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**ORTHOGRAPHY DEVELOPMENT
FOR CREOLE LANGUAGES**

KENDALL DON DECKER



The work in this thesis has been carried out under the auspices of SIL International[®] in collaboration with the National Kriol Council of Belize. The writing of this thesis has been carried out under the auspices of the University of Groningen, with assistance from the Center for Language and Cognition Groningen (CLCG).



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To Belize

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Abbreviations

BK	Belize Kriol
BKP	Belize Kriol Project
C	Consonant
IPA	International Phonetic Alphabet
NKC	National Kriol Council
V	Vowel

**INTRODUCTION TO
ORTHOGRAPHY DEVELOPMENT**

THE premise of this research is that orthography development cannot, and does not need to, produce a linguistically confined product; speech communities can tolerate some variability in the way they write their language. As an example of acceptable variability this dissertation describes the development of an orthography for a Creole-speaking community.

The development of writing has been cited as one of the most important inventions in the history of humankind. Despite this, only about half of the world's languages have standardized orthographies. Although many languages have existed for generations without writing, there are tremendous benefits to having a standardized orthography. For example, Daniels (Daniels & Bright 1996:1) claims, "Humankind is defined by language; but civilization is defined by writing." While some may see this a chauvinistic perspective, the socio-political power that accompanies literacy cannot be denied. The benefits of an orthography include the documentation of ideas, histories, policies, and facts (Goody 2000). Writing makes the communication of ideas over both distance and time possible. However, a standardized orthography is required for mass literacy and in this modern age, it may be a requirement for the survival of oral languages.

This thesis harmonizes principles of orthography development that have been identified by numerous scholars, such as Fishman (2010), M. Lewis (forthcoming), Lüpke (2011), and Smalley (1964). These scholars draw from research in several different sub-fields of linguistics. The study of orthography development has not received much focused attention in the linguistics community. The little known field of grammatology, a subfield of linguistics, is concerned with the study of writing. However, historically, grammatologists have focused on the study of ancient writing systems and the establishment of typologies of writing systems, rather than orthography development. Such development is more often considered a language

management activity and within the realm of sociolinguists. Most research on orthography development in recent decades has been focused on the impact of established orthographies on literacy. In contrast, this dissertation focuses on the development of a new orthography for a previously unwritten language.

A further contribution of this study is the documentation of orthography development for a Creole language — the Kriol language of Belize in Central America. Creole languages provide unique environments for the study of sociolinguistic theory. Those both inside and outside the language community consider the languages to be socially and linguistically deficient, yet they are the heritage and dominant language of their speakers. They are “despised” languages on one hand, yet the speech communities continue to maintain their use because they have intrinsic value to many of their speakers. There are many social benefits to a Creole speech community when they gain an orthography, such as improved identity, pride, and value. Although a more complete discussion of the social impact of orthography development is beyond the scope of this case study, it will provide a greater insight into the process of orthography development, which can be applied to other languages.

1.1 Grammatology

The term *grammatology*¹ was first used by Gelb (1963) in 1952 to refer to the study of writing, a new field of linguistic research at the time. Other terms used have been *graphemics* (Augst 1986), and *graphology* (Crystal 1995). Derrida (1974) used the term *grammatology* in a philosophical treatise on the impact of writing on how people think. Regardless of the term, the study of writing covers many overlapping disciplines and affects many aspects of human activity. The earliest studies on writing were concerned with deciphering ancient writing systems, referred to as *palaeography*. Today the most prolific field of research related to writing is the study of literacy acquisition, but also includes *typography*, a graphic art focused on the visual presentation of a text in typesetting. Grammatology also includes the ergonomic study of *graphonomics*, the analysis of the hand motions in writing. Even the art of *calligraphy* could be considered an aspect of the study of writing. Here we are primarily limited to the process of

¹ Grammatology from Greek *grammat-*, stem of *grámma* letter + *-o-* + *-logy* study.

creating a new, standardized system for writing a language. Ferguson (1968) used the term *graphisation* for the process referred to here as *orthography development*, and Sebba (1998) calls it *codification*.

1.2 Orthographies, language management, and Creole languages

To lay a foundation for this dissertation, the rest of this chapter presents a brief discussion on the intersection of orthography studies with several divergent linguistic interests. The first section introduces the linguistic interest in the study of writing. The next section presents a discussion on orthography development as a language management activity. Then there is a brief section commenting on orthography development and endangered languages. Finally, we will provide an introduction to Creole languages and the debate over orthography standardization.

1.2.1 Writing and linguistics

In recent centuries there has been a shifting perspective between the preeminence of written language and spoken language. In the last century the linguistic interest in written language has not been nearly as focused as the research of spoken language. Previous to the twentieth century the written word was considered the truest form of language (Sampson 1985:12). In this practice literature could be studied and rules for writing could be prescribed. However, speech was considered proper only if it followed the rules of the written language. There was no interest in studying everyday spoken language. In the early twentieth century there was a radical shift and the foremost linguist, Bloomfield (1933:21), proclaimed, “Writing is not language, but merely a way of recording language by means of visible marks.” Thus, through most of the twentieth century, most linguists were predominantly concerned with spoken language. However, even as early as 1939, Vachek (1989:103–115) argued that the relationship between written and spoken language should not be considered in terms of primary and secondary importance; rather they should be studied in their complimentary physical forms (phonic v. graphic) and mutually-functional roles. He explained that “the function of the spoken utterance is to react to a given reality in a distinct and immediate manner, while the written utterance reacts to the same reality in a manner which is preservable and thus permanent.”

(Vachek 1989:107) Therefore, the study of writing is gaining recognition as a legitimate realm of investigation.

There has also been a shift in the consideration of the degree to which written language represents spoken language. There are two issues to this question: the expression of ideas in speech versus through a written text, and the accurate and consistent orthographic representation of the phonology of a spoken language. The debates as to the differences between cognition, speech, and writing have sparked great interest. (For example, see Derrida 1974, Goody 2000, & Street 1984.) Regarding the first issue, our concern is the frequent belief among speakers of unwritten languages that their languages are deficient in some way, which prohibits the writing of their language. It is true that the written form of a language will differ in terms of word order and the presentation and development of ideas from the spoken language. However, from the linguist's perspective, it is inconceivable that a spoken language could not be written in a way that adequately communicates the writer's ideas.

The second issue, the representation of the phonology of the spoken language in written form, is the predominant focus of this dissertation. In the early to mid-twentieth century missionaries and linguists became interested in the documentation of the many lesser known languages that were being found around the world. There was also interest in helping people develop orthographies to give them access to literacy and religious materials. At the same time linguistics was developing as a new science. A group of linguists, referred to as the American Structuralists, proposed to create orthographies that would represent speech most faithfully. The best, most scientific, orthography was seen as one in which there was an exact representation between a limited set of phonemes in a language and a limited set of symbols, a one-symbol to one-sound system (Pike 1947:208). This approach came to be accepted as the only truly scientific response to the needs of unwritten languages (Lüpke 2011:313, Sebba 2007:74). The implication of this perspective was that orthographies could be created merely from the linguistic analysis of speech, apart from considering the interests of the speakers of the language.² However, linguists came to realize that there are two significant sets of variables influencing the development of

² To be fair to Pike, he also observed that an orthography needs to motivate people to want to read and that any orthography can be taught to people who have this desire (Pike 1947). Therefore, he did care about the interests of the speakers of the language and recognized that a good orthography did not need to be limited to a one-symbol to one-sound system.

orthographies, the linguistic and the socio-cultural (Sjoberg 1971:264). For numerous reasons, many of the phonemic orthographies that were developed through the mid-20th century were rejected by their speech communities (Benton 1999, Lüpke 2011, Smalley 1964). Linguists found that compromises had to be made between the linguistic realities and the desires of the speech community. Therefore, today, orthography development is carried out with a great deal of collaboration with the speech community. An ideal orthography is still viewed as having a close relationship between sounds and symbols, but there is less insistence on a one-to-one grapheme-phoneme relationship. This study gives significant consideration to the socio-cultural factors, which are examined throughout.

The creation of an orthography that is suboptimal in the consistent relation to speech has an impact on literacy (Grigorenko *et al* 2012). The field of research that studies problems with literacy acquisition focuses on two concerns: 1) the relationship between learning disabilities and specific types of orthographies, and 2) the variation in child language learning abilities resulting from different orthographies. The study of the impact of an orthography on literacy is beyond the scope of this research. However, in chapters 2 and 5, where we discuss the specifics of orthography design, consideration will need to be given to its impact on literacy.

In contrast to the linguistic grapheme-phoneme approach to orthography design, a review of the historical development of certain orthographies indicates improvements to the orthography development process. Prior to about 200 years ago (a somewhat arbitrary threshold), there were relatively few deliberate, analytical attempts at orthography development (Jaffré & Fayol 1997, cited in Coulmas 2003:94). International languages (such as Arabic, Chinese, English, French, Russian and Spanish) and most other current national languages developed as written languages over the course of centuries and there was little, if any, intentional effort to plan or manage the initial development of their orthographies. Their typical development process was to adapt written forms used by other languages, or earlier varieties of their spoken languages. There was usually a time when their orthographies were reformed and standardized, but that came centuries later. Many of these systems are irregular and require years of training for proper use. Yet, in spite of their appearance of being flawed, they have become major literary languages. In chapter 4 we will consider some historical patterns that inform the orthography development process.

Through this brief introduction to the linguistic interests in studying written language we note that there are significant linguistic and sociolinguistic issues that influence the design of an orthography. This will be further discussed in chapter 2.

1.2.2 Orthography development and language management

The intentional systematic development of an orthography is a significant social experiment. The introduction of writing as a new communication technology has many social, economic, and political implications. Literacy is a skill that is attained individually and creates inequalities in the society. Literates inevitably have more social, economic, and political power than illiterates. Furthermore, when the division between literates and illiterates is also a division between different ethnic groups, these inequalities will create social, economic, and political problems. Language management has developed as a field of study for those interested in remediating these social, economic, and political problems.

While people have engaged in language management-like activities since the formation of the first human societies, language management, as an academic discipline, is considered to have emerged in the 1950s and 60s (Cooper 1989:29). The research in the early days was motivated by the independence and formation of many new nations, particularly in Asia and Africa. Researchers in language management, most of whom were Europeans and Americans, believed that mass literacy in national languages would resolve many social inequalities and form national unity. However, the Western ideologies of these researchers often did not fit the linguistic realities and cultural aspirations of the new nations. Such ideologies were attacked as being promoted by dominant elites (Ferguson 2006). In typical situations, education in the national language became more available in many countries, but it did not produce mass literacy and national unity. There was a great disparity in the success of education, dependent on the heritage language of students; those who did not speak the national language faced much greater challenges. Research shows that the ability to read and write in one's heritage language facilitates acquisition of those skills in another language (Thomas & Collier 2002, Edwards 2009). This means that orthographies need to be created and education needs to be provided for all of the smaller speech communities. However, the support of multilingualism through the production of materials in many languages is very expensive for

a national government. Therefore, many countries have been reluctant to enact policies that guaranteed equal rights for all speech communities. Furthermore, the promotion of national languages in education and for economic advancement has increased the necessity of fluency in those languages. This has had the impact of endangering many smaller speech communities as parents have decided to only use the national languages with their children, and many young adults chose to seek fluency in the national languages at the expense of connections with the heritage language community.

Through the years language management researchers have learned that comprehensive language management requires three kinds of planning: status, corpus, and acquisition planning (Cooper 1989). Status planning relates to changing perceptions, and realities, of the efficacy of using a certain language. For example, when a language is declared an official language; its use gains legal support. Corpus planning involves the creation of means to use a language for new functions. This is where orthography development fits into language management. The creation of an orthography makes it possible to efficiently use a language for written communication, a new function for the languages of many speech communities. Acquisition planning responds to the need for people to learn and adapt to the new language situation. (Hornberger (1994) gives a more thorough treatment of the kinds of planning.) This paradigm of planning suggests that any one aspect of language management, without planning in the other areas, will not be successful. Orthography development requires a change in the status of the language, but this can be a perceptual change and does not require official recognition. It must be accompanied by acquisition planning to enable the speech community to use the orthography.

Finally, orthography development should be a collaborative activity for all parts of a society impacted by national policies. An understanding of this history of language management has guided this research into a concern for the role of the speech community in language management and orthography development. The process of orthography development as part of a larger language management effort will be developed further in chapter 3.

1.2.3 Orthography development and endangered languages

Since the early 1990s, many linguists have become concerned with language endangerment (Hale *et al* 1992, Granadillo & Orcutt-Gachiri 2011). Other

linguists have focused more on the human rights aspect of language endangerment (Skutnabb-Kangas *et al* 1995, May 2012). In recent years, through critical self-evaluation, language management efforts have become more sensitive to the roles of governments and their policies, and linguists and their ideologies (Tollefson 2006:49ff). The result of this critical self-evaluation by linguists is a greater concern for the empowerment of local speech communities for their own development.

Through the brief introduction to language management above we have been introduced to several significant issues concerning the survival of many speech communities. Unwritten languages face endangerment due to social, political, and economic inequalities, often caused by national policies. To counter these inequalities, the introduction of an orthography is an essential part of maintaining functionality for an endangered language. Orthography development must also be accompanied with other status and acquisition planning efforts. In chapter 4 we will explore several case studies describing the historical process of orthography development and how language management has proceeded in several recent orthography development efforts. While these case studies involve languages that may or may not be endangered, orthography development will be presented as an essential element in the maintenance of the language.

1.2.4 Orthography development and Creole languages

There are many different ways to categorize the languages of the world. Languages can be categorized by grammatical features, such as word order, or by morphology, such as agglutinating or non-agglutinating. Often they are categorized by their diachronic relationships, described as language families. Creole languages are identified by the socio-historical processes by which they were formed. Creole languages are generally understood in linguistic circles to be a Pidgin language that has gained mother-tongue speakers (Holm 2000). A Pidgin is described as a language that has developed from the collision of two or more distinct speech communities. Through an as yet undefined process, people pick and choose simplified forms of speech to communicate across languages. This new speech variety has reduced phonological and grammatical structures, reduced lexical selection and stylistic range, and there are no mother-tongue speakers. When the Pidgin acquires mother-tongue speakers it is called a Creole language. Theoretically, there is an accompanying process called creolization in which

the language expands in complexity and increases the number of linguistic features.³ These processes of Pidgin formation and creolization are not fully understood. There is debate as to whether Pidgins and Creoles form a linguistically unique category of languages (Degraff 2004, McWhorter 2012).

Creole languages tend to develop in colonial situations in which one group of people is subjugated to another group. In these types of situations the dominant group typically maligns the language and culture of the subjugated group. As a result, speakers of Creole languages tend to have negative attitudes towards their language. Linguists⁴ and laymen⁵ alike generally consider that prospects are dim for the successful development of a standardized orthography for a Creole language. They base these predictions on linguistic and social factors. For example, Creole linguistic structures are considered to have too much variation, and to change too rapidly, for standardization. Carrington (1976) believes that situations where there is a Creole continuum are unfavorable for Creole promotion due to negative attitudes towards the Creole. For over 100 years the *Gleaner*, a prominent newspaper in Jamaica, has carried the debate concerning whether Jamaican Patwa should be written. In some cases, members of the speech community fear that development of the Creole language will “cut off its users from the rest of the world” (Cooper, n.d.). Kephart (1992) even documents concerns that learning to read and write in Creole might cause brain damage. Truly, there are barriers to the successful development of a written form for Creole languages. Conversely, there are Creoles who appreciate their language and desire to see its development. For many years Caribbean nationals have been involved in the study of their Creole languages and they have promoted the use of Creole in education (D. Craig 1971, 1977; Roberts 1988), and have emphasized the reality of social identification of Creoles with their languages. Furthermore, there are several Creole languages that have orthographies which have attained some form of official recognition, *e.g.*

³ There are numerous theories as to how Creole languages are formed. For a thorough description of the major theories, see Holm 2000 and Mufwene 2001.

⁴ For example, when considering the barriers to language development, Fishman (2010:15–6) puts Creole languages in a different category than other vernacular languages and dialects.

⁵ Lopez (1991) presents numerous reasons why Belize Kriol could not be developed for literary purposes.

Haitian, Papiamentu, Kabuverdianu, Seselwa, Sango, Bislama, Tok Pisin, and Tetun Dili (Lewis *et al* 2013).

The Kriol⁶-speaking community in Belize was chosen in 1992 as a promising environment in which to study the process of orthography development. The involvement of this writer and his wife in language management efforts, from 1992 to the present, is documented in §5.3. Through several studies sponsored by SIL International in the 1980s, and wider secondary research, the Belizean Kriol-speaking community was identified as having people with positive attitudes towards the language. There was active use of the language and there were people specifically interested in orthography development. The orthography development for Belize Kriol is documented in chapters 5 and 6.

⁶ When the National Kriol Council began standardizing the orthography for Kriol they decided that they would only promote the spelling *Kriol* for the language, but they would continue to use the spelling *Creole* when referring to the people in English. I will follow this convention.

THEORY OF ORTHOGRAPHY DESIGN

THERE are certain conditions for the creation of a good and successful orthography. Technically, an orthography can be created for any language. Even a difficult orthography like Chinese is learned by millions of people. Orthographies have been created for fictional languages such as Tolkiens' *Tingwar* (Allan & Carson 1978), and Roddenberry's *Klingon* (Okrand 1985). Linguists are able to use the International Phonetic Alphabet (IPA) to write dying languages. If there are people in a speech community who want to start writing their language, they do not need to wait for some other conditions to be met. So, the reference to "conditions" focuses on *good* and *successful* orthographies. A *good* orthography is one that adequately represents the language, is easy to learn for new literates, and easy to read by fluent readers. A *successful* orthography is one that is embraced by a speech community as the correct way to write their language.

In this chapter factors are described that influence the design of an orthography so that it may be acceptable and useful to the speech community. The next five sections will present:

- two perspectives on the sociolinguistic environment that identify crucial factors for creating sustainable literacy;
- a description of the types of writing systems that are found in the world;
- several alphabetic patterns that can be followed in the creation of an orthography;
- a set of maxims and principles to guide orthography design; and
- a set of possible options for handling the linguistic variation of multidialectal speech communities.

At certain points in this chapter definitions will be provided for clarification. One of the problems encountered in this research is the frequent ambiguous or imprecise use of terms in the writings of some authors. One

goal of scientific investigation is the taxonomic identification and labeling of meaningful and discrete units. While it can be helpful to use popular and familiar terms, it is not helpful to use several terms to refer to the same thing, or the same term to refer to different things. For example, Sampson (1985:19) says, “I shall use the terms *script*, *writing system*, or *orthography*, to refer to a given set of written marks together with a particular set of conventions for their use” [emphasis mine]. He provides the same definition for three different terms. In any science it is important that specialists understand the use of terminology by one another. Furthermore, the way that researchers define and use terms has an impact on their analyses and recommendations on issues. The researcher’s definitions reveal certain assumptions upon which their hypothesis will be built. The wider linguistic community may not use the terminology with the same specificity, but our intention is to be clear and precise in this study.

2.1 Sociolinguistic conditions

The development of an orthography is not a natural linguistic development for a spoken language. It is driven by the perceived needs and desires of the speech community to overcome some difficulty or achieve some goal. Those needs and goals will have an influence on aspects of the orthography design. Therefore, there needs to be a careful consideration of the sociolinguistic environment of the speech community. However, a sociolinguistic environment is a vague concept covering any social behavior associated with language use. Preston (1999:xxxiii) points out that there are three different aspects to this relationship between language and social behavior: 1) what people actually say, 2) how people react (attitudinally) to what is said, and 3) what people say about how they react to what is said. There are methods to quantify and analyze language to observe the reaction of people to language, and to ask people what they think about what has been said, including the language used. In the next two sections two typologies will be presented that will be helpful for describing and understanding the sociolinguistic environment.

2.1.1 Stewart's and Fishman's scale of language types

In 1962a,⁷ Stewart introduced a language typology aimed at “describing national multilingualism.” The framework of this typology was only meant to classify languages by understanding their relationships to one another. In this paradigm the categorization of language types is based on the presence or absence of four attributes: *vitality*, *historicity*, *autonomy*, and *standardization*. Stewart describes each of these attributes as characteristics that can be observed; i.e., a language has the characteristic of standardization if there is a widely accepted orthography for the language.

In 2010, Joshua Fishman, in *European Vernacular Literacy*, used Stewart's typology to explain the increase and loss of functionality of languages. Fishman's interest was in accounting for the literary development of the major languages of Europe. Unlike Stewart's descriptions of these attributes, Fishman focuses on the attitudes, beliefs, and perspectives people have as they evaluate whether a given speech variety should be written or not. The following descriptions of the four attributes are from Fishman.

- *Vitality*: Speech communities with perceived numerical dominance, in relationship to neighboring groups, believe that they will excel over smaller language groups. They believe that they have sufficient numbers to exist indefinitely. This belief contributes to the motivation to perpetuate the use of their language.
- *Historicity*: Speech communities that perceive they are older than other speech communities believe they will excel over ones that are viewed as younger. They believe that their language and culture have had a prestigious past with greater political dominance and social prestige than less powerful and less prestigious neighboring groups. This belief contributes to the motivation to use their language to document their history and culture, and possibly to maintain their dominance.
- *Autonomy*: Speech communities with a stronger sense of self-determining identity will succeed over less autonomous groups. They believe that they are independent of control by others. This attribute becomes more crucial when two closely related varieties are competing for similar sociolinguistic space. Fishman also points out that the

⁷Stewart (1972) is a revision of an earlier “Outline of Linguistic Typology for Describing Multilingualism” published in Frank A. Rice, ed. (1962) *Study of the Role of Second Languages in Asia, Africa, and Latin America*. Washington, D.C.: Center for Applied Linguistics. 15–25.

supportive or unsupportive perspective of outsiders can have impact on the perspective of the insiders. This belief contributes to the motivation to develop their language through the increase of its functional uses; this could include the creation of a written form of the language and encourage its use in new ways.

- *Standardization*: Speech communities that have achieved standardization have developed prescriptive rules as to “proper” use of the language. While Stewart acknowledges that some unwritten languages have developed normative standards for speech, he prefers to limit his use of the term to written languages with formal, codified standards. These speech communities believe that their languages are improved upon by standardizing patterns of writing. When grammars and spelling guides are present the people abide by their guidance because they perceive them to be authoritative.

Therefore, a community that believes its heritage language has: a great past (historicity), linguistic sovereignty (autonomy), a promising future (vitality), and normative rules for writing (standardization) – such a speech community has a good chance of creating sustainable literacy in the heritage language.

Fishman (*ibid*) uses these four attributes, in Table 1 below, to define eight types of languages, expanding upon Stewart’s seven language types.

Language Types	Attributes			
	Vitality	Historicity	Autonomy	Standardization
Literary	+	+	+	+
Vernacular	+	+	+	
Dialect	+	+		
Creole	+			
Pidgin				
Classical		+	+	+
I-A-L ⁸			+	+
Code				+

Table 1: Scalability of attributes
(Fishman 2010:15)

The taxonomy presented in Table 1 describes the differences between written languages, spoken vernacular varieties, and artificial languages. Literary languages have all the attributes, so they have the greatest

⁸ International Auxiliary Language, for example, Esperanto

functionality. According to Fishman, vernacular languages are not able to function as literary because there has been no standardization. The attributes are scalable because the presence or absence of each variable differentiates each of the different language types. This taxonomy does not explain that a certain type of language cannot succeed at development, nor guarantee that a certain type can be developed. It does identify some key areas of development for a speech variety to gain a greater functionality, particularly for creating sustainable literacy. The speech community of a dialect would need to gain the perception of being autonomous of other speech varieties before it could then become standardized to develop as a sustainable literary language. In general, Table 1 provides a good argument for differentiating the language types, but in the case studies described in chapter 4, some flaws with Fishman's premise will be discussed. The attributes are not as distinctive, nor scalable, as they may seem.

2.1.2 Lewis and Simons' Sustainable Use Model

The Sustainable Use Model (SUM) (M. Lewis, forthcoming) is a language assessment and planning tool currently under development by SIL International. The SUM considers five sociolinguistic conditions that are identified as essential for the sustainability of a language. These five conditions, referred to by the acronym FAMED, are: functions, acquisition, motivation, environment, and differentiation.

- *Functions*: In multilingual communities people have different uses for the languages they know. We refer to the uses as the *functions* (Stewart 1972:540) of the language. When we are referring to a situation as being the combination of a specific location, social situation, topics, or specific people we call these *domains*. Functions and domains are very similar concepts but with slight differences. The functions of a language are the purposes for which the language is useful; *why* that language is chosen in a certain situation, what the speaker hopes to accomplish through the choice of language used. A domain refers to the context in which a language is used; *what* was discussed, *when*, *where*, and *with whom*. For languages to maintain sustainability they need to maintain or increase the number of functional uses for the language. For example, if a pre-mechanized speech community wants to gain the ability to own, use and maintain outboard boat engines, and be able to talk about it in their own language, they will need to add or create new

vocabulary to their language. This is adding a new function to the language and it is done through adding, or creating, new vocabulary to the corpus of the language.

- *Acquisition*: There needs to be a way for people to gain proficiency in the languages they need for all the functions they have for language(s). Initially, language is learned in the home from family. As children grow they begin to learn more language from their community. Further language learning can occur through formal education or interaction with members of another speech community. If a speech community is adding a new function to their language, with new vocabulary for the corpus, there needs to be a way for that knowledge to be acquired by all in the speech community who need that knowledge.
- *Motivation*: People are motivated to make certain language use choices based on the perceived benefits of making those choices (Karan 2000). Parents decide which language to use with their children based on the perceived benefits of their options; for example, they may choose to use the language used in school to help prepare the children for school. That choice may give the children access to education and socioeconomic benefits, but may also lead to the loss of their heritage language. Based on these perceptions, people are motivated in their language use choices.
- *Environment*: This condition focuses on the language policy aspect of language management, which will be discussed further in chapter 3. A national government's language policy has a significant impact on the language use environment. Language management strategies will only work if they are officially sanctioned and if it proves to be socially rewarding (Hellinger 1986:56, Wurm 1977:352). If there is a prohibition against the use of minority languages, it will be difficult for the language to be maintained. For example, the Spanish dictator Franco tried to prohibit the use of Catalan from the 1930s to 1975, but people maintained the language in secrecy. Even though Catalan now has official support, the years of repression have had a significant negative impact on use of the language (Strubell 2001). Policy can also be implemented at local levels. For example, a company may decide that they will only hire speakers of the national language; this could encourage shift from the local language to the national language. Or a school system may make a policy of hiring bilingual teachers who can

speaking the local language; this would support maintenance of the local language.

- *Differentiation*: For the sustainable use of a language with less prestige in a region alongside the use of a more dominant language there must be community normative behavior that separates the functions of the vernacular and the dominant language. This is similar to Fishman's (1967) and Fasold's (1984) definitions of diglossia. The normative behavior of the community is the condition that binds all of the other FAMED conditions together. For the community behavior to be normative there needs to be at least tacit agreement on which language is used for which function. There also needs to be cooperation within the community to support language acquisition, a majority of the people need similar levels of motivation to maintain the differentiation, and there need to be policies which support the different roles for each of the languages.

Each of the conditions can be measured on its own scale. For example, the condition of Function can be described from having no function to highly functional. Parts of these scales can be viewed in Table 3 to 7 below. These scales can also be correlated with a scale of language vitality. As a language loses vitality, it loses functions, it loses ways for younger generations to acquire it, there is less motivation to use the language, and there is a greater imbalance of domains in which the language can be used. Conversely, a language with strong vitality is very functional; there are many ways for people to gain proficiency and scope in using the language, they are motivated to maintain the use of the language, and there is policy support for maintaining the language. For a comparison with language vitality Table 3 to Table 7 use the Expanded Graded Intergenerational Disruption Scale (EGIDS) (Lewis & Simons 2010), which can be viewed in Table 2 below. The EGIDS is based on Fishman's (1991) nine-point Graded Intergenerational Disruption Scale (GIDS). The half levels were created by Lewis and Simons to maintain the relationships with Fishman's GIDS scale. The main criteria of the scale is the status of a language; at the higher end of the scale the measure is based on official status and at the lower end on the status of language use in the family.

Level	Label	Description
0	International	The language is widely used between nations in trade, knowledge exchange, and international policy.
1	National	The language is used in education, work, mass media, and government at the nationwide level.
2	Provincial	The language is used in education, work, mass media, and government within official administrative subdivisions of a nation.
3	Wider Communication	The language is widely used in work and mass media without official status to transcend language differences across a region.
4	Educational	The language is in vigorous oral use and this is reinforced by sustainable transmission of literacy in the language in formal education.
5	Developing	The language is vigorous and is being used in written form in parts of the community though literacy is not yet sustainable.
6a	Vigorous	The language is used orally by all generations and the situation is sustainable.
6b	Threatened	The language is still used orally within all generations but there is a significant threat to sustainability because at least one of the conditions for sustainable oral use is lacking.
7	Shifting	The child-bearing generation can use the language among themselves but they do not normally transmit it to their children.
8a	Moribund	The only remaining active speakers of the language are members of the grandparent generation.
8b	Nearly Extinct	The only remaining speakers of the language are elderly and have little opportunity to use the language.
9	Dormant	There are no fully proficient speakers, but some symbolic use remains as a reminder of heritage identity for an ethnic community.
10	Extinct	No one retains a sense of ethnic identity associated with the language, even for symbolic purposes.

Table 2: Expanded Graded Intergenerational Disruption Scale
(Adapted from Lewis & Simons 2010)

EGIDS	Functions
4: Educational	Adequate vernacular literature exists in every domain for which vernacular writing is desired.
5: Written	Enough literature exists in some domains to exemplify the value of vernacular literacy.
6a: Vigorous	Adequate oral use exists in every domain for which oral use is desired (but there is no written use).
6b: Threatened	Adequate oral use exists for some domains for which oral use is desired (but not for all).
7: Shifting 8a: Moribund 8b: Nearly extinct	There are entire generations that no longer have full oral use of the language.

Table 3: EGIDS levels 4-8b and the Functions condition

EGIDS	Acquisition
4: Educational	Vernacular literacy is being taught by trained teachers under the auspices of a sustainable institution.
5: Written	There are adequate materials to support vernacular literacy instruction and some members of the community are successfully using them to teach others to read and write the language.
6a: Vigorous	There is full oral transmission of the vernacular language to all children in the home (literacy acquisition, if any, is in the second language).
6b: Threatened	The language is used orally within all generations but only some of the child-bearing generation are transmitting it to their children in the home.
7: Shifting 8a: Moribund 8b: Nearly extinct	The only transmission of the heritage language is for identificational use (often in institutional settings rather than the home).

Table 4: EGIDS levels 4-8b and the Acquisition condition

EGIDS	Motivation
4: Educational	Members of the language community perceive the economic, social, religious, and identificational benefits of reading and writing in the local language.
5: Written	Some members of the language community perceive the benefits of reading and writing their local language, but the majority of them do not.
6a: Vigorous	Members of the language community perceive the economic, social, religious, and identificational benefits of using their language orally, but they perceive no benefits in reading and writing it.
6b: Threatened	Members of the child-bearing generation perceive the benefit of using their language orally for some purposes, but for others find more benefit in shifting to a more dominant language.
7: Shifting 8a: Moribund 8b: Nearly extinct	The child-bearing generation finds no practical benefit in speaking the language, though they may still find sentimental benefit.

Table 5 EGIDS 4-8b and the Motivation condition

EGIDS	Environment
4: Educational	Official government policy calls for the cultivation of this language and cultural identity and the government has put this policy into practice by sanctioning an official orthography and using its educational institutions to transmit local language literacy.
5: Written	Official government policy encourages the development of this language, OR has nothing to say about ethnolinguistic diversity or language development and thus raises no impediment to the use and development of this language.
6a: Vigorous	Official government policy affirms the oral use of the language, but calls for this language to be left in its current state and not developed.
6b: Threatened 7: Shifting 8a: Moribund 8b: Nearly extinct	(as above for 6a)

Table 6: EGIDS 4-8b and the Environment condition

EGIDS	Differentiation
4: Educational	Members of the language community have a set of shared norms as to when to use the local language orally and in writing versus when to use a more dominant language.
5: Written	Members of the language community have a set of shared norms as to when to use the local language orally versus when to use a more dominant language. But for writing, some members of the language community use the local language in written form for particular functions while others use a more dominant language for many of the same functions.
6a: Vigorous	Members of the language community have a set of shared norms as to when to use the local language orally versus when to use a more dominant language, but they never use the local language in written form.
6b: Threatened	Some members of the child-bearing generation use the local language orally for functions that were traditionally reserved for the heritage language, while others use a more dominant language for many of the same functions.
7: Shifting 8a: Moribund 8b: Nearly extinct	The only remaining domain of heritage language use is identificational.

Table 7: EGIDS 4-8b and the Differentiation condition

There are only certain levels within this scale at which language use is sustainable. Levels 0 through 4 distinguish levels of sustainable literacy differentiated by levels of official recognition. Level 6a is a level at which oral use of the language is sustainable in a community. Level 9 is considered sustainable identity; memory of the language is maintained for the purpose of identity. People may have books in the language, remember that they had a unique language, or they may remember a few words. But no one speaks or reads the language any longer. Level 10 is sustainable since there can be no reversal of the state of extinction. From Level 7 to 9 we see that there is a decrease in the number of generations who use the heritage language. The scale can be used in a descending direction to describe language loss and in an ascending direction to describe language revitalization.

The FAMED-EGIDS comparative scale is designed as a diagnostic tool, by assessing the current state for each of the FAMED conditions. The assessment of each condition is then correlated with the level of vitality on

the EGID scale. While an orthography can be created for a language at any level, the FAMED-EGIDS comparative table shows that there are other conditions to be met in order for literacy to be sustainable. Since this model is quite new, many aspects of it have not been fully tested. For example, in theory a language that is assessed at EGIDS 6b should be able to be restored to level 6a by changing the language use behavior in some homes. However, due to the complex factors that may be underlying the parent's decision to not pass their language on to children, there may be many other issues that need to be addressed, and it may be too difficult to reverse the language shift. Except for Hebrew, we do not have case studies of languages that have reached EGIDS level 7 or lower that have successfully reversed the shift and re-attained level 6a or higher. There are currently efforts to revive a few languages which had ceased to be spoken, such as Cornish, but the sustainability of those efforts are still in question.

Many of the languages that are currently getting orthographies, or are as yet unwritten, are endangered languages. There are several factors about endangered languages that need to be considered before the creation of an orthography for these languages. As a language loses its functionality, the speakers of that language must choose which language(s) to use in domains where their heritage language cannot be used. They can shift to the use of the other language or they can develop their heritage language for meeting the new functions. The speakers of the endangered language do not have an unlimited timetable. As each day passes, children are born, elders die, and language use choices are made. As children grow up with less exposure to their heritage language, there is less opportunity to master the language. Effective revitalization efforts need to be implemented rapidly to assure parents that there is value to passing the heritage language on to their children. It is possible for there to be so few fluent speakers of the language that practical, sustainable revitalization is not feasible.

2.2 Classification of writing systems

In both popular and academic literature, the terms *writing system*, *script*, and *orthography* are often used interchangeably (Coulmas 1996, 2003). In this study we will use specific definitions for these terms.

- A *writing system* is a set of scripts, which share common features. It does not refer to a system used for a specific language.

- A *script* is a set of orthographies, which share common features. It does not refer to a system used for a specific language.
- An *orthography* is a specific set of symbols and the rules used to combine those symbols into words and sentences for a specific language.

Through the last century, grammatologists have been interested in the research of ancient scripts and the classification of writing systems. The variables considered by the different classification systems focus on the degree to which a symbol represents meaning or sound. Haas (1976:152–153) describes two types of writing systems: *cenemic*, systems with symbols that represent sounds, and *pleremic*, systems with symbols that “are semantically informed, denoting both sounds and meanings” (Joyce & Borgwaldt 2011). However, Coulmas (1996:521) notes that “fully developed pleremic systems invariably use cenemic signs also.” Cenemic systems include syllabaries and segmental systems. A syllabary uses one symbol to represent a syllable. Segmental systems use individual symbols to represent individual phonemes. Pleremic systems include logographic systems, like Chinese. A logographic system may also be called morphemic (Coulmas 1996:348), morphosyllabic (Mair 1996:200), or logosyllabic (Daniels 1996:4). Depending on the morphophonemic structure of the specific language, these systems use symbols to represent variations of syllables, morphemes, and words. As the lexicon of a language continues to grow the number of symbols will also continue to grow. For example, Mair (1996:200) reports that a recent Chinese dictionary, *Hányǔ dà zì-diǎn* (1986-90) lists about 60,000 individual symbols.

A further classification of segmental cenemic writing systems, includes *abjads*,⁹ which only represent consonants, *abugidas*, which mark vowels by the use of diacritics or some other modification of the consonant character, and *true alphabets*,¹⁰ which use separate symbols for both vowels and consonants (Daniels 1996:4). There are other taxonomies of writing systems which vary dependent on the researcher’s goals, definitions, and analysis of

⁹ Coulmas (2003:113) prefers to call these consonantal alphabets.

¹⁰ The term *alphabet* is also used to describe a set of characters that are used for a specific language. This creates an ambiguity in the naming of two different parts of the taxonomy of writing systems. While this is not helpful for academic clarity, the dual use is so pervasive that there is no alternate term to use. So, we are relegated to saying that the English alphabet is used in an alphabetic writing system.

different writing systems, but a debate of these different classification systems is beyond the scope of this dissertation. The categories presented in this section provide a sufficient taxonomy of writing system types, but the reader must remember that most orthographies are not entirely limited to one type (Coulmas 2003:381). For example, English, which uses an alphabetic writing system, may also employ logographic symbols such as <©>¹¹ or <☎>, which have no phonetic value, and morphemic symbols, such as plural <-s> and past tense <-ed>.

A *script* is a specific graphic type of writing system; such as the logographic Chinese script, the syllabic Japanese kana script, or the abjad Arabic script. Cyrillic, Greek, and Latin scripts are cenemic types of writing systems. A specific script includes the complete set of symbols used for writing one or more languages. For example, the Latin, or Roman, script includes all the symbols that are used by Germanic and Romance languages, and all the other languages that use Latin-based systems.

We use the term *grapheme* to refer to any individual symbol used as a graphic representation of the spoken language whether it is used in a cenemic or pleremic writing system; some use the term *character* for the same units. A grapheme is the smallest analytical graphic unit used in writing. There are three kinds of graphemes: logograms representing semantic units or morphemes, syllabic representing phonographic syllables, and alphabetic representing individual sounds.

In an alphabetic system, when two or more distinct graphemes are used to represent one sound or semantic unit; for example, when <n> and <g> are used together to represent /ŋ/ in English, the <ng> unit is called a *digraph*. When the grapheme represents a morpheme, such as when <-s> represents pluralization in English, the grapheme is representing a semantic unit. The term *letter* can be used to refer to a specific graphic unit, with alphabetic value, used in cenemic writing systems (Coulmas 1996).

An *orthography* includes a limited set of graphemes specific to only one language (Coulmas 1996:379) and can be used for pleremic and cenemic writing systems. An *alphabet* is a language specific inventory of symbols chosen from a segmental script of a cenemic writing system. The English alphabet is a set of 26 symbols from the Latin script. The only time other letters from the Latin script are used in English is with borrowed words or

¹¹ In academic writing graphemes are indicated by being placed between angle brackets <>.

proper nouns. An alphabet does not include numerals or punctuation. Writing usually uses other, non-alphabetic, symbols to help clarify the text or provide shorthand representation for some words. These include punctuation < ? , ! () >, numbers < 1 2 3 >, intellectual property symbols < © ® >, currency symbols < £ ¢ \$ >, and logograms < & @ % # >, which include emoticons < ☺ ☹ > and other icons < ✂ 📞 📧 >. Usually, when authors are describing these non-alphabetic symbols, they list all of the different types of symbols. It will be useful to have a term to classify all these symbols when defining the term *orthography*. We propose a new term *paraglyph*, defined as the non-alphabetic symbols used in text for a specific language. This term derives from *para-*, an English Greek-based prefix meaning beyond, plus *glyph*, an English Greek-based term referring to marks used in writing, sometimes synonymous with grapheme or character. Symbols that are part of a separate system, such as those used in mathematical and musical notation, or shorthand, would not be considered paraglyphs since they are part of a separate system.

An orthography also includes the rules that map the graphemes to the sounds and the patterns by which the graphemes can be combined to form words. A standardized orthography includes all of the socially accepted spellings for all of the words in the language. In addition to the syntactic rules of word combination in the language, there are also orthographic rules that become normative for writing texts. These orthographic rules include the conventions for using paraglyphs, the non-alphabetic symbols.

2.3 Alphabetic orthography models

Since the focus of the Belize Kriol case study, presented in chapters 5 and 6, will be on the creation of an alphabetic Latin-based orthography, the nuances of the phonetic, phonologico-morphological, and historic-traditional models of alphabetic orthographies, as presented by Istrin (1953:364), will be described now. Istrin called these *alphabet types*, but we will call them *orthographic* because they involve the mapping rules for alphabetic characters, as well as choices for morphemic representation. They are called models because these types represent a generic pattern which is followed for the design of a specific orthography.

Phonemic	Morphophonemic	Historico-traditional
comes closest to representing the sounds of the spoken language.	will have frequent phoneme-grapheme representation of the sounds of the spoken language	has the least relationship to the sounds of the spoken language
useful for languages with little inflection through the use of affixes	used when the morphology of the language makes a phonemic orthography impractical	used when there is strong influence from the orthography of a related spoken and written language
considered easiest for gaining initial literacy, but may be difficult for fluent readers	may be easiest for fluent readers	most difficult for initial literacy and provides little benefit to fluent readers
accentuates differences between dialects	may or may not mask differences between dialects, depending specifics of the given language	masks differences between dialects
if there is an associated language which already has an orthography, this will probably have the least similarity in appearance	provides the best opportunity for appearing standardized, particularly for languages with complex morphology	if there is an associated language, which already has an orthography, this will probably have the greatest similarity in appearance
introduces spellings that may appear unusual if the users are familiar with different spellings in a related language	may be possible to achieve a balance between new spellings and maintaining familiar spellings	maintains spelling conventions that may mean nothing when applied to another language
may or may not appear standardized depending on the morphology of the language	may or may not appear standardized depending on the morphology of the language	provides the least appearance and reality of standardization

Table 8: Comparison of alphabetic orthography models

Although Istrin (*ibid*) called the first model phonetic, it would be more appropriate to call it phonemic since no orthography¹² will be a fully phonetic representation of the spoken language. A phonemic orthography provides all the precision needed. Our preference is to refer to this model as an IPA-oriented phonemic model because most linguists choose letters from the IPA. However, there is no reason orthography creators need to limit themselves to the IPA, so we will distinguish this model from what is referred to in §6.2.4 as the English-oriented Phonemic Model. Either of these models maintain a fairly strict mapping of phonemes to graphemes or digraphs. To create a one-sound to one-symbol alphabet some linguists will choose IPA letters that are generally not considered part of the selection of Latin script graphemes, such as <ɘ> or <⊙> used for clicks in Khoisan languages. Other symbols may also be chosen when there are not enough symbols in the Latin set to represent all of the phonemes adequately. Sometimes orthography designers will make exceptions to the one-symbol to one-sound maxim, such as using digraphs <ng> for /ŋ/ or <sh> for /ʃ/, rather than introduce unfamiliar letters.

Daniels (1996:9) refers to Istran's phonologico-morphological type as morphophonemic, which will be followed here. This model generally maintains a phoneme to grapheme pattern of mapping, but may also establish canonical spellings for some morphemes and morphemic affixes that change in pronunciation depending on phonological environment. To use a system such as this requires the creation of numerous rules. For example, in English the pluralization morpheme is spelled <s>, or in some cases <es>, regardless of pronunciation, which may vary between /s/ ~ /ɪs/ ~ /əz/ ~ /z/. In some environments the choice of spelling depends on pronunciation. If the noun ends with a sibilant or strident phoneme, the <es> spelling is used, as in: *addresses*, *churches*, and *calves*. The choice can also depend on the appearance. For example, some nouns that end in <y> are pluralized with <es>, as in: *berries* and *activities*, but a noun like *pulley* is pluralized with <s> because visually English would not allow *<eies>.¹³ In a

¹² A phonetic transcription, using the IPA, can provide a very accurate representation of speech, but it does not represent an orthography with a limited set of characters combined through the use of conventions specific to the language being transcribed.

¹³ English has very few words with three or more vowels in a sequence, such as *tableau* and *onomatopoeia*, which are relatively recent borrowings from other languages.

morphophonemic model graphemes may be chosen from the IPA, or another standard set of letters from a chosen script, such as from the Latin or Cyrillic script.

The historico-traditional model is influenced by the spelling patterns of another, older orthography which is used for a related language. For example, English through the centuries has maintained many spelling conventions it has borrowed from different languages. For example, the initial <k> in Modern English <knife> and <knight> is no longer pronounced, but the <k> is retained from Middle English, in which the <k> was pronounced. There are also many words in English, borrowed from French, which preserve French spelling conventions that are not found in English, such as: *ballet*, *chauffeur*, and *cliché*. With the historico-traditional model there is much less effort to map the actual sounds of the language to graphemes.

Each model has benefits and deficiencies. Table 8 above presents a comparison of some benefits and limitations of each of the models. Obviously, since the examples are taken from English for each different model, it is possible for an orthography to have a mixture of features from the different models. In §6.2 below, several further variations on these models will be described.

Orthographies can also be described as *deep* and *shallow*, or *transparent*. The depth, or transparency, of an orthography refers to the complexity of the mapping between the phonemes and graphemes. A deep orthography requires the knowledge of many rules guiding the association of graphemes to the appropriate pronunciation. For example, in English most letters are interpreted differently in different environments, often with exceptions, and an English reader needs to learn all of the rules. See Table 9 below for a description of some English pronunciation variations for the letter <s>.

Shallow orthographies have little complexity in the mapping of sound to symbols. In the most shallow of orthographies there is a strict phoneme-grapheme relationship. A seemingly deep orthography is not necessarily without uniformity; Nunn's (1998) research shows that Dutch, a seemingly deep orthography, has ordered rules that predict the spelling of 95% of native words and 73% of non-native words.

Pronunciation	Environment	Example	Exception
/s/	#s	< soup >	
/s/	sc(i, e, y)	< scent >	< conscience >
/Ø/ (silent)	isl	< aisle >	< Islip > (UK)
/Ø/ (silent)	is# (French loanwords)	< debris >	< apropos > < corps >
/z/	VsV, VssV, (Øi)	< result > < dessert >	< basin > < vessel >
/z/	ms, sm	< crimson > , < tourism >	
/z/	Vse# (silent <e>)	< wise >	< vise >
/z/	V/Cvoiced# / es# (suffix)	< skies > < dogs >	< notes >
/ʒ/	Vsi, rsi	< vision > < version >	
/ʒ/	Vsure#	< measure >	< erasure >
/ʃ/	Vssu(r)e#	< pressure > < issue >	
/ʃ/	sh	< fish >	
/ʃ/	Vssi	< passion >	< brassiere > < chassis >

Table 9: Some grapheme-phoneme rules for English <s>

2.4 Principles of orthography design

In §1.2.1 it was described how linguists in the 1950s came to the conclusion that a one-symbol one-sound, phonemic model would be the best orthography. So, why would there be any use for other models for designing an orthography? Languages are spoken by people with many different motivations, needs, and senses of form. An orthography is more than simply writing the way people speak. Its design is also influenced by attitudes people have about writing and identification with the appearance of an orthography. A scientific focus on the phonemic representation of a language is little more than transcription, and Coulmas (2003:26–35) points out that there is a difference between transcription and orthography; orthographies must be more sensitive than transcription to sociolinguistic and non-linguistic factors. Tom Crowell, SIL's former International Literacy Coordinator, claimed that in most situations "alphabet symbols are chosen for thirty percent linguistic reasons and seventy percent because of non-linguistic motivations." (cited in Henne 1991:12).

There are also practical concerns about the teaching of the orthography and its usefulness for learning another language. There are technical concerns with the ease of putting characters on paper and the physical reproduction of a document. The sociolinguistic and non-linguistic motivations guiding orthography creation may be in conflict with the phonological realities of the language (Burns 1953, Sjoberg 1971, Berry 1977).

Several linguists have proposed sets of principles for guiding orthography development. Four different sets will be discussed here: Smalley (1964), Nunn (1982), Winer (1990), and Lüpke (2011).

In 1964, Smalley (1964:31–52) presented a list of five factors (presented below) that summarize the important aspects of developing and assessing a good orthography. This was not the first time anyone described such a list, but it is the most often cited. Smalley's five criteria for developing a good orthography are:

1. Maximum motivation
2. Maximum representation of speech
3. Maximum ease of learning
4. Maximum transfer
5. Maximum ease of reproduction

Smalley presented these qualities of a good orthography in order of importance. Most other principles described by other linguists are presented below as subpoints to Smalley's principles. Due to the fact that Nunn's list is derived from the study of an established orthography, Dutch, her list differs somewhat from Smalley's. Nunn's list is also ordered but in a way to explain the spelling of Dutch rather than proposing an approach to creating a new orthography. These principles, or better described as rules, are worth noting here because they show how a seemingly deep orthography can actually be explained by a set of ordered rules. (See the last paragraph of §2.3 above.)

1. The Phonological Principle
2. The Graphotatic Principle
3. The Morphological Principle
4. The Etymological Principle
5. The Readability Principle

Nunn's principles 3 – 5 are different from any of Smalley's principles. They will be discussed below after Smalley's third principle because as an ordered list they should be considered next.

Winer's (1990) list is also somewhat unique because it is presented as a proposal for a specific language, Trinidadian Creole English. Winer's principles are not ordered. Lüpke's (2011) list is not ordered either. His topical list is presented as a discussion of issues that must be addressed in the development of orthographies for endangered languages. Winer's and Lüpke's principles will be integrated into the descriptions of the aforementioned principles by Smalley and Nunn.

2.4.1 Maximum motivation

Smalley (*ibid*) identifies three categories of people who have a stake in the design of an orthography, and their need to be motivated towards support of an orthography: the national government, the individual learner, and the speech community. Some governments take an active role with influencing orthography development. Their interest is that the orthographies serve the ultimate purpose of uniting their people and creating a national identity. For example, Sjoberg (1971:267–268) describes several situations in which governments have insisted on certain orthographic choices that are not linguistically motivated, but require greater orientation to the national language. If the phonology of the target language is significantly different than the national language, the mismatch may create unsolvable problems. Government involvement may also create problems for speech communities that cross national boundaries; boundaries that separate countries with national languages that use different scripts. In such cases the use of different scripts could cause disunity in the community.

Individuals and speech communities are motivated by both their reasons for wanting an orthography and their perceptions as to how their orthography should look. The motivations of an individual greatly overlap with the general motivations of the wider speech community. The individual needs a purpose for expending the effort to learn to read and write. The purpose may be for education and access to more knowledge and information, or for greater access to economic benefits. Some people have an interest in maintaining a sentimental connection with their heritage language for maintaining an identity, particularly if it is endangered. Some people may want to relearn the language of their ancestors, or they may be motivated as

an expression of religious devotion (Mithun 1992:143). It may also be to avoid negative impact from an oppressive authority, such as when the former Soviet Union imposed Russian on large regions where previously literacy in Russian had not played any role. An individual may be motivated to learn to read and write to identify with a prestigious speech community with a different language. In such cases the acquisition of literacy skills in the heritage language is primarily to transfer those skills to another language.

The motivations of a speech community are simply the aggregate of motivations of each individual member of the community, and we would expect that those motivations are rarely homogenous. Groups that are scattered, such as nomads or people settled on different islands, may value the ability to communicate in writing. The main concern for language managers is when different segments of the speech community are motivated towards different scripts or orthography types. Lee (2003) reports that, currently, the Sherpa speech community of Nepal is debating which script to use. Older people want a Tibetan script to maintain connection with the ancient Tibetan Buddhist manuscripts, which are important to their religion. The Tibetan script would be suitable for a tonal language like Sherpa. For nationalistic reasons, middle-aged people want to use a Devanagari script, as the national language, Nepali, uses. Use of the Devanagari script would be more acceptable to the majority of adults who are already somewhat literate in Nepali. While it is possible that materials could be produced in diglot, the cost and technical difficulties of publishing and education would dramatically increase.

Motivation may also be effected by perceptions of the appropriateness of the orthography (Winer 1990). The concept of appropriateness may cover a wide variety of issues: visual aesthetics, complexity, correctness, and similarity. The people may not like the appearance of an orthography with too many diacritics, or characters they do not know. A deep orthography, with too many phoneme to grapheme rules, may appear to be too complex. People who have been influenced by the orthography of another language may have perceptions of correctness that they impose on a new orthography for their own language. If the new orthography does not meet their expectations, it may affect their motivation to use the new orthography. Often, people have an undefined sense that an orthography, or some aspect of it, seems right or not right.

An orthography that appears to be similar to a related language may or may not be desirable (Lüpke 2011). Gralow (1981) and Henne (1991) report that people in minority language communities often want the orthographic system for their language to conform to perceived norms of the national language. Dawson (1989:9) warns language managers:

Do not underestimate the desire of a community to conform to the national language. There are cases where an orthography has been used acceptably for twenty years, but when readers become more and more acquainted with their national language through the school system those features of their own orthography which did not conform to the national language are rejected.

Winer (1990:252–253) describes the situation in Trinidad and Tobago where the people want the orthography for Trinidadian Creole to appear different from English, a related language. She describes this as a principle of linguistic independence. The orthography should create an appearance that establishes the legitimacy of the language as different from other languages. However, an orthography that accentuates dialectal differences may be viewed as divisive and inappropriate (Lüpke 2011, Mithun 1992:143). (See the Dani example in §2.5.3 below.) While orthography revision is beyond the scope of this research, it is worth noting that there are cases where the ancestors of a people used an orthography that is now largely unused. The people may want a new orthography to have similarities to the old orthography (Sjoberg 1971:269–270).

Finally, when given the choice, not all speech communities want an orthography. Some groups feel that an orthography will give other people access to their secrets or special knowledge. Other groups do not want standardization, concerned that it will in some way inhibit linguistic freedom. For example, according to Sebba (2007) Caribbean Creole speakers in the United Kingdom use their language as an expression of rebellion against “the system,” so standardization would represent cooperation with “the system.”

2.4.2 Maximum representation of speech.

Maximum representation of speech refers to the relationship between the graphemes and the sounds of a language. It is the maximum *possible* representation of sounds in light of the other criteria that must be considered. This is one reason why Smalley listed ‘maximum motivation’ ahead of this

criterion. A purely phonetic orthography would represent too much detail for fluent reading (Bauernschmidt 1980, Sebba 1998). A strict one-symbol to one-sound orthography may require the introduction of symbols, such as <ʃ> or <ŋ>. Often <ʃ> or <ŋ> are represented by <sh> and <ng>, but this is one sound represented by two symbols.

Winer (*ibid*) proposes two principles related to different aspects of this criteria: principles of consistency and pronunciation-based spellings. Similarly, Nunn's (*ibid*) Phonological Principle recommends that the same phoneme is written the same way "unless deviations are induced by the Morphological or Etymological Principle."

If orthography creators do not have a thorough understanding of the phonology and morphology, they may create an orthography with over-differentiation or under-differentiation. If an orthography represents more sounds than is necessary for efficient reading and writing, the problem is called over-differentiation, or over-specification. For example, English has aspirated and unaspirated voiceless, bilabial plosives: [p^h] as in [p^hat^h] *pot* and [p] as in [spat^h] *spot*. Since speakers of English are generally unaware of the difference, to represent both sounds would be confusing. However, if the users are non-native speakers, relearning their heritage language, the orthography may need to be more complete than for a native speaker, who is fully fluent in the phonology (Mithun 1992). Orthographies can also fail due to under-differentiation. Under-differentiation, or under-specification, refers to an orthography that does not adequately represent all of the significant differentiation in the phonology. This creates a problem for both learning to read and reading fluency because the pronunciation of many words will be ambiguous. Bird (1999a) describes how representation of tone in Cameroonian languages has suffered from both over-differentiation and under-differentiation. This will be further described in §4.3.2. Smalley (*ibid*) relates that some orthographies have been created in which a certain feature, such as tone, was only written when it seemed necessary, to avoid ambiguity. However, this lack of consistency created a problem for learners who do not get consistent exposure to what tone markings meant.

The morphology of a language presents another challenge to orthography creators (Mithun 1992). A morpheme should generally remain spelled the same regardless of the sound. For example, in English the past tense suffix <-ed> is pronounced as [t], [ɪd], or [d] depending on the phonological environment. To represent the morpheme three different ways

is not necessary or efficient. However, the suffix is reduced to <d> when there is already an <e> present at the end of the stem, as in: *save* > *saved* and *die* > *died*. The English patterns also have to comply with a limitation to the combinations of vowel symbols that are permitted or preferred. For example, <agreed> with two <ee> is acceptable but *<lived> would not be acceptable, nor would *<agreed> be permitted.

The morphophonemic pattern of spelling in English is also helpful when various uses of the same word change pronunciation, but the unchanged spelling maintains the connection of the morpheme in each variation. For example:

Spelling	Pronunciation
<photograph>	/ˈfotəgræf/
<photographer>	/fəˈtɒgrəfər/
<photographic>	/fotəˈgræfɪk/

Therefore, we see that the morphology of a language contributes to the orthography development of a morphophonemic model. (See §2.4.4 below for Nunn’s Morphological Principle.)

Lüpke (2011) presents another reason why an orthography may deviate from a purely phonemic orthography. There may be phonemes that have a very limited environment. To create a more efficient system a low frequency grapheme may be used for other purposes elsewhere. For example, /h/ only occurs word initially in Belize Kriol, therefore, the <h> could be used in digraphs <sh, ch, zh, hn> with no ambiguity. (See §6.5.1 below.)

In spite of the arguments against a strictly phonemic model, the creators of an orthography must endeavor to base the new orthography on a sound phonological analysis of the language. More on linguistic analysis will be discussed in §3.4.4.

2.4.3 Maximum ease of learning

The ease of learning has been implied in the previous criteria; ease of learning can be motivational and is greatly impacted by the orthography’s relationship to the spoken language. However, there are several other issues related to the maximum ease of learning. It has been shown that the optimal orthography for a beginning reader is not the same as for a fluent reader (Smalley 1964:42). Phonemic alphabets have been shown to be easy to learn

for the new reader, who reads by decoding sound by sound. However, the fluent reader reads by identifying words and phrases as whole chunks of information (Venezky 1970:260). An orthography too closely based on pronunciation may hinder fluency. Conversely, an orthography that hinders the development of beginners' reading skills may hinder the development of fluent readers.

When some languages combine affixes with root words, the pronunciation of the root changes; the pronunciation of the affix may change also. This makes a purely phonemic orthography difficult for fluent readers. The fluent reader needs root words to maintain recognizable shapes regardless of the changes in pronunciation. Just as the speaker of a language does not recognize that allophones are different, the speaker also misperceives that morphemes have a stable pronunciation, so that they do not recognize that there is variation in different environments (Snider 2010:66). Therefore, morphemes should be spelled as the speaker perceives their pronunciation. Snider (2010:66) gives the following example from Chumburung, a language spoken in Ghana:

Words spoken in isolation

/kofi/ 'Kofi (person's name)'

/kuɲu/ 'head'

Words spoken in context

/kofu kuɲu/ 'Kofi's head'

Notice that the [i] in 'Kofi' changes to [u] in 'Kofi's head.'
... while the native speaker pronounces 'Kofi with an [i] in isolation (i.e., citation form) and with a [u] when it comes before the word for 'head,' he doesn't realize he is making this change.

Nunn's (1998) Graphotactic Principle is included here because a morphophonemic orthography needs to maintain consistency in the graphotactic rules to assist the learner. Graphotactic rules address which graphemes can be contiguous, usually to reduce the appearance of redundancy or to avoid the confusion of replication. For example, the plural form of an English root word ending with <ss> adds <es> rather than simply <s> because English does not allow *<sss>,¹⁴ e.g. <addresses>, not *<adresses>. Likewise, too many graphemes representing vowels cannot be in sequence, e.g. <toe> + <s> is <toes>, not *<toees>. Lüpke (2011:333)

¹⁴ (*) indicates something that is not permitted or does not occur.

describes this as creating a better appearance at morpheme boundaries, e.g., he gives the example from Maori when the morphemes <whaka> and <āhua> are combined it is written as <whakaahua>, not *<whakaāhua>, even though the <ā> does not change pronunciation. This is based purely on the aesthetics of the speakers of the language.

There are several non-linguistic issues that impact orthographies and the ease of learning them. Mithun (1992) says that the optimal level of abstractness, the depth of the orthography, may be affected by the size of the speech community. The volume of material to be produced can have an effect on the ease of learning. For example, although English has a somewhat deep orthography, with a fair bit of morphological abstractness, people in places where it is the official language are exposed to written English every day and it is relatively easy to learn. For minority language groups receiving orthographies for the first time, “such opportunities for reinforcement may never exist: people will probably never begin the day by reading their language on cereal boxes and milk cartons, nor will they finish it with newspapers and novels in their language” (Mithun 1992). If the amount of literacy materials will be limited due to the limited resources of a small speech community, the people may not have enough regular exposure to fully learn an abstract orthography. Often proper nouns, such as town names, need to maintain their historical representation since it would be too expensive to change many signs and maps. This is another issue that might prevent a purely phonemic orthography.

There has been considerable linguistic interest in orthographies and their impact on literacy and education. Learning to read is a complex process in which a person must differentiate the symbols used, identify the relationship between the symbols and the sounds, identify the relationship between a collection of symbols and the meaning of the word, and associate the meaning of the words as a sentence. Some linguists (e.g. Altmann & Fengxiang 2008) have studied the visual and cognitive impact of the graphic design of the characters in an orthography. Smalley (1964) also discusses this and points out that beginning readers often have problems differentiating <p, q, b, d> .

Finally, the ease of learning is also influenced by the teaching methods that are used. The study of literacy acquisition is too broad to be covered here. However, one consideration worth mentioning is that modern, western,

teaching techniques may not be appropriate for cultures in which children are usually taught by observation. (Mithun 1992).

2.4.4 The Morphological Principle

Nunn's (1998) Morphological Principle is inserted at this point in Smalley's list for consideration when a morphophonemic orthography is being created. If a language has inflectional patterns that alter the pronunciation of a root word when combined with an affix or conjugated, it may be most efficient to maintain consistency in the spelling of root words regardless of their pronunciation (Lüpke 2011). There may be differences between derivational and inflectional morphology. The determination of a standard morphemic spelling would need to be considered in the context of its possible inflectional combinations and derivational forms. In some languages, such as Russian, all root words in a certain class of words, like verbs, may always have an affix, thus making the pronunciation without affixes irrelevant. Little consideration has been given in this research as to the creation of morphophonemic orthographies since there is only rare morphophonemic phenomena in the English-lexicon Creole languages of the Caribbean region.

2.4.5 The Etymological Principle

Nunn's (1998) Etymological Principle follows her Morphological Principle. Nunn was developing rules to explain Dutch orthography and found that it was useful to consider loan words separate from native words. Her Etymological Principle is simply a way of explaining unpredictable spelling variation. When creating a new orthography it may be useful to consider different solutions for non-native words, especially if they have established spellings in their native form. The historic-traditional model, which addresses established spellings, was introduced in §2.3 above and several variations on the model will be presented in §6.2 below.

In Winer's (1990) proposal for Trinidadian Creole English she suggests a principle of historical precedent. The spelling of words should be maintained if they are well-established, familiar, and accepted. Lüpke (2011) cites this as an important consideration also. In Belize, even though the orthography is basically phonemic, some people wanted to retain the English spelling <Creole> for reference to themselves because they self-identified with the spelling. Lüpke (*ibid*) also cites examples in which folk etymologies

are retained, e.g., English *hiccup* is sometimes spelled as <hiccough> due to the false assumption that the second syllable comes from *cough*.

2.4.6 The Readability Principle

Nunn's (1998) Readability Principle follows her Etymological Principle. The Readability Principle states that "spelling may deviate from the pronunciation as long as it will still enable us to derive the correct pronunciation." Readability is described as a rule that governs the interaction of the Phonological, Morphological, and Graphotactic Principles. As we have discussed, spelling is more than a transcription of pronunciation (Phonological Principle). Due to morphologically induced shifts in pronunciation it is not always desirable to represent the actual pronunciation of a word so that the root form of the morpheme is maintained (Morphological Principle). This aids the reader in recognition of words for more fluid reading. However, the combination of morphemes may create combinations of graphemes that are not considered by the speakers of the language as aesthetically pleasing. Therefore, a further alteration of the spelling is guided by the Graphotactic Principle. Together, these principles are considered to determine if the spelling of a word is easily readable.

Winer (1990) points out that readability should be maximized, primarily for heritage language speakers, and secondarily for speakers of other languages. Lüpke (2011) says that for readability, it may be important to distinguish homophones. Usually, homophones occur between words in different word classes and can be adequately distinguished by their syntactic location in an utterance.

2.4.7 Maximum transfer

Smalley's next principle, maximum transfer, refers to the relationship of the orthography for a non-dominant speech community to the orthography of the national, or regional, language. Galow (1981:10) points out that people in non-dominant speech communities will eventually need to transfer their reading skills to the national language. Once people gain literacy in their heritage language, they should be able to shift to literacy in another language with as little difficulty as possible. It follows that primary literacy in a person's heritage language aids in the acquisition of literacy in another language (Fischer 1992, Thomas & Collier 2002). Sometimes a speech community may be primarily or even exclusively interested in literacy in

their heritage language as an avenue to literacy in another language, the national or regional language. In this case the needs of a fluent reader of the heritage language are not in focus, rather the transference to another orthography. For whichever reason, the process of transferring literacy skills will be facilitated if there are similarities between the grapheme-phoneme mapping in both orthographies (Venezky 1970:260). This may be difficult to attain if the phonologies of the two languages are significantly different. These concerns need to be addressed in the development of a new orthography.

For maximum transfer, the script that is chosen for the new orthography should be that of the national, or regional, language. Winer (*ibid*) calls this the practicality principle. If there are a significant number of people who are already literate in another language, the use of that alphabet has tremendous benefits (Mithun 1992). However, there are examples of people in countries where a non-Latin script was used for the national language, and the people preferred a Latin script. The spreading dominance of the Latin script has even led to the development of Latin-based orthographies for major languages like Japanese and Chinese. Conversely, there are several syllabaries that have been developed for languages spoken by people familiar with the Latin script but desired a script that was not influenced by it. The Vai (created in the 1930s), Cree (created in 1840), and Pollard (created in 1904 for Hmong and several other Southeast Asian languages) scripts are all still actively used (Singler 1996, Nichols 1996, Daniels 1996).

Related to maximum transfer, Winer (*ibid*) refers to a principle of pedagogical support; given the opportunity an orthography should support literacy in the heritage language first, then consideration should be given to similarities with another language.

Problems can arise if a system is too similar to another. In Central Pomo of Mexico, the digraph that was used for dental stop <th> caused difficulty. The children began pronouncing those words with a fricative as in English (Mithun 2003). Familiarity with writing in another language may even influence the grammar when writing in the heritage language, even to the extent of changing the word order (Mithun 2003).

Lüpke (2011) points out that orthographies are sometimes created for moribund languages and the people attempting to revive the language are not speakers of the language. In such cases he recommends that the orthography

be more transparent, for example there might be different representation even for allophones. In Belize, even though the new readers are speakers of the language, they wanted greater transparency, e.g., <j> or <ch> are used before /ɪ/ even though the phonemes /ɟʒ, tʃ/ are allophones of /t, d/ in this environment.

2.4.8 Maximum ease of reproduction.

Maximum ease of reproduction has to do with “writing” and the reproduction of a text. Writing may refer to handwriting, typing on a typewriter, computer, or cellular phone, or by use of a computer printer. Reproduction of a text, or publication, may be by photocopying, mimeograph, computer printing, any of numerous commercial printing methods, or by publication on the internet. In 1964, when Smalley created his list of criteria, the issues were quite different. Then, if an orthography was created with any letters which were not normally found on a typewriter, new keys would have to be made for each typewriter. Today, it is much easier to create a new computer font and alternate keyboards. With the use of cellular phones, people are often creating their own orthographic patterns by which to communicate through texting. The reproduction of physical publications has become less expensive, and publication on the internet is virtually free and can be immediately available to anyone with computer access. Smalley was concerned that orthography creators were sometimes choosing symbols based on their availability on a standard typewriter regardless of other factors that indicated other choices. Even though computer fonts may make it easier to use non-Latin script symbols, linguists may still be tempted to favor options from the inventory of the Latin script. This may represent an inappropriate chauvinism which should be avoided.

Lüpke (2011) identifies several considerations with modern computer technology. Complex symbols, such as logographic scripts, can be difficult to type due to the limitations of computer keyboards. The configuration of keyboards can be a problem for some languages due to the frequency of different graphemes than used in the typical QWERTY keyboard. There are 96,000 standardized Unicode characters and graphemes should be selected from this set. But, there are some symbols used traditionally in unique orthographies that are not included in the Unicode set.¹⁵ For example, <!>

¹⁵ Google currently has a project to create a font that will meet the orthographic needs of all languages. See: <https://code.google.com/p/noto/>

and <#> have been used to represent click sounds in the orthographies of some Kohisan languages. However, these are not recognized as having phonemic value in alphabetization. Cellphones may have more limited sets of characters available for texting.

There is another aspect of reproduction that Smalley did not consider: the physical and socio-economic environments in which some speech communities live. There are speech communities for which an orthography can be created that meets all the other criteria, but if those people have small populations that live in a remote location, without electricity, and are economically limited and cannot afford even simple machines like mimeographs and typewriters, they may not be able to establish a culture of sustainable literacy (Mithun 1992:143). Members of the speech community may not have the technological skills to use computers, nor maintain machines. Often, particularly in the tropics, the climate is destructive to paper and electronic technology.

2.5 Multidialectal orthographies

Every speech community has some amount of linguistic variation in the speech between different members of the community. Members of the speech community also have different perceptions of what identifies one speech variety as a dialect or as simply a different pronunciation. With greater variation, there will be more of a challenge to find orthography solutions that are acceptable to all speakers. If there is one variety that is considered the most central, the most prestigious, or the best/most pure, this can resolve some of the problems presented by variation.

Stewart's (1972) taxonomy, based on four attributes of a speech community: vitality, historicity, autonomy, and standardization, was described in §2.1.1. While these perceptions are not specifically related to dialectal variation in a speech community, people in different dialectal segments of a larger speech community may have different perceptions of the attributes. These perceptions may affect the orthography design options in response to a multidialectal language development situation.

Unseth (2014) presents four approaches to the standardization of an orthography for a multidialectal speech community: unilectal, union, systematic multi-dialectal, and an incomplete approaches. A non-standardized approach will also be included. These will each be described in the next five sections.

2.5.1 Unilectal orthographies

A unilectal orthography represents one variety of speech upon which the orthography will be based. It is possible to use either the phonemic, morphophonemic, or historico-traditional model, as described in §2.3, but in most situations today a phonemic model will be used. However, as is shown in §2.4.7 above, for some languages there is considerable pressure for the orthography to have a certain amount of similarity to and appearance of the orthography of another language. In §6.2 below, five variations of the unilectal approach will be introduced.

In many language management efforts globally it has been possible to choose one speech variety that is represented by a standardized orthography. This variety is called the *reference dialect*. To select a reference dialect for development, Sadembouo (1989) recommends the following criteria. The reference dialect should be the dialect that is:

- most widely understood
- spoken by the largest population
- spoken in the most geographically, politically and socially central location
- the one with the highest prestige

Secondary selection criteria for identifying a reference dialect include a dialect with:

- government favor
- religious significance
- socioeconomic value
- existing literature

While the first two criteria are usually redundant, this is not always the case. For example, a central, more prestigious dialect may be more widely understood than a remote, isolated, less prestigious dialect with a large, dispersed population. Additionally, a variety with religious significance or socioeconomic value can sometimes take precedence over other factors.

Unilectal orthographies become problematic when there is not support throughout the wider speech community in the choice of reference dialect. It will be more difficult for speakers of a non-standardized variety to learn the new orthography.

2.5.2 Union orthographies

Union orthographies combine features of different dialects so that the orthography represents elements of all, or several, dialects, but without completely representing the speech of any one variety. Union orthographies are less systematic than systematic multidialectal orthographies, which are described below. A union orthography may follow any one of the three models (phonemic, morphophonemic, or historico-traditional), or incorporate features from either of the models. Union Igbo, and the more recent Standard Igbo, of Nigeria are examples of a composite of elements from different spoken Igbo dialects. Sadembouo (1989) and representatives of the Igbo community report that this approach has not been well accepted, for example, see the Igbo911 and Igbo Language (2007) websites. There have been two primary complaints; the standardized form seems like a different language, and the speakers of a large central dialect, Onitsha, do not feel that their dialect should be superseded by another dialect.

2.5.3 Systematic multidialectal orthographies

The systematic multi-dialectal approach involves a careful mapping of the morphophonemic rules of each dialect. This approach may follow either the phonemic or morphophonemic model. When dialects of a language diverge from one another there is often a systematic pattern of divergence. For example, in Kaingang, a language in Brazil, (discussed further in §5.4), some dialects have merged /a/ and /e/ while other dialects retain the distinction. The solution was to maintain the distinction between /a/ and /e/ in the orthography for all dialects. In the dialects that have merged the two vowels readers simply “pronounce them alike” (Wiesemann 1989a:7).

To create a multidialectal orthography Simons (1977) recommends looking at phonological levels other than the phonemic. He presented an example from Dani, a language spoken in Papua, Indonesia. Dani has eight dialects, of which two are chosen to represent the other dialects: the Western Dani (WD) and the Lower Grand Valley Dani (LGV). Bromley’s (1961) analysis (see below) shows that there are eight phonemic voiced and voiceless plosives in WD that correspond to four voiceless plosives and two voiceless fricatives in LGV. Simons proposed that by looking at the phonetic level a pattern could be identified from which an orthography could be designed. In Table 10 we see that in the word initial position WD has both voiced and voiceless plosives, and the LGV voiceless plosives correspond to

WD voiced plosives. While <p, t, k> work well in intervocalic and final positions, there is conflict in the initial position. If <p, t, k> were used for the LGV [p, t, k], they would correspond to WD [mb, nd, ng], and that would leave <b, d, g> for assigning to WD [p, t, k]. If the Dani had no contact with other languages, there would not be a problem. But when they come in contact with a language with a standard Latin-based grapheme-phoneme correspondence the grapheme-phoneme mismatch creates problems. The solutions all involve phonetic elements of both dialects. Simons also gives examples of multidialectal orthography solutions that were arrived at by looking at the phonetics of fast speech.

	Initial								Intervocalic				Final		
WD phonetic	mb	ph	nd	tsh	ng	kh	ngw	kwh	ɸ	ɾ	ɣ	gw	p	t	k
WD phonemic	b	p	d	t	g	k	gw	kw	b	d	g	gw	p	t	k
LGV phonetic	p	h	t	s	k	h	kw	h	ɸ	ɾ	ɣ	gw	p	t	k
LGV phonemic	p	h	t	s	k	h	kw	h	p	t	k	kw	p	t	k
Proposed orthography	b	ph	d	ts	g	kh	gw	kwh	p	t	k	kw	p	t	k

Table 10: Partial phonology and orthography of Dani

2.5.4 Incomplete orthographies

An incomplete orthography indicates one with a proposal but no implementation. This is not so much an approach to handling the multidialectal nature of a speech community as simply an outcome of the development process. For example, many of the Maya languages of Guatemala have their own orthographies. In 1976 the *Proyecto Lingüístico Francisco Marroquín*, an indigenous Mayan organization, proposed an orthography that was meant to unite all of the different Maya languages (French 2003:493). However, “The Academy has done almost no work on standardization beyond the establishment of the alphabet” (Grenoble & Whaley 1998:112).

2.5.5 Non-standardized orthographies

Finally, it needs to be acknowledged that standardization is not always necessary. Sallabank (2002) reports that Guernsey French, spoken on

Guernsey in the Channel Islands, does not have a standardized orthography. Even with this seeming deficiency there is a considerable body of literature and 60% of the people claim to be literate in the language. In fact, many languages with standardized orthographies began by being written in very individual patterns by various writers.

It may also be worthwhile for the speakers of an endangered language to write, regardless of the absence of a standardized orthography, so that their traditions, culture, and a version of their spoken language can be preserved before it is lost.

2.6 Summary

In this chapter we have discussed numerous linguistic and sociolinguistic factors that will influence the direction of orthography design. Two different models of the sociolinguistic environment were presented to give a thorough and dynamic view of the issues that must be considered about the sociolinguistic environment to predict the potential for attaining the goals of language management. Smalley's (1964), Nunn's (1998), and Winer's (1990) maxims and principles of orthography were presented. As they pointed out, an orthography must maximally represent the language, but there are also many other demands upon the design of an orthography. The Phonemic Principle, a one-symbol to one-sound maxim, is an optimal ideal but not one that should be slavishly followed. Finally, several options were presented for dealing with linguistic variation to create appropriate and efficient orthographies.

Each factor discussed in this chapter should be considered as having some effect on orthography development. An orthography can be developed for any language, but to achieve sustainable literacy, more factors will need to be considered beyond simply the creation of an orthography.

PRACTICE OF ORTHOGRAPHY DEVELOPMENT

CHANGES to language usage are a normal part of the life of any language and speech community. These changes are generally stimulated by changes in the world that are external to the choices of the members within a given speech community. The natural changes occur as people respond to their environment and may include adopting new terminology or adding new languages to their repertoire of languages. It is also possible to have an intentional linguistic response to the changes in the world of a speech community. Such changes are called *language management*.

Orthography development as a language management activity involves an intentional effort to alter the language use of a group of people. Any effort to alter behavior has political overtones that need to be considered: what are the desired outcomes, who is involved in this process, what are the activities/processes, what is the larger change context for the efforts to have potential for positive impact, is there precedent to expect that this can be successful, and what are the moral implications of interfering in the behaviors of others? Both outside linguists assisting in the process of language management and members of the speech community need to consider these questions.

The creation of an orthography requires the compromise between linguistic and sociolinguistic realities, requiring a firm understanding of both. It follows that the study of linguistic structures and associating linguistic elements with graphic symbols is of primary importance. Although fully understanding the social realities is beyond the capacity of an outside linguist it is important for him/her to gain insight into the socio-cultural issues. The appropriate influence of the socio-cultural factors on orthography development can only be accomplished through participation of the speech community.

In this chapter we will discuss orthography development as a language management process. We will begin with a brief introduction to the larger

topic of language management, then focus on orthography development as one of a wide variety of language management goals. The bulk of the chapter will present a list of steps for the development of an orthography for a previously unwritten language. As in the previous chapter, we will need to define several terms more precisely.

3.1 Language management

In this section some aspects of the field of study that investigates intentional efforts to alter language use will be described. This field of study has been referred to by several different names: language engineering (Miller 1950), glottopolitics (Hall 1951), language planning (Haugen 1959), language development (Noss 1967), language regulation (Gorman 1973), language management (Jernudd & Neustupný 1986), language policy (Ricento 2006), and language planning and policy (Hornberger 2006).

One problem with choosing a term is that there is no consistency in the way the terms have been used. Although language planning seems to be the most commonly used term, Cooper (1989) presented twelve definitions for *language planning*, and observed that, “There is no single, universally accepted definition of language planning.” Nekvapil (2006) feels that since language planning in the 1960s referred to a fairly specific set of ideas and assumptions, he prefers to retain the term *language planning* only for discussion of the theories that were advocated during that period. Sometimes *language policy* has been used synonymously for language planning. Hornberger (2006:25) explains that language planning and language policy are “inextricably related” and prefers to refer to the process all as “language planning and policy”.

SIL International uses the term *language development* to refer to their language use intervention activities. However, there have been problems with the use of the term due to its confusion with the field of study describing the way children gain language proficiency, which is also called language development. In addition, some people feel that language development, used in the sense of changing language use behaviors, is degrading, implying that there is something deficient about the language which needs improvement. However, that defense ignores the fact that a language which is not meeting the needs of its speakers is deficient and could result in language death.

Chaudenson (1989), cited in Kaplan and Baldauf (1997:206ff), made a three-way distinction between policy, planning, and management as parts of a larger language program. Language policies are described as long-term objectives, language planning applies to operations that lead to policies. Language management is understood as the overall program, including the planning and policies. While this seems to be a useful distinction, it does not appear that other scholars have used it.

Spolsky (2009) defines language policy¹⁶ as “the choices made by individual speakers on the basis of rule-governed patterns recognized by the speech community.” When language use choices [policies] result from the intentional efforts of some authority, he refers to this as *language management*. Previously he had stated that *language management* best captures the description of “any specific efforts to modify or influence that practice by any kind of language intervention, planning, or management” (Spolsky 2004:8).

Many authors seem to simply use the term most popular at the time, although others choose their term on ideological grounds. In the common use of these terms, when there is intentional intervention in the use of a language, someone *plans development* activities and creates *policies*. The term *language management*, as suggested by Chaudenson (1989) and Spolsky (2004), will be used here since it seems to be the least ideologically encumbered. When the term language management is used here there is a strong tendency for the activities to be collaborative with, or led by, the speech community. No terminological distinction is made between different methods and policies used through different time periods.

3.1.1 A brief history of language management

Language management emerged as an academic discipline in the 1950s and 60s (Cooper 1989:29). There was earlier research on activities that would become considered part of language management; for example, Bloomfield’s (1942) study of literacy, Deutsch’s (1942) observations on the relationship

¹⁶ I feel that this use of the term *language policy* is too broad and that policy should refer to formal, tactical guidance chosen by an authority figure or body, somehow backed by a force, intended to alter language use behavior. I understand that Spolsky is saying that behavior is guided by societal norms. When a person makes a language use choice, that choice is guided by a societal norm and, with the weight of societal conformity, it constitutes a policy. However, I think it should be limited to an official authority.

between European nationalism and language use, Pike's (1947) recommendations for creating phonemic alphabets, Boone's (1949) study of patterned language use behaviors, and Lazarsfeld and Merton's (1949) analysis of the affect of mass communication on social action. However, these early researchers did not include reflective consideration of the larger field of topics and made no attempt to develop a theory of language management.

Ricento (2000) groups language management research since the 1950s into three historical stages. The first stage during the 1950s and 60s was motivated by the independence and formation of many new nations, particularly in Asia and Africa. Some early significant literature includes Miller's (1950) *Language engineering*, and Haugen's (1959) *Planning for language standardization in modern Norway*. Much of the research from this period has been presented in collections such as: Rice (1962), *Study of the Role of Second Language in Asia, Africa, and Latin America*, Fishman (1968a), *Language Problems of Developing Nations*, and Fishman (1968b), *Readings in the Sociology of Language*. The main effort of linguists during those decades was the documentation of efforts, identifying typologies, and the proposal of theories to explain language management used at macro-sociopolitical levels (Hornberger 2006:26). Tollefson (1991) refers to this as the "neoclassical approach." The goals were to overcome social inequalities and injustice (Tollefson 2006:42). However, there was an insufficient understanding of the sociolinguistic dynamics, and the Western ideologies of the language managers often did not fit the linguistic realities and cultural aspirations of the new nations (Ferguson 2006).

Ricento's second stage, spanning the 1970s and 80s, is typified by recognition of the failure of the earlier ideologies, and an expansion to the study of sociolinguistics (Cobarrubias & Fishman 1983). Much of the literature published during this period is focused on the descriptions of language management case studies and their failures (Paikeday 1985, Phillipson 1992, Rubin & Jernudd 1971, Wolfson & Manes 1985). Scholars realized that languages were not easily described as structured entities, concepts about language distribution and multilingualism were much more complex than previously assumed, and language use was influenced by a wider variety of variables that resisted engineering (Hornberger 2006; Ricento 2000, 2006). Scholars began to recognize that some of the approaches of language management were actually serving to perpetuate

language and social inequality (Ricento 2006:14). Much of the literature published during this period is focused on the descriptions of language management case studies and their failures. However, there was also new research on language acquisition, contact, use, and change. Some significant research from this period has been presented in collections such as: Rubin and Jernudd (1971), *Can language be planned?*; Fishman (1974), *Advances in language planning*; and Rubin (1977), *Language planning processes*.

Ricento's third stage covers a time, from the early 1990s to the present, when the field of language management research was divided between several different ideologies and directions. The previous stages had been steeped in modernist structuralism that sought to understand human culture through the study of the relationships of all the parts. Each unit, whether the economic system, the language, or politics, was seen as a discrete unit that could be managed separately. Due to the failures of the early language management efforts, by the mid-1980s the Structuralist approach came under criticism of the postmodern perspective. New research began to focus on the interplay of economics and ideological forces involved in language use and language policies at a micro-sociopolitical level (Tollefson 1991). Concern for threatened and endangered languages became a focal issue for many linguists (Hale *et al* 1992). After the breakup of the Soviet Union into many new nations, and the reorganization of the Slavic and Baltic States, there was a renewed interest in language management. In Europe, some of the smaller, regional languages, like Irish, Welsh, Catalonia, and Basque, began to gain more political support. The major theme to development during this time was revitalization (Ferguson 2006), although some linguists became focused on language maintenance as a diversity concern. They studied the interrelationship of biological, cultural, and linguistic survival and an independent field of study referred to as biocultural diversity has developed (Maffi 2007). Other linguists have focused more on the human rights aspect of language endangerment (Skutnabb-Kangas *et al* 1995). There has also been a special research focus on the role of global English hegemony (Canagarajah 1999, Pennycook 1994).

Even as efforts were made to revitalize endangered languages, it was recognized that many of these efforts were not proving successful (Spolsky 2009). Fishman (2001:481), in answer to his own question, *Can threatened languages be saved?* says,

... more of them can be saved than has been the case in the past, but only by following careful strategies that focus on priorities and on strong linkages to them, and only if the true complexity of local human identity, linguistic competence and global inter-dependence are fully recognized.

Romaine (2002) says that language policies have either been destructive to minority languages or ineffective in supporting language maintenance of endangered languages. Policies and laws are often ineffective because there is no provision for enforcement or planning. She also cites schools as being ineffective to guarantee the transmission of language from one generation to the next. Fishman (2001:11) maintains that this can only be done in the home.

Since the beginning of the new millennium new challenges have arisen for language management. Large groups of people are migrating to new countries, sometimes to flee turmoil or to pursue greater economic advantages. The numbers are sometimes so large that new ethnic communities are established in which many people can remain virtually monolingual. Furthermore, they are often able to maintain better connection with their home speech communities. The presence of these new communities has required nations to establish new educational language policies (Ferguson 2006).

Another development in the last decade has been the application of Critical Theory to language management. Critical Theory is a reflective approach to considering planning and policy. It recognizes the potential damage that can be inflicted on less-powerful peoples, and aims to develop planning and policy that reduces inequality (Tollefson 2006:42ff). Spolsky (2012) employs Critical Theory when he points out that, historically, language management has focused on top-down planning. While some scholars make reference to *bottom-up* forces, it has only been in recent years that there has been focus on family language planning; the study of the complex relationships that guide language use in the home. This provides a bottom-up perspective. Curt-Christiansen (2013) gives a comprehensive overview of recent research informing current theories on family language planning.

With the focus on family language management we see a shift from a macro-level response, such as a national level government policy to a micro-level concern. Regarding a response to government policy, Donahue (2002:159) recommends that:

The responsible modern citizen must react with an aggressive analysis of any public policy initiative which undertakes language planning or education reform. Any urged reform must be scrutinized for the likelihood of a positive outcome for the general public. More specifically, all citizens must protect the potential of others to develop a fully empowered, autonomous, and skeptical Self.

We see in Donahue's admonition a focus on the response of the individual to government policy. Presently it appears that the trend is towards micro-level research and response to language management problems.

3.1.2 Intentional language management efforts

Language management involves intentional efforts to influence the uses, structure, or acquisition of a language or language variety within a speech community. Kloss (1969) first proposed the distinction between *status planning* and *corpus planning* in language management. In 1989 Cooper added *acquisition planning* as a third focus. For successful language management, these three types of planning need to be involved: status, corpus, and acquisition.

- Status planning deals with how people feel about the languages, thus promoting the status of languages in relationship to one another.
- Corpus planning deals with forms of a language and intentionally engineered changes in the structure of the language – this includes orthography development.
- Acquisition planning addresses the changes that are needed to sustain the transmission of all languages included in the repertoire.

These are not distinct categories and planning in one category will usually involve planning in the others. For example, a government addressing acquisition planning may make a policy decision that all schools must include education in the home language of the student. For the implementation of this policy there will need to be corpus planning for the development of writing systems for all of the languages. There may also need to be status planning for some social groups who do not support the use of their minority language in education, or they may have negative attitudes towards the languages of other students in their children's classroom.

Approaches Types	Policy Planning <i>(on form)</i> Goals	Cultivation Planning <i>(on function)</i> Goals
Status Planning (about uses of language)	Standardisation Status Officialisation Nationalisation Proscription	Revival Maintenance Interlingual Communication International Intranational Spread
Acquisition Planning (about users of language)	Group Education/School Literature Religion Mass Media Work	Reacquisition Maintenance Foreign Language/ Second Language Shift
Corpus Planning (about language)	Standardisation Corpus Auxilliary code Graphisation	Modernisation Lexical Stylistic Renovation Purification Reform Stylistic simplification Terminology unification

Table 11: Language planning goals
(Hornberger 1994:78)

There are many kinds of goals to language management activities. Some are focused on changing the form of the language(s), and some activities are focused on the functions of the language(s). Hornberger (1994) presents a six-dimensional framework that gives a good generalization of the major areas of planning. (See Table 11 above.) In Hornberger's table there are policy and cultivation goals associated with each type of language management planning. Orthography development, covered by graphization and standardization, is presented as a policy goal of corpus planning, and standardization is shown as a status planning goal.

The implementation of planning in each of these categories involves both decision-making and activities. Someone decides which activities are needed to make the desired changes. Language management decisions tend to be made by governments or non-government agencies, which are external

to the community. This is one criticism of language management — the decision-making is made at a higher, external level, which can be insensitive to the real needs of minority language communities. Since the external decision-makers typically make decisions that favor their solutions, the situation tends to disempower the minority language communities.

It is beyond the scope of this dissertation to describe all possible activities required for the transition of a pre-literate speech community to a speech community with literacy. Such a shift has major cultural ramifications. Initially, people may need to be convinced of the value of literacy. It may require that people learn to distinguish two-dimensional shapes, how to hold books, and to turn pages. Their work and rest cycles may need to change in order to allow for literacy lessons. When children go to school they are removed from the work force. It may change the power structure of the community if younger people become more educated than the older leaders. This just gives a glimpse of the cultural changes that will need to be managed.

3.2 Language and the speech community

The first step with any form of language management is to identify the target of the planning and management. The most salient feature for differentiating groups,¹⁷ particularly for orthography development, is their speech. Up to this point the term *speech community* has been used without first defining it. The term is used to refer to a specific group united by a shared repertoire of language behaviors. Gumperz (1968) defined a speech community as, “any human aggregate characterized by regular and frequent interaction by means of a shared body of verbal signs¹⁸ and set off from similar aggregates by significant differences in language usage.” When he speaks of a *human aggregate* it is a hypothetical group of people and cannot be finitely defined. The community may be multilingual, diglossic, or monolingual. Wandruszka gives us a clear description of this sociolinguistic reality when he says,

¹⁷ The statement that languages need to be differentiated may seem to suppose that only one language is being addressed at a time. However, the best approach to language management in a country is to address all of the groups simultaneously. Even in such a case, speech communities that represent different interests and goals need to be differentiated so that everyone has a voice in decisions that affect their lives.

¹⁸ The term can include forms of language that are not spoken, such as literature, and also communities that do not use speech, such as the Deaf.

For humans there exists neither a complete control of language nor a completely homogeneous speech community. Never and nowhere will we find a perfect, homogeneous monosystem; always and everywhere we will just find imperfect heterogeneous polysystems. The relationship of humans towards their language is not one of perfect monolingualism, but just the opposite, it is one of imperfect polylingualism and one of polylingual imperfection. (Wandruszka 1979 cited in Hinnenkamp 2005 and translated from the original German)

The linguist must identify an idealized aggregate that differentiates one community from the behavior of other communities. From a linguistic perspective, a language is the sum total of all the varieties used by people who consider that they all speak the same language. Linguists consider all of the varieties, or dialects, of a language to be equal. As Baugh eloquently points out, there is a difference between the way linguists look at dialects and the popular perspective:

From a conceptual point of view, linguists of every theoretical persuasion consider all dialects to be equal, regardless of the social status of their speakers. This egalitarian philosophy has no basis in social reality, however, because of the strong, and deeply emotional, linguistic opinions that abound. (Baugh 1993:173)

If we are going to manage a language, how do we identify that language and differentiate it from other languages? Historically, language management has been more interested in major languages, helping nations to establish national languages for unifying the peoples. National governments have their perspective on what constitutes the national language, which is usually prescribed in textbooks. However, our primary focus is orthography development for the purpose of maintaining language use in the speech communities of lesser-known languages. Often neither linguists nor the speakers of the languages have a clear idea of the linguistic and social dimensions of these lesser known speech communities. If the language is unwritten, there is probably no thorough grammatical description or dictionary.

There are no definitions of language or dialect which linguists can agree upon. Linguistic definitions are divided between structuralist and functionalist approaches. Chomsky (1965), a structuralist, described language as a pure linguistic code which can be studied in isolation apart from people or communication. Makoni and Pennycook (2006), functionalists, view language as a human behavior that cannot be described

artificially as a distinct code in dictionaries, grammars and with arbitrary writing systems. Structuralist definitions have difficulty accounting for the functional variation of language use and functionalist definitions do little to address the structural specifics. A linguist involved in language management will need to look at languages from both perspectives. Furthermore, a linguist also needs to integrate the perspectives of those in the speech community.

In popular use, varieties of speech are referred to as dialects or languages, and in popular usage, the term dialect almost always has a negative connotation. A dialect is what someone else speaks and is a less desirable or less prestigious variety of a language. In some countries, the speech variety used by the politically dominant people is a language and the other varieties are dialects, whether they are linguistically related or not. To some people, a speech variety is only a language if it is written; everything else is a dialect. Within a given specific speech community there are different perspectives on who is included in the group and who is excluded. Sometimes, there is a great deal of linguistic variation in the speech of a people who consider that they all speak the same language. In other situations there may only be a seemingly slight amount of linguistic difference between two varieties, yet the people consider that they speak different languages. While we cannot assume that everyone in a group will have the same opinion, within a particular speech community there tends to be shared agreement on the self-identification with a language. In fact, situations where this agreement is in question may indicate the sociolinguistic boundaries between speech communities.

Often the term language is synonymous with an ethnic identity. In a case such as Sweden and Norway, spoken forms of Norwegian and Swedish are so similar that people from the different groups usually use their own language when they meet others (Gooskens 2006:445). Yet, Norwegians and Swedes still prefer to consider their languages as different for reasons of national identity. In India, where most communities are multilingual, there is considerable ambiguity on language identification. Sanskrit is an ancient language of India from which the modern Indo-Aryan languages of South Asia have diverged. Rajasthani is the name given by linguists to a cluster of Indo-Aryan varieties (including Marwari, Malvi, Dhundhari, and others) spoken in the Indian state of Rajasthan. People from the same area, speaking essentially the same, will identify themselves either as speakers of Sanskrit,

Rajasthani, Dhundhari, or Marwari speakers, etc. (Lockwood 1972:195–199) depending on how they wish to identify themselves at a given time and purpose. We can see that definitions of speech communities, dialects, and languages are dependent on perspective and are not defined precisely. People may choose groups they want to identify with for many different reasons, and they may also be placed in them or excluded from them by socially dominant groups.

All of these definitions vary because “how one chooses to define a language depends on the purposes one has in identifying that language as distinct from another” (M. Lewis 2009:9). Thus, the speakers of a language, language managers, and linguists have different purposes for and ways of looking at language. For practical purposes those who develop orthographies need a pragmatic means of identifying a language. Language is used for the purpose of communication and if two people cannot understand one another, they are not communicating. But how much loss of comprehension is acceptable before two varieties are considered different languages? While quantitative measurements may provide verification of language variation in some situations, sociolinguistic information will be helpful in cases of marginal intelligibility. The *Ethnologue* (Lewis *et al* 2013), a catalogue of the world’s languages, contains three important criteria for the identification of a speech variety as a language, rather than a dialect:

- Two related varieties are normally considered varieties of the same language if speakers of each variety have inherent understanding of the other variety at a functional level (that is, can understand based on knowledge of their own variety without needing to learn the other variety).
- Where spoken intelligibility between varieties is marginal, the existence of a common literature or of a common ethnolinguistic identity with a central variety that both understand can be a strong indicator that they should nevertheless be considered varieties of the same language.
- Where there is enough intelligibility between varieties to enable communication, the existence of well-established distinct ethnolinguistic identities can be a strong indicator that they should nevertheless be considered to be different languages. (M. Lewis 2009:9)

Each of these criteria includes the consideration of a perception of unification or separation. In the first criterion, the term *understanding*, even though it is modified by the adjective *inherent*, requires the choice to understand. It is possible for groups that speak the same language to deny comprehension due to animosity. In the second criterion the reference to a common literature or identity is another issue that requires a social choice of identification. The third criterion also requires compliance with a social choice that the speech communities have made.

Stewart (1962a), attempting to explain why language management has succeeded for some languages but not for others, proposed a model of language types¹⁹ based on factors that account for differences between languages. (See §2.1.1.) These factors include their histories, relationships to other speech communities, standardization, and perceptions of language usefulness. These factors are each perceptions of the worthiness for development. They are important issues that language managers could focus on development in the attempt to improve the status of a language.

There are many different ways to define or identify speech communities, languages, and dialects. Of foremost importance to the language manager, the opinions people hold for creating their identities are the most salient. They are the ones who are going to want to either be united or to maintain separation through language management. Language management that attempts to unite a people who do not consider themselves unified, even if there is linguistic similarity and good intelligibility, probably will not succeed (Kloss 1967:36ff). Conversely, language management that does not facilitate the unification of a people who consider themselves united will probably fail.

3.3 The function of writing

Frequently in multilingual speech communities one of the languages, usually a prestige language spoken as a second language, will have a written form that is used for all literary functions. Just as a speech community may use multiple varieties of spoken languages, writing serves other functions of language in the repertoire of the community. There can be many functions for writing a language: it enables the documentation of thoughts and messages, it can be an expression of creativity, it can be used to document

¹⁹ Stewart's model was discussed in §2.1.1 above.

the history, traditions, and beliefs of a people, it can be used for official documentation of policy and record keeping, it can serve to reinforce the writer's identity, and many other uses.

Lüpke (2011) proposes the term *exographia* to describe situations in which reading and writing is only in a language other than the heritage language of the speech community. He also proposed the term *endographia* to describe writing in the heritage language.

Exographia can have different effects on speech communities depending on the close or distant linguistic relationship of the heritage language and the written language. The close relationship between Belize Kriol and English, as described in Chapters 5 and 6, has an impact on literacy for Creoles that is different from situations in West Africa, for example, in which the national and literary languages are European languages being used by speakers of linguistically distant African languages. In a distant relationship the young literate learner must learn the skills of reading and writing, while also learning the second language. In a distant exographic relationship there is possibly a greater chance that endographic writing may have functions not fulfilled by the exographic writing. For one thing, writing in the second language would not meet the needs for a writing genre that is more intimate and identificational. In a close exographic relationship, there is more possibility that the written language is viewed as a more proper or prestigious form of the heritage language.

Lüpke (*ibid*) points out that orthography developers must identify functions for writing in the heritage language. If no function can be identified for writing the heritage language, then there is little use for literacy in the heritage language. Whether acknowledged or not, sometimes the function that is envisioned for writing the heritage language is primarily sentimental, symbolic, or identificational. In these situations there may be high interest in the creation of an orthography, but the speech community may not have the same enthusiasm or means for actually implementing a language development program.

3.4 The procedure of orthography development

In this research no complete, published, description of the process of the development of an orthography has been found; only: handouts from an SIL graduate level literacy course that briefly describes the process, a brief description from SIL Philippines, and parts of the process have been

published by a few authors (Easton & Wroge 2002, Lüpke 2011, Schroeder 2008). One reason others may not have taken the time to present this information is that the process is variable. In some locations it may not be preferable to follow all of the steps, in other situations the order may change or there may be overlap of steps. However, the list presented here is intended as a thorough and logical process.

Rather than document the historical development of the different lists of principles, an amalgamated list will be presented with citations of significant early sources for some of the principles. The procedures recommended here are for a speech community that has had no standardized orthography. The procedures for revising or reforming an orthography will be different. The following eleven steps are described in the following sections:

1. Community ownership
2. Language role assessment
3. Orthography awareness assessment
4. Linguistic analysis
5. Pre-testing
6. Tentative orthography design workshop
7. Testing phase
8. Working orthography design
9. Trial production and Use phase
10. Revision phase
11. Re-assessment phase

3.4.1 Community ownership

Most discussions of the procedures for orthography development begin with a recommendation for analyzing the phonology, grammar, and vocabulary of a language (Sjoberg 1971:265, Malone 2010:52). However, as a process step, the first consideration in orthography development is the role of the speech community.²⁰ Linguists from outside the speech community first need to consider their role in affirming the linguistic rights of the speech community. Skutnabb-Kangas (2006), as well as others, has written extensively on linguistic rights, establishing the case for allowing people to

²⁰ Schroeder (2008) provides a thorough discussion on a participatory approach to orthography development.

manage their own language. Any intentional effort to alter the sociolinguistic environment of a speech community has moral and political implications. Tollefson (2006:45) says that in the field of Critical Language Policy researchers “accept the political principle that people who experience the consequences of language policy should have a major role in making policy decisions.”

Orthography development is a language management activity. Language management literature (Cooper 1989:31) focuses on three categories of initiators of language management activities: governments, non-government agencies, and others. Historically, governments have been more often involved with orthography reform efforts, but less frequently with initial orthography development. The role of government in language management is the most powerful; they have the authority and means to establish and enforce language policies. Non-government agencies, particularly Protestant missionary organizations, have been the most active in orthography development for previously unwritten languages. There have also been individual linguists, both members of a speech community and outsiders who have gotten involved in orthography development. And finally, there have been grass-roots level efforts initiated from within the speech communities (Malone 2010).

Cooper (1989) recognized that the role of the speech community is implicitly to respond to the planning and policy of the initiators. One of the lessons learned from language management efforts, as well as other social and economic developments, is that there is a power imbalance between initiators and receivers. An important understanding of establishing a policy is that there must be some force behind it; this implies a power imbalance. Language policies are created to influence language use, which implies that someone believes they know what is better for other people. Some theorists (Tollefson 2006:46) appeal to the Marxist belief that there are incompatible socioeconomic interests between different social classes. Conscientious language planning researchers must recognize that social struggle will be required to achieve equality and justice. Tollefson (2006:47), citing Donahue (2002), points out that this imbalance may result in the “loss of culture, identity, and socialization has enormous consequences, including the destruction of sources of meaning and a disillusioned and cynical citizenry.”

The role of the speech community in their own language management may begin with indigenous advocacy for minority language rights. If the

government impedes non-official language management efforts, preservation efforts will be more difficult and costly, if they can succeed at all (M. Lewis, forthcoming). There are ways that the inequalities and injustices of power imbalance can be addressed. However, a discussion of language advocacy is beyond the scope of this dissertation. Nevertheless, the linguist from outside of the speech community must always approach language planning activities as opportunities to affirm the role of the members of the speech community in the management of their own language (Easton 2003:2, Schroeder 2008:2). This begins with a willingness to learn from the speech community, including a commitment to collaboration and sharing of knowledge.

The most practical step to establish the role of members of the speech community in the management of their own language is to establish a language management guidance committee (Sadembuou 1989, Malone 2004:39). Of course, the structure, authority, and functioning of such a committee is culturally dependent. However, there are four general language management activities that should be assisted by guidance from a committee (Sadembuou 1989):

- Overseeing language standardization: this includes elaborating the principles of orthography design, sensitivity to dialectal variation differences, and finding solutions to development problems.
- Modernization, which involves the creation of new vocabulary or other changes that need to occur so that the written language can function for all of its intended uses. This also includes overseeing activities to create a desire for literature and literacy in the new orthography.
- Creation of a “literary milieu”; this focuses on the creation of an environment where people can use their literacy skills.
- Promotion and popularization of the orthography, which involves both the production of literature, materials for teaching literacy, and literacy efforts for all social classes. This will also include the development of transitional programs to respond to the needs for bilingualism.

These responsibilities parallel the main areas of language planning: status, corpus and acquisition planning, demonstrating that there are many different kinds of activities that a development committee may initiate. In each of the case studies presented in chapter 4 we will see that language management rarely proceeds in an orderly sequential process. The process progresses through phases, trying alternate approaches, and allowing attitudes to change over time. Some people may consider the inevitable

changes to plans to be a problem and Sadembuou (1989) advises patience to allow promotional activities to take place. To do so permits attitudes and beliefs about language management to be reconsidered and new norms to become established. The complexity of language management is such that the managers can never predict all of the effects of their activities so that they need to be flexible to respond to the unexpected outcomes.

Language management committees are necessary because the entire speech community cannot be involved in making final decisions, nor can an entire community be fully educated in the nuances of every aspect of language and orthography development. However, committees can also have a stifling effect on development. Several of the case studies in chapter 4 describe how progress has been impeded by the inability of committees to make decisive policy. Some language management efforts have failed due to attrition of language proficient speech community members. Newman (2003:8) discusses the failure of developing world linguists to get involved in the endangered languages movement in their own countries.

3.4.2 Language role assessment

The next step is to study the sociolinguistic environment, particularly the role writing plays in the speech community. Two models for understanding the sociolinguistic environment were presented in §2.1, and a discussion on the functions of writing was discussed in §3.3. To investigate these issues, several different methods of research will need to be used. Secondary research can provide information on government policies, ethnolinguistic histories, previous linguistic research, the sociolinguistic environment, and multilingualism. Interviews may be conducted with both internal and external community leaders, as well as randomly in the community to get an impression of the attitudes of those who are less politically motivated. Questionnaires may be useful for gathering materials for a larger statistical sampling of the wider speech community. Wordlist collection and intelligibility testing can be conducted to better understand the linguistic variation of dialects. This research should be conducted in collaboration with the language management committee.

Members of a speech community may be unaware of the potential positive and negative consequences of creating an orthography. The creation of an orthography may increase the prestige of the language. A written form of the language may enable communication over distance and preserve the

language by preserving cultural knowledge. However, the use of the written language to aid the acquisition of literacy skills can also improve the opportunities for transition to literacy in another language, which may result in language shift. Furthermore, a speech community has a repertoire of languages and each language has a certain role in the community. The roles, in most cases, are constantly shifting as the perceived benefits shift as people adjust to their environment (Karan 2000). The language management committee needs to consider a number of socio-culture issues: Who in the community is interested in language and orthography development? How widespread is the community interest? Is interest limited to one demographic set of people? Why do people want to develop their language? Are they aware of the effort that will be required? There has been no standardized procedure for investigating these issues. However, the participatory methods described by Schroeder (2008) may provide good guidance.

3.4.3 Orthography awareness assessment

The next consideration is the choice of script. In §2.2 above, three types of writing systems: segmental, syllabary, and logographic were described. For speech communities that are in the process of developing a writing system there are several reasons why they may choose one type of system over another. They may want to choose a system that is:

- similar to the national language of their country,
- associated with their religion,
- used by a related language with which they feel ethnic affinity,
- associated with their concept of modernization, or
- will assist with the transition of literacy skills in another language.

Linguists should also have a good knowledge of the other orthographies that may have an impact on the choices made by members of a speech community when they choose a script for their own language (Gudschinsky 1973:117, Malone 2004:45). Ferguson (1978:586) (cited in Hellinger 1986:67) reports that it is unproblematic for multilingual speakers to acquire more than one orthography. However, he is speaking of orthographies using the same script, like German and Dutch. Research on people using two different scripts such as Chinese and Latin was not part of this study. Lüpke (2011:322–323) points out that certain scripts have tended to be identified with certain religions (e.g., Arabic script with Islam, Latin

Script with Christianity, and Indian scripts with Hinduism and Buddhism) and have spread with those religions. This does not mean that a Muslim speech community will want an Arabic script, only that it may be a factor in the choice of script. Linguists working with languages in regions where there is a boundary between major religions, such as the sub-Saharan region of Africa or southeastern Asia, should be mindful that the selection of a script may be a challenging choice.

To make an assessment of community opinions about scripts and writing, it is helpful to conduct formal or informal surveys of various members of the speech community. In some cases there may have been people who have been attempting to write their language. Recently there have been undocumented reports of people who speak languages without standardized orthographies, but who are finding ways to text their language on cell phones. If there are a sufficient number of samples of this folk writing, they can be helpful in understanding some aspects of the phonology and the preferences people may have for writing their language. It may also be helpful to talk with people involved in the development of neighboring speech communities who have recently developed an orthography. This can help understand both local linguistic issues as well as social and cultural.

3.4.4 Linguistic analysis

Once members of the speech community form a language management committee, assess the sociolinguistic environment, and identify their language management goals, then it is time to begin the analysis of the phonology, morphology, grammar, and vocabulary. The linguistic analysis of languages for designing orthographies is the most reported aspect of the orthography development process. In §2.4 above, we discussed a number of linguistic variables that need to be analyzed. There are many methods for exploring the linguistic aspects of the language and for dealing with special problems. For example, Schroeder (2008) gives guidance in the analysis of Bantu languages for orthography development. In §2.3 and §2.4.3 we discussed the problems with identifying the best orthography for new readers and fluent readers. Snider (2010) presents a guide for analyzing a language in ways to deal with this problem.

We will now present some brief, generalized steps and describe a few problems that may arise. Many good introduction to phonology textbooks, like Peng (2013), will provide a more thorough description of these

processes. More on linguistic analysis will be presented in chapter 5 below. Traditionally, the analysis of the phonology of a language begins with the elicitation of word lists. The first goal is to identify the phonemes, the significant and contrastive sounds, of the language. Vowels tend to have the greatest phonetic variation in a language and it can be challenging for a linguist to analyze all the different vowel qualities and to identify phonemes and allophones. Such features as height, backness, roundness, nasalization, voicing, length, tongue root retraction, and rhoticity may or may not be distinctive. Vowel combinations need to be analyzed to determine if they are sequential monophthongs, diphthongs, or triphthongs. Consonants can have allophones also, but tend to have less variation. They need to be analyzed for features such as length, aspiration, voicing, prenasalization, glotalization, palatalization, labialization, co-articulation, and whether or not a consonant is syllabic. Finally, there are approximants, phones that are articulated as vowels but function as consonants, and non-pulmonic consonants, sounds that are made without airflow from the lungs, such as clicks.

It is helpful if the linguist is familiar with the range of sounds that are found in the family of languages and neighboring languages, so that the full range of phonemes can be identified. For example, during the documentation of Ushojo, a Dardic language in Pakistan (S. Decker 1992:73), it was known that some related, neighboring languages had a voiced, velar fricative [ɣ], but it only occurred rarely. Therefore, some lexical items were elicited in which it might occur. Similarly, when labialized consonants were detected, it was known that they were not a feature identified in other Dardic languages. However, it was known that Pashto, a lingua franca, had labialization of consonants. Therefore, it could be surmised that the labialization was probably present due to influence from Pashto. Had there been a move to develop an orthography, there probably would not have been a need to represent labialization.

Some languages have suprasegmental features, primarily tones and vowel harmony, which require careful consideration for orthographic representation. In some languages, like Chinese, tones are associated with individual words and do not change by the location in a sentence or concurrence with other tones. However, in other languages, such as Dschang of Cameroon, tones change dependant on a word's location in a sentence and the overall tone patterns of the utterance (Bird 1999a:3). Vowel harmony refers to a process in some languages in which one vowel, the trigger vowel,

influences some featural aspect of other vowels preceding or following the trigger vowel (Van der Hulst & Van de Weijer 1995).

The next linguistic level to investigate is the morphology. The morphology of analytic languages, which isolates morphemes, does not generally pose significant consideration for an orthography. However, the various types of synthetic languages, in which morphemes are combined to form longer, more complex words, can be more affected by any of several morphophonological processes, such as: assimilation, dissimilation, elision, epenthesis, lenition metathesis, and sandhi. These kinds of features tend to force an orthography away from a strict phoneme-grapheme representation of speech. Studies of grammar, and discourse will provide further insight into issues, such as word divisions for spacing and sentence structure for punctuation, which an orthography will need to handle.

As mentioned above, the orthographies of neighboring and related languages should be studied. There are three ways in which these other orthographies may influence the development of a new orthography:

- The members of the speech community may desire that the orthography of their language looks like a more prestigious language for greater acceptability.
- They may want an orthography that assists in the transition to another language.
- The ways in which related languages handled certain difficult representations that may be usefully employed in the new orthography.

3.4.5 Exploratory phase

After the linguistic analysis phase of preparation, the linguist and language committee will probably have a general idea of how a tentative orthography might look. They will also have identified:

- certain problematic issues with representation of some sounds,
- certain linguistic features that are very different from the national language or language of wider communication,
- linguistic features that will be difficult for the chosen script to represent,
- sound combinations in some words or homophones that may create ambiguity in an orthography, or

- they may be aware of dialectal variation for which they hope to compensate.

They may also have ideas as to possible solutions to these challenges. Probes can be created to get feedback from the speech community as to their perceptions of the cultural acceptability of different orthographic options. Gralow (1981) describes some problems that have occurred due to the failure to assess this social feedback. However, this phase may not be possible if there are no literates in the speech community.

Probes can be created with the use of two different wordlists and several short, less than a half page, native-authored stories. The first wordlist is used to create a multiple-choice probe, so there should be several words illustrating each of the problematic spellings, with several options for spelling. There is not a set recommended length for this tool, but it should include the problematic spelling issues. The list should be randomized so that no sample of a spelling issue is contiguous to another word with the same issue. Each reader should examine the multiple choice list and mark, by circle or underline, the spelling they most favor. The second wordlist, with about fifty to sixty items, should include both words that are considered problem-free and words with possible solutions to orthographic challenges. This list is read aloud to the language helpers. They are instructed to write the words as they think they should be written. The third part of this phase of research is for reading fluency. Each of the native-authored stories is written in several ways using different solutions to the problems that have been identified. Another short story is prepared in the national language, or language of wider communication. This will be used as a control test to assess the reader's proficiency in their language of literacy. Each reader reads the control story first, then the other stories in the trial orthographies. The reading may either be recorded for scoring later, or the researcher can use another copy of the stories and mark difficulties. The results are evaluated for fluency, hesitations, false starts, repetitions and pronunciation errors. The reading of each story can also be timed as a measure of fluency. Finally, the language helpers can be asked as series of questions:

1. Which story appeared the way you feel your language should look?
The least?
2. Which story did you feel was the easiest to read? The hardest?

The probes should be administered, if possible, to a demographic sample of the literate speech community. The research team should include members of the speech community. The researchers need to stress that this is a collaborative process for creating a new orthography. The idea of a “test,” or the implication that anything is already decided, should be avoided. The analysis of the first wordlist probe will indicate if there is any consensus on perceived ways of dealing with the problematic issues. The second wordlist will provide feedback as to the intuitiveness of the so-called problem-free spellings. It will also provide a comparison to the responses to the multiple choice probe; someone may provide a creative solution to a problem that has not been considered. The reading probe will provide both quantitative and qualitative feedback as to the visual perception of the possible orthography solutions. One benefit of the wordlists over reading a text is that the reader of a text may be able to gain greater comprehension from the context, which is not provided in a wordlist. A reading probe like this is particularly important for languages that need to represent suprasegmental features, to be sure the representation is effective. The final questions will also give qualitative feedback on perceptions. With the results from these probes it should be possible to determine if the phonology is well understood: do the predominant features of the trial orthography sufficiently represent the spoken language, and does the trial orthography have cultural acceptability?

3.4.6 Tentative orthography design

The next step is to hold a workshop to create a tentative orthography (Malone 2004:45). How such a workshop is to be organized is dependent on the culture. In some cases it may be organized like an academic conference with both expatriate linguists and linguists from within the speech community. In other cases it may be a number of tribal elders gathered together before a blackboard. In other cases a wide social spectrum of people can be included: such as fluent speakers of the target language who are not literate, those literate in another language, educators from within the speech community, musicians, and members of the religious community. Invitees may include representatives of the national or local government, and members of neighboring or related speech communities.

Research prior to the workshop should have given the linguist and language committee impressions of the general bias of the speech community towards certain patterns. The linguist and language committee

should prepare all necessary materials ahead of time for presenting the options to the participants. Many workshops use lists of sample words that are written to demonstrate the appearance of various optional spellings, and all previous research should be shared with the workshop participants.

The agenda of the workshop will also be different depending on the culture and level of academic sophistication. The workshop can be two to ten days in length. The linguist or a member of the language committee may begin with an orientation to the process and discuss all of the phonemes in the language. Someone should take notes to document the discussion and decisions that are made. If there is enough time, some linguists have found that it is helpful to have the participants begin writing short stories to get feedback on the ease of remembering the spelling patterns. The workshop should be concluded with plans for follow-up and future goals.

The purpose of the orthography workshop is to make the tentative assignments of writing symbols to the spoken language. The first decision is whether the language will be represented by a logographic, morphosyllabic, syllabary, or segmental writing system, as discussed in §3.4.3 above. In actual practice this is probably rarely discussed since the type of writing system will be apparent and based on the system used by neighboring languages. However, due to the growing dominance of the Latin script worldwide, it is possible people may choose the Latin script even though neighboring languages use Arabic, Tibetan, Devanagari, or some other script. While most new orthographies currently use the Latin script, this is not always the case. There have been examples of new syllabary writing systems (Gittlen & Gittlen 1981) created in the last century, as well as the Chinese morphosyllabic system for previously unwritten languages. Further discussion here is limited to the creation of Latin-based orthographies.

Any segmental script can be used with any of the alphabetic models that were described in §2.3. Technically, the alphabetic model could be chosen before the script, but usually the choice of script is a foregone conclusion, see §3.4.3. The phonological analysis, as described in §3.4.4, will help to identify which of the alphabetic models is most appropriate for the morphophonology of the language.

The next activity for the workshop participants is to tentatively assign symbols to represent the sounds of the spoken language. Since the language has already been analyzed there should be a complete description of the phonemic inventory from which to work. The application of the alphabetic

model to the phonology will be different for each model. A practical application of phonemic and historic-traditional models will be discussed in §6.2. The creation of a morphophonemic orthography involves an analysis of the root forms of words, the affixes, and the patterns of the phonological shifts in the morphology of the language. The creation of a morphophonemic orthography requires the creation of rules. These rules determine how the spellings of roots will change depending on the interaction of the phonemes in the roots and affixes. In Nunn's (1998) analysis of the morphophonemic orthography of Dutch, she found that it was important to identify different rules for loanwords, which have different phonological patterns. Since this research has focused on Creole languages that have very little morphology there has been very little consideration of the creation of an orthography using a morphophonemic model.

In an orthography workshop participants must consider all of the criteria presented in §2.4. It is not feasible to present here all of the possible ways that different orthographies have represented their unique phonological features. Often there can be a straight forward assignment of symbols to signs. Depending on the level of contact people may have had with another orthography, they may already have an expectation that certain symbols represent certain sounds. For example, they may already associate the <m> and <n> shapes with nasal sounds. However, problems arise when the language has more consonant phonemes than can be represented by the standard twenty-one Latin letters that are usually used for consonants, or more vowel phonemes than can be represented by the five Latin letters that are usually used for vowels. For consonants co-articulation, retroflexion, plosives, affricates, consonant clusters, lengthening, aspiration, or non-pulmonic consonants can present a challenge for adequate representation. Vowels can also have many qualities that could prove challenging: lengthening, nasalization, diphthongs, or different voice qualities. Tone, stress, and other suprasegmental features may also need to be represented in the orthography. Depending on the particular set of features in a language, a decision must be made as to whether new symbols will be created, if symbols can be combined, or if diacritics might be used. Some choices may remain unresolved until testing can help identify the best selection.

Decisions made in such workshops are rarely objective or 'scientific.' As the language speakers make the decisions, the orthography developed represents their sound system as they perceive it, not necessarily as it would

be described in a phonological analysis of the language. There may be a historical precedent set by well-established spellings that are familiar and accepted. While maintenance of these patterns may be desirable to the speech community, they may also violate some other established patterns (Winer 1990:252–253). Language attitudes are at the core of this process; consideration of attitudes is not a supplemental factor to make the orthography acceptable. Issues of social identity, in particular, how the speech community views itself in relation to other languages, such as prestige languages, church languages, and neighboring languages, are often the most influential in the discussions and decisions. Other factors, such as ease of learning and teaching, which reflect the goals set by the language community for developing their orthography, are also influential. (Easton 2003:7)

Possibly the most difficult aspect of orthography development is achieving consensus. The inability of different factions to compromise has been the downfall of numerous orthography development efforts. Several case studies will be presented in chapter 4, where people could not compromise and come to a consensus on a certain aspect of the orthography. It is important to clearly communicate that the first form of the orthography is merely a tentative orthography and that it will probably go through multiple revisions. Sometimes, there are issues which are not resolved during the workshop and further research is needed to identify the best solutions.

Alphabet Design Workshops (ADW),²¹ held by SIL Papua New Guinea, are five to ten-day workshops in which minority speech community members are assisted in the development of their own orthographies (Easton 2003). Without any previous research these workshops have been used as the initial step in the orthography development process. The process used in the workshop is cyclic, including: write/read language, identify problem areas, discuss options for problem areas, make decisions, and test decisions. Different parts of the cycle may be active at any one time. The participants begin by writing short stories in their own language. As they attempt to represent their language in writing they encounter uncertainties, which are then discussed with fellow participants. A decision is then made and tested.

²¹ “Since 1995, over 60 ADWs have been held resulting in over 130 languages/dialects producing orthographies. A small percentage of these have been revisions to previous orthographies, or dialects of languages with existing orthographies.” (Easton 2003) As of 2003, the ADW concept has also been used in Thailand.

Next they exchange the texts and read them aloud. As the stories are read common difficulties will be identified, as well as consistent solutions, which are then tested by further writing. After many of the sound-symbol decisions are made, “directed wordlists” are used to systematically practice writing words with each letter in word initial, medial, and final positions. Through this process allophones are identified. Facilitators can also identify inconsistencies and discuss the options with the participants. Whenever the ADW is held over a two-week period, some participants are able to return to their home communities and discuss the developing orthography with others. There is informal testing that occurs during the workshops and ADW participants are encouraged to continue using the same cyclic process after the workshop.

3.4.7 Testing phase

After a tentative orthography has been created there will need to be formal testing to gather information from a larger demographic sample of the speech community to assist in the creation process. There are two kinds of testing that can be done at this point in the process: testing the linguistic accuracy of the orthography, and assessing the acceptability of the orthography. Most authors discussing orthography testing (for example Gudschinsky 1973:126–135) use tests for linguistic accuracy. These tests usually involve a subject reading or writing lists of words, similar to the process presented in §3.4.5 above. This will determine if all the necessary phonemic distinctions have been made between similar word forms.

After a tentative orthography has been created it is possible to begin creating trial teaching materials. The process of teaching the orthography to new people provides a perfect opportunity to assess the linguistic accuracy of the orthography. All aspects of literacy will be helpful; teaching reading and writing along with writing stories and wordlists will assess the ease of learning the orthography as well as identifying anything consistent errors. Once again, the researchers are looking for patterns of errors in writing and spelling-related confusion in reading. Having fluent speakers of the language involved with the assessment team will make the testing much more accurate since an expatriate linguist may not hear errors in reading. It is important to include a reading test in the national language as a control.

Sometimes a linguist will recognize that some of the choices made by the speech community either create unnecessary distinctions, *over-*

differentiation, or they have not represented enough distinction, *under-differentiation*, as discussed in §2.4.2 above. Wordlists can be useful for identifying these problems. To identify over-differentiation, words are chosen in which there is a sound that seems to be the same sound but has been written differently in the words. These words are lined up to identify minimal pairs. When people read the words they can consider if the different spellings really represent different sounds or not. To identify under-differentiation, words in which there are different sounds that have been written in the same way are listed together. Again, people read the words and consider if the sounds are really the same or if they should be represented differently.

Depending on the size of the population, it may be valuable to test hundreds of people. The testing should use random stratified sampling to get a good cross-section of the community. Informal investigation can also be helpful by asking people if they have difficulty reading or writing some feature of the orthography. All results from testing should be documented and retained for later revisions to the orthography. More on orthography testing can be found in Gudschinsky (1973).

3.4.8 Working orthography design

Once testing has been completed and the results analyzed, a committee can implement the changes to the orthography and move the tentative orthography to a working orthography category. The purpose of a working orthography is not for testing as much as for gaining the acceptance of the wider community (Bauernschmidt 1980:20). A large number of products should be published in the orthography to give people multiple options for reading materials, and provide items of interest to people with different interests. This also relates to the discussion in §1.2.1 in which speakers of unwritten languages believe that their language cannot be written. This is an opportunity to prove that their language can be used expressively in a wide variety of ways.

3.4.9 Trial production and use phase

Once a working orthography has been agreed upon, the next phase is to make limited use of the orthography. This phase should last for several years. During this time some writing workshops should be held to both test and begin literacy instruction. Materials written by authors at writer's

workshops can be used to begin creating reading material for the new literates. There should also be some trial literacy classes. These classes will continue to test the efficacy of the orthography, increase literacy, and begin training teachers for future literacy programs.

The acquisition of literacy for a significant portion of a speech community may be difficult if there is no cultural tradition of literacy. Therefore, it is very important that an orthography is developed that can be learned quickly. In cases where there has been no literacy, there are other cultural traditions and practices that people will value and want to maintain. For example, the adults in a speech community have their occupations which involve the majority of their daily time and energy. They may also have care-giving responsibilities to children and elders. They do not have much time for learning to read and write.

3.4.10 Re-assessment and revision phase

After a time of production and somewhat limited use of the orthography there may be need for a further revision of the orthography. All of the orthographies that have been studied as part of this research, that have been in use for over fifty years, have had revisions. Changes may be limited to certain writing conventions that go along with an orthography, such as punctuation. Sometimes the changes can be dramatic. For example, many orthographies developed in Africa were very phonemic and were based on the International Phonetic Alphabet (IPA). After people began to gain literacy and became familiar with the national language, they decided they wanted more similarity between their orthography and the orthography of their national language. At one point members of the Mayan community in Guatemala wanted to return to the ancestor's pictographic orthography. Bauernschmidt (1980:20) proposes that major publications, like the Christian Bible or a dictionary, should wait at least three years without any suggested changes to the orthography. At some point there may be official government recognition and endorsement of an orthography, or a cultural authority may give their endorsement. At this point the orthography may be considered to be established (Bauernschmidt 1980:20).

3.5 Summary

In this chapter we looked briefly at the history to the language management movement. We saw how the absence of a critical, introspective approach in early attempts to change language use behaviors resulted in some unexpected consequences, particularly the death of some languages. It has been emphasized that the role of outsiders, such as outside linguists, is that of support and facilitation — they are not decision makers. Decision making should remain in the hands of members of the speech community. We discussed how a language guidance committee can provide the focal guidance needed for sustainable management. We also discussed that orthography development is a corpus planning-type activity in the overall schema of language management activities, but it also has status planning impact.

From among all the possible activities in a language management effort, the focus has been narrowed to the process by which an orthography is developed. This process was described as having assessment, analysis, creation, testing, trial use, and revision phases — understanding that this takes several years.

CASE STUDIES OF ORTHOGRAPHY DEVELOPMENT

IN Chapter 2 we discussed several maxims and principles of orthography design and several models, or patterns, for designing an orthography. In chapter 3 we discussed language management as intentional activities to alter language use behaviors. We also discussed the idealized phases through which orthography development may proceed.

This chapter will begin with a brief history of how writing developed, how the Latin script developed, and spread to many European languages. There are certain patterns that have typified the development of orthographies prior to about two hundred years ago. We will see that there are elements of these patterns that should be still considered as applicable in modern orthography development. The largest part of this chapter will be used to explore several case studies of actual orthography development in recent centuries. There have been numerous studies of languages that have gone through orthography reform in recent years. These studies generally focus on problems that were encountered and how a solution was found.

These case studies will reveal elements of Fishman's (2010) four community attitudinal dimensions (presented in §2.1.1), the usefulness of the Sustainable Use Model (presented in §2.1.2), and the application of Sadembuou's guidelines (presented in §3.4.1). These case studies are also presented in order to make a comparison with Creole examples, to assess whether there are any relevant differences between the barriers faced by Creole and non-Creole minority languages, which will be discussed in chapter 7.

4.1 A brief history of writing

A study of the historical development of writing helps us to see the changes in the ways that people have perceived the role of writing in relationship to the spoken language. It also helps us to understand why there are different writing systems representing the spoken language in different ways.

Language, as a capacity of the human being, is so ancient that theories associated with the development of language are associated with the evolutionary development of the *Homo sapien* brain, jaw, and throat (Botha & Knight 2009). Writing came as a much later stage of development since it is a more abstract cognitive process. It may have originated from a simple idea of making marks and associating them with meaning (Henshilwood & Dubreuil 2009). However, for the markings to constitute writing there needs to be syntactic structure representing human speech (Istrin 1953:364). When early humans first began marking pictures and symbols on walls, there was no intent to represent speech. Much later when Phoenicians made marks in clay tablets, the markings were meant as a mnemonic code for accounting purposes, not to represent speech. This early system eventually developed into Mesopotamian cuneiform, which first began to be used for representing spoken language around the end of the 4th millennium BCE. This is considered to be the earliest writing (Michalowski 1996). Even as writing systems have adapted through history, with a greater interest that the orthography represent speech, writing has always served other functions autonomous of speech, such as maintaining inventories, records of laws, or descriptions which are recorded in ways different from normal speech.

By 2600 BCE cuneiform was being used to write different languages: Sumerian, Assyrian, and Babylonian. Since the development of cuneiform, most scripts have developed based on other scripts. While most of the scripts in use today are descended from this one lineage, there have been at least two, Chinese and Mayan, and maybe seven other scripts, that have developed independently without influence from some other writing system (Daniels & Bright 1996:2).

The Phoenician alphabet in use around 1200 BCE, derived from cuneiform, is considered the first phonemic alphabet. It had a limited set of twenty-two symbols that represented consonantal sounds. The association of symbols with sounds was a major development and has been followed by most other orthographies through history.

In the early 5th century BCE the Achaemenid ruler Darius I used the Aramaic alphabet, derived from Phoenician, for written communication throughout the empire. The Aramaic alphabet became the source of Hebrew, Arabic via the Nabatean script, Devanagari via the Brahmi and Gupta scripts, Mongolian via the Syriac and Sogdian scripts, and a number of other lesser known orthographies.

By 400 BCE some Archaic Greek alphabets were using symbols for vowel sounds. This enabled the writing system to better represent that actual pronunciation of words. During the next two centuries left to right writing became standardized in Attic Greek, the dialect of Athens. The letter shapes and the direction letters faced became standardized also (Threatte 1996).

During the 8th century BCE, Etruscan, an earlier form of a written western Greek dialect, was carried to Italy by Greek immigrants. Within two centuries a modified form of the Etruscan alphabet was being used to write Latin. By the first century BCE Latin was written with 23 letters. All letters were what we would consider upper case, there was no punctuation, and word breaks were not used yet. By the 3rd century CE a form of handwriting known today as New Roman Cursive was using symbols we would recognize as having shapes similar to modern Latin lower case letters (Knight 1996).

In the mid-4th century CE Wulfilas, a Goth Christian bishop, created an alphabet for the Gothic language. He adapted the Greek alphabet to represent the sounds of Gothic. Although none of his research is documented, he obviously considered the phonology of the language and considered the different symbols that were available and how they would be perceived (Ebbinghaus 1996). This is the earliest example of an orthography based on an analysis of the language being created by an individual.

The Greek and Latin alphabets were originally (9th to 3rd century BCE) written as a majuscule /mæɟəskjul/ script. In this form of script letters, which we would call capital or upper case letters, are always formed between two horizontal, parallel lines. Many of the individual majuscule letters were formed with straight lines. By the 3rd century BCE the straight lines were becoming more rounded. This was called an uncial /ʌŋʃəl/ script. It was used in Greek and Latin manuscripts until the 8th centuries to 12th centuries CE (Crystal 1992:403–404).

After the collapse of the Roman Empire, throughout Europe literacy was predominantly maintained in the courts of nobles and in monasteries. By the late 7th century CE a Latin-based alphabet called Insular Script was being used by monks in Ireland and England. Various less standardized scripts were being used across Europe, which caused problems for clear communication. In c. 781, Charlemagne, king of the Franks, invited an English monk by the name of Alcuin to join his court. Alcuin was considered one of the most learned men of his time (McKitterick 2005:158).

Charlemagne believed that a standardized orthographic system for Latin would improve education and his ability to govern. During Alcuin's years in Charlemagne's court the Carolingian Minuscule /m̄njuskul/ script was standardized, which included upper and lower case letters for the first time. A minuscule script used the uncial shaped letters at half the height of the majuscule letters to form lower case letters. In the minuscule script some lower case letters extended below the base line of letter formation. Alcuin also standardized the heights of the letters relative to one another, and developed rules for capitalization (Crystal 1992:239–240). He also invented the question mark and punctuation rules were made uniform. Spaces between words became consistently used. These developments created a more complete orthography. There were also intentional efforts to train monks and other writers in this new system; an acquisition planning language management activity. Due to Alcuin's stated intention to standardize the pronunciation of Latin through this process, Coulmas (1996:68) cites this manipulation of the orthographic system as an early attempt to use the written language as a model of the spoken language.

In the mid-9th century CE tradition states that two brothers, Cyril and Methodius, created the Glagolitic alphabet for Old Church Slavonic (Cubberley 1996). It is believed that the system was successfully adopted because the Bulgarian government wanted a script that was different from Greek to weaken the influence of the Greco-Roman culture of the Byzantine Empire (Martin 1994:40–41). The alphabet was based on the Greek alphabet but added symbols from other alphabets and created some new symbols. Initially this orthographic system did not differentiate upper and lower case letters. This script was later adapted and became the Cyrillic script which has been used predominantly with Slavic languages. This is significant as an early example of the political nature of scripts and how, sometimes, people want a script that does not look like another script.

With the standardization of many writing conventions in Latin under Charlemagne and Alcuin, writing began to spread to many European languages. By the end of the 10th century all the major languages of Europe were being written with the use of Latin-based or Cyrillic-based scripts. The next major development in written communication was the invention of the printing press in 1450. Previous to this time period, literacy was primarily restricted to a small elite group of government administrative assistants (scribes and clerks), religious priests and monks, some nobles, and a few

creative writers. The printing press enabled mass reproduction of less expensive reading material. The shift from hand writing to printing had revolutionary consequences on most aspects of life in Europe. It made ancient texts more available, which stimulated creative thinking; old forms of government and religion were changed, and the sciences developed (Eisenstein 2005). However, it was not until the Industrial Revolution in the mid-19th century when paper and books became affordable to all classes of people throughout Europe.

By the 18th and 19th centuries in Europe, when literacy really became available to the majority of the people, the languages had orthographies that had been established for hundreds of years. Mass literacy sometimes required changes to the orthographies. For example in modern English the *ash* <æ>, *ethel* <æ>, *eth* <ð>, *thorn* <þ>, *wynn* <ƿ>, and *yogh* <ȝ> from Middle English are no longer used. It was decided that these letters could be replaced by other letters, thus simplifying the alphabet and printers needed fewer different letters. There were other languages that went through major reforms. For example, in 1911, 1945 and 2009, Portuguese underwent major changes by simplifying the spellings of many words. These changes were made to ease the acquisition of literacy. More dramatically, in the 1930s Turkish shifted from using an Arabic script to a Latin script. Many Arabic and Persian loanwords were replaced by traditional Turkish words or newly coined terms based on Turkish roots. Not only did these changes increase literacy, they reduced the cost of publishing and played a role in strengthening the national identity (G. Lewis 1999).

As with spoken language, when one writing system comes in contact with another, one may be influenced by the other. For example, when Irish Christian missionaries brought the Latin minuscule script to England in the 9th century it came in contact with the runic Futhorc script. As a result the Latin minuscule <a> was combined with <e> to make <æ>, the <d> was modified to <ð>, and two runic letters were added <ƿ> and <þ>. Writing systems evolve to meet the needs of their environments. For example, in 17th century American English the letter <ʃ> was used for the /ʃ/ sound. But by the mid-18th century all words with this letter had been changed to <sh>.

In this brief history of writing we can derive several lessons about orthography development. It is usually initiated by or serves the purposes of ruling elites and has political ramifications. Orthographies are usually

adapted from another orthography already known by the literate population. If we were able to go into more detail about the development of each orthography, as we will do for French in §4.2, we would see that the process involved a good deal of experimentation. As described above, the orthographies keep changing; people keep adapting orthographies to meet their needs. With the exception of people like Alcuin, Cyril, Methodius, and Wulfilas, prior to the 19th century, there were few examples of planned orthography creation. However, in the last two centuries there have been many planned efforts to create orthographies for unwritten languages. There were about 100 written languages in use in the world in 1800. Today there are nearly 3000 written languages. The invention of writing was revolutionary to the human experience, as was the invention of the printing press. As we observe social changes occurring in regard to computers and the Internet, it appears that we are entering another period of revolutionary change in our methods of communication.

4.2 Early development of written French

As we consider ways that language planning can be successfully employed in the development of a language, we should look at some languages that are considered highly developed. There are six languages considered as working languages for the United Nations: Arabic, English, French, Mandarin Chinese, Russian, and Spanish. This status should establish them as the most developed languages, having the greatest functionality. The history of written French will serve as an example of how one of these international languages developed as a written language. There is considerable uncertainty and disagreement as to the exact relationship between the written and oral languages in the eighth and ninth centuries, a key time period in the development of Old French (Rickard 1974, McKitterick 2005). However, this example will be sufficient for demonstrating salient points.

Through the first centuries of the current era, after the Roman Empire had conquered Gaul, modern day France, Latin was imposed on the people of Gaul. The competition between Latin and Gualish, a Celtic language, resulted in the decline of Gaulish until the cessation of its use in the 5th century (Rickard 1974:5). As the Roman Empire collapsed, in the sixth century the Germanic Frankish tribes conquered post-Roman Gaul from the northeast. The ruling Merovingian Franks quickly shifted from speaking Old Frankish to Latin (Hen 1995:25) and embraced Latin as their literary

language. Wright (1991) maintains that up until the end of the eighth century spoken and written Latin were perceived as representing the same language. However, spoken Latin in Gaul had been changed through contact with Gaulish and Old Frankish.

In c. 781, Charlemagne, king of the Franks, invited an English monk by the name of Alcuin to run the palace school. Although Charlemagne is often credited as initiating the reform of Latin, McKitterick (1989:12) citing Wright (1982) believes that the impetus for Latin reform may have come from Alcuin when he encountered a different form of Latin. Wherever the idea came from, the spelling and pronunciation of Frankish Latin was reformed. Classical grammars were available, so the reformation of the grammar and vocabulary attained a greater success of actually representing an earlier form of Latin. However, the pronunciations could only be based on perceptions of how classical Latin might have sounded. Rikard (1974:12) notes that scribes had a difficult time deciding how to write some sounds that came from Germanic Old Frankish, which had not been in Latin. So, even the reformed Latin was somewhat different from Classical Latin. The new orthographic changes were learned and followed by the monks, church scribes, and court clerks. McKitterick (1989) describes evidence of literacy and availability of literature to a wide range of people. Latin continued to be the language of the church, education, and court until 1539.

Eventually, the reformation process served to create a divide between the written Latin and the vernacular of the people. This released the common spoken, *vulgar*, Latin, also referred to as Low Romance, from any vestige of similarity with the written Latin (Holmes & Schutz 1967:28). The different regional spoken varieties started to be considered as languages separate from Latin. Old French in the 9th to 12th centuries was not a uniform language; the different regions each had their own variety. The variety spoken around Paris is referred to as Francien. Among others, the neighboring varieties included: Picard to the north, to the east Champenois, Burgundian to the southeast, Berrichon to the south, to the southwest is Gallo, and to the northwest is Norman. Collectively they are known as *Langue d'oïl* to differentiate them from *Lenga d'òc*, the varieties in southern France that were much less effected by the Old Frankish speech. There are surviving pieces of literature for many of these varieties from the 12th century or earlier.

Even as the language situation was shifting, so also were all aspects of culture, government and society. In previous centuries most written

documents were concerned with either religious or legal topics. But as French nobles rode off to conquests in England, Spain, and crusades to the Middle East, they returned with tales of adventure and romance. Folktales, songs, and early scientific investigations were documented (Holmes & Shutz 1967:42). As the Capetian kings centralized government through the 11th century the nobles sought a way to express their role in the new power structure. According to Bloch (1977:10), “all the major “aristocratic” forms of [Old French] – epic, courtly novel, and lyric – are deeply rooted in the evolving legal ethos of their time.” The narratives, legal documents, and verse were “a forum for adaptation to the political realities of the post feudal world.” (Bloch 1977:258) The documentation of new and old stories was an affirmation of a new cultural identity.

Some of the composers of these epics and lyric moved from court to court and they chose to write in ways that minimized uniquely dialectal features. In the early 12th century, Francien, as the dialect of Paris, the largest city and center of government, served as the obvious basis for a somewhat standardized written form. However, this standardized form would not have represented a pure form of Francien and would have included elements of other varieties. Not all writers used it and there are samples showing that some writers continued to use the regional varieties (Ewert 1956:8–9).

Written, as well as spoken, Old French continued to take its own course of development, separate from Latin. By 1539, with the passage of the *Ordonnances de Villers-Cotteret*, written French became the official language of France. In 1635 the *Académie française* was established as the official authority on all matters of vocabulary, grammar, and the usage of the French language. Of the other varieties of Old French that diverged during the 8th to 12th centuries only Picard and Walloon continue to maintain a literary tradition today separate from French. When the government endorses a variety, it tends to hamper the maintenance or development of other varieties. The speakers of other varieties, such as Occitan in southern France and Creole in Haiti, are content to maintain their speech as a dialect of French, even though there have been efforts to write these varieties. Kloss (1967:36) proposed that these varieties are not endangered due to “the high degree of illiteracy and overall backwardness among their speakers.”

This description of the development of French presents evidence that meets Fishman’s (2010) criteria for a strong sense of *vitality* and *historicity*. The Franks considered themselves rightful successors to the Romans. The

uniting of a large portion of Western Europe into what became the Frankish Empire, and later the Holy Roman Empire, along with the centralizing of government and the establishment of ruling dynasties, all served to create a strong identity of a vital people with a history and a future. The timing of Charlemagne's reformations of Latin, and the reformations themselves, along with their political history, played a major role in creating the *autonomy* Fishman describes as necessary for development of vernacular literacy. Fishman (2010:11) says that a dialect cannot develop a literacy because both internally and externally it is considered a less capable category, a dialect of something else. Although Charlemagne had united a large number of autonomous states, they still maintained their regional identities. When Latin and the many varieties of Old French became identified as different, the varieties were no longer considered dialects of something else. The use of Latin was limited to certain functions and it was not in competition with Old French as an appropriate language for expressing the new genres of literature. Writers in each region gained a sense of the autonomy, a freedom to write as they wanted.

An analysis of the historical development of French reveals that Fishman's (2010) explanation of the effects of these qualities is plausible. We cannot really know for certain, since we are unable to go back to analyze the beliefs and attitudes of the people from 1000 years ago. However, there are other factors, possibly just as important, that enabled the success of these development efforts. In the French example there are fifteen other aspects listed below that were significant in the development of written French. The development of other international languages (Arabic, English, French, Mandarin Chinese, Russian, and Spanish) developed through similar processes. Surely other languages have been successfully developed without all of these features, but the presence of these and similar historical conditions should be supportive of development.

- *Loss of functionality*: Latin and Old French orthographies were co-existing in complimentary uses. Then after the reformations of the 8th century, Latin began losing functions. This eventually allowed French to take over those functions. In fact, when people wanted to write about new topics, it seems that Old French was perceived as the obvious choice.
- *Script availability*: The Latin script was widely available and familiar to a wide spectrum of the society. People who wanted to write Old

French already had associations between sounds and symbols which they could easily adapt for Old French.

- *Literate population*: There was a relatively wide spectrum of people who were already literate. The transition of a culture from non-literate to literate is a major shift. For example, people need to be convinced that there is use for literacy skills. At higher levels of society the French had already made this transition. The embracing of literacy by the masses took centuries and was accompanied by major political changes as concepts of democracy changed the culture.
- *Political absence*: As discussed in §3.1.1, political involvement tends to have a negative impact on language planning efforts. When the government got involved in Latin reform it began the demise of spoken Latin. Often it is sufficient for a government to simply not resist language planning efforts. In the French example, the government was unconcerned about written Old French. It posed no threat to their control through the use of Latin. However, later endorsement of Francien French by the government served to remove competition from other varieties.
- *Non-elites*: As discussed in §3.1.1, elites can have a tendency to use language management as a way to maintain hegemony. The people who began writing Old French were not elites, they were people who had a role as communicators. They were the main stakeholders, grassroots activists, the people who had a use for written French and no ulterior motives.
- *Creative freedom*: As will be seen in other case studies, committees can be a good way to achieve collaboration, but they can also impede progress. The people who began writing Old French had freedom to experiment and an unlimited timetable. There were no committees or administrative bodies to which they had to answer.
- *Linguistic similarity*: The linguistic relationship between Latin and Old French would have helped in the transition from literacy in Latin to literacy in Old French. The word order was similar.
- *Literacy transfer*: The orthography for Old French was similar to Latin, so there would have been awareness of the relationship between the sounds and symbols. For people already literate in Latin, the transfer of literacy skills was easier going from Latin, as a second language, to Old French because they already had comprehension of that language.

- *Literature availability*: The production of Old French literature was proportional to the growth in the number of literate readers in Old French. Initially, the number of Old French readers would have been relatively small. The first writers and readers were the people who traveled from court to court carrying news, stories, and other oral entertainment. It was probably after these writers had written and gathered a relatively large selection of materials that others became interested in learning to read and have their own collections of Old French literature.
- *Non-endangered language*: Speakers of endangered languages have practical options as to which language they continue to use. From the 5th century, when Latin became the predominant oral language of the Franks, until the 16th century when French became the official language of France, there was never a phase when the oral language of the people was endangered. When written Latin became less functional, and written French became sufficiently developed, there was no other practical linguistic choice other than embracing written French.
- *Unlimited timetable*: Endangered languages do not have an unlimited timetable. As each day passes, children are born, elders die, and language use choices are made, the clock is ticking for the survival of the language. If effective revitalization efforts are not implemented, a point of no return will be reached. For French there was no timetable; the people who began writing Old French could experiment with different orthographic conventions to find the most acceptable. The development of written French took several centuries, but that was not a problem.
- *No expectations*: Often the speakers of unwritten languages believe that there is something deficient about their language which limits its usefulness as a written language. If language managers attempt to introduce writing and there is something deficient, such as incorrect tone marking, the speakers may become more cynical. Since the Franks had an acceptable written language, Latin, in the early centuries there were no expectations on written French.
- *Unification aspirations*: While some of the people who began writing Old French focused on describing their own variety, there were others who tried to create an orthography that was unmarked for specific dialects. Although union orthographies have not had much success in

recent decades, the success of the French orthography, may indicate that the experimental creation process was more like that of a systematic multidialectal orthography.

- *Dialect awareness*: At least some of the people who were experimenting with writing Old French were aware of some of the dialectal variation. For those who were trying to create something like a systematic multidialectal orthography, the knowledge of numerous varieties would help them to better analyze the options available.
- *Democratic process*: As Holmes and Shutz (1967) and Bloch (1977) point out, the process was actually fairly democratic. The development of written French involved non-elites, experimenting with different options for creating a standardized orthography. The process went on long enough that it allowed a wide variety of input from a growing number of people who were interested in the process.

When this research of Medieval French began, the expectation was that the ruling elite imposed their preference of dialect as a means of establishing dominance. However, the evidence is that it was much more of a democratic, grassroots effort. It seems that all of the international languages²² developed in situations similar to French.

4.3 Writing systems in the last century

Prior to the 19th century, there had been virtually no planned development of unwritten languages. However, in the last century there have been many efforts to standardize orthographies for previously unwritten languages. Following are five case studies of languages that have pursued orthography standardization in the last century.²³ These five speech communities have been chosen because they exhibit a variety of factors affecting the success of the language management efforts. While these examples will not be described in detail, the most salient linguistic and sociolinguistic issues that are particular to each case will be described. Each case study will be described based on issues relevant to Fishman's (2010) four attributes

²² English is a bit more complex than the others, having gone through Runic writing from Old German, Latin script from Latin, and Carolingian Miniscule from Norman French.

²³ All of these examples demonstrate challenges of making segment choices within an orthographic system. The reader is also referred to the description of Sherpa in §2.4.1 as an example in which the challenge concerns the choice of a script.

(vitality, historicity, autonomy, standardization) necessary for sustainable literacy, M. Lewis' (forthcoming) Sustainable Use Model, and Sadembuo's (1989) recommendations on the choice of reference dialects. After the five case studies are described a summary will be presented describing the issues affecting orthography development and achieving sustainable literacy.

4.3.1 The Mixe of Mexico

The Mixe language of Oaxaca, Mexico is spoken by more than 100,000 people in total. There are three major varieties: highland, midland, lowland (Suslak 2003). These are further divided into either nineteen dialects (Mapa de Territorio Mixe), or 290 (Jany 2010) depending on the perspective of the source. Some of the dialects are not intelligible to speakers of other dialects (Jany 2010). As a people, the Mixe possess a strong sense of identity based on the fact that they were never defeated by invading forces, including the Spanish.

Efforts to create orthographies for the languages of Mexico have progressed through several phases. In pre-Colombian times some languages were written with pictographs. In the early days of Spanish colonization, some languages were documented by Catholic missionaries, who also developed orthographies. In the early 18th century a Dominican friar wrote a grammar and a collection of hymns and prayers in Mixe, which were subsequently lost (Suslak 2003). Through the 1930s to 50s, the SIL International began to analyze many languages of Mexico and assisted in the creation of orthographies. SIL's approach then was to create "linguistic" orthographies based on phonetic symbols (Benton 1999). By the late 50s SIL realized that the speakers of the languages wanted their orthographies to look like Spanish. So, when SIL began to work on orthographies for the Mixe languages their approach had already shifted to trying to make orthographies that had visual similarities with Spanish orthography. They used symbols from a common set for Mexican languages, but applied them differently for each Mixe dialect. Some Mixe leaders became concerned that different orthographies would divide Mixe society.

In 1979 a group of Mixe linguists decided to create a union orthography to serve all Mixe dialects. An organization was formed and a group of linguists, bilinguals, and cultural leaders were charged with the task. The consonants were easy to deal with, but each dialect has its own unique set of vowels. Each dialect has phonemic vowels that are not found in

Spanish (Jany 2010). The vowels also carry a heavy load as they mark grammatical functions. The variation present between the northern and southern varieties of the highland dialect poses more problems than the differences between the midland and lowland dialects. By 2010 Jany considered that the union orthography effort had failed (Jany 2010:242).

The problems were ideological and linguistic. Speakers of each dialect wanted to hold on to unique orthographic conventions that established their individuality. Over the years, the guiding committee released change after change to the orthography. Finally, people grew weary of trying to keep up with the changes. The confusion hindered the use of Mixe in the classroom, endangering Mixe language use by the next generation. During the last decade, Jany (2010) has been working with the Chuxnabán Mixe, a Midland variety, helping them create an orthography. She describes orthographies for five different dialects, but does not specify how much they are used. Jany (2010:232) reports that there is increasing bilingualism, and many Mixe young adults are moving away to cities and ceasing their use of Mixe.

The Mixe's strong sense of *historicity* and *autonomy*, as described by Fishman (2010), motivated the people in their desire for a unified orthography. The fact that they were trying to develop their language indicates that they have some sense of *autonomy* and *standardization* beliefs. However, the failure of the union orthography has probably been discouraging for any sense that standardization is possible. The case highlights the difficulties in trying to develop a union orthography that satisfies all the variation that exists in each of the dialects. The Mixe have been unable to arrive at a consensus of one dialect to standardize. It is now apparent, after many years, that there is no critical mass of people with political power or socioeconomic prestige that is able to commit to the success of a unifying standard. And there is no significant economic incentive for the Mixe to develop a written standard for their language. The government is ambivalent towards minority language management. The *vitality* is the main quality that appears to be in question.

Some of the Mixe communities could be assessed at EGIDS level 5, developing, since they are developing orthographies. (See §2.1.2 above.) However, it is also apparent that some of the younger generations are turning away from the use of Mixe, which would put them at least at EGIDS level 6b, threatened. The Function condition of the Sustainable Use Model (M. Lewis forthcoming) is at level 5, Developing, but the Motivation,

Acquisition and Differentiation conditions seem to be between levels 6a and 6b. There is obviously an orthographic system that has been used in the schools, which means the situation is better than level 6a for some communities. However, due to the incomplete standardization of the orthography we cannot say that they meet the description of level 5. The Environmental condition may be the strongest condition for the Mixe, and for all of the case studies. Through much of the 20th century the government has encouraged the promotion of Spanish among the Indian population for national unification. But in recent years they have changed policy and they are now promoting the development of the minority languages, at least in bureaucratic rhetoric (Baldauf & Kaplan 2007:18). The weakness of the vitality may be a major problem for achieving sustainable literacy.

4.3.2 The Yemba of Cameroon

The Yemba language of Cameroon has two dialects and is spoken by approximately 300,000 people (Lewis *et al* 2013), which is large in relationship to neighboring speech communities. The Yemba have pride in their identity and their position of prestige and power in the region. The choice of Dschang as the reference dialect seems to be an appropriate choice for standardization. Dschang is a widely understood dialect spoken by a large population living in a central region of the larger Yemba language region; which meets primary criteria listed by Sadembouo (1989). The orthography for the Dschang dialect has undergone an irregular development. The first effort in 1928 was influenced by English and German spelling conventions. Tone was not marked even though it is a common phonologic feature of most sub-Saharan languages. This under-differentiation rendered the orthography unusable. Then in the 1970s, a group of Cameroonian and expatriate linguists proposed “scientific” solutions to create orthographies oriented to African languages. One requirement for all new orthographies was that all tone had to be marked. This created a problem of over-differentiation (Bird 1999a).

Literacy efforts were not highly successful due to problems with the new orthography. In 1997, Bird (1999b) tested the efficacy of tone marking in Yemba. He studied the effects of tone marking on reading fluency and on the ability of writers to accurately indicate tone. He found that tone marking for Yemba had a negative impact on reading fluency. When asked to mark tone on a text without tones marked, experienced writers were successful

only 73% of the time. He discovered that the tone marking system represented surface level tone, while deeper level features guided tone placement. Interestingly, when he proposed a revision of tone marking to the Yemba literacy workers, they rejected the changes for being too difficult!

In his analysis of this rejection of orthographic improvements, Bird (2001) describes three sets of people who have vested interests in certain orthographic solutions. First, in Yemba, the literacy workers were key to the language management efforts. They gained prestige from mastering the orthography but had nothing to gain from alternative systems, even an easier system. The second group consisted of language committees who enjoyed elite status as the people who guided the valuable resource of their language. This gave them a special identity as the language experts, a role previously held by expatriates. They were committed to solutions they had developed. The third group is the expatriate linguists who invested years of effort, study, and resources into language management. It was easy for them to identify with the orthographic solutions they had developed. Their solutions might also garner academic recognition or further funding for developing the Yemba language. Bird concluded that the various competing interests had a negative impact on orthography development.

The Yemba appear to have a strong sense of vitality, historicity, autonomy, and standardization, as described by Fishman (2010). This has motivated the people in their desire for a standardized orthography. The overall vitality of Yemba appears to be at EGIDS level 5, Developing. There is no indication of serious threats to the vitality of Yemba. In spite of this positive environment for orthography standardization, development has been hampered by differing linguistic solutions to tone marking and competing agendas of the stakeholders. In this description the tension between over-differentiation and under-differentiation with tone marking has proven to be a barrier for standardization. This case demonstrates that different stakeholders have their own motivations for supporting or resisting change. As stated by Sadembouo (1989), committees are valuable for guiding language management efforts, but stakeholders may also hinder efforts to standardize an orthography.

4.3.3 The Basque of Spain and France

Basque is an ancient, multidialectal language believed to be the last remnant of people who lived in Europe before the expansion of the Indo-European

language groups. It is spoken in the border regions between France and Spain. They have always resisted assimilation into neighboring populations. For many centuries the Basque were ignored or repressed (Fishman 1991). A nationalistic movement in Spain began in the late 19th century that led to the establishment of two autonomous regions in 1979: the Basque Autonomous Community (BAC) and Navarrese Autonomous Community (NAC). Shortly thereafter, the Basque language in Spain was officially granted equal status with Spanish. Out of an estimated ethnic population of 2.5 million only about a third speak the language with any fluency (Azurmendi *et al* 2001). While 800,000 speakers may seem to be a significantly large group, the fact that it has lost an estimated 1.6 million speakers is a noteworthy negative trend to the maintenance of the language.

Since the 16th century attempts were made to standardize each of the five Basque dialects. Linguistic divergence in spoken Basque was so great that some of the dialects were difficult to understand by speakers of the others. In 1918, the Basque Language Academy was established to research, protect and establish standards for the language. In the 1960s the Academy introduced a Standardized Basque that was based on the central dialect. Despite some resistance to this standard, most Basque speakers approve of the choice. This Standard Basque is now used extensively in popular literature, at all levels of education, for administrative purposes, and in all forms of mass media. It is also fast becoming the dialect spoken in the urban areas of the Basque Country (Zuazo 2010).

Development efforts have been pursued unevenly. In the autonomous BAC and NAC regions in Spain, the Basque create their own laws for protecting and promoting the use of their language. In the BAC there is a unified language management plan. In the NAC various policies have been implemented in some communities, but not others. In France, where there is no official recognition, the language is prohibited or at best tolerated (Azurmendi *et al*, 2001). Edwards (2009:3) makes reference to an elementary school in France in which the children are learning Basque. While the political autonomy in Spain is a great advantage for the maintenance of Basque, the lack of homogeneity of the population is a significant barrier to the promotion of the language. Only a fourth of the people in the Basque Country speak Basque; the majority in Spain speak Spanish, and in France the majority speak French. About one-third of the population is non-Basque and these immigrants vary in their opinions about

the value of Basque promotion (*ibid*). Basque identity is very strong and since the implementation of Standard Basque increasing numbers of people are trying to learn it. In spite of positive factors supporting Basque maintenance and development, there continue to be concerns. In the Azurmendi (2001) assessment of language vitality they say that the “changes [since gaining autonomy] have not been very significant” in the BAC territory and “the situation in the other territories is even weaker still.” Gardner (2000) relates that people do not use Basque in administrative domains because they do not know Basque terminology.

In this case study we get a description of a multidialectal language spoken by a people with a strong sense of identity, a long unique history, and a widespread desire for unification and standardization. This case study shows how standardization can progress when everyone accepts the choice of one dialect rather than attempting to create a union system. The formation of the Basque Language Academy has positively influenced language development efforts and outcomes. Sadembuou’s (1989) recommendations were followed in most points. They chose the dialect that was understood most widely, with the largest population, spoken in a central location, and with enough prestige. Also, there is government support and socioeconomic value in some areas of the Basque Country. Basque fits three of Fishman’s (2010) criteria: they believe that their language and culture were around for a long time (*historicity*), as a people they have attained political autonomy, and more than that their identity is strong enough to reinforce their perception of *autonomy*. They also have a history of language *standardization* attempts, which culminated in a form that they believe is successful. One aspect that might cause concern for the future of Basque is their dwindling number of speakers. Many ethnic Basque no longer speak the language. An awareness of this may weaken their perception of *vitality*.

It is more difficult to give an overall assessment of the vitality of Basque since the use is so different in different regions. At the best, in some situations the vitality is EGIDS 2, having official government support as a Provincial language. However, in some areas it is probably only EGIDS level 8b or 9; nearly Extinct or Dormant, since there may only be a few elderly people with some fluency in an area, such as in France. As stated in the previous paragraph, the overall vitality of the language is somewhat at risk. Even if its use is strong in some places, the overall erosion of language use can threaten the entire speech community. The Differentiation condition

of the Sustainable Use Model may only be at level 5 at best; there are not social norms determining when Basque will be used and when Spanish will be used, particularly in official domains. These language vitality concerns are relevant for the orthography since there will be no use for the orthography if language use shifts to Spanish. Use of the orthography is another one of the areas for which there are not societal norms as to when to use written Spanish and when to use written Basque.

4.3.4 The Matigsalug Manobo of the Philippines

The Matigsalug Manobo are a multidialectal but ethnically unified speech community. They are presented as an example of a standardized dialect that is supported by Sadembouo's secondary criteria: the development of a dialect with political, cultural and religious value. There is evidence of Fishman's qualities: historicity, autonomy and standardization, but there is reason to question the perception of vitality. This case study says little about the difficulties of standardizing an orthography for multiple dialects. It is included as an example of a community that is enjoying more success in language development than the other examples.

Matigsalug Manobo, is one of the eleven different varieties of Manobo on the island of Mindanao in the Philippines (M. Lewis 2009). It is spoken by some 30,000 (Wang *et al* 2006) to 50,000 (M. Lewis 2009) people, 5,000 of whom are considered to be monolingual. The Manobo are proud of the fact that they have more than one thousand years of documented history in the Philippines. They also have a strong leadership structure. However, by the 1970s much of their land had been taken by commercial loggers and they were losing their cultural pride. In 1995, as part of the revival of their culture, they formed the Matigsalug Literacy Education Incorporated (MALEI) (SIL 2013), a non-government organization (NGO).

According to Wang *et al* (2006:2), the significant variation in the phonology of Matigsalug Manobo is between different age groups rather than by geographic region, "Younger speakers tend to reject sounds which are not in the major regional languages (Cebuano and English)." An orthography was standardized over the course of two decades through the efforts of linguists and Manobo speakers. Local community education committees, church leaders and traditional community leaders have worked together to support and promote literacy efforts. Many educational and religious materials have been produced and are used in schools, homes and

churches. Church support has been particularly significant since there is much desire for Christian scriptures in their language. Today, over 10% of the people are literate in Matigsalug Manobo.

The Matigsalug Manobo are a good example of what can be accomplished when political, cultural and religious leaders cooperate in their support of development efforts. In these days when so many small speech communities are losing their languages, the Matigsalug Manobo are making a strong effort to maintain their language and develop it for new purposes. The Matigsalug Manobo situation fits three of Fishman's (2010) criteria for sustainable literacy: pride in their cultural history reinforces a perception of historicity. Their communities enjoy strong political structures that reinforce their perception of autonomy. The fact that they are trying to develop their language indicates that they have some sense of standardization beliefs. However, their time of culture and land loss may result in concern for their future vitality.

The EGIDS level for Matisalug Manobo is 4, Educational. The written language seems to be becoming well established as functional in many domains. The government has recently enacted very strong policies on linguistic rights for minority groups.

4.3.5 The Kaingang of Brazil

The five dialects of the Kaingang language of southern Brazil are spoken by over 25,000 people (M. Lewis 2009), which is a relatively large speech community for their region of Brazil. In the 1960s and 70s Ursula Wiesemann, an SIL linguist, was working with the Paraná dialect, producing primers. Eventually, different materials were produced for each dialect. Literacy teachers were trained and classes were organized in each village. However, frequently the wrong dialect materials were distributed to teachers. To remedy this situation the teachers asked for materials to be produced in only one dialect (Wiesemann 1989a).

To create a systematic multidialectal orthography significant problems had to be overcome with the morphology. For example, features that varied between dialects included: mood and aspect marking, pronominal systems, negation, imperative constructions, and vocabulary.

Initially, apart from the teachers, the communities expressed resistance to the idea of standardizing the orthography. Although there was no evidence of a communication problem, people claimed they could not understand the

other dialects. Eventually solutions to most²⁴ of the linguistic problems were found and an orthography was developed that the people began to use. It was only after several years that Wiesemann finally discovered why the people said they could not understand one another. One reason had to do with ways each group had been assimilating Portuguese, the national language, into their speech. So, the use of more Portuguese by some people created a loss of comprehension. But with orthography standardization the people “purified” their speech by eliminating Portuguese words from spoken Kaingang. This resulted in greater oral comprehension between the dialects and greater acceptance of the orthography.

Today, Kaingang continues to be the predominate language used in the villages, except in homes with mixed marriages. In homes with spouses from other languages, the children are learning and using Portuguese. Kaingang is used some in the schools and churches, which are the main environments where people interact with reading and writing the language. It appears from cursory research that few Kaingang have been involved in the language development decision-making. There does not seem to be much literature available in Kaingang.

This case study describes a situation in which morphological differences are the prominent linguistic problem. Unlike the Mixe and Yemba situations, at first, there was little interest in orthography standardization among the Kaingang. This is an example of attitudes and identity being changed as an outcome of language management. The choice of an acceptable reference dialect, as recommended by Sadembouo, which is supported by the church and schools, has resulted in a positive outcome. However, the long term outlook for Kaingang is questionable since Portuguese is gaining a presence in their communities. The Kaingang exhibit a sense of autonomy and standardization, as described by Fishman (2010). However, the attributes of vitality and historicity are less pronounced in this speech community.

With the information available it is difficult to assess the language vitality for Kaingang. For some segments of the speech community the vitality may be as good as EGIDS level 5, written materials are being developed. But for other parts of the community it may be as low as 6b, Threatened, some young people are shifting to the use of Portuguese. The

²⁴ Wiesemann (1989a) reports that the differences between the pronominal systems were never resolved.

orthography is being used in some schools and churches, but there are also homes where the children are no longer learning the language due to intermarriage.

4.3.6 Discussion of the five case studies

In each of the five case studies, which have just been described, it was possible for an orthography to be created.

At any point in time a speaker of a language can attempt to write his or her speech. However, as presented in chapters 2 and 3, there are a number of environmental factors that need to be in place for the effort to be embraced by the wider speech community and for the development to be sustainable. These five case studies present examples of speech communities at various points of readiness for orthography development. Language management activities have begun but were they ready for it? After analysis, what were the factors that have been salient to the success of the development activities?

There have obviously been different factors that were relevant for each speech community. The Matigsalug Manobo are probably experiencing the greatest level of success. The orthography was developed under the guidance of an association of community leaders who were able to achieve a consensus of opinion. Several institutions have been able to support the use of the new orthography, as well as support the promotion of the language and culture. This institutional support includes government policy and action that supports minority language development. The Kaingang may be the most endangered, possibly even failing to maintain sustainable orality. Language development has not been led by members of the speech community. There has not been strong, coordinated institutional support for the language, culture, or orthographic system. The dilution of the speech community through intermarriage has not been discouraged by a strong movement for ethnic unification. The factors that have contributed to the limited success are the agreement of the Kaingang teachers on the one dialect to be standardized, the “purification” of the language that has contributed to some community unification, and the partial support of a couple of institutions. It seems that the key areas for immediate language management attention for both the Matigsalug Manobo and the Kaingang are the Function, Motivation, and Differentiation conditions of the Sustainable Use Model (M. Lewis forthcoming). For language maintenance to continue

the people need to see a clear differentiation of functions in which their heritage language is the best choice. The production of more heritage language reading materials will help to keep people motivated to maintain the differentiation.

The Mixe and Yemba case studies are somewhat similar to each other. They are both multidialectal speech communities with differing orthographic solutions to the linguistic variation. For both the Mixe and Yemba the guiding committees have been unable to gain a unifying consensus on standardization. They have both tried to create union orthographies, which have been no more successful than other attempts. The reason the committees have failed is due to differing agendas of different members of the committees. The situation with the Yemba may be somewhat more stable than the Mixe. There was nothing that indicated language shift for the Yemba, but Spanish usage is increasing amongst the Mixe. The information gathered on both language groups focused on the orthography standardization and did not discuss other language management goals. It may be possible that concentration and development of other uses of the languages, which do not require a standardized orthography, may alter attitudes towards the orthography and break the log jam. The Mixe have experienced complete failure to achieve standardization according to Jany (2010). Their desire to maintain unique identities focused on dialectal differences is greater than their motivation for standardization. The Yemba have an orthography they are making to work with extra effort and less success than possible. Possibly, with time, people will make adjustments to the orthography that make it easier to use and teach.

The Basque case study has several differences from the other case studies, and there is also a lot of variation in the vitality of language use throughout the Basque speech community. Language management activities have been going on much longer for Basque than for the other groups. The Basque speech community is divided between two countries, in one country Basque has official status and in the other country there is no recognition. Basque in Spain in one district is managed by uniform policies, but irregular policies in another. As with the Matigsalug Manobo and Yemba, the Basque have been able to settle on one dialect to standardize. Unfortunately, for all of the things that have gone well in the development of Basque, only a minority of the population use the language frequently. The issue for Basque is not language maintenance, but revitalization (Lewis & Simons 2010). The

community of active users of Basque is eroding. It seems that the key areas for immediate language management attention for Basque are Functions, Motivation, and Differentiation (M. Lewis forthcoming). For language revival to occur the people need to see a clear differentiation of functions in which their heritage language is the best choice, and they need to be motivated to put the effort into changing their behavior.

Just as the major European languages went through different phases of development, so also have each of these new orthographies already gone through phases of development, even though the development efforts have been in progress for only several decades.

According to Fishman (2010), four attributes (vitality, historicity, autonomy, standardization) are necessary for development. The progression through which a community achieves these attributes ends with standardization, which Fishman asserts as the most difficult to attain. In three of the five examples (Mixe, Yemba, and Kaingang), language variation has presented somewhat of a barrier to standardization. However, in each of these examples we have also seen that vitality tends to be a questionable factor in each of the speech communities. Therefore, Fishman's (2010:14) assertion that the attributes are implicational, that the presence of one attribute presupposes the presence of the others, is false. The attributes are not really implicational since all of the groups are working on standardization, but they are struggling with vitality. Development of the attribute of standardization does not imply the presence of another attribute. The dichotomy is useful as Stewart (1972) proposed for identifying speech communities that are "likely to be accepted by the members of a national society (including its language planners) as suitable for some specific role, such as for the use as an official language." (Stewart 1972:533) Fishman's typology can be expanded, as presented in Table 12 below, with two new types, *salvage* and *endangered*, that were not included by Stewart or Fishman.

Language Types	Attributes			
	Vitality	Historicity	Autonomy	Standardization
Salvage		+		+
Endangered		+	+	+
Literary	+	+	+	+
Vernacular	+	+	+	
Dialect	+	+		
Creole	+			
Pidgin				
Classical		+	+	+
I-A-L ²⁵			+	+
Code				+

Table 12: Language development attributes

(adapted from Fishman 2010:15)

The term *salvage* has been borrowed from language documentation (C. Craig 1998:257). These are languages that have identification with their language for their historical connection and there has been standardization. Groups like this do not have autonomy or vitality as evidenced by the fact that they succumbed to pressure to shift to another language. They may actually have a standardized orthography and a history that is important to them. The *endangered* languages are like *classic* languages in that they are not being maintained as oral languages, their maintenance is based on factors other than their overt functionality. There is a difference between classic and endangered languages; classic languages are maintained because there are cultures that continue to value their maintenance for identificational, academic, or religious purposes. Muslims, whether of Arab descent or not, maintain the use of Classical Arabic for religious purposes. Western cultures maintain the use of Classical Latin and Greek for their literary and academic value. Endangered languages, even if they are written, may reach the point of language death at which they are only preserved in archives.

Nations around the world are being encouraged to create policies that are supportive of the maintenance of all speech communities within their borders. Regardless of how good the policies may be and the amount of money spent to maintain minority languages, if the speakers of the language are not sufficiently motivated to find functional uses for their heritage language, the language will become extinct. This fact punctuates the

²⁵ International Auxiliary Language, for example, Esperanto

importance for documenting the remaining endangered, lesser-known languages.

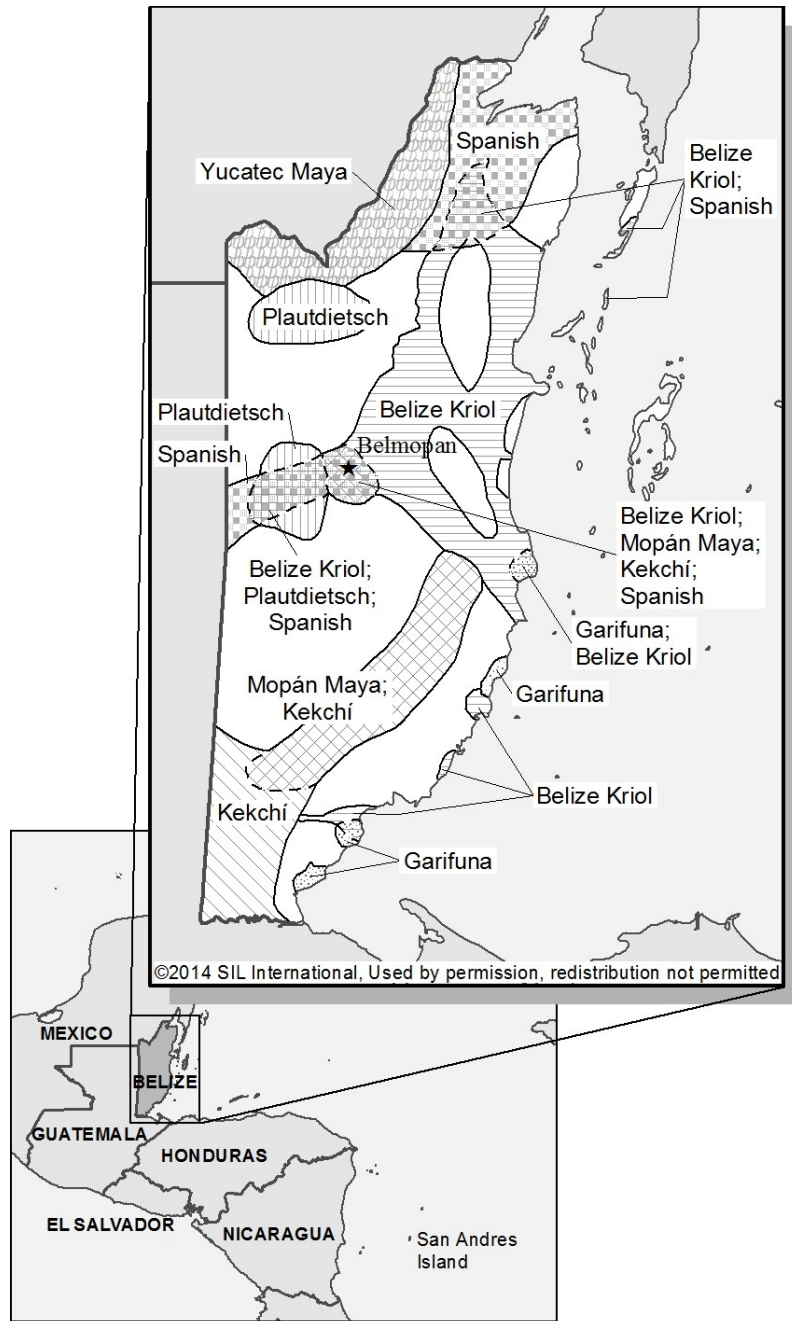


Figure 1: Central America with languages of Belize in indent

BELIZE KRIOL

THIS section will give a brief overview of the history of Belize Kriol²⁶ (BK), the English-lexicon Creole language spoken in Belize, and describe the current role of BK and other languages in Belizean society. This description of the Belize case study and the following sections, will emphasize the process through which the orthography has been developing.

5.1 Introduction to the history of Belize Kriol

The young nation of Belize is located at the intersection of Central America with the Caribbean. Belize relates politically and socially with both the nations of Central America and the Caribbean region. Belize gained independence from the United Kingdom in 1981. It is the only country in Central America with English as its official language, but there is a growing Spanish-speaking population. It has a population of 303,422 people, of which approximately 21 percent identify themselves as Creoles (Belize.com: 2010). Other ethnic groups include Mestizo (50%), Mayan (10%), Garinagu (5%), Mennonite (3%), and smaller numbers of Lebanese, East Indians, East Asians, and recent immigrants from Africa. BK is the most widely used second language of the country. Until the most recent decades BK has been the first language of the largest portion of the population. However, due to the increase of Spanish-speakers from elsewhere in Central America, Spanish is more typical in some parts of the country.

Through the 16th and 17th centuries the Mayan empire, which included the area that is now Belize, was in a state of decline. The Spanish were

²⁶ Participants of the first orthography workshop in 1994 decided that they wanted to spell the name of the language <Kriol>. However, there was disagreement as to whether the reference to themselves as a people should be <Creole> or <Kriol>. While the supporters of Creole cultural development are now using <Kriol> for themselves as a people, I will continue to use <Creole> for the people in order to differentiate the language and people.

occasionally active in the area of northern Belize (Shoman 1994). Although people of Mayan descent have never left Belize, their numbers and influence were greatly reduced by the 16th century. Early in the 17th century British pirates/buccaneers/privateers began developing the Caribbean coast of Central America for international commerce, primarily logging, and brought slaves from Africa. The first English settlement at the mouth of the Belize River is alleged to have begun in 1638 (Humpherys 1961). By 1787 the area of British occupation ran from northern Belize to southern Nicaragua, including the Corn Islands and the islands of San Andrés and Providencia off the coast of Nicaragua. As Africans and Europeans intermarried, the Central American Creoles, including the Belize Creoles and Nicaraguan Creoles, were born as an indigenous people. The Spanish attacked the settlers seven times between 1716 and 1798 trying unsuccessfully to expel them from the territory. As a result of these attacks many of the settlers and slaves from Belize would move temporarily to the Cayman Islands or down the Central American coast to Honduras and Nicaragua, called the Miskito Coast, where they came into contact with Miskito Indians. Many Kriol names for plants and animals, as well as other words, were borrowed from the Miskito language, a member of the Misumalpan language family.

In 1787, as a result of the 1786 Convention of London (Humpherys 1961), most of the British settlers and their slaves on the Miskito Coast moved to Belize. The new settlers to Belize outnumbered the current residents nearly five to one (Floyd 1967). Before this date the speech of the settlers may have been more linguistically similar to the Creole of Jamaica, but after this date BK became much more like the Creole of Nicaragua's Miskito Coast.

Through the last couple of centuries the presence of other languages in Belize has had little effect on BK (K. Decker 2005). In 1797 the British, on the island of St. Vincent in the West Indies, deported most of the Garinagu, Garifuna-speaking people, to Central America. Part of the group eventually settled in southern Belize. Through the years of contact between Creoles and Garifuna, BK does not seem to have borrowed many words from Garifuna, but all Garinagu in Belize have learned Kriol. In the past two centuries there has been an increasing influx of Spanish speakers into Belize from neighboring countries. Many Creoles seem to learn phrases and words in Spanish, but there does not seem to be evidence of anyone shifting to Spanish as their dominant language. On the other hand, there is evidence that

the new Spanish-speaking immigrants are keen learners of English and Kriol. Since the earliest presence of Europeans in Belize the Mayans, who occupied Belize for previous centuries, have kept separate from all non-Mayans. There are only a few words that have been borrowed by Creoles from the neighboring Mayan varieties of Yucatec, Mopán, and Kekchi. Most Mayans eventually gain some proficiency in BK. In 1959, about 3000 Mennonites, speakers of Plautdietsch, a variety of Low German, moved to Belize. They live separate from other Belizeans in their own communities. While there has been no influence on BK, some Mennonites learn a bit of Kriol for communication with Belizeans outside of their communities.

5.2 Sociolinguistic environment of Belize Kriol

Historically, in most cases around the Caribbean, Creole languages have not been accepted as legitimate languages. They have been called "bad," "broken," or "bastard" forms of more dominant languages. There has been considerable research into language attitudes in Creole communities. (For example see: Ferguson 1959, Stewart 1962b, and Devonish 1986.) There has been reluctance to consider development of the Creole languages because of their perceived limitations and the possible hindrance it may produce to the people's development in the more prestigious languages. However, as LePage (1980:341–42) pointed out, Creole speech in one social situation may be stigmatized while in another situation it is cultivated for identification.

In recent years the observation has been made²⁷ that attitudes are changing to be more positive towards the recognition of the Creole vernaculars. Language management is progressing in numerous Caribbean nations where Creole languages are spoken, such as Papiamentu in Aruba, Bonaire, and Curaçao (Dijkhoff & Pereira 2010), French-lexicon Creole varieties in Guadeloupe (Bulus 2010), St. Lucia (Simmons-McDonald 2010), French Guiana (Migge & Légise 2010), and Haiti (Schieffelin & Doucet 1994), and the English-lexicon Creole varieties of Jamaica (Carpenter & Devonish 2010), Nicaragua (Koskinen 2010), San Andrés and Providencia (Morren 2010), Trinidad and Tobago (Winer 1990, Youssef 2002), Guyana, St. Vincent and the Grenadines (Kephart 1992), and Belize (Uds 2012).

²⁷ See, for example, Carrington 1976, Devonish 1986, and Winer 1990.

Through the last century the Spanish-speaking population has gained numerical dominance in Belize. Some Creoles have been concerned about this, fearing that a majority Spanish-speaking dominance may shift the country towards closer linguistic and cultural alignment with Latin America. The Creoles are very proud of their Anglo-oriented culture.

5.2.1 Negative attitudes towards Kriol in Belize

It is important to discuss the negative attitudes held against BK and to describe the resistance because the very same situation will be faced by language managers in any other Creole-speaking communities. For example, the resistance to Jamaican Creole language development has raged for decades. Many people, generally those already highly educated, oppose the writing of Creole and the use of it in schools. One can read the debate in multitudes of articles and letters in *The Gleaner*, Jamaica's most prominent newspaper (www.jamaica-gleaner.com). In fact, there has probably been some discussion of the issue in every Caribbean territory. Negative attitudes toward the use and development of BK have been summarized by Cooper (n.d.) in the following list of objections:

1. Creole [sic] is stigmatized.
2. Creole has no standard phonology, morphology, or syntax; there are too many varieties.
3. Creole has no standardized orthography.
4. There is no body of Creole literature to draw upon for literacy.
5. Creole literacy would cut off its users from the rest of the world.

Lopez (1991:15–16), in his analysis of the merits of making BK the national language in Belize, refutes all of these arguments against BK, except the fact that there was no standardized orthography. He points out that the Ministry of Education had discussed the possibility of the development of an orthography in the 1980s. However, he said that the idea was discarded due to the expectation that it would be prohibitively expensive to develop teaching materials and textbooks. During the 1990s when this research was carried out in Belize, frequent expressions were heard that there was no need for development of BK, or that it was a bad idea, due to the reasons similar to those reported by Cooper (*ibid*). It was even asserted by some people that, “*Wi no taak no Kriol.*” (We don't speak Kriol.) The most

frequent concern heard is that it will hinder the children's acquisition of English.

Other advocates of Kriol language development have encountered similar negative attitudes. In the mid-1990s a Belizean English teacher for children in the 10 to 12 year old age group ran an experiment on the effect of using BK in the classroom (Rocke 1996, Rocke & Decker 2000). In one classroom, the control group, she taught the subject matter, grammar, only in English. In the other classroom she taught first in Kriol about the grammatical topic, using Kriol examples. Then she repeated the process using English examples. Once again she repeated the lesson speaking in English and first using Kriol and then English examples. After three months she found that the English writing skills of the test group had improved dramatically over the control group.²⁸ Not only were there impressive academic results, but parents of the children in the test group were commenting to her that their children really liked school; some adding, "for the first time in their lives!" When she presented the dramatic findings to the school principle, her response was, "That's nice. Now quit using Kriol in the classroom." Even though the improvement of English proficiency was a high goal; if the solution involved using Kriol, then that solution was considered unacceptable.

The language manager must evaluate these negative attitudes since they may represent an accurate evaluation of an inappropriate development. If no one continues to speak a language, then that is a valid criticism of development activities. Negative attitudes and criticism may also provide a useful spotlight on issues that need to be addressed. In Belize two very common language concerns were expressed: that a focus on BK would hinder English proficiency, and the lament that the children had such poor English proficiency. Believing that initial literacy in the heritage language is both an excellent educational strategy and a human right, addressing these concerns became the central goal of the language management effort.

5.2.2 Positive attitudes toward Kriol in Belize

When this research began in Belize in the early 1990s, there was also evidence of positive attitudes towards Kriol use and development. Most people would acknowledge that Kriol was used in many social situations

²⁸ Similar tests, with similar results, were conducted by Siegel (2002) in Papua New Guinea with Tok Pisin, and by Murtagh (1982) with Australian Kriol speakers.

every day. Cooper's (n.d.:9) observations, from his 1986 study, were confirmed that the usual language of office communication between Belizeans is in Kriol, not English. Kriol is often spoken in school classrooms, and non-Creoles feel alienated from their Creole friends when they can only use English.

Kriol is not only spoken in all informal, and some formal domains, it is also promoted in some visible ways. Through the last thirty years there have been television and radio programs in which mesolectal, if not basilectal, Kriol is used. Kriol phrases are used in newspaper articles, promotional posters, on t-shirts, and billboards. Musicians have marketed audio cassettes and CDs with Creole songs and Kriol lyrics printed in Kriol. Plays have been written and performed in Kriol. There have been numerous poems, stories and resource materials published²⁹ in Kriol. Several noteworthy examples include:

- A BK poem titled "Tode and Billy" was published as early as 1935 (Elliot 1935).
- A book about BK, with a small glossary, was published by George McKesey, a popular radio personality, in 1974.
- A book of Kriol proverbs was published by Dr. Colville Young in 1980.
- The *Reporter* newspaper of Belize City has published a weekly column in Kriol for over 15 years now.
- The Belize Kriol Project hosted several Kriol writing workshops in the mid-2000s and produced several small books of personal stories and folktales.
- The BK grammar (K. Decker 2005) and dictionary (Crosbie 2007) have sold out several printings and are widely used.
- The *Di Nyoo Testiment eena Bileez Kriol* (2012) has been translated into BK and is gaining widespread use.

Over the last several decades, there have been debates in journals, newspaper editorial columns, and other public forums concerning the development and use of Kriol, and whether BK is a 'real' language or a dialect. There has been a slow shifting of attitudes from disdain to acceptance. While there are still those who wish BK would go away, there is

²⁹ Hellinger (1976) cites numerous other early examples, p. 25–9.

now a greater pride in their language and there are many who feel quite passionate about the validity of the use and development of BK (Uds 2012).

The shift was quite obvious in 2012 when a young woman applied for a job with the Belize Kriol Project. In the interview she stated that she had always thought of BK as a real language, and all her life she had known it as a written language; the first orthography workshop happened when she was a young child. A new generation is growing up with very different and positive attitudes. Furthermore, even though people had said for years that Kriol should be kept out of the classroom, at the March 6, 2013 dedication of the Belize Kriol New Testament Bible translation, the honorable Patrick Faber, Minister of Education, said that he feels Kriol should be used in the classroom now.

5.3 A brief history of language management in Belize

Whether acknowledged or not, there has always been a general acceptance of BK as a preferred medium of expression by most Belizean Creoles. It is what most people have spoken to one another in most social situations. There was general acceptance of its use in some public functions. People enjoyed the George McKesey radio broadcasts in the 1960s and 70s during which he talked about Kriol language and culture. However, while there was no opposition to the publication of the McKesey (1974) and Young (1980) books, they were only considered curiosities. This section will include an emphasis on the participatory approach that has been followed in Kriol language management, which is absent in many discussions on orthography development.

In essence, language management for Belize Kriol began the first time someone tried to write it. In numerous accounts and documents from the late 1700s there are occasional words or phrases written in the author's attempt to represent the actual speech that was used. As mentioned in the previous section, items written in Kriol were published as early as 1935.³⁰ Until the orthography development efforts reported on here, most people attempting to write Kriol spelled words in whatever way they felt seemed right at the moment.

³⁰ *The Baymen of Belize* (Forbes & Fairweather 1997/1914), if authentic, may be an earlier published source occasionally using Kriol. The book is about events occurring in 1794. Forbes asserts that it was first published in 1914, but originally written in 1837.

Today, most people knowledgeable of the facts think of Sir Colville Young's PhD program and dissertation (Young 1973) as the real beginning of BK language development. Under the tutelage of Dr. Robert LePage at York University in the UK, Sir Colville gained an appreciation for BK as a real language with structure, and he also began to see the importance of the language for the educational development of Belizean Kriol-speaking children. Upon his return to Belize he taught at St. John's College and later at the University College of Belize. During these years Sir Colville spoke positively to his students about Kriol and maintained that it could not be ignored in the educational system (Young 2002). Silvaana Uds, a current advocate for Creole culture and Kriol language, was one of the students influenced by Sir Colville. She eventually got an undergraduate degree from Indiana University in the USA that would help her start a business that could fund Kriol development activities. At some point previous to this study, she started working on an orthography. In 2012 Ms Uds completed her Doctoral degree (Uds 2012) with a study on the positive impact of Kriol use in the classroom on English proficiency and positive attitudes towards Kriol.

Also during the early 1970s there was a growing interest in BK from expatriate linguists. Dr. Marlis Hellinger and Dr. Geneviève Escure both spent a considerable amount of time studying Kriol in Belize. Over the years they have written many linguistic articles on Belize Kriol. In the late 1970s, the U.S. Peace Corps in Belize decided that their people needed to have an introductory language learning course in Kriol. Jon Dayley produced a three-volume set of books to help language learners (Dayley 1979). Dayley used an IPA-oriented³¹ phonemic alphabet like Cassidy and LePage (1967) had used in the Jamaican Dictionary.

In the late 1980s, Sir Colville Young, then president of the University College of Belize, wrote to SIL International requesting assistance with language management for BK. In response to this request this writer and his wife, Sandy Decker, moved to Belize in 1993.³² We were official consultants on the project until 2000, and have remained in communication with the National Kriol Council up to the present. The first activity was a meeting with the consultants including a dozen local educators and advocates for Kriol development. The participants presented numerous arguments for ways

³¹ It is not fully IPA-based due to inconsistencies as identified by Hellinger (1986:63).

³² This writer's research of Belize and Creole languages began in 1992.

that language management would help education and social issues. They also described possible barriers to development. The consultants presented examples of SIL International involvement in language management around the world. Out of the participants of this meeting a steering committee was formed.

The purpose of the steering committee was to be a sounding board for the SIL linguistic consultants, this writer and his wife, and to provide guidance to the development activities. This aligns with the first recommended step in the procedure of orthography development in §3.4.1. As consultants, activities were proposed and the committee would either approve or recommend other activities. The major activities of the linguistic consultants included the collection of linguistic data and analysis of the phonology, testing and proposing orthography design options, facilitation of the orthography workshop, and proposing other language management goals. The major projects overseen by the committee included planning the first orthography workshop and the production of the Belize Kriol Glossary and Spelling Guide (Belize Kriol Project 1997). The Steering Committee functioned until 1995 at which time the steering committee transformed into the guidance committee of the Belize Kriol Project (BKP).

The first step in corpus planning is to study the phonology. A significant amount of linguistic analysis was already available. This helped to narrow the focus of the research to studying the discrepancies between the different resources. My analysis of the phonology is published in *The Song of Kriol: A Grammar of the Kriol Language of Belize* (K. Decker 2005). The biggest challenge was with the vowel system. There were seven different analyses of the vowels (K. Decker 2005:17). There were differences concerning the heights and advancement of the vowels, vowel length, vowel nasalization, and which phones may be allophones. As solutions were explored for each of the differences, local people and steering committee members were consulted for their intuitions. This aligns with the fourth recommended step in the procedure of orthography development in §3.4.4. Concurrent to this analysis, data were collected on language attitudes and use, as well as people's attitudes about an orthography for BK. This aligns with the second and third steps in the procedure of orthography development in §3.4.2 and §3.4.3.

Next, possible orthography designs were considered as well as principles of orthography design that had been recommended by others. This

aligns with the fifth recommended step in the procedure of orthography development in §3.4.5. Eventually it became evident that an analysis of English orthography would be necessary, which was carried out by this writer. Four possible orthography designs for BK were identified, which will be more fully explained in §6.2. Next, a test was developed of the four methods to identify strengths and weaknesses with each model, which will be described in §6.3.

In early 1994, the steering committee began planning for an orthography workshop. The Deckers developed a workbook for use in the workshop. Committee members handled most of the arrangements for the meetings and invitations. The workshop was held June 16 and 17, 1994 in Belize City and was led mostly by the Deckers. The twenty-five attendees were specially chosen for their prominence in the community and enthusiasm for Kriol language development. Through the course of the two days most of the issues were discussed, but there were still some issues that had not been resolved. Following the workshop there were a series of meetings with the Steering Committee to work through the final problems. This aligns with the sixth recommended step in the procedure of orthography development in §3.4.6.

Next, this writer produced a small booklet titled, *How fi Rite Bileez Kriol* (Belize Kriol Project 1994) that explained the spelling system. Over the course of the next several years, working with the Steering Committee and later the leaders of the BKP, the Deckers supported a number of promotional activities. A large format children's folk tale book was published. Booths were erected at numerous cultural events around the country at which the orthography was introduced to people and promoted. A literacy class was held in the summer of 1995 for about forty teenagers. One of the members of the Steering Committee began writing a short newspaper column and arranged for it to be published in a weekly newspaper with national distribution. During those years, the Deckers gathered linguistic data that eventually resulted in the publication of the *Bileez Kriol Glassary an Spellin Gide* (Belize Kriole Project 1997), *The Song of Kriol: A Grammar of the Kriol Language of Belize* (K. Decker 2005), and the *Kriol-English Dikshineri* (Crosbie 2007). At the same time Creoles were encouraged to use written Kriol in new situations. The new orthography was being used on billboards, in newspaper advertisements, on CD music jacket inserts, and in some parts of a few books. The Deckers provided consulting support to these

efforts. This aligns with the seventh recommended step in the procedure of orthography development in §3.4.7 as well as §3.4.9.

During the testing phase there were several times when writers complained about problems with the orthography. The Deckers worked with the writers to consider different options. In 2001 SIL consultation to the BKP was passed to another SIL consultant team, Paul and Cindy Crosbie. As this new team became familiar with BK, the orthography, and the language advocates, they also heard complaints about some features of the orthography. In April 2002 another orthography workshop was held and adjustments were made to the system. This workshop served the purpose of both reassessing and revising the orthography, as recommended in §3.4.10, and moving the orthography to the a working orthography, as recommended in §3.4.8.

Currently, with the production of the BK grammar (K. Decker 2005), the dictionary (Crosbie 2007), the *New Testament* (2012), and curriculum at the University of Belize for teaching BK (Uds 2012) there is a solid foundation upon which to build a greater body of literature.

5.4 Linguistic elements of Belize Kriol relevant for orthography development

Through the rest of this chapter a description will be presented of the variation in the lexicon, phonology, and grammar that have been relevant to the literary development of Belize Kriol. As described in §2.5, there is linguistic variation among the speakers of any language. Those who speak with a set of relatively similar features consider that they all speak a dialect, or they may consider it a different language from other varieties. As discussed in §2.4.1, there are many benefits to uniting the largest number of people together using the same orthography. Therefore, when planning for language standardization the forms of linguistic variation need to be studied. Between the dialects there can be variation in the phonological systems, grammatical systems, lexical sets, and even socio/cultural ways of using the language.

When planning for language standardization of a Creole language, in the context of a Creole continuum, variation in two directions needs to be considered: there is variation among basilectal varieties and variation between the basilectal varieties and the acrolect.

In the definition of Creole languages presented in §1.2.4, we see that they are languages in a state of relatively rapid transition. In a community where language is changing like this, we would expect the speech of some people, usually the older folks, to be more conservative, holding to forms as they learned them, while the speech of others, usually younger adults, would be more innovative with alternate pronunciation, new words, new structures. In a study of the language, such as that which produced the grammar of BK (K. Decker 2005), which attempts to describe a general representation of the speech behavior of the whole community, the researcher must choose evidence that is stable and consistent in the speech, and therefore conservative in relation to the point of innovation where the language is at the time of the study. Thus, subjective choices were made to describe some features as representative of the overall Kriol language, and other features as being only idiolectal.

The primary goal of the BK grammar (K. Decker 2005) was to describe the basilectal variety of Belize Kriol. A secondary goal of the grammar was to give examples of ways that Belize Kriol differs from standard English. The acrolect is sometimes referred to as Belize, or Belizean, English, which is similar to what some call West Indian English or Caribbean English. These terms are used to describe a variety of English with a set of features that are different from either British or American varieties of English. These local and regional English varieties need further definition. The mesolectal forms received relatively little attention, unless a certain feature is clearly not an acrolectal or basilectal phenomenon.

As mentioned in §5.3, previous to this research there had been some linguistic analysis of BK, most notably: Dayley (1979), Escure (1978, 1981, 1991), Hellinger (1973), and Young (1973). In the area of sociolinguistics, the work of LePage *et al* (1974) is quite well known. Other noteworthy sociolinguistic research not cited elsewhere in this report includes Escure (1982) and Kenan *et al* (1977).

Several of the articles by Hellinger concern the literary future of BK. In her article, "The Future of Belizean Creole" (1974:14), she discusses a number of factors favoring the development of Kriol:

- Creole [sic] is as strong as ever in all...functions of the community.
- Vital cultural activities...are still carried on in Creole.
- A number of Belizean writers have started to use Creole as a literary language.

- First steps have been taken in the educational field to give Belizean Creole its proper place in the school curriculum.
- Belizean Creole has gained scientific recognition by local and foreign linguists.

These factors are still true at the current time.

During the early days of this BK study it was reported that there is regional variation at the basilectal end of the continuum throughout the Belize Kriol-speaking community. The regions people would refer to as being different included a city versus rural distinction and variation between northern rural and southern rural areas. There are also social differences between the speech varieties of the youth and the elderly, and there can be variation based on the speaker's level of education and socioeconomic status. These variations are largely found in lexical choices and phonological features.

Belize Kriol is spoken in the presence and influence of English. The schools attempt to teach some variety of English to the children. Radio and television brings English into most homes. Churches, government offices, and businesses function most of the time in some variety of English. English has much prestige and in order to present an image of being educated and sophisticated, people will, at times, attempt to use as many English features in their speech as possible. Several linguists have studied the social implications of the variation in the speech of different Belizean Creoles; see for example Young 1973, Escure 1981, 1991, and Migge 1994.

The close social and linguistic relationship between BK and English means that Creoles have strong feelings of affinity towards English and an expectation that written BK will have similarities to written English, which will be described fully in chapter 6. However, the linguistic differences also mean that written Kriol cannot be exactly like written English. Furthermore, the many peculiarities of English writing make it undesirable to make an orthography for BK that has too much similarity to written English.

Difficulties arise when one tries to make any statement of comparison between Kriol and English since there are many varieties of English. The most appropriate comparison might be with British English, and particularly 16th and 17th century regional British English. Historically, it was British and Scottish sailors and settlers who had the most linguistic influence, and these sailors spoke different regional varieties of English. It seems that the speech of northern England and Scotland had more lasting influence. (See Holm

1978.) Today there is much more influence from American English. But again this influence comes in different varieties: the Midwestern media standard of television, and the varieties encountered in New York, New Orleans, Houston, Chicago, and Los Angeles by those Creoles who go to the States for some time and then return. There may even be some influence today from other West Indian varieties of English. People seem to be fairly aware of accents from different parts of the Caribbean and there is some contact with people from other parts of the Caribbean.

Dealing with this same problem Hellinger (1973) presented the following model adapted to show the different English to Kriol variations found in Belize:

RP ↔ l-n varieties ↔ ?ED ↔ ?WIE ↔ l-n varieties ↔ ?BE
 ↔ l-n varieties ↔ BK

This model states that: between a British English standardized variety (RP for Received Pronunciation) and the basilectal variety of Belize Kriol (BK) there are numerous undefined variations (l-n varieties) found in non-standard British regional variations (ED for English dialects), an undefined West Indian variety of English (WIE) along with its variations around the Caribbean, an undefined Belizean English (BE) acrolectal variety, and other undefined mesolectal variations (l-n varieties). So it is very difficult to say where English ends and where Kriol begins, but when we compare the ends of this continuum we find there are significant differences.

The criteria given by Young (1973) and Escure (1981) were used as a method for deciding whether a given word or phrase was to be considered basilectal Kriol or not. Young (1973:164), in his research of stylistic shifts between different lects, chose three phonological features as indicative of the differences between the acrolect and basilect:

- interdental fricatives in English are matched to alveolar stops in BK (For example: English /ð/ becomes /d/ in BK.)
- word-final consonant clusters are reduced to a single consonant (For example: the English word final /nd/ in *hand* becomes /n/ *han* in BK.)
- nasalized word endings, not found in acrolectal speech, are indicative of basilectal speech (For example: the BK nasal sound in /pã/ *upon* is not found phonemically at the end of English words.)

In the results of his research, Young (1973:172) said,

Almost all informants showed a 100% substitution of stops for interdental fricatives, and of reduced word-final C-clusters, when they used Creole. On the other hand, nasalization was never 100% over long stretches. However, fricative-substitution and C-cluster reduction are seen to be features of even the most formal speech generally, sometimes over 50%, then increasing in less formal situations, to a figure of about 100% of all speakers in Creole usage. Nasalization was much more clearly “reversed” for the less formal and, especially for Creole speech modes.

Escure (1981:32) presented eighteen features by which Kriol differs from English: nine phonological differences and nine grammatical differences. She used these criteria to determine when speech could be considered basilectal.

Sound Differences

1. reduction of English word final consonant clusters;
such as /_st#/ > /_#s/
2. rounding of the English mid-central vowel, /ʌ/ > /ə/
3. unrounding of the English low back vowel, /ɔ/ > /ɑ:/
4. reduction of the English low central to mid-back diphthong
/ao/ preceding /n/ > /oŋ/
5. English vowels that lose stress gain length in Kriol,
such as /'watɪ/ > /wɑ:'tɑ/
6. reduction of syllable nucleus /ɪ/ > /ə/
7. reduction of /ð/ > /d/
8. reduction of /θ/ > /t/
9. lowering of the diphthong /oɪ/ > /ɑɪ/

Grammatical Differences

1. non-gender marking of 3rd person singular pronoun he, she, it > /i/
2. non-marking of possessive with <-s>
Tom's horse > Tam haas
3. non-redundant marking of past tense
They swam there > dehn bayd deh
4. absence of auxiliary do in negative sentences
I do not sing > Ah noh sing
5. absence of be verb before stative verbs
I am sick > Ah sik

6. non-marking of plural with –s
the girls > di gyal dehn
7. relationship between the forms for locative /de/ and continuative /di/
it is there > i deh deh
he is walking > i di waak
8. past tense marker /mi/ preceding verb
we called them > wi mi kaal dehn
9. possessive marker /fi/ preceding noun
her house > fi shee hous

5.5 Phonological description and variation

Data used in this analysis have been gleaned from information collected through eight years of language study in Belize from 1993 to 2001. About a dozen Kriol speakers gave significant help, and many other individuals have provided additional assistance. Some data come from transcribed discussions; other data consist of individual phrases or words. Most of the transcriptions were phonemic, rather than phonetic, from a very early stage. Much of the data have been collected on cassette tape. For phonetic and suprasegmental phonological studies one short story was exhaustively analyzed using the SIL CECIL and Speech Analyzer³³ computer programs; the story was transcribed phonetically, stress and intonation were analyzed, and each vowel was measured. Approximately 1400 words were processed by a phonology-sorting computer program. This program gives output files of individual sounds arranged by the position in words, syllable shapes, and occurrences of two sounds frequently made together in words. This helped to organize the data for analysis. A more thorough description of the phonology of Belize Kriol can be found in Decker (2005); portions relevant to orthography design are presented here.

5.5.1 Vowels

The description of Belize Kriol vowels presented here is somewhat simplistic. The reality is that the vowels of BK are very complex. There is much variability in the vowels of any person, and thus it is difficult to describe a uniform system for the language. However, there is a uniform

³³ The latest versions of these programs are available on the Internet at: <http://www.sil.org>.

system understood within the minds of the speakers of the language; if it were not so, Creoles could not communicate with one another. In this section the pattern of vowels will be described. This analysis of BK vowels describes a ten-vowel pattern. (See Table 13 below.) In addition, there are two diphthongs and four nasal vowels.³⁴

Phonetically, there are at least sixteen vowels in BK; however, four of them only occur in a specific syllable position. For each of the high and mid cardinal vowel positions there are front and back long³⁵ vowels /i:/, /e:/, /u:/, /o:/ and short /i/, /e/, /u/, /o/ vowels. There are two low central vowels, /a/ and /ɑ/. (See Table 13 below.) In closed syllables, the short vowels have lax allophones [ɪ], [ɛ], [ʊ], [ə].³⁶ This can be expressed as the following informal rule:

$$V[-\text{length}] \rightarrow [-\text{tense}] / _ C \bullet [ɪ, \epsilon, \upsilon, \text{ə}] \\ [+tense] / _ \bullet [i, e, u, o]$$

The rule is read as follows: a vowel (V) that does not have length becomes less tense when followed by a consonant (C) in the same syllable. That is /i, e, u, o/ become [ɪ, ɛ, ʊ, ə] respectively, but remain tense in an open syllable (___•),³⁷ that is [i, e, u, o]. This rule explains that the syllable shape accounts for four of the variants. Since the lax vowels [ɪ, ɛ, ʊ, ə] are allophones of the short tense vowels [i, e, u, o] they can be represented the same way phonemically. There are also two diphthongs: /ai/ and /ou/. There appears to be phonemic nasalization on five of the vowels /ĩ, ẽ, õ, ã, õ:/ but only for a few words. (See §5.5.1.2 below.)

VOWELS	Front	Central	Back
High long	i:		u:
short	i		u
Mid long	e:		o:
short	e		o
Low long		ɑ:	
short		ɑ	
Diphthongs	ai		ou

Table 13: Belize Kriol Vowels

³⁴ The analysis of vowel nasalization is described in §5.5.1.2.

³⁵ The analysis of vowel length is described in §5.5.1.1.

³⁶ Phonetically, [ə] is not only lax, but also the lips are unrounded.

³⁷ The (•) represents a syllable break or end of the word.

Occasionally one will hear the occurrence of other diphthongs. For example, sometimes /e:/ and /o:/ are replaced by diphthongs: [ɪe] for /e:/, as in [sɪɛkə] *due to*, and [uo] for /o:/, as in [buot] *boat*. These diphthongs appear to be a more archaic form of the long vowels. They are phonemic in other Western Caribbean Creole varieties, such as Jamaica, Bluefields, Nicaragua, and San Andrés, Colombia. In other single syllable words, words that in English end with [ɪ], such as *dear, deer, dare, bear, beer*, there are numerous variations in the vowel sequence in BK: [ɛɪ], [eə], [ɪɪ], [iə]. Phonemically, these were analyzed as a sequence of /eɪ/, effectively regarding the alternative realizations as free variation.

5.5.1.1 Vowel length

The analysis of the vowels of Belize Kriol, as presented in K. Decker (2005), considers there to be a significant contrast of vowels as measured in the length of production. There is a clear contrast between short and long vowels in open syllables, e.g. /si/ *see* versus /si:/ *sea*. To arrive at this analysis the vowels in a short story were measured using the Speech Analyzer³⁸ computer program. This program is able to analyze many features of each phoneme in great detail. Concerning the vowels, there are some very distinct qualities of long and short vowels. Long front vowels [i:] and [e:] were measured at an average of .1 to .11 seconds long. Long back vowels [u:] and [o:] tend to be slightly shorter. Short vowels were measured at an average of .04 to .05 seconds long. Nasalized short vowels tend to measure almost as long as a long vowel, .09 to .1 seconds in length. Glides tend to last a little longer than long vowels, lasting about .1 to .12 seconds. The general variation in the vowel length for each specific phoneme from sentence to sentence deviates about plus or minus .02 seconds of the mean. This variation occurs due to higher-level phonological features.

The various higher-level phonological features (e.g. stress and breath segments) cause variation in the length of time the vowels are held. In these special environments long vowels are held longer than short vowels. Vowels in syllables receiving sentence level stress tend to be held longer. Vowels that constitute a whole word (e.g. /i/ *he, she, it*) tend to be held longer. Vowels in a word preceding a pause tend to be held longer, whereas following a pause they may be longer or shorter depending on the presence

³⁸ Speech Analyzer is a free program downloadable from:
http://www.sil.org/computing/catalog/show_software.asp?id=57

of higher-level stress. Vowels in unstressed syllables, or in the middle of a long breath segment, tend to be shorter. In closed syllables, a tense and a lax vowel may be as long as each other depending on higher level phonological features. However, tense vowels appear to be perceived as longer since language helpers could easily and consistently differentiate the vowels. If there is one or more of these higher-level features affecting a specific vowel, the actual length of the vowel may vary plus or minus .02 seconds to the standard length of time of the vowel.

5.5.1.2 Vowel nasalization

Nasalization is a relatively minor phonological feature in Belize Kriol. It often occurs as a simple spreading feature from nasal consonants to preceding vowels, and then the nasal consonant may be dropped or less pronounced. For example, /tonti/ *dizzy*, may be pronounced as [tõti], which shows nasalization of the vowel in a word medial position. Nasalization of a vowel before a nasal consonant is predictable and, therefore, does not need to be marked in the orthography.

For a small set of words nasalization is phonemic. For five vowels nasalization creates a meaningful contrast: /ĩ, ẽ, õ, ã, ã:/ . In Table 14 below pairs of words are presented that show contrast on the basis of nasalization.

/hĩ/ <i>he, his</i>	/sẽ/ <i>same</i>	/sõ/ <i>some</i>	/wã/ <i>shall</i>	/wã:/ <i>want</i>
/i/ <i>he, she, it</i>	/se/ <i>say</i>	/so/ <i>thus</i>	/wan/ <i>one</i>	/wã:n/ <i>warn</i>

Table 14: Contrast between nasalized and non-nasalized words

5.5.2 Consonants

Belize Kriol has a basic selection of nasals, stops, fricatives, affricates, and approximants. See Table 15 below. These consonants tend to occur in the same distribution as the related consonants in English.

The BK nasals are very similar to English nasals, with only slight variation. As Escure (1981) pointed out, in English the combination of /ao/ with a following /n/ becomes /oŋ/ in BK, such as /toŋ/ *town* and /moŋtɪn/ *mountain*. This feature is quite consistent amongst all speakers. Most stops and fricatives tend to be well articulated. However, there can be some variation, which will be discussed in the next section.

	Labial	Labio-dental	Alveolar	Post alveolar	Velar	Glottal
Nasals	m		n		ŋ	
Stops	p b		t d		k g	
Fricatives	f v		s z	ʃ ʒ	h	
Affricates			tʃ dʒ			
Approximates	w		ɹ l	j		

Table 15: Belize Kriol consonants

5.5.2.1 Pronunciation variation

In preparation for orthography design the linguist needs to investigate all phonetic variation to identify all possible sounds that may need to be represented in an orthography. Some stops and affricates have variation in fast speech: /b/ ~ [β], /k/ ~ [x], /g/ ~ [ɣ], /z/ ~ [s]. This variation does not indicate regional or social distinction for BK. This kind of variation should not affect orthography design for BK, and in fact no one ever suggested writing any of these variations.

	[m]		[ŋ]		[l]	
[p]	[hapm]	<i>happen</i>	[hapŋ]	<i>happen</i>	[ap̩l]	<i>apple</i>
[b]	[i:bm]	<i>even</i>	[i:bŋ]	<i>even</i>	[baɪb̩l]	<i>bible</i>
[t]			[sɪtŋ]	<i>certain</i>	[tɪt̩l]	<i>turtle</i>
[d]			[gja:dŋ]	<i>garden</i>	[ɪd̩l]	<i>riddle</i>
[k]					[tɪk̩l]	<i>turtle</i>
[g]					[ɪg̩l]	<i>riddle</i>
[f]	[ɑ:fm]	<i>often</i>	[ɑ:fŋ]	<i>often</i>	[sk̩ɑ:fl]	<i>scaffold</i>
[v]	[i:vm]	<i>even</i>	[i:vŋ]	<i>even</i>	[i:v̩l]	<i>evil</i>

Table 16: Syllabic nasals and lateral approximates

The BK syllabic consonants /m̩/ and /ŋ̩/, as well as the syllabic lateral [l̩], may only occur at the end of words following stops, or labial fricatives. See Table 16 above. Some of these words with syllabic consonants have alternate pronunciations, i.e. [hapm̩] or [hapŋ̩] *happen*. There will need to be decisions as to which forms to standardize. Furthermore, in English these syllabic consonants are usually accompanied by an <e> in the orthography,

e.g. <apple> and <even>. This difference will need to be considered in orthography design.

There is variation in BK consonants that is identified as regional. The most prominent feature is the variation between urban /v/ and rural /b/, as in /iiva/ ~ /iiba/ river. Urban Kriol speech has both /b/ and /v/ in distribution similar to English, but /v/ is much less common in rural, less educated, basilectal speech. The voiced postalveolar fricative /ʒ/ seems to be a new phone that is entering urban speech in a few isolated environments. For example, rural speech uses /ɟ/ in *measure* /meɟa/ and *treasure* /tʃreɟa/. Many urban, educated speakers of BK, some of whom may not even control basilectal BK, would use /ʒ/ in these words. This sound only occurs in the middle of words. While there are a number of words in the Kriol dictionary (Crosbie 2007) with /ʒ/, they may not be words that are used by many rural, less educated, basilectal speakers. However, a decision will need to be made as to which form to standardize or whether to represent both forms in the orthography.

The liquid approximate /ɹ/ is usually found in the syllable onset or nucleus, but only rarely in the coda. When the /ɹ/ is in the syllable nucleus there are alternate pronunciations. For example, /dɹt/ *dirt*, /bɹd/ *bird*, and /wɹk/ *work* are also sometimes heard as /dot/, /bod/, and /wok/. These variations may be the result of regional or social variation. In orthography design it may be important to make a decision as to whether the /ɹ/ is analyzed as consonant or as a semi-vowel.

There are many words in BK that have alternate pronunciations. Sometimes phones are added or subtracted, as compared to the equivalent English words, or there are phones that are replaced by others. For example, one such feature is the addition of /h/ at the beginning of a word: /haliɣeta/ *alligator*, /hamadili/ *armadillo*, /hamanz/ *almond*, /hambɹelo/ *umbrella*, and /hɑ:ɹi:nɟ/ *orange*. These words are sometimes heard without the /h/, but dropping the /h/ may be a mark of shift away from the basilect. When the orthography is designed there will need to be decisions as to which pronunciation is represented. When a phoneme or syllable is dropped from the English word to produce the Kriol pronunciation, it is usually at the beginning of a word. However, in the decreolized speech of Belize City the first vowel or syllable is often heard, making the word pronounced more similar to English. In the following example English and BK words are compared to show the changes:

	English	BK
<i>iguana</i>	/ʔɪgwana/	/gwana/
<i>about</i>	/ʔəbaʊt/	/bʊt/
<i>across</i>	/ʔəkɪəs/	/kɪəs/
<i>amongst</i>	/ʔəmʌŋst/	/mõŋs/
<i>against</i>	/ʔəɡenst/	/ɡens/
<i>around</i>	/ʔʌɹaʊnd/	/rõŋ/
<i>upon</i>	/ʔʌpən/	/pã/
<i>except</i>	/ʔəksept/	/sep/ or /sepɱ/
<i>remember</i>	/ɹimembə/	/membə/
<i>depend</i>	/dipend/	/pen/

There are also words in BK for which metathesis appears to have happened, for example: /kɹɔdɹ/ *curdle*, /kɹɑ:ɹ/ *crawl*, /tʃʌnɪlz/ *challenge*, /lɑɡɹahed/ *loggerhead turtle*, /sɑtʃɪz/ *sausage*, and /hoks/ *husk*. For these words, a pronunciation that is closer to English is not considered real Kriol. More on these lexical variations will be discussed in §5.8 below.

Other kinds of variation identified included the substitution, metathesis, dropping, or addition of individual phonemes. For example, there is variation between /k/ ~ /t/ in *turtle* as /tɹɪkɹ/ or /tɹɪtɹ/. However, when compared with another word, /bɹɪkɹ/ or /bɹɪtɹ/ *food*, it does not appear that this difference is regionally patterned. The same people in some locations produced both variations, i.e. one person would say not only /tɹɪkɹ/, but also /bɹɪtɹ/. These pronunciations were identified as more modern and more archaic. For example, /kɑsɑ:da/ *cassava* is considered archaic but is still used by some people, while /kɑsɑ:va/ is considered a more modern pronunciation. Previously in this section, the addition of an initial /h/, such as /hɑɹɪɡetɑ/ ~ /hɑɹɪɡetɑ/ *alligator* was described. These examples of variation did not represent a regional pattern of variation. There are other words that add /s/ to the beginning, such as /stʃɹu:t/ *truth* and /skɹʌʃ/ *crush*. There are also words with subtraction of /s/ with an initial /st/, /sp/, or /sk/ combination in the English word, for example, /tõmɪk/ *stomach*, /pɹɹɹ/ *spur/buttruss of a tree*, and /kɹɹ:p/ *scrape*. More examples can be seen in Table 17 below. Words in the first column tend to be pronounced more as in English. In most cases a sound has been dropped in the second column, but there are examples of epenthesis and internal sandhi also. The forms that are less similar to English are considered older pronunciations.

English	BK option 1	BK option 2
squeeze	/skwi:z/	/kwi:z/
stand up	/stan əp/	/tan əp/
story	/sto:i/	/to:i/
drowned	/ɔ̃:ɹɔ̃ŋdɪd/	/ɔ̃:ɹɔ̃ŋlɪd/
nutmeg	/nɑtmɛg/	/nɑtɪmɛg/
potato	/pətɛ:to/	/pɪtɛ:ta/

Table 17: Examples of pronunciation variation

5.5.2.2 Consonant clusters

The recognition of word shapes is one way that reading fluency increases. Therefore, we can expect that Creoles, who are literate in English, will come to the orthography design process with some expectation as to the word shapes of written Kriol words. There are numerous ways that consonant clusters have changed between English and BK. Therefore, through phonological analysis it is important to study the differences between English and Kriol consonant clusters. Young (1973) and Escure (1981), as mentioned in §5.4, identified several phonological features as diagnostic indicators of basilectal Belize Kriol. One such feature is the word final consonant cluster reduction. Belize Kriol does not tend to have word final /nd/, /pt/, /kt/, /st/, /sk/ consonant clusters as in English words. In the following examples notice that the BK word does not have the final consonant cluster as in the English gloss: /fɪɛn/ *friend*, /aksep/ *accept*, /ak/ *act*, /ɹɛs/ *rest*, and /mɑ:s/ *mask*.

Another diagnostic feature identified by Young (*ibid*) and Escure (*ibid*) is the absence of the interdental fricatives /ð/ and /θ/. (See §5.4.) Even though these phones are different sounds in English they are both represented by the <th> grapheme combination. These are replaced in BK with /t/ and /d/ respectively, as in /tɪk/ *thick* and /dɪs/ *this*.

Both English and Belize Kriol have labialization and palatalization when certain consonants occur before certain vowels. However, some of the specific consonants and vowels where these processes take place are different between English and BK. BK has two sets of consonant clusters in syllable onsets that do not occur in English. English and BK both have words in which stops, except for /p/, are followed by the labial approximate /w/ marking labialization, e.g. /twelv/ *twelve*, /dwa:f/ *dwarf*, /kwaʃ/ *coatimundi*. English uses the orthographic combination <qu> for the /kw/ sound. The

voiceless velar stop /k/ can be preceded by an unvoiced alveolar fricative /s/ and with labialization we get a consonant cluster of /skw/, e.g. /skwɪnɔ̃/ *crowd together*. Unlike English, BK also has consonant clusters that combine a stop, /b/ or /g/, followed by the labial approximate /w/ and followed by the diphthong /aɪ/, e.g. /bwaɪ/ *boy* and /gwam/ *going*.

The second set of consonant clusters is the result of palatalization. English has palatalization in many of the same words as BK, but it is not written. In BK the consonant clusters are identified by a consonant followed by the palatal approximate /j/. (See Table 18 below.) As with English, there is palatalization of some stops, labiodental fricatives, and nasals when preceding the long high back vowel /u:/. BK, and some non-standard English varieties, palatalizes the alveolar stops when proceeding the /u:/. Furthermore, when these stops are palatalized they become affricates: /t/ > /tʃ/ and /d/ > /dʒ/. BK also palatalizes some stops when followed by the low central vowel /a/ or /a:/, and the BK alveolar nasal /n/ can also be palatalized preceding a /u:/. These only occur in some regional varieties of British English.

Consonants	Vowels	
	/u:/	/a/ or /a:/
stops /p/, /b/, /k/, and /g/	/pju:p/ <i>pupil</i> /bju:tɪfʊl/ <i>beautiful</i> /kju:t/ <i>cute</i> /ɑgju:/ <i>argue</i>	
stops /p/, /k/, and /g/		/pjɑmpi/ <i>foolish</i> /kjɑtɪ/ <i>cattle</i> /gja:dŋ/ <i>garden</i>
stops /t/ and /d/	/tʃu:b/ <i>tube</i> /dʒu:ti/ <i>duty</i>	
labiodental fricatives /f/ and /v/	/fju:/ <i>few</i> /vju:/ <i>view</i>	
nasals /m/ and /n/	/mju:l/ <i>mule</i> /nju:z/ <i>news</i>	

Table 18: Palatalization of Belize Kriol consonants

There are a few other consonant clusters in BK that need to be identified as they may have some impact on orthography design. Previous to orthography design, it was uncertain as to how affricates would be represented. They can occur in syllable onsets as: /stʃʊpɪd/ *stupid*, /stʃiɪmpɪs/

shrimp, /tʃɪɹak/ *track*, and /dʒɪɹɔg/ *drug*. In the syllable coda, they can only be preceded by an unvoiced alveolar nasal /n/, e.g. /lɹntʃ/ *launch* and /skwɪndʒ/ *crowd together*. While the affricates /tʃ/ and /dʒ/ are unique phonemes, they are also allophones of /t/ and /d/ when occurring before /ɹ/, i.e. /t/ and /d/ are never pronounced as such before an /ɹ/. Therefore, we get [tʃɪɹɔŋk] *trunk* and [dʒɪɹɔŋk] *drunk*, but not *[tɪɹɔŋk] or *[dɪɹɔŋk].

All of the features discussed in this section may influence the standardization of an orthography. The way that these BK phonemes are represented in the orthography will result in words that may look significantly different from the equivalent English words.

5.6 Suprasegmental features

Tone is often an important element of the a languages phonology, therefore the linguist should investigate syllabic tone, word level tone and higher level suprasegmental features to see if there is something that needs to be indicated in the orthography.

Example 1

<u>English</u>	<u>Belize Kriol</u>	<u>Intonation</u>
	— —	
<i>Take their book.</i>	/tek dē buk/	high-low-high
	—— —	
<i>Take those books.</i>	/tek dē buk/	high-high-low

Example 2

<u>English</u>	<u>Belize Kriol</u>	<u>Intonation</u>
	— —	
<i>the man's horse</i>	/di man ha:s/	low-high-low
	—— —	
<i>the male horse</i>	/di man ha:s/	low-low-high

Belize Kriol uses intonation as a device for marking certain syntactic relationships for which English uses inflections. There may need to be some way to mark this in a text. The examples above show how intonation clarifies otherwise similar Belize Kriol sentences in which English would use different words or structures. In example 1, above, intonation is clarifying a possessive relationship versus a plural marking. In example 2

intonation is clarifying a possessive relationship versus an adjectival construction.

5.7 Morphological considerations

In many languages, when words are combined into sentences, or root words are combined with affixes, the sounds at the morpheme junctures effect changes. In normal fast speech, words run together and certain sounds are eliminated or altered. There are certain patterns that are typical to BK and certain patterns that are not permitted; and these patterns tend to be somewhat different from English. There are two common sandhi processes by which BK words are altered in normal speech.

The first sandhi process occurs when the final consonant of a word is transferred to the beginning syllable of the next word, if that second word begins with a vowel, and if the vowel is stressed. For example, the phrase *look out* tends to be pronounced as /lu: 'kout/, rather than */lu:k 'out/. Some words appear to have resulted from this sandhi process, such as /a'ta:l/ *at all*. This word may have originally formed by resyllabification, but today it is considered one word in BK.

Another sandhi process involves the sounds of words assimilating as they are combined so that one becomes more similar to the other. In the following example a word-final nasalized vowel precedes a bilabial stop in the next word causing the insertion of a nasal consonant, with the same point of articulation as the following stop, to become more similar with the position of the bilabial stop.

[wã] + [buk] = [wãmbuk] *a book*
but not: [wã] + [fiʃ] = *[wãmfɪʃ] *a fish*

The speaker does not perceive that [wã] is now [wãm]; this sandhi assimilation process only occurs in the specific environment of nasalization preceding a bilabial stop. The same process is involved in the next example. However, the two words do not blend together in the same way because the nasal is voiced and the bilabial stop is voiceless, so there is a slight pause between the two words.

[dẽ] + [put it] = [dẽm pu tit] *they put it*

In the following example, again, the same process is occurring. However, since the following consonant is a nasal it is only lengthened and

becomes both the coda for the preceding syllable and the onset to the following syllable.

[dē] + [məni] = [dēməni] *their money*

Usually the speakers of the language are unaware of these changes and the changes are not considered to be permanent features of the word. Therefore, we generally do not have different ways of spelling the same words in different sentences. Early writing samples present examples of authors trying to combine words to make the writing more like the spoken language. However, currently BK writers are avoiding this practice.

5.8 Lexical variation

We cannot say how many words or senses of words there are in BK that differ from English. The *Kriol-English Dikshineri* (Crosbie 2007), which is only a beginning exploration into the lexicography of BK, lists about 5000 words. In the collection of words for the dictionary criteria had to be identified to decide when a word qualified as Kriol and not English. Some unfamiliar words were found to be archaic English or to have come from a regional variety of English. As with other languages, BK has borrowed words from many languages over the years. There are many plant and animal nouns that come from Miskito in Nicaragua. More recently Spanish words for many food items have been coming into BK. Words from various African languages, Garifuna, and even French have been identified. The relevance of studying the lexicography is to understand the words that Kriol speakers perceive as authentically Kriol. It may also be that a word is borrowed from a language with a different phonology, which may present a unique problem to fit into the standardized writing patterns.

As described in §5.2.1, there was a general belief that Kriol could not be written because there was too much lexical variation throughout the country. Variation between high frequency lexical items can be a problem to language standardization. When Islander Creole, on the islands of San Andrés and Providencia, Colombia, was studied it was found that there was a great amount of linguistic similarity with Belize Kriol (Decker & Keener 2001a). However, the most significant difference is that the Tense-Mood-Aspect (TMA) markers are different. For example, the anterior tense marker for BK is /mi/ and /wě/ for Islander. The future mood marker for BK is /wǎ/ and /wi/ in Islander. It might be difficult to try to create one orthography for

these two varieties. The similarity between the BK future mood marker and the Islander anterior tense marker could create confusion for understanding the intended tense and mood. It would be difficult to create one anterior tense marker that both peoples would be satisfied with due to the difference between the two forms.

Lexical variation can become a problem to orthography development when common words used in one place are not understood in another place. For example, Urdu, spoken in Pakistan, and Hindi, spoken in India, are very similar languages. However, Urdu often tends to choose certain loan words from Arabic, that Hindi derives from Sanskrit. Even if Urdu and Hindi were written with the same script, the communities would desire different sets of literature due to different lexical choices. Due to these kinds of differences publishers sometimes produce two different versions of books for the different countries. Since the populations of the two countries are so large, this does not create a problem for orthography development, it is simply a publishing concern. However, in a context with much smaller populations, such as Belize and San Andrés, there may not be the option of publishing different versions. Then the lexical variation becomes an orthography problem because a writer may include words that are not understood by other speakers of the same language. It is true that an academic or writer of a specific genre of literature may use words not known in the general public, but this writer's audience is limited to initiates in that specific field.

In the early days of the project people reported that there was lexical variation around the country. Usually linguists collect wordlists to identify lexical similarity, focusing on commonly used words. A variation of such a list was used to create a wordlist designed to find as much variation as possible. Examples of supposed variation were collected from people around the country and then tested on people. Two to four people were interviewed in each of ten different towns throughout the country. These towns represented all the possible regions of the country. In the end no significant variation was identified; no variation that would create a problem for standardizing an orthography. There was no significant lexical variation in high frequency function or common words. There were a few words that varied dependant on geographic regions. Between the northern and southern parts of the country there were a few obscure plants or animals with different names. Even if someone tended to use one of these regional words, they generally knew the other word. Following are a few examples:

	<u>Northern</u>	<u>Southern</u>
<i>dragonfly</i>	/ni:dʒke:s/	/ziŋgəŋga/
<i>a freshwater trout</i>	/mali moŋtin tuba/	/maʃaka/
<i>heliconia leaf</i>	/waha li:f/	/wail pla:ntin/

There were a few words that varied patterned as an urban - rural difference. For example, the *turkey* is called either a /tiki/ by urban speakers or /gabla/ by rural speakers.

CREOLE ORTHOGRAPHY DESIGN AND STANDARDIZATION

THIS chapter presents the material provided to the participants of the orthography design workshop and the individual symbol-to-sound-correspondence choices they made. The results of initial orthography testing are presented in this chapter since the findings were presented to the participants of the workshop. The chapter concludes with a description of orthography use following the workshop and revisions that were made eight years later. These activities were facilitated by this author and his wife, who worked in Belize from 1993 through 2000, documented more fully in §5.3.

6.1 Application of orthography design principles

If orthography design was simply a matter of assigning symbols to the sounds, creating a scientifically based, one-symbol to one-sound system, orthography development would be a relatively simple process. One may need to take into account some amount of language variation, but a scientific solution should be available. However, as Berry (1970) claims "an alphabet is successful in so far and only in so far as it is scientifically and socially acceptable." Smalley's (1964) first criteria for orthography development addresses the social element, maximum motivation – what do the people want.

It is important to remember the discussion in chapter 4, and §4.2 in particular, that it is not important, or preferable, to create a perfect orthography from the start. French and Basque orthographies went through numerous changes in their development. It was also shown with the example of Latin how efforts to make an orthography more "correct" may have negative consequences. Therefore, it seems that at the beginning of orthography development efforts it may be more effective to be open to more variation in the system. Then if the people feel a need for more uniformity, they can adjust the orthography in that direction. Ultimately, the most

important factor is that the speakers of the language arrive at something they like and will use. There were many choices available to the Belizeans as they began to design the orthography for Kriol. The first choice was to decide which writing system they would use. There was actually no discussion on this point. Being that English is the national language of Belize, and Kriol is associated in many ways with English, there was never a question that a Latin-based alphabetic system would be chosen. Hellinger (1986:61) describes that in her testing it was obvious that English was the “frame of orthographic reference.” Complete ties to English should not be broken. Belizeans were not willing to consider alternative writing systems upon which to base creative solutions. When alternative spellings were tested that had any appearance of Spanish, they were rejected.

In §2.4 principles of orthography design were discussed and the comment was made that several of these principles are in tension with one another. The preeminent tension in the development of the BK orthography was between maximum representation of the speech with maximum motivation. Resolving these tensions is the core of the difficulty in creating an orthography. It is important that these principles are considered by the speakers of the language. The most practical way forward is for them to judge for themselves as to the most important principles. This is best done by looking at real examples and options.

After a choice of the writing system to use, the next consideration is the choice of a model that will guide the overall creation of the orthographic system. As described in §2.4.2, Smalley (1964) recommended that the orthographic system have maximum representation of the speech. This maximal representation is usually accomplished by assigning one symbol for each phoneme. This is often accomplished by using the International Phonetic Alphabet (IPA) to guide the assignment of symbols to phonemes. This would create an orthography that looked independent of English, thus providing motivation for some, but a disincentive for others. The result would agree with Winer’s (1990:253) principle of maximal appearance of linguistic independence. However, this desire for the appearance of linguistic independence may eventually conflict with the acceptability of the orthography for the majority of Creoles. When the linguistic independence became established in the minds of Belizeans, would an orthography that is radically different from English continue to be the best system for the other needs of the language? In fact, it was possible even at that time, that an

orthography that appeared greatly different from English, would not be acceptable to most Belizeans.

In Belize, there is a high degree of awareness of English. The majority of the people, who were not particularly interested in Kriol language development, were more inclined towards maintaining as much similarity with English as possible. Many English word forms, or spelling norms, were already considered as acceptable forms even for those words in Kriol.

One feature of BK is the phonological similarity of many words. For example, BK /fe:t/ is said for both *faith* and *fate*. Although these words are pronounced the same it might be important to have different ways to spell them to reduce ambiguity, depending on whether it reduces readability or not. There would also be conflict with consistency when considering words which have spellings established by historical precedence, i.e. the small, yellow fruit called /krabu:/ has an established spelling of <oo> for the /u:/ sound. The consistency offered by a phonemic system may also be in conflict with the readability of a text for the experienced reader. As discussed in §2.3 and §2.4.3 above, pronunciation-based spellings are helpful for the beginning reader, but may not help the fluent reader.

6.2 Five orthography designs

In Winer's (1990) proposal of orthographic standardization for Trinidad and Tobago Creole English, she presents three models: the Phonemic Model, the Historical-Etymological Model, and the Modified English Model. At the 1994 Belize Orthography Workshop a fourth model was proposed that was called the Rule-based Phonemic Model. A fifth model will be proposed here called the Non-standardized Etymological and Phonemic Model.

6.2.1 The IPA-oriented Phonemic Model

The first model is what Winer called the Phonemic Model. This model is similar to systems proposed by Devonish (1986) and Cassidy (1978) for other Caribbean Creole English varieties. As described in §2.3 above, this is referred to as an IPA-oriented Phonemic Model because it chooses its symbols from the IPA. This is to distinguish it from a model that will later be refer to as the English-oriented Phonemic Model.

The Phonemic Model adapts a basic linguistic phonetic system for the language, thus creating a one-symbol to one-sound system. Symbols are chosen from the IPA. For example, the English word *enough*, pronounced as

/nof/ in Kriol would be spelled <nof>. As presented in Table 8 in chapter 2, this type of system may enhance initial literacy, and appears quite different from the orthography of a lexical source language. However, an IPA-oriented Phonemic Model has the disadvantage that it must be standardized for one specific dialectal pronunciation and may lose historical and morphological relationships. Possibly the most important point cited by Winer is that a Phonemic Model would have low social acceptability. Hellinger (1974:26) proposes that social unacceptability may be the reason why Cassidy's orthography for Jamaican Creole has taken so long to be accepted. She relates that,

In the introduction to Sibley (1968:xii) [Quashie's reflections in Jamaican Creole] McLaughlin explains that Cassidy's phonemic system, which 'may subsequently become standard orthography for the Creole' (Sibley 1968:xii), has been altered in the direction of the English model 'for the sake of intelligibility.'

Hellinger (1986:68) says, "It is not unprecedented that a notation originally devised for descriptive purposes is eventually adopted for wider communication" (such as Cassidy and LePage (1967) for Jamaica). Todd (1982:302) reports that the phonemic orthography used in the Krio-English Dictionary (Fyle & Jones, 1980) and also adopted for Nigerian Pidgin will most likely become the basis of the writing systems of all English-based West African Pidgins and Creoles. Similarly, a writing system proposed for BK or Jamaican Creole should also be capable of serving as the basis for all English-related Creoles in the Caribbean."

6.2.2 The Historical-Etymological Model

Winer next discusses the Historical-Etymological Model. This is a combination of Istrin's (1953:364) (see §2.3) phonetic and historic-traditional model. In this model, words are spelled as they have been spelled in the historical form in the language from which the words have come. A phonemic representation, based on the IPA, is used for new words, words with no historical precedence, and words with unknown etymologies. For example the Kriol word /kɾa:bu/ would be spelled as <kraabu>, even though English never uses <aa> together and rarely ends a word with <u>. A word like *enough* in Kriol would not change its spelling even though it is pronounced differently from English. While being highly acceptable and accessible to those favoring the lexical source language, it preserves all the

orthographic inconsistencies of the historic word forms and adds new forms in the phonemic representations. It also maintains the appearance that the Creole is subordinate to the lexical source language.

A method similar to the Historical-Etymological Model was proposed for Belize Kriol by Richard Hadel (1974). BK texts written in this model were tested with Belizean Creoles, and as Hadel predicts, people can read it quite easily, but the informants nearly all said, "But it's not Kriol!" Having some appearance of difference from the lexical source language is important. Hellinger (1986:67) claims that in a Creole continuum with decreolization, an orthography that looks too much like English will strengthen the impression that Kriol is inferior to English, it will eradicate much of the language's phonemic authenticity, it will stifle linguistic creativity, and ultimately it would accelerate decreolization. Obviously, a balance needs to be found between the appearance of difference while maintaining an appearance of similarity.

6.2.3 The Modified English Model

The third model described by Winer (1990) is called the Modified English Model. This model is described as retaining the spelling for words shared by both the lexical source language and the Creole, so that only salient features would be changed. For example, English *through*, following BK pronunciation would be spelled <chrough>. In this example, only the first phoneme in BK pronunciation is different from English pronunciation. Words that have an established spelling and that are pronounced as they are in the lexicon would retain that spelling, and other words would receive a phonemic spelling. This model has the advantage of being more accessible to those already literate in English, but, as with the Etymological-Historical Model, it maintains all the inconsistencies of English spelling as well as adding new variations found in the phonemic spellings.

Winer (*ibid*) reports that this model is closest to what has been used in Trinidadian Creole literary works. This is true for Belize also. However, writers have usually been unsystematic in their spellings. In early BK texts that were sampled, the same words were often found to be spelled different ways in the same text, or even the same sentence. This will tend to discourage the reader and make the language look like an inferior system compared to the lexical source language.

6.2.4 The English-oriented Phonemic Model

The fourth model presented at the workshop was a compromise between the Modified English and IPA-oriented Phonemic Models, which was called a Rule-Based Phonemic Model. For transparency this model will be referred to as an English-oriented Model to differentiate it from the IPA-oriented Phonemic Model.

The key idea of the English-oriented Phonemic Model is to maintain certain, more common spelling conventions of English rather than selecting symbols from the IPA. This is done by choosing the most representative ways that sounds, specifically vowels, are symbolized in English. The original Rule-based Phonemic Model allowed for there to be more than one way to represent some sounds, but the choices were guided by rules. Consonants maintained the one symbol, or digraph, to one sound correspondence. The English-oriented Phonemic Model limits the symbolic representation of each sound to only one grapheme or digraph. This is a phonemic system because only the actual vocalized phonemes of the language are represented.

In the original Rule-based Model, two or three, different ways of spelling each vowel were chosen from the way those sounds are written most commonly in English. It was believed that designing the Kriol orthography with this relationship would help with transition between the two languages. It was reasoned that, since people have been able to master reading and writing in English with all its variation, surely to reduce the options to two, or three, choices for each of the long vowels would be a manageable system. Furthermore, more words would look similar to English to increase recognition and transfer. Simple rules were created to determine when to use each representation to guide the choice. That is why the model was called 'Rule-based'.

Cassidy (1993:136) says, "There is no learning advantage in having it [an orthography] reveal its etymological relationship to the European or other lexicon." Hellinger (1986) makes a similar argument for a phonemic alphabet. But these perspectives miss many possible benefits, such as later transfer of literacy skills and for acceptance by the current generation. Hellinger (1986:67) also says that use of an orthography that had any connection with English will create the concept that Kriol is inferior to English. This is not necessarily true, an association between the orthographies does not mean it has to be perceived in a negative light. Many

people, after getting phonemic alphabets, have asked for orthographies that were more associated with the national language. Again, we are searching for a balance between the similarity and difference of appearance in the eyes of the speakers of the language.

A major argument against leaving the one-sound to one-symbol dictum is that the system will be more difficult to learn. However, a phonemic system that associates unfamiliar symbols with the sounds of a language may prove difficult to learn also. Wiesemann (1989b:19) points out that most any orthographic system, even ones that are not very systematic, can be mastered, given enough time. "However, the easier the writing system is, that is, the closer it is to the *sound perception* of the native speaker, the more quickly it can be learned and by more people." (italics mine). It is the sound perception of the speakers with which we are trying to coordinate. Which symbols do the people associate with which sounds? In an IPA-oriented phonemic spelling system, the sound of /i/ would be represented by the letter <i>. This would be fine in a country with Spanish as the national language because the /i/ sound in Spanish is written with an <i>. In English, the /i/ sound can be written at least eleven ways. For example: *baby* <y>, *he* <e>, *sea* <ea>, *see* <ee>, *machine* <i> plus 'silent <e>',³⁹ *field* <ie>, *key* <ey>, *either* <ei>, *people* <eo>, *amoeba* <oe>, and in Belize *caye* <aye>. The letter <i> used for the /i/ sound is not a very common spelling and is combined with a word final, silent <e>. In English, the more commonly recognized symbols for the /i/ sound are <ee> and <ea>, or <y> in the word final position. So, if the long /i:/ sound is written with <ee> or <ea>, it should be recognizable to more people. The number of ways to spell the /i:/ sound is reduced from eleven to two.

6.2.5 The Non-standardized Etymological and Phonemic Model

To complete the list of possible variations, a fifth model is described here that covers the non-standardized ways that many Creoles have tried to write. This model is referred to as the non-standardized etymological and phonemic model. This is not really a model since it is not standardized. Writers create spellings for individual words as they write. The same word may be spelled differently even if used in the same sentence. The terms etymological and phonemic are used because the writers base their spellings on either the

³⁹ This <i> requires a 'silent <e>' at the end of the word to associate the <i> with the /i/ pronunciation.

English form, if the word is etymologically related to the Creole word, or based on a perceived phonemic form. As described for the Rule-based Model, people have folk phonetic alphabet,⁴⁰ associations between sounds and symbols based on patterns from a literary language they know.

The non-standardized etymological and phonemic model should never be recommend as a goal in orthography development, but it may be a useful step in the process of moving towards a better orthography. There are things that can be learned from studying texts in this model. To make use of such texts one would choose Creole words that do not come from English, words that rhyme, and have been written by several authors. By comparing these words we can help to identify patterns revealing the perceived folk phonetic alphabet. Furthermore, it may be possible to identify some words that have spellings that have become standardized.

6.3 Orthography testing

Before the orthography workshop was held in 1994 the first four models were tested to find out how people would respond to them. This section will describe the process for testing the orthography for Belize Kriol. This critical topic is given extra attention due to its absence in most discussions on orthography development.

6.3.1 Orthography test design

To test the different models, four short stories of similar length, topic, and difficulty were collected. The story names are: Early Days, Crooked Tree, Christmas Lights, and Meeting Pa. Each story was then written in each of the four models. This required that some arbitrary choices were made as the principles of the models were applied.

6.3.1.1 *Early Days* story in the Phonemic Model

In the Phonemic Model, all words are written as close as possible to a phonemically standardized system based on IPA symbols, without the introduction of new characters or diacritics, if possible. To prepare the

⁴⁰ The term ‘folk phonetic alphabet’ is used as representative of something that is not related to the International Phonetic Alphabet (IPA). The IPA is a standardized, internationally agreed upon alphabet; a folk phonetic alphabet only needs to make sense in the perception of the writer.

stories for testing a phonological analysis of the language first had to be completed to identify the phonemic sounds. Some of this analysis was presented in §5.5 above. Even though a phonemic one-sound to one-symbol systems may seem straightforward; some arbitrary choices were required. These arbitrary choices were only for the purpose of the testing and the intent was always that Belizeans would make the final choices as to the model and the symbols. Since the Cassidy (1978) system used double vowel symbols for long vowel sounds, this was selected for the symbol to sound relationships. However, Cassidy had not made a choice for marking nasalization of vowels. Introducing a new character or diacritic was not desirable, so <hn> following the nasalized vowel was chosen to mark nasalization, as in lines 6, 10, 12, and 15 below. The digraph <ch> was chosen for /tʃ/ in lines 2 and 15, and <sh> for /ʃ/ in lines 3, 4, 9, and 12. A single symbol <j> was chosen for /dʒ/ in line 13, and <ng> was chosen for /ŋ/ in lines 6, 11, 12, 13, and 14.

There is more to orthography development than simply choosing symbols to assign to represent sounds. One other part is deciding where word breaks occur. At the time of the testing there was still much that was not understood about word breaks, or in the case of BK, word combinations. For example, some combinations were known, such as Kriol /yu:stu/, in line 2, comes from a combination of English <used to>. Other examples include: /i:na/ in lines 5 and 15, /mike:s/ in line 7, /outa/ in line 8, and /ɑ:fa/ and /ha:fa/ in line 9. Other words that should have been combined include: /riva said/ in line 4, /bengk said/ in lines 6 and 13, and /lei dong/ in line 11. Another part of orthography development is making decisions about capitalization. For the purpose of the test the 1st person singular pronoun <A> was capitalized as in English, as in lines 1, 10, etc. But then the 3rd person pronoun <i> was not capitalized, as in line 16.

1 A mi baan da Naadan Laguun. Wen A get tu mi sensiz A neva
 I was born (on) the Northern Lagoon. When I got to my senses I never
 2 get fi noo mi pa. Mi pa yuustu go da Beliiz evri chri
 got to know my father. My father used to go to Belize every three
 3 mons. Wan dee mi an mi ma gaan fishin. Mi ma mi oonli
 months. One day I and my mother went fishing. My mother was very
 4 sik an wiik. Wen wi gaan da di riva said an wi mi di fish, wan
 sick and weak. When we went to the river bank and we were fishing, a
 5 big taapom tek di lain an haal ahn iina di waata, an i kudn
 big tarpon took the line and pulled her into the water, and she couldn't
 6 help iself. So, I si wan man di paas oova de pahndi neks bengk said. I
 help herself. So, she saw a man passing over on the other bank. She
 7 se, "Hei, misa man, hei! I se, "Help mi, no!" Di man mikees kom
 said, "Hey, mister, hey! She said, "Help me, please! The man hurried
 8 kraas an help mi ma outa di waata. Den di man mi tek di
 across and helped my mother out of the water. Then the man took the
 9 fish aafa di lain. I tek haafa di fish an I gaan. So wi gaan aan
 fish off of the line. He took half of the fish and he left. So we went on
 10 an du evriting di seem wee. Bot wan dee moo den aal, A si
 and did everything the same way. But one day things changed, I saw
 11 mi ma di lei dong iina i bed. Mi ma kyaahn wek op. A
 my mother laying down in her bed. My mother couldn't wake up. I
 12 se, "Ma, we du yu?" Ma gat i yai shet dong.
 said, "Mother, what is wrong with you?" Mom had her eyes shut tight.
 13 Wen A luk A si som jaankroo pahndi bengk said. A staat
 When I looked (outside) I saw some vultures on the riverside. I started
 14 tu krai. Den A mi tek wan kongk shel an A bloo it. A luk an si bout
 to cry. Then I took a conch shell and I blew it. I looked and saw about
 15 chri man kom iina wan doori. I se, "We di hapm tu yu?" A
 three men coming in a dugout. He said, "What is happening to you?" I
 16 se, "Mi ma kyaahn wek, saa." Wen i gaan iin i se mi ma ded!
 said, "My mother can't wake, sir." When he went in he said my mother
 was dead.

6.3.1.2 *Crooked Tree* story in the Historical-Etymological Model

In the Historical-Etymological model, only the words that are uniquely Kriol receive a unique spelling based on their phonemic pronunciation. All other words that are historically English receive an English spelling. The first difficulty arises in deciding which words are uniquely Kriol. Is the Kriol 1st person pronoun /mi/ in a subject position the same as an English 1st person object pronoun <me>, as in line 1? Is Kriol /hafu/ the same as English <have to>, as in lines 2, 8, and 11? Is Kriol /gwain/ the same as

English <going>, as in line 5? Is Kriol /i:na/ the same as English <in a>, as in line 5? These are the kind of decisions that a community would need to make if they decided to use this model. For testing purposes, these arbitrary choices were not as critical.

- 1 When I da mi little girl mostly about thirteen, me sister mi live da one
When I was a little girl, probably about thirteen, my sister lived in a
- 2 village name Crooked Tree. But by this time you hafu go through
village called Crooked Tree. But at that time you have to go through
- 3 the lagoon by boat. You go by Bolton Bridge and you take straight
The lagoon by boat. You go by Bolton Bridge and go straight
- 4 down, straight down the river, no stop. Well, sometime you take two
down the river, don't stop. Well, sometime you take two
- 5 or three days when going in a boat, sometime more, depends on the
or three days when you go by boat, sometimes more depending on the
- 6 weather. When the tide high, the boat go fast. When the tide
weather. When the tide (was) high the boat went faster. When the tide
- 7 low you simpa simpa. When you get to the place, now the bank, you
(was) low go slowly. When you get to the place, the bankside, you
- 8 hafu go through one little pikado. When you walk about two, three
have to go through a little trail. After you walk about two or three
- 9 miles on the road you see the little house.
miles on the road you see the little house.
- 10 I never like it because the weather like so, calm and sandfly tear you
I didn't like it because the weather was calm and the sandflies bit you
- 11 good. You hafu keep on you long pants. Well, I only spent one week
hard. You have to wear your long pants. Well, I only spent one week
- 12 but I like it because I live in the water like duck.
but I liked it, because I lived in the water like a duck.

6.3.1.3 *Christmas Lights* story in the English Modified Model

In the English Modified model, words which are pronounced essentially the same in English and Kriol are written with the English spelling. For words that are historically English, but have a different Kriol pronunciation, the part of the word that has a uniquely Kriol pronunciation receives a phonemic alteration to conform to the Kriol pronunciation, but the part of the word that is pronounced the same as English, receives the English spelling. For the creation of this test some arbitrary decisions were required to deal with two significant problems: deciding how similar the pronunciation in English and Kriol needs to be and merging two different systems, the English and phonemic systems. For example, English <want>, in line 1, is pronounced

/wɔ̃nt^h/ in English and /wā:n/ in Kriol. Is the difference in pronunciation enough to mark the length and nasalization in Kriol? In English orthography, certain letters take different sounds when aligned with other letters. For example, the <i> in English <find>, line 4 below, is pronounced as /aɪ/. However, in Kriol the final consonant cluster /nd/ is reduced to /fɑn/, but the <i> in <fin> should be pronounced as /fɪn/. Another example is <perfec> in line 14, pronounced /pɪfek/; the letter <c> in English needs a consonant after it for the hard /k/ sound. The incompatibility of the two systems makes this model particularly difficult to use.

1 Chuesday maanin, when we get op, me pikni dem say dat den wan di
 Tuesday morning, when I got up, my children said they wanted the
 2 Christmas tree fi go op. Afta den eat dinna an gone back da
 Christmas tree to be put up. After they ate their lunch and went back to
 3 school A tek me time an A put op di tree. Set it op di way it shoulde
 school I took my time and I put up the tree. (I) set it up the way it should
 4 go. When A look fi di decoration A fin out dat we no got
 go. When I looked for the decorations I found out that we didn't have
 5 none a di li ball den, li shiny ball den. So A decide, well, we hafu jos
 any of the balls, little shiney balls. So I decided, well, we'll have to just
 6 do berotin. An A staat to put on do bow den firs an A got bow all
 go without. And I started to hang the bows first and I had bows all
 7 ova di tree, lota li red bow. An den afta dat A put on di top pan
 over the tree, lots of little red bows. An then after that I placed the top on
 8 di tree. When A gone put on di light den, A notice dat one set a
 the tree. When I went to hang the lights, I noticed that one set of
 9 light den no di wok ataal, di one den weh blink, den no di wok
 lights weren't working at all, the ones that blink, they weren't working
 10 ataal. So A gone out da tong, an A pick op one set fra one shop. Bot
 at all. So I went out to town, and I picked up a set from a shop. Bot
 11 when we try it da di shop, di set di wok good. When A bring
 when we tried it at the shop, the set was working good. When I brought
 12 it home, one section a di light den no di wok none ataal. So A gone
 it home, one section of the lights didn't work at all. So I went
 13 back out da tong again, an A change dat an den gi mi one new
 back out to town again, and I exchanged them and they gave me a new
 14 set, an A bring it an A string op di two set den. An den wok perfec
 now.
 set, and I brought it (home) and I strung up the two sets. And they work
 perfect now.

6.3.1.4 Meeting Pa story in the English-oriented Phonemic Model

In the previous three models the choice of sound to symbol correspondence is guided by either the established spelling in English, or the established correspondences in the IPA. In the Rule-based Phonemic Model all words are written following a phonemic system that has to be developed based on established English-symbol correspondence rather than choosing from the IPA. The choice of consonants was mostly a straight forward correspondence of symbols with their most common phonemic value. An arbitrary choice was made to mark nasalized vowels by following the vowel symbol with <hn>, as in lines 1, 7, and 12. The choice of symbols for the vowels is more complex and will be describe in §6.3.2.

- 1 Wen A mi ate yaaz A staat tu werk frahn den. Di uman
When I was eight years (old), I started to work from then. The woman

- 2 weh raze mi yoostu mek jany kake an ting fi sel. Evry
Who raised me used to make johnny cakes and things to sell. Every

- 3 maanin A bade mi skin an put aan mi klooz. A no go da skool
morning I washed up and put on my clothes. I didn't go to school

- 4 soon. A go go sel den pipl rong da Albat Street de. Wen A
right away. I went to sell to people around Albert Street. When I was

- 5 don werk A geh dres an go da skool. Now A neva noa
done (with) work I got dressed and went to school. Now, I never knew

- 6 mi aje. A neva noo wen A baan. Wan maanin A heeya
my age. I didn't know when I was born. One morning I heard

- 7 dis ting ya hib dong. A say, "Mis Ani," A say, "sohnbody eena
something falling down. I said, "Miss Annie." I said, "somebody is in

- 8 yu yaad." Wen Y luk out Y say, "Da yu pa." A say,
your yard." When she looked out she said, "That's your father." I said,

- 9 "Fi mi pa?" Y say, "Yes, da yu pa dat." Wen Y
"My father?" She said, "Yes, that's your father." When he

- 10 kohn Y say, "Yu no dis da yu data?" "O
came (to the house) she said, "You know that this is your daughter?" Oh

- 11 yes, Y da mi data. Yu mi baan di tweny-et a Mach,
yes, she is my daughter. You were born the 28 of March,

- 12 nine-teen tweny foa." A say, "Wel, an A di tink aal di time Ai ola dan
1924." I said, "Well, I always thought I was older than

- 13 dat." An so A kohn fi noa mi aje.
that." And so I found out my age.

6.3.2 Sound-symbol choices for the English-oriented Phonemic Model

In this section the process will be described by which the sound-symbol correspondences were chosen for the testing phase. To prepare for the English-oriented Phonemic Model, a list of 1000 most common English words were selected. These words were transcribed based on a Midwestern American accent, because that was what was available. The words were arranged by the ways each phoneme is spelled and the environment or other factors that have led to the English spelling patterns were noted. It is a simple approach to English phonology. Bishop (1986) provided some help to gain an understanding of the patterns.

As discussed in §5.5.1, BK has five short vowels and five long vowels, and two diphthongs. The process of associating symbols to sounds was obvious for some of the vowels, and some did not follow the primary guidelines; the obvious choices will be discussed first, then the others. This will require a jump from discussing some short vowels, then some long vowels, and some diphthongs before returning and finishing the short vowels, then long vowels, and finally the diphthongs. The first guideline was to represent all short vowels with only one grapheme, one letter. The long vowels and diphthongs would be represented, in most cases by digraphs.

Tables 19 through 23 present the major correspondences between the English vowel sounds and the multiple ways they are represented in the English orthography. These charts were used to help identify the symbols to use for vowels.

- a) Table 19 shows that the English short high front vowel /ɪ/ is represented in English six ways <i, ui, u, a, ee, y>. The symbol <i> representing the /ɪ/ sound, occurred in 196 cases in 1000 words. In English, the lax vowels only occur in closed syllables. There is a significant difference between the number of first and second symbol choices for each of the lax vowels. The second most common symbol for the /ɪ/ sound is the digraph <ui> in three cases out of 1000. Therefore, anyone familiar with reading and writing in English is going to expect that an <i> in a closed syllable is going to be pronounced as [ɪ]. For the testing, the BK /ɪ/ was represented with <i>.
- b) As presented in Table 19 the English mid lax front vowel /ɛ/ is represented by <e> in a closed syllable in 172 cases out of 1000

words. /ɛ/ is represented by <ea>, the second most frequent representation, in only 18 cases. Therefore, it seems that anyone familiar with reading and writing in English is going to expect that an <e> in a closed syllable is going to be pronounced as [ɛ]. For the testing, the BK /e/ was represented with <e> .

Eng phoneme	Eng Ortho	environment	# out of 1000	phoneme	Eng Ortho	environment	# out of 1000
/ɪ/	<i>	(C)_C(C)•	196	/ɛ/	<e>	(C)_C(C)•	172
		it, tin, kill				elbow, next, blanket	
/ɪ/	<ui>	C_C(C)	3	/ɛ/	<ea>	C(C)_C	18
		build, biscuit				head, bread	
/ɪ/	<u>	C_C(C)	2	/ɛ/	<a>	(C)_ny#	2
		busy, business				any, many	
/ɪ/	<a>	_Ce#	2	/ɛ/	<ue>	C_CC	2
		damage				guest	
/ɪ/	<ee>	CC_C	1	/ɛ/	<ei>	C_C	1
		creek				foreign	
/ɪ/	<y>	C_C	1	/ɛ/	<ai>	C_C	1
		bicycle				again	
/ʊ/	<oo>	C_C	11	/ɛ/	<ie>	CC_CC	1
		foot				friend	
/ʊ/	<u>	C_C	5				
		full					
/ʊ/	<ou>	C_ld	3				
		would					
/ʊ/	<o>	C_CC	1				
		wolf					

Table 19: English lax vowel sound-symbol correspondences

Eng phoneme	Eng Ortho	environment	# out of 1000	phoneme	Eng Ortho	environment	# out of 1000
/i/	<y>	C_#	68	/eɪ/	<a>	'_•/#	52 ⁴¹
		baby				labor	
/i/	<e>	'_•	39	/eɪ/	<a>	__(C)Ce#	18
		me, behind				change, gate	
/i/	<e>	__Ce#	19	/eɪ/	<ay>	__#	19
		complete				play	
/i/	<ea>	(C)__(C)	34	/eɪ/	<ai>	__C#	18
		each, tea, read				bait	
/i/	<ee>	(C)__(C)	30	/eɪ/	<e>	__C#	3
		see, eel, between				leg	
/i/	<i>	__ng/k	22	/eɪ/	<ei>	__gh	2
		single, thinker				weight	
/i/	<i>	__ng/k#	3	/eɪ/	<ea>	__C#	1
		thing, drink				great	
/i/	<i>	__#	3	/o/	<o>	__•/#	23
		taxi				hotel, also	
/i/	<ie>		5	/o/	<o>	__CC	13
		believe, field, cookie				most	
/i/	<ey>	__#	5	/o/	<o>	__(C)e#	25
		honey				joke, toe	
/i/	<ei>	c_	3	/o/	<ow>	__#	20
		ceiling				grow	
/i/	<eo>		1	/o/	<oa>	__C#	14
		people				coat	
				/o/	<ou>	__gh#	1
						though	
				/o/	<ew>	__#	1
						sew	

Table 20: Long vowel and diphthong sound-symbol correspondences

⁴¹ Initially I combined these first two rules, but now I realize they are significantly different. I no longer have the original list of 1000 words, so for this presentation I

- c) The English high lax back vowel [ʊ] presents a problem in that the most frequent representation is a digraph <oo>. Since it was decided to represent all BK short vowels with a single grapheme, <oo> could not be used to represent BK /u/. The next most common sound-symbol correspondence is with <u>. It is obvious from Table 19 that this vowel is not used much in English, but a person familiar with English orthography would be familiar with the pattern that a single vowel in a closed syllable is pronounced as its lax form. Testing was able to prove this to be true. For the testing, the BK /u/ was represented with <u>.

Next, the choices for some long vowels will be described before completing the choice of symbols for short vowels. When Cassidy (Cassidy & LePage 1967) created his orthography for Jamaican, he chose reduplicated digraphs based on the IPA sound-symbol relationships to represent the long vowels: <ii, ee, aa, uu, oo>. It was decided to distinguish BK long vowels by using digraphs, also. But the combinations were chosen from the English sound-symbol relationships.

- d) English words with the tense high front vowel /i:/ correspond to words with the BK high front vowel /i:/. Table 20 above shows that the English tense high front vowel /i:/ is represented twelve ways. The choices for representing the BK long vowels based on the number of occurrences in English is not as obvious as for the lax vowels. Eliminating the single graphemes as a choice for a long vowel, the most common digraphs in English are <ea> in 34 out of 1000 words and <ee> in 30 out of 1000 words. Other representations are not as common. After working through the other long vowels, it was decided to include the use of <e> with the 'silent <e>' rule at the end of words in which the corresponding word in English uses this rule. For the testing, <ea> was chosen to be used in any BK word with /i:/ corresponding to the English word using <ea> for /i:/, and <ee> in all other places.
- e) Table 20 above shows that the English diphthong /eɪ/ is represented seven ways. Since it had been decided that BK long vowels would be

have split the 70 occurrences of /eɪ/ represented by <a> by a 75%-25% division. I chose this division because according to Bishop (1986), <a> representing /eɪ/ in a stressed open syllable occurs approximately three times as frequently as /eɪ/ represented by <a> in a closed syllable with the 'silent <e>' rule.

represented by digraphs, <a> could not be used in stressed open syllables as a rule. The next two most common representations were with <ay> or <a> in the environment a word final closed syllable with use of the ‘silent <e>’ rule. For the Kriol long, mid, tense fronted vowel /e:/, the <a> was chosen to be used in the environment of word final closed syllables with use of the ‘silent <e>’ rule. Then <ay> would be used in all other positions.

- f) Some English mid tense back vowels /o/ correspond to the BK long mid back vowel /o:/, and others correspond to the BK short mid back vowel /o/. These BK short mid back vowels /o/ will be covered in (h) below. Table 20 above shows that the English mid tense back vowel /o/ is represented seven ways. Since it had been decided that BK long vowels would be represented by digraphs, <o>, the most frequently used English representation in open syllables, could not be used as a rule. In Table 20 above we see that in 25 of 1000 cases, English /o/ is represented by <o> with the ‘silent <e>’ rule when /o/ is the nucleus of a word final syllable. For the BK long rounded mid back vowel /o:/ the <o> is used with of the ‘silent <e>’ with either zero or one consonant between <o> and the final ‘silent <e>’. This choice would be used whenever it could be employed at the end of a word. The next most common digraph representation of /o/ in English is with <ow> in the word final position. As can be seen in Table 23 below, <ow> is also frequently used to represent the diphthong /ao/. This might create too much ambiguity. The next most frequent representation of English /o/ is with the digraph <oa>, and this is not used to represent any other sound in English. So, for testing, the <oa> was chosen to represent BK /o:/ in all other locations.
- g) Table 21 below shows that the English high tense back vowel /u/ is represented eight ways. For the Kriol long high back vowel /u:/ the <oo> and <u> in the ‘silent <e>’ environment were chosen. The rule for this vowel states that a <u> will be pronounced as /u:/, if it is followed by zero or one consonant, which is then followed by a word-final, silent <e>. This <e> has no phonemic value; it only marks the preceding <u> as having the /u/ pronunciation.

phoneme	Eng Ortho	environment	# out of 1000
/u/	<oo>	C_C boot	18
/u/	<u>	_(C)e# blue, tube	14
/u/	<u>	_• duty	2
/u/	<o>	_Ce# move	10
/u/	<o>	_•/ together	4
/u/	<ew>	_# new	5
/u/	<ou>	 you, group	3
/u/	<ui>	C_C juice	2
/u/	<wo>	_# two	1
/u/	<oe>	_# canoe	1

Table 21: More tense vowel sound-symbol correspondences

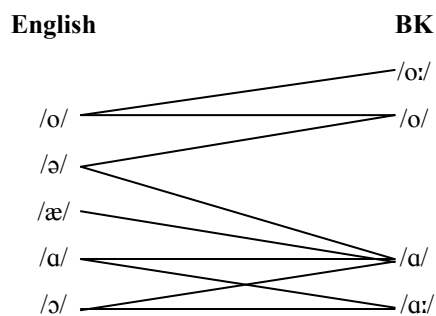


Figure 2: Correspondence between some English and BK vowels

- h) There is a complex correspondence between the BK vowels /o:/, /o/, /ɑ/, and /ɑ:/, and the English vowels: /o/, /ə/, /æ/, /ɔ/, and /a/. The correspondence is shown in Figure 2 above. Some English words with mid back vowels /o/ correspond to the BK words with the long mid back vowel /o:/, which was discussed in (f) above. Other English words with the mid tense back vowels /o/ correspond to the BK words with the short back vowel /o/. Likewise, some English mid central vowels /ə/ correspond to the BK short back vowel /o/, and others correspond to the BK short low central vowel /ɑ/. Words that have the English low central lax vowel /a/ correspond to either the BK short low central vowel /ɑ/ or the long low central vowel /ɑ:/. Words with the English low back vowel /ɔ/ correspond to either the BK short low central vowel /ɑ/ or the long low central vowel /ɑ:/. Words with the English low front vowel /æ/ correspond to the BK short low central vowel /ɑ/. The representations for English /ə/, /æ/, /a/, and /ɔ/ are presented in Table 22. Since BK words with /ɑ/ may correspond with English words with /ə/, /æ/, /a/, and /ɔ/, there are potentially ten different ways that BK /ɑ/ could be represented. If digraphs are excluded, there are four possibilities: <e, a, u, o>. The <e> is used for the BK short mid front vowel /e/ and <u> for the BK short high back vowel /u/. In Table 20 above we see that /o/ is never represented by <a> in English. Therefore, even though English /a/ is much more frequently represented by <o> than <a>, the <o> was chosen to represent BK /o/ and <a> for BK /ɑ/.
- i) The long low central vowel /ɑ:/ does not exist in English as a contrast to a short low central vowel /ɑ/. Some BK words with /ɑ:/ had either /ɑ/ or /ɔ/ in English. The pattern has been established that long vowels are represented by digraphs. In English /ɔ/ is sometimes represented by <aw> or <au>, so one of those digraphs could have been chosen. However, many existent BK texts written by Creoles already used <aa> consistently to represent the long low central vowel /ɑ:/. The digraph <aa> does not occur in English, but the consistency of use in existent BK texts makes it evident that this choice is perceived already as the appropriate representation. It was almost as well established that <a> represented the BK low central lax vowel /a/.
- j) English words with the /ao/ diphthong correspond to BK words with the /ou/ diphthong. As can be seen in Table 23 below, the /ao/

diphthong is only represented by <ou> and <ow> in English. For testing purposes both options were chosen. This conforms to the reasons presented in (h) above for using <o> to represent /o/. The rule was that <ow> is used at the end of a syllable and <ou> is used in closed syllables.

Phoneme	Eng Ortho	environment	# out of 1000	phoneme	Eng Ortho	environment	# out of 1000
/ɔ/	<o>	(C)(C)_CC often, cost, cloth	25	/ə/	<u>	much	88
/ɔ/	<a>	(C)_1 all, walk	20	/ə/	<a>	want	86
/ɔ/	<aw>	_(C)# raw, awkward	14	/ə/	<o>	come	65
/ɔ/	<au>	(C)_ (C)(C) August, caulk	11	/ə/	<ou>	double	8
/ɔ/	<ou>	_gh cough	1	/ə/	<e>	item	5
/ɑ/	<o>	C_C hot	66	/ə/	<io>	education	4
/ɑ/	<a>	C_C father	5	/ə/	<oo>	blood	2
/æ/	<a>	_C and, black	166	/ə/	<ai>	captain	2
/æ/	<au>	_C aunt, laugh	2	/ə/	<au>	because	1

Table 22: More lax vowel sound-symbol correspondence

- k) The options for spelling the /oɪ/ and /aɪ/ diphthongs in English are presented in Table 23 below. English words with both the /oɪ/ and /aɪ/ diphthongs correspond to BK words with the /aɪ/ diphthong. For the initial testing, three options were chosen for representing the /aɪ/ in Kriol. The <i> was used with the ‘silent <e>’ rule; there could be zero, one, or two consonants between the <i> and the word final

‘silent <e>’. The <y> was chosen for use when the /aɪ/ diphthong is at the end of a word. Then finally, <ai> was chosen for any other location. This conforms to the reasons presented in (i) above for using <a> to represent /a/. The use of <ai> to represent the /aɪ/ diphthong does not occur in English. English <ai> as a way of representing the /eɪ/ diphthong in 18 out of 1000 words, as shown in Table 20. There is also one occurrence of <ai> representing the lax mid front vowel /ɛ/, as shown in Table 19. The testing would show whether this created a problem or not.

Eng phoneme	Eng Ortho	environment	# out of 1000	phoneme	Eng Ortho	environment	# out of 1000
/ao/	<ou>	__C(C) out, round	18	/aɪ/	<i>	__CC grind	51
/ao/	<ou>	__Ce# house	3	/aɪ/	<i>	__(C)e# pie, time	22
/ao/	<ow>	__(C)# now, fowl	18	/aɪ/	<y>	__# fly	8
/oi/	<oi>	C__C(C)(e)# boil, point, noise	/oi/	/aɪ/	<uy>	__# buy	1
/oi/	<oy>	__# toy	/oi/	/aɪ/	<ei>	__ either	1
				/aɪ/	<ye>	__# bye	1
				/aɪ/	<ui>	C__C guide	1

Table 23: Diphthong sound-symbol correspondences

Table 24, below, presents a compilation and comparison of BK and English vowel sounds, the English orthographic symbols, and the symbols chosen for use with the English-oriented Phonemic Model for testing various orthography options. To the reader, it may seem like this has been a lot of work for designing this system. However, as described for the Historical-Etymological and English Modified Models, there are many more decisions that will have to be made that will take considerable time because there are no patterns. The work that has been explained here resolves many of the

decisions that will need to be made. Of course, these were only temporary choices and the Creoles would need to review and make their own choices.

BK Vowels	English Vowels	English Orthographic Symbols	Symbols that were chosen for BK for testing
/i:/	/i/	< y, e, e/e, ea, ee, i, ie, ey, ei, eo >	< ea, ee, eCe >
/i/	/ɪ/	< i, ui, u, a/e, ee, y >	< i >
/e:/	/eɪ/	< a, a/e, ay, ai, e, ei, ea >	< ay, a(C)e# >
/e/	/ɛ/	< e, ea, a, ue, ei, ai, ie >	< e >
/u:/	/u/	< oo, u, u/e, o/e, o, ew, ou, ui, wo >	< oo, uCe# >
/u/	/ʊ/	< oo, u, ou, o >	< u >
/o:/	/o/	< o, ow, oa, oe, ou, ew, eau >	< oa, oCe# >
/o/	/ə/, /ɒ/	< o, u, oo, ou >	< o >
/ɑ:/	/ɑ/, /ɔ/	< a, au, aw >	< aa >
/ɑ/	/ɑ/, /æ/, /ɔ/	< o, a, au >	< a >
/ai/	/aɪ/	< i, y, ie, uy, ei, ye, ui >	< y, ai, i(C)(C)e# >
/ou/	/aʊ/	< ou, ow >	< ou, ow >

Table 24: Vowel-symbol choices

6.3.3 Test organization

All four stories were written in each of the four orthographies. This produced 16 different story-orthography items. When testing, the items were rotated so that each test involved one of each of the stories and one of each of the orthographies. No two tests had the same exact order. With four of the 16 units combined into a test, there are 576 possible combinations⁴² for unique tests. However, only 60 tests were conducted. Each combination was tested a nearly equal number of times and in an equal number of places in the rotation.

The combinations were rotated so that the order would have no effect on the test results. For example, if one of the stories was a little harder than

⁴² With 16 stories-orthography combination, there are 16 choices for the first combination to be tested. Once one story and one orthography are chosen for the first test, there are three remaining stories and three orthographies (9 combinations) available for the next story. After the second story-orthography combination is chosen to be tested, there are four possible combinations remaining. Therefore, the calculation is: $16 \times 9 \times 4 = 576$.

others and was always last in the test, we would not know if poor responses on this story were the result of it being a harder story, if the orthography was more difficult to read, or if the subjects were tired of the test. With the rotation of all the variables, if the timing is faster on one story, regardless of the place in the rotation or the orthography, then we would know that the story contributed to the faster time. In the following chart, consider that each letter (a, b, c, d) represents a story and the number (1, 2, 3, 4) represents an orthography. Table 25 presents a facsimile of the rotation of stories and orthographies that was used for the testing.

a2	d4	a4	d1	c3	c4	d3	d2	b1	b2
b3	c3	c3	c2	d4	b3	c2	b4	a2	a4
d4	b2	d1	b3	a1	d2	b1	c3	d3	d1
c1	a1	b2	a4	b2	a1	a4	a1	c4	c3
c3	a2	b4	a2	d1	a1	d3	b1	c3	d4
d1	b1	a1	d4	b3	c4	c4	a2	a2	a1
a4	c4	d3	c1	a2	d3	a1	c4	d4	b2
b2	d3	c2	b3	c4	b2	b2	d3	b1	c3
a1	a3	b2	c1	c1	d4	a2	c3	a1	b3
c4	d2	a1	b4	b3	a2	d1	b1	d2	c4
d3	c1	c3	a2	d2	b3	b4	a2	b3	d1
b2	b4	d4	d3	a4	c1	c3	d4	c4	a2
d2	c4	b4	a3	c2	b4	c2	d1	a4	d2
a3	b3	d1	b4	a4	c2	d3	a2	b3	c1
c4	a1	c2	d2	d1	d1	b1	b4	d2	a4
b1	d2	a3	c1	b3	a3	a4	c3	c1	b3
c1	a3	c1	d3	c2	b3	b2	a4	a4	d2
d3	c2	a4	b2	b3	d4	d3	b2	d1	a4
b2	d1	b3	a4	d1	c2	a4	c1	c3	c3
a4	b4	d2	c1	a4	a1	c1	d3	b2	b1
b1	c2	d1	d4	a3	b3	b3	c4	b1	b4
d3	a1	b4	b2	c1	a1	c1	a1	c4	d2
a4	d3	c2	a1	b4	c2	a4	b2	a2	a3
c2	b4	a3	c3	d2	d4	d2	d3	d3	c1

Table 25: Test combination rotations

A stratified sampling was conducted of the population. The stratification was broken into six categories: male versus female, and three age groups: 15 to 25, 26 to 40, and over 40. All subjects were required to be proficient readers of English and have no impairments that prevented them from having a reasonable capability to read the Kriol texts. While informed

consent forms were not collected, the purpose of the testing was explained, and no personal identification information was collected. No one was coerced in any way into participating. The tests were conducted in various locations around the country. About half of the tests were conducted in Belize City. Others were conducted in Burrell Boom, Orange Walk, Gracie Rock, Belmopan, San Ignacio, Dangriga, and Punta Gorda.

Each test included collection of subject information (age, hometown, education), a description of the test, and the purpose of the testing was explained. The subject was timed as they read each text. Errors and reading difficulties were marked on a separate copy of the text. After they had read the four texts they were asked the following series of questions:

1. Which story did you feel was the easiest to read?
2. Which story did you feel was the hardest to read?
3. Each story was written with a different way of possibly writing Kriol. Which one looks the most like Kriol?
4. Which one looks the least like Kriol?
5. What do you think of the idea of reading and writing Kriol?

6.4 Orthography test results

The results were found to be exactly as we expected. Therefore, at the time, the numeric results of the testing were not considered worth retaining, but summary notes were kept. The length of time to read a story ranged from about 1:15 to 4 minutes. It always took longer for a subject to read a story in the IPA-oriented Phonemic model, usually about twice as long as the story the person read most quickly. The easiest orthography to read was the English Modified model. The Historical-Etymological and English-oriented models usually took about 50% longer to read than the English Modified model.

Some people seemed to learn as they went through the test and read the later stories faster due to familiarity of the exercise. Others seemed to tire, go slower, and make more mistakes. This improvement or slowing correlated with their answers to question number (5). If they felt positive towards the idea of literacy in Kriol, they tended to be the ones who had improved. If they felt negative or ambivalent towards reading and writing in Kriol, they tended to tire of the exercise.

The Christmas Lights story tended to be the story read most easily, and the Early Days story tended to take the longest and required more rereading of sections. People tended to have more problems reading English words with an unusual spelling, like <Chuuzde> and <dekoreeshanz> in the Christmas Lights story in the IPA-oriented Phonemic model. They also had some problems with unfamiliar Kriol words, such as <berotin>, *to go without*, in the Christmas Lights story.

In response to question (1), people tended to think that whichever story was in the English Modified model was the easiest to read. They felt that whichever story was in the IPA-oriented Phonemic model was the most difficult to read (question 2). There was not a consensus to the responses to question (3) on which orthography looked most like Kriol. They gave various reasons why they chose one orthography over the others. Some said that the IPA-oriented Phonemic model looked most like Kriol because it was the most different from English. Some felt that the English Modified or English-oriented models looked more like Kriol because they recognized words that are not English and they were spelled as they are used to seeing them written. The answers to question (4) were quite definitive; no one liked any story written in the Historical-Etymological model. Everyone said it looked too much like English. A few people commented that the English Modified model also looked too much like English. In response to question 5, most people liked the idea of reading and writing Kriol but thought it would be very hard to do, even though they had just done it. None of the people made adamant statements against literacy in Kriol, but there were some, mostly older people, who felt it would be a waste of time.

As Hellinger (1986:62) observed, “the linguistic distance between the Creole and English is generally perceived in such a way that speakers will represent it in writing. Each author takes the position that identification of a text as Creole must not rest on morphological, syntactic and lexical clues alone. Furthermore, the speakers’ readiness for a more radical departure from the dominant model becomes evident in numerous idiosyncratic spellings.” This explains some of why people did not like the Historical-Etymological model, and some the English Modified.

6.5 Orthography design workshop

The first Orthography Workshop was held June 16th and 17th, 1994 in Belize City. Previous to the workshop a workbook was prepared with materials that

provided examples of everything that might be discussed during the meetings. About 30 people attended including people from the Ministry of Education and the Teachers College, several church ministers, two musicians, and several other professionals who are also Kriol enthusiasts and advocates. The program opened with introductions and a few short speeches from the Minister of Education, Philip Goldsen; Lynda Moguel from the Teachers College, and Joey Belisle from the University College of Belize.

The first exercise in the workshop was a brief introduction to phonetics and the IPA. This was so that words could be written in phonetics and not imply that a specific spelling was being suggested. Next, a list of orthography design principles was presented. These were presented earlier in §2.4. There were people in attendance who wanted written Kriol to look as different as possible from English, and those who felt that some appearance of similarity with English would be helpful. The presentation on principles stimulated some discussion on this point.

The following list of principles was presented to the participants of the first orthography workshop in Belize in June, 1994.

- a) Pronunciation-based Spelling. Spelling should reflect the pronunciation.
- b) Consistency. There must be distinctive relationships between the sounds and symbols. In a strictly phonemic system each letter, or letter combination, signals only one distinctive sound. Some variation may be allowed for proper nouns, to avoid cumbersome spelling of very common words, to distinguish homophones, to maintain the original spelling of unassimilated loanwords, and to maintain well-accepted spellings of familiar words.
- c) Linguistic Independence. The written Kriol should appear as a legitimate, independent language, different from, as well as similar to, English.
- d) Linguistic Conformity. The majority of readers who are acquainted with English will desire that the orthography for Kriol conform to English orthography norms.
- e) Motivation. The orthography should motivate the learner, and maximize acceptance by society and power groups, such as government. This is generally attained through conformity to the national language.

- f) Practicality. The English (Latin) alphabet should be used without new characters. It is also recommended that no new diacritics or accent marks be introduced.
- g) Pedagogical Support. Spelling should support initial literacy in Kriol as a first language, and standard English as a second. There should be ease of learning. A successful orthography that does not facilitate transition to English may restrict Kriol speakers from development in English.
- h) Fluency Directed. The optimal orthography for a beginning reader is not the same as for a fluent reader. An orthography too closely based on pronunciation may hinder fluency. However, an orthography that hinders the development of beginners' reading skills may hinder the development of fluent readers.
- i) Readability. Readability should be maximized, primarily for Kriol speakers, and secondarily for English speakers.
- j) Compromise. Several of these principles are in opposition to one another. There will have to be compromises and decisions made between options.

After lunch the four models (§6.3.1) were introduced and explained to them. The testing was also described to them. After some discussion it was tentatively decided to follow the English-oriented model. The first issue to be discussed was nasalization and several options for the ways that it could be marked were presented. This initiated some discussion as to whether nasalization needed to be marked. There is a limited set of words that, due to their similarity, clearly indicated a need for marking nasalization: /wa:n/ *warn*, /wa:m/ *warm*, /wã:/ *want*, /wan/ *one*, /wã/ *indefinite article*, and /wã/ *future aspect marker*. They did not want to use a tilde <~> because it added a diacritic and it made the orthography appear a little like Spanish, which they did not want. It was decided that they would write <hn> after the nasalized vowel. When this convention was applied to all the words in which it seemed relevant, it appears they are all morpheme final positions, for example: <waahn> *want*, <frahn> *from*, and <sohnbady> *somebody*.

The second day began with looking at consonants and making decisions about how they would be spelled. For the most part it was decided that the consonant letters would represent the sounds for which they are traditionally associated in English. However, there were finer points that were important to consider. The next section is taken from the workbook that lists all the decisions that needed to be made about consonants. The

participants decisions have been inserted in square brackets [] at the end of each point.

6.5.1 Decision-making for consonants⁴³

< ' > Apostrophe – Some people, when writing Kriol, will use an apostrophe to mark where letters have been dropped between the English spelling and the Kriol spelling. For example <bes'> *best*, <bo'd> *board*, <'nof> *enough*. [The participants did not want to use this convention as it made Kriol appear substandard to English.]

< b > Will the letter be used for the /b/ sound, as in *baby* and *tub*? [Yes.]

Will the 'silent' be dropped, as in *dumb*, *doubt*, and *climb*? Exclusion may look like <dum>, <dout>, and <clime>. [The participants decided that they did not want to write the silent consonant. They reasoned that these are parts of English words, not Kriol.]

Should the optional spelling of for <v> be permitted in certain words to allow for dialectal representation, as in *river*, *never*, and *devil*? Inclusion would produce <riva> and <riba>, <neva> and <neba>, <devil> and <debil>. [The participants decided to keep these alternate spellings wherever relevant. Note: In the twenty years since the workshop, there has never been a problem with allowing these alternate spellings. In fact, people have found them to be one useful way to indicate rural speech.]

< c > In English <c> has three sounds, as in: *canal*, *ceiling*, and *appreciate*. Generally, the rule is that: <c> has the /s/ sound before the <i> and <e>, as in: *city* and *cent*; and the /k/ sound everywhere else (except before <h>), as in: *cotton*, *garlic*, or *locust*. The /j/ pronunciation occurs before unstressed <i> in English and will be discussed below with <s>. One option would be to leave <c> as it is in English. Another option would be to change all <c> to their 'hard' /k/ or 'soft' /s/ sound. This would produce *sity*, *sens*, *koton*, *garlik*, and *lokus*. Another option would be to leave <c> representing the /s/ sound before <i> or <e>, and <c> representing the /k/ sound everywhere else and only replace <c> with a <k> or <s> if the word does not fit the rule. This would affect words like *bicycle*

⁴³ Participants were instructed to not be concerned about how vowels would be spelled in the section.

<bisycle> and *saucer* <sausa>. [Participants decided that they would drop <c> and just use <s>, <k>, and <sh> as needed.]

Will the <c> be maintained with the <k> for the /k/ sound, as in: *back*, *clock*, and *truck*? Exclusion would produce <bak>, <clok>, or <truk>. [The participants decided to not keep the <c> in these environments and only to use the <k>.]

Will <ch> continue to be used for the /tʃ/ sound, as in *church*? This is typical in words such as *chance*, *chase*, and *cheap*. Should the <ch>, in words like *Christ* and *Christmas*, be written differently? For example: <Krist> or <Khrist>, <Kristmas> or <Khristmas>. [The participants chose to keep <ch> for the /tʃ/ sound and use <k> for the /k/ sound in words like <Kristmas>.]

< d > Will the letter <d> be used for the /d/ sound, as in *dog*, *ladder*, and *greed*? [Yes.]

In English words, <d> before <r> or <g> is pronounced with the [dʒ] sound in Kriol. This is a predictable environment and does not require a different spelling. Should the spelling reflect the different pronunciation with the <j> symbol? Inclusion would produce <jrink> *drink*, <jrive> *drive*, <juje> *judge*, <brije> *bridge*, and <eye> *edge*. [The participants chose to use the <j> to represent the [dʒ] sound even if it is a predictable environment.]

In both Kriol and English, when a /d/ occurs before /u/, as in *educate*, there is palatalization producing /dju/, which is often pronounced as [dʒu]. Should the [dʒ] sound be written as <j> in these words? This would produce <ejucate>. [Yes]

Kriol frequently does not pronounce the /d/ after /n/ at the end of many words in English, such as *find*, *send*, and *land*. Should the spelling follow the pronunciation? This pattern will produce: <fin>, <sen>, and <lan>. [The participants chose to not write the <d> if it is not pronounced.]

< f > Will the letter <f> be used for the /f/ sound, as in *food*, *suffer*, and *skiff*? [Yes.]

In English, there are words with <ph> or <gh> spellings that are pronounced with the /f/ sound, as in *cough*, *enough*, *phone*, or *dolphin*. Should these words be spelled with the <f>? This change would produce <couf>, <nouf>, <fone>, and <dolfin>. [The

participants decided to use the <f> symbol to represent this sound in all occurrences.]

< g > Should <g> continue to represent both the ‘hard’ /g/ sound, as in *go*, *log*, and *gallon*; and the ‘soft’ /dʒ/ sound, as in *cabbage*, *language*, *page*, and *college*? Spelling the ‘soft’ /dʒ/ with <j> would produce <cabbaje>, <languaje>, <paje>, and <colleje>. [Participants decided to use <g> for the ‘hard’ /g/ sound and the <j> to represent the ‘soft’ /dʒ/ sound.]

Will the ‘silent’ <g> be dropped, as in *foreigner* and *sign*? Exclusion would produce: <foreina> and <sin> or <sine>? [Initially the participants wanted to postpone a decision on this until they could discuss the vowels and how that would affect the appearance of these words. They later decided to drop the ‘silent’ <g>.]

Will the ‘silent’ <gh> be dropped? There are different groups of words that have the <gh>. The first group (*night*, *right*, *light*, *fight*, and *alright*) can easily adapt to a similar form, such as <nite>, <rite>, <lite>, <fite>, and <alrite>. A second group (*weight* and *eight*) could possibly be adapted to <wait> or <wate> and <ait> or <ate>. A few other words are more problematic: *though*, *weigh*, *through*, *daughter*, and *high*. How would they look as <dou> or <do>, <we> or <wei>, <tru>, <data>, <hai> or <hi>? [Initially the participants wanted to postpone a decision on this until they could discuss the vowels and how that would affect the appearance of these words. They later decided to drop the ‘silent’ <gh>.]

< h > Will the letter <h> be used for the /h/ sound, which only occurs in the word initial position, as in *house* and *hope*? [Yes.]

Should the optional spelling of <h> at the beginning of certain words be permitted to allow dialectal representation, as in *alligator* and *armadillo*? Inclusion would produce: <halligata> and <hamadilli>. [The participants decided to keep these alternate spellings wherever relevant. Note: In the twenty years since the workshop, there has never been a problem with allowing these alternate spellings. In fact, people have found them to be one useful way to indicate rural speech.]

Should the ‘silent’ <h> be dropped, as in *why*, *ghost*, and *hour*? Exclusion would produce <wy>, <gost>, and <owa>. [The participants decided that they did not want to write the silent consonant. They reasoned that these are parts of English words, not Kriol.]

Some Kriol writers have written some Kriol words with a ‘silent’ <h> at the end, for example <deh> *there*, <gih> *give*, <fih> (*preposition* and *possessive marker*), and <weh> *which* or *where*. This may be to distinguish some words that sound alike, or they may represent a special vowel quality at the end of words. If retained, which words would this apply to? [The participants decided to keep this feature. However, the list of words with this ‘silent’ final <h> may not yet be solidified. No linguistic explanation has been identified as why the Creoles want it; they simply feel that it makes certain words look better.]

< j > See questions for the letter < d > and < g > above. Should the letter < j > be used for the /dʒ/ sound, as in *juice* and *just*? [Yes]

< k > Will the letter < k > be used for the /k/ sound, as in *kill* and *break*. [Yes.]

Should the ‘silent’ < k > be dropped, as in *knife*, *know*, and *knock*? Exclusion would produce < nife >, < now > or < noo >, and < nock > or < nak >. [The participants decided to not use the ‘silent’ < k >. Other decisions regarding the letter < k > and [k] sound were resolved during the discussion on the letter < c > and < q >.]

< l > Will the letter < l > be used for the /l/ sound, as in *love*, *pillow*, and *call*? [Yes.]

Should the ‘silent’ < l > be dropped, as in *walk*, *palm*, and *should*? Exclusion would produce < wak >, < pam >, and < shud > or < shuda >. [The participants decided to not use the ‘silent’ < l >.]

< m > Will the letter < m > be used for the /m/ sound, as in *mountain*, *remember*, and *storm*? [Yes.] There does not seem to be any other issues with letter < m > or /m/ sound!

< n > Will the letter < n > be used for the /n/ sound, as in *napkin* and *honey*? [Yes.]

In Kriol, an < n > after the /ou/ diphthong, is pronounced with the [ŋ] sound (like < ng > in *sing*), as in *around*, *town*, and *brown*. Use of the < ng > spelling would produce < aroung >, < toung >, and < broung >. Should this change be included? [The participants decided to use the < ng > combination for the [ŋ] sound. However, before a < k > it is only < n >, as in < tink > *think*.]

< p > Will the letter < p > be used for the /p/ sound, as in *powder*, *napkin* and *trip*? [Yes.]

Other issues related to the letter <p> were discussed with the letter <f> above. There are no words in Kriol related to English words with the ‘silent’ <p>, as in *pneumatic* and *psychology*. [If one of these words is borrowed by Kriol, the <p> is not written.]

< q > Should the <qu> be retained or replaced by <kw>, as in *quick*, *queen*, and *quite*? This change would produce: <kwik>, <kween>, and <kwite>. This would eliminate the letter <q> from the Kriol alphabet. [The participants decided to eliminate the <q> and use <kw> where English uses <qu>.]

< r > Will the letter <r> be used for the /r/⁴⁴ sound, as in *road*, *grab*, *foreigner*, *disturb*, and *far*? [The /r/ sound occurs regularly in syllable onsets in BK, but in normal speech it is variable in syllable codas. The participants decided to write the <r> “when it is pronounced”. However, in the dictionary (Crosbie 2007) there are many entries with <r> in a syllable coda contrasting with similar words without the <r>, such as <far> *for* but <kaa> *car* and <bod/berd> *bird* but <kaad> *card*. It does not seem that the use of <r> is completely standardized.]

In Kriol, many words have the /a/ sound where English has <r>, as in *picture*, *liquor*, *dollar*, and *foreigner*. Writing <a> as the word is pronounced in Kriol would produce something like <pitcha>, <lika>, <dolla>, and <forina>. Should this change be included? [The participants decided to write words the way they are pronounced and use <a> or <aa> as appropriate in those environments where English used an <r>.]

< s > Will the letter <s> be used for the /s/ sound, as in *sand*, *blossom*, and *pass*? [Yes.]

Will the ‘silent’ <s> be dropped, as in *island*? An alternate spelling might be <ailan>. [The participants decided to not use the ‘silent’ <s>.]

Will <sh> continue to be used for the /ʃ/ sound, as in *ship*, *fish*, and *shop*? This sound is also found in *sugar*. Should it be spelled <shuga>? [The participants decided to write the /ʃ/ sound with <sh> in all cases.]

⁴⁴ Phonemically, the correct IPA symbol should be /ɹ/, but we used the /r/ symbol for familiarity with the participants.

There are also words in which <c> occurs before an unstressed <i>, which occurs before another vowel, these are pronounced with the /ʃ/ sound, as in *special* and *appreciate*. If the /ʃ/ sound is represented as <sh>, these words might be written as <speshal> and <apreshiate>. [The participants decided to write the /ʃ/ sound with <sh> in all cases.]

The <s> in English words ending <-sion> sometimes has the /ʒ/ sound, as in *occasion*. Should this be spelled <zh>? Inclusion might produce <okezhan>. [The participants decided to write the /ʒ/ sound with <zh> in all cases.]

The <s> in the English words ending <-sure> is pronounced as /ʒ/ in both English and Kriol, as in *treasure* and *measure*. Should this be spelled <zh>? Inclusion would produce <treazha> and <meazha>. [Yes] Sometimes in Kriol it is also pronounced as /dʒ/. Should the optional spelling of <j> for <zh> be permitted in certain words to allow for dialectal representation? Inclusion would produce <treaja> and <meaja>. [The participants decided to keep these alternate spellings wherever relevant. Note: In the twenty years since the workshop, there has never been a problem with allowing these alternate spellings.]

The <sc> combination can be represented as either /s/, as in *scent*, or /sk/ as in *scale*. Should the words with <sc> representing /s/ be written only with <s>, and should the /sk/ represented by <sc> be written as <sk>? This might produce something like <sent> *scent*, <sizaz> *scissors*, <siense> *science*, <skale> *scale*, <skary> *scary*, and <skatta> *scatter*. [The participants decided to write the words with <sc> representing /s/ with <s>, and to write the words with <sc> representing /sk/ as <sk>.]

< t > Will the letter <t> be used for the /t/ sound, as in *town*, *fritter*, and *cat*? [Yes.]

Kriol frequently does not pronounce the <t> that is at the end of many words in English, such as *best*, *fist*, *can't*, and *want*. Should the spelling follow the pronunciation? This pattern might produce <bes>, <fis>, <can>, and <wan>. [The participants decided to not write the <t> if it is not pronounced.]

In Kriol, <t> before <r> is pronounced with the [tʃ] sound (like <ch> in *church*), as in *trash*, *century*, *travel*, and *try*. Should the

spelling, using <ch>, reflect this? Inclusion might produce: <chrash>, <cenchry>, <chravel>, and <chry>. Since it is a predictable environment, it is not necessary to write the <ch>. [The participants decide to write <t> when the [tʃ] sound precedes an <r>. Note: for a very similar phonologic environment, they had decided to use <j> before <r> for the [dʒ] sound. This inconsistency was later removed.]

In Kriol, words related to English words ending in <-tion>, as in *education*, are pronounced [-ʃan]. Should the spelling reflect the pronunciation in words with this ending, for example *direction* <direcshan>, *function* <fongshan>, *nation* <nashan>, and *education* <educashan>? [The participants decided to write <sh> whenever it is pronounced.]

Kriol uses the pronunciation /t/ where English uses [θ], as in *thank*, *thick*, *thin*, *truth*, and *faith*. Should the spelling reflect this pronunciation? Inclusion of this pattern would produce <tank>, <tik>, <tin>, <trut>, and <fait>. [Participants decided to use the <t> symbol rather than the <th> digraph when pronounced as /t/.]

Kriol uses the pronunciation /d/ where English uses /ð/, as in *than*, *weather*, and *brother*. Should the spelling reflect the pronunciation? Inclusion of this pattern might produce <dan>, <weada>, and <breda>. [Participants decided to use the <d> letter rather than the <th> digraph when pronounced as /d/.]

Should the 'silent' <t> be dropped, as in *whistle*, *wrestle*, and *listen*? Exclusion might produce: <wisl>, <resl>, and <lisen>. Related to this are words like *watch*, *catch*, and *match*; in which the <t> is also 'silent'. Exclusion might produce <wach>, <cach>, and <mach>. [The participants decided to not write the <t> if it is not pronounced.]

< v > Will the letter <v> be used for the /v/ sound, as in *very*, *ever*, and *give*? [Yes.] For issues related to the dialectal /b/ pronunciation for some words with <v> see the letter above.

< w > Will the letter <w> be used for the /w/ sound, as in *water*, *tower*, *bowl*, and *cow*? [Yes. However, when the /w/ sound is in a syllable onset it is a consonant, but when written at the end of a syllable it is part of the vowel in the syllable peak. For other uses of the letter

<w>, see letter <q> above, the <Cw> consonant cluster below, and §6.5.2 below about the use of <w> with vowels.]

Should the 'silent' <w> be dropped, as in *answer*, *write*, and *wrong*? Exclusion would produce: <ansa>, <rite>, and <rong>. [The participants decided to not write the <w> if it is not pronounced.]

< x > Should the letter <x> be used for the /ks/ sound, as in <bex> *angry*, <nex> *next*, <six>, and <ax> *axe*? Exclusion would produce <beks>, <neks>, <siks>, and <aks>. Should /aks/ *ask* be spelled <aks> or <ax>? [The participants decided to retain the <x> to be used in words that in English have an <x> for the /ks/ sound.]

< y > Will the letter <y> be used for the /j/ sound, as in *yellow*, *lawyer*, and *lay*? [Yes. However, when the /j/ sound is in a syllable onset it is a consonant, at the end of a syllable it is part of the vowel in the syllable peak.] For other uses of the letter <y>, see the <Cy> consonant cluster below and §6.5.2 below about the use of the letter <y> with vowels.

Certain words spelled with <r> in English are pronounced in both Kriol and English with the /j/ sound, such as *fire*, *wire*, and *tired*. Should these be written as they are pronounced? This might produce <faya>, <waya>, and <tayad>. [Initially, the participants decided to delay a decision on this point, but they later decided to go with this option.]

< z > Will the letter <z> be used for the /z/ sound, as in *zinc* and *zipper*? [Yes]

English marks plurality with <s> at the end of the word, or rarely <es>, this is done whether the pronunciation is /s/ or /z/. In Kriol, there are a few words which retain the pronunciation of the word final /s/ or /z/. The /z/ pronunciation is retained in /e:z/ *ears*, /sensiz/ *senses*, /gudz/ *goods*, and /pi:z/ *peas*. The /s/ pronunciation is retained in /parens/ *parents*, /bu:ts/ *boots*, and /ʃrimps/ *shrimp*. Should <s> be used in all cases to retain the connection with English, or should the spelling reflect the pronunciation? [The participants decided to write the /s/ sound with an <s> and the /z/ sound with a <z> whenever those are the sounds pronounced.]

- < zh > [See the discussion following the letter < s > above for adoption of the digraph < zh > .]
- < Cw > Kriol has a number of consonant clusters combining a consonant (C) and the labial [w] sound; this could possibly be interpreted as labialization, for example <twelv> *twelve*, <dwaaf> *dwarf*, <kwash> *coatimundi*, <bwai> *boy*, and <gwain> *going*. Should this pronunciation be written? Should a <w> or <u> be used? This could be examined further during the discussion on vowels. [Initially, the participants tentatively decided to use the <w> to represent the labialization and it has continued to be used.]
- < Cy > Kriol has a number of consonant clusters combining a consonant (C) and the palatal [j] sound; this could possibly be interpreted as palatalization, for example <cyapet> *carpet*, <cyash> *cash*, <neecyap> *kneecap*, <gyaadn> *garden*, <gyambl> *gamble*, <gyal> *girl*, <nyew> *new*, <nyam> *eat*, <hyumid> *humid*, <fyucha> *future*, <byuro> *bureau*, <milyan> *million*, and <nevyew> *nephew*. Should this pronunciation be written? Should a <y> or <i> be used? This could be examined further during the discussion on vowels. [Initially, the participants tentatively decided to use the <y> to represent the palatalization and it has continued to be used.]
- < CC > Many English words are spelled with duplicated consonants (CC), such as *wall*, *ladder*, *butter*, *bigger*, *egg*, *drummer*, *dinner*, *effort*, *account*, *apple*, *cabbage*, *off*, *collar*, *arrow*, and *kiss*. Exclusion of the duplicated consonant might produce <wal>, <lada>, <buta>, <biga>, <eg>, <druma>, <dina>, <efaat>, <acont>, <aple>, <cabaj>, <of>, <cola>, <arow>, and <kis>. Orthography testing and evidence in texts already written in Belize Kriol show that there is a perception that there should be duplicated consonants in some words that do not have consonant clusters in English, such as <bredda> *brother*, <pipple> *people*, <laff> *laugh*, <beffo> *before*, <siddung> *sit-down*, <haffu> *have-to*, <ledda> *leather*, <lissen> *listen*, and <wudda> *would-have*. This may be due to perceptions of 'proper' syllable shapes. This may need to be further examined during vowel discussions. [Initially, the participants tentatively decided to use double consonants in some

situations. Over time the choices were arbitrary. However, eventually, in the dictionary (Crosbie 2007) they were all removed.]

< - > Hyphenation. When compound words are written in English the letter which has been dropped in the process is marked by an apostrophe < ' >, for example *could + not = couldn't*. Compound words in Kriol are formed a little different than in English. For example: *might + have = <mite-a>*. Some compound forms may not be recognized as compounds <hafu> *have + to* or <kongo> *come + go = accompany*. A possible convention for compound words in BK could be to hyphenate them. This might result in some of the following possible spellings for BK compound words: <oud-a> *ought to*, <cud-n> *could not*, <con-go> *come go*, <haf-fu> *have to*, <shud-a> *should have*, <mite-n> *might not*, <mus-n> *must not*, <pu-dong> *put down*, <si-dong> *sit down*, <gan-an> *gone on*, and <yus-tu> *used to*. Should compound words be marked differently? [The participants decided to not use hyphenation. They felt that some of them should not be combined, such as <kohn go> and <put dong>, and the others are not contractions, they think of them as single words, as in <outa> and <kudn>.]

At the time of this writing, there is an ongoing email discussion concerning how to write contractions. Jopson (p.c.), a BK writer, proposes a list of contractions combining a pronoun and a mood marker or modal word, marked with an apostrophe. Interestingly, all of the words that follow the pronouns begin with semi-vowels. So far the opinions are in favor of accepting the following contractions:

Ai + wahn > Ai'ahn	I will
yu + wahn > yu'ahn	you will
hihn/shee/ih + wahn > hihn'ahn/shee'ahn/ih'ahn	he/she/it will
unu + wahn > unu'ahn	you (pl) will
dehn + wahn > dehn'ahn	they will
Ai + wuda > Ai'da	I would
yu + wuda > yu'da	you would
hihn/shee/ih + wuda > hihn'da/shee'da/ih'da	he/she/it would
unu + wuda > unu'da	you (pl) would
dehn + wuda > dehn'da	they would

6.5.2 Decision-making for vowels

After working through the consonants the discussion shifted to the vowels. The participant reviewed the Rule-based Model. As described in §6.3.2 and Table 26, each short vowel is represented by one symbol. A number of single-syllable Kriol words with short vowels were presented and there was some discussion of spelling options when the short vowel is at the end of a word. At this point the participants discussed their desire for a final <h> on several one syllable words after the word final short vowel.

BK Vowels	BK Symbols	Sample words in BK orthography after the first workshop
/i/	<i> <ih>	big, sing, jrink (drink), wi (we), si (see), plik (crazy) ih (he, she, it)
/e/	<e> <eh>	red, ten, ded (dead), bred (bread), mek (make), egg weh (where), seh (say), deh (there), tideh (today)
/u/	<u>	bush, fut (foot), buk (book), luk (look), du (do), tu (too)
/o/	<o> <oh>	son, no (no, any), flod (flood), trok (truck) noh (didn't, isn't), goh (go), soh (so)
/a/	<a> <ah>	bak (back), nak (knock), dat (that), bax (box) Ah (I)

Table 26: Written Belize Kriol words with short vowels

Next on the agenda were the long vowels. These posed the greatest problem and uncertainty in the process. As described in §6.3.2 concerning the English-oriented Model, the symbols chosen were to follow the most common patterns in English. This way there would be greater recognition and acceptance by people who were not positive towards Kriol language development. It was also presumed that the reduction of the numerous ways of writing vowels to only two or three ways, would be possible and a great simplification of the system. However, even at this early stage in the process, some people were concerned about the amount this system relied on knowledge of English. Table 27 and Table 28 below present the decisions that were made for the long vowels and diphthongs and the simplified rules for choosing between the options available.

A final session had been planned during which the participants would apply the spelling rules to lists of words. However, in the end, there was not enough time. The participants made one other decision; they felt that they

would prefer at this time to keep proper nouns spelled as they are in English or Spanish.

Even though this workshop did not resolve all of the issues, it was quite successful in making decisions on a great majority of the spelling decisions for most words.

BK Vowels	BK Symbols	Rule	Sample words in BK orthography after the first workshop
/i:/	<eCe#> <ea> <ee>	Used when it matches English spelling. All other locations.	kerosene, komplete (<i>complete</i>) bead, reach, eat, tea, sea, teacha (<i>teacher</i>) cheez (<i>cheese</i>), areenj (<i>orange</i>), eena (<i>in</i>)
/e:/	<a(C)Ce#> > <ay>	Used when it matches English spelling. All other locations.	bake, lane, table, paje (<i>page</i>), lase (<i>lace</i>) bay, day, rayn, brayks
/u:/	<oo> <u(C)e#>	Used when it matches English spelling and all locations where the following rule does not apply. All other locations where it can be used.	food, moon, boots, soon, yoosta (<i>used to</i>), joorin (<i>during</i>) frute (<i>fruit</i>), tyune (<i>tune</i>), inklude (<i>include</i>), blue
/o:/	<o(C)e#> <oa>	Used when it matches English spelling and avoids using <oa> at the end of a word. All other locations.	rope, smoke, stone, lone, noe (<i>know</i>), bifo (<i>before</i>) boat, road, oapm (<i>open</i>), oava (<i>over</i>)

Table 27: Written Belize Kriol words with long vowels

BK Vowels	BK Symbols	Rule	Sample words in BK orthography after the first workshop
/a:/	<aa >		maaga (skinny), daata (daughter), alaam (alarm)
/ai/	<i(C)(C)e#> <y >	Used when it matches English spelling and avoids using <ai> at the end of a word. Used when it matches English spelling and avoids using <ai> at the end of a word.. All other locations.	bible, five, bite, lite (light), tie, pie try, kry (cry), fly, wy (why)
/ou/	<ou > <ow >	Used when it matches English spelling. Used when it matches English spelling.	spaitful (spiteful), taiga (tiger), raita (writer), spaida (spider), nainteen (nineteen) hous (house), mout (mouth), kloudz (clouds) powda (powder), krowd (crowd), owl, how, kow, now

Table 28: Written Belize Kriol words with long vowels and diphthongs

6.6 Orthography use

The next step in orthography development is a trial period.⁴⁵ This trial period for BK included further testing of acceptability. Over the next few years there were several different kinds of promotional activities.

⁴⁵ See §3.4 for the phases of orthography development.

At some point in the first year of the project the steering committee became the Belize Kriol Project (BKP) with a mandate to promote the literary development of the language. The Board of Directors of the BKP oversaw the promotional activities. A few years later The National Kriol Council (NKC) was formed as a cultural promotion and advocacy organization. The Belize Kriol Project became a division of the NKC.

Shortly after the first orthography workshop a small brochure called *How fi rite Bileez Kriol* [How to write Belize Kriol] (BKP 1994) was produced. This brochure explained the spelling rules, included a short story in the new orthography, and presented a brief grammar of Kriol. The brief grammar statement showed that Kriol not only has an orthography, it also has a grammar, i.e. the language has structure, which can be linguistically described. These developments countered the perceptions of BK's deficiencies as pointed out by Cooper (n.d.) in §5.2.1.

The BKP participated in several cultural events each year, for example the Crooked Tree Cashew Festival and the September 10th Battle of St. George's Caye Day. At these events a booth would be set up, the *How fi Rite* brochure was distributed, and people were informed about the orthography development activities. Promotions were also made on several radio and television programs each year to encourage recognition of the language as a real language with cultural and academic value. One of the members of the BKP Board of Directors, Silvaana Uds, began to write a column in Kriol that ran each week for many years in the *Reporter* newspaper. The columns told about the cultural value of Kriol and there were also fictional stories and folktales. Columns continue to be printed on an irregular basis.

Through the following years data were collected around the country as to awareness of the *Reporter* newspaper columns and the *How fi Rite* brochure. People were also asked if they were reading these materials and they were asked about their attitudes toward Kriol language development. Over the course of several years attitudes began to shift to a greater willingness to acknowledge that Kriol has a real role in their culture. There were also people who reported that they had become regular readers of the Kriol newspaper column. There were advertisers who contacted the BKP to get the right spelling to have Kriol messages in newspaper advertisements and on billboards.

In 1997 the BKP published a glossary and spelling guide with approximately 3700 words. Several children's books were produced. Mr.

Peter's Boom and Chime Band, a cultural icon, produced a compact disk (CD) recording and the lyrics on the case sleeve were all in the BKP orthography. Brad Pattico, a well-known folk singer, produced a songbook of traditional songs (Pattico 2001). Some members of the BKP began to translate books from the Christian *New Testament*. Their first product in 1998 was a cassette tape with a dramatization of the Christian nativity story. The tape was packaged with the script written entirely in the BKP orthography. In 1999 they published the *Gospel of Mark*. In March, 2013 *Di Nyoo Testiment eena Bileez Kriol* was published and hundreds of copies have been sold or distributed around the country.

Belizeans have begun writing personal correspondence using this orthography. There are several churches that have classes for teaching people to read Kriol in order to have access to the New Testament. There continue to be occasional Kriol articles and advertisements in the *Reporter* newspaper, and billboards can be seen around the country using the orthography. There are a few teachers who have been using the grammar, *The Song of Kriol* (K. Decker 2005), in classrooms, and they use the orthography for writing Kriol examples. There are several websites that either use occasional Kriol, such as the NKC website (<http://nationalkriolcouncil.org/home>), or are completely in BK, such as the Jehovah's Witness website (<http://www.jw.org/jw-bzk>). In general, there is an attitude of acceptance of the orthography, even though some people still oppose the idea of writing Kriol at all.

6.7 Orthography redesign

In May, 2001 the consultation position with the BKP passed from Ken and Sandy Decker to another SIL International consultation team, Paul and Cindy Crosbie. This team had worked for a number of years as consultants for a similar language management project in St. Lucia with Kweyol, a French-lexicon Creole. Shortly after beginning work in Belize, members of the BKP asked the consultants for a revision of the orthography. After years of using the orthography they continued to struggle with remembering the rules for the long vowels and they had identified a few inconsistencies with consonants. The BKP committee held another orthography workshop in April, 2002.

6.7.1 Consonant revisions

Participants of the second orthography workshop first addressed the inconsistencies and desired changes that had been identified with consonants.

- < x > The <x> was removed from the alphabet and replaced by the <ks> combination.
- < tr > The <tr> and <dr> combinations in English are pronounced in Kriol as [tʃɹ] and [dʒɹ], respectively. During the first workshop the decision was made to write the former as <tr> but the latter as <jr>. They decided to change the <tr> to <chr> to match the <jr> pattern.
- < CC > In the first workshop there was an irregular choice of words that were spelled with and without doubled consonants. In the second workshop the participants decided to eliminate all doubled consonants.
- < - > Hyphenation. In the first workshop it was decided that hyphenation would not be used. This was not addressed in 2002 workshop. However, by the publication of the grammar (K. Decker 2005) and dictionary (Crosbie 2007) a number of words had been introduced with hyphenation. It seems that some of them are purely random, but it might be that combining the morphemes would create consonant clusters that are considered unacceptable, such as: <out-daytid> *outdated*, <jos-kohn> *newcomer*, and <dobl-benk> *overpower*. Other morphemes combined by a hyphen may signify that the morphemes without combination by hyphenation would not carry the same meaning, for example: <op-stap> *wrong way*, <oabya-man> *practitioner of obeah*, <man-bwai> *a young man still treated as a child*, and <bak-chat> *talk back*. In Kriol, some plant and animal names come from phrases. It is possible that the hyphenation of these phrases is needed to indicate that the phrase is actually a name, such as: <nak-mi-bak> *an herbal medicine* and <man-a-waar> *frigate bird*, but not <giv ahn tek> *a variety of palm tree*. Creoles also like to create colorful names for habitations, such as <nak-ahn-stan-op> *shack*, <op-stayz hous> *house on stilts*, and <jrai-weda hous> *house with a leaking roof*. In general, Kriol does not use affixes nor inflect verbs. However, a few adjectives can become adverbs when followed by <wan>, such as: <kwaiyat-wan> *quietly*, <kwik-wan> *quickly*, and <jrai-wan> *brazenly*, and <braad-wan>

openly. There are a few other grammatical markers that have been hyphenated when combined, such as: <mi-di> (*past progressive tense*), <da-mi> *was*, and <deh-aan> (*intensifier*).

Proper nouns. The committee decided to use Kriol spelling for all names in the Bible translation work and for fictional characters when a story is written completely in Kriol. The spelling of all other proper nouns will be left to the writer's discretion.

6.7.2 Vowel revisions

The committee decided to reduce the spelling options for the long vowels and diphthongs from two, or three, to only one.

- < ee > The digraph < ee > was retained for the /i:/ sound.
- < ay > The digraph < ay > was retained for the /e:/ sound.
- < oo > The digraph < oo > was retained for the /u:/ sound.
- < oa > The digraph < oa > was retained for the /o:/ sound.
- < ai > The digraph < ai > was retained for the /aɪ/ sound.
- < ow > The digraph < ow > was retained for the /ou/ sound.

6.8 Summary

To identify a model upon which to base an orthography for BK, several models were tested. A system was identified that makes a compromise between maximal representation and maximum motivation. Furthermore, the system is not so rigid as to limit a writer's expression in the use of spelling variations that represent dialectal variations. The process also allowed adjustments to the orthography through the course of time.

The use of the English-oriented Phonemic model was intended to allow greater variation to gain more appearance of similarity to English. Revisions to the system moved from a more complex system to a simpler, more uniform system. The revised system is more like a Phonemic model, but one that does not follow the IPA for the long vowels. It is only conjecture as to whether it would have been better to start with the Phonemic model and try to introduce variation. However, it seems that there was no problem to start with more variation and then revise the system to more uniformity. The most

important factor is that the speakers of the language led the process and have arrived at something they like and will use.

DISCUSSION AND CONCLUSIONS

THE primary purpose of this dissertation has been to analyze development of an orthography for the Kriol language of Belize. In this chapter aspects of orthography development for Creole languages will be summarized and conclusions will be drawn from the case studies that have been presented in this dissertation. There will also be a proposal for some further steps.

7.1 Principles of sound-symbol choices

Linguists have identified the Phonemic Principle as an optimal approach to orthography development. One of the major goals of this dissertation has been to explore reasons for deviating from this standard and ways that the developers of a specific orthography may make alternate choices for writing their language. In §2.4 principles for orthography design were discussed. As we will see now, those principles are general and when the Belizeans made decisions on the choices of sound-symbol relationships, they employed a more detailed and specific set of principles. Some of these principles are closely related to the Smalley's (1964) and Lüpke's (2011) guidelines, but some principles are rather grounded in the linguistic and sociolinguistic realities of the situation. Following is a summary of the major principles as expressed by the participants in the orthography workshops, as described in §6.5 and §6.7 above.

1. Write the way we speak. This is like Smalley's "maximum representation of speech", but its expression is made in the context of a desire that the BK orthography not look too much like English.
 - a) Do not represent letters used in English but not pronounced in BK
* <nd/_#> for /n/_# or <th> for /t/ or /d/
 - b) Do not be concerned with maintaining etymological shape appearance
association of words, no need to keep silent letters <b, k, l> etc.,
* <gh, ph> for /f/

2. Choose symbols and digraphs only from the English orthography (no <ŋ, ε, ʒ>). This related to several of Smalley's principles; it maximizes learning, transfer, and ease of reproduction.
 - a) Choose symbols that have the 'perceived obvious' representation of the sound; for vowels this means selecting the common option from the many options available. Use a single symbol to represent lax vowels and digraphs to represent tense, long vowels. Initially, it was decided that the tense, long vowels would have two or three options for spelling, guided by rules. This was later revised to only one option.
 - b) Avoid symbols that have ambiguous symbol-sound relationships (<c>) or disambiguate (<g> for /g/ and <j> for /dʒ/, not /j/).
 - c) Avoid symbols that are redundant (<q> and <x>).
 - d) Since there are not enough letters to maintain a one-symbol to one-sound correspondence, allow a limited use of digraphs. The permitted digraphs are: <sh> for /ʃ/, <ch> for /tʃ/, <ng> for /ŋ/, <zh> for /ʒ/, and <hn> for nasalization of vowels. The use of <h> in several of the digraphs follows a well-established pattern in English whereby an <h> can be used to modify other symbols for representing a different sound, such as: <gh#, #ph> for /f/, <th> for /θ, ð/, <wh> for /w/, <sh> for /ʃ/, and <ch> for /tʃ/. Digraphs are also allowed for long vowels and diphthongs.

3. Do not allow BK to look substandard with respect to English (e.g., using * <'> for "missing" letters).
 - a) A rule from English can be borrowed if it has the same perceived obvious strength of association as any other symbol to sound association (<n>/__C_{velar} = /ŋ/, <ng> and <nk>; <ng> would actually represent /ŋ/ + /g/, but [g] does not occur at the end of a syllable, it is unreleased /g̚/). This is also another case of choosing something that is perceived as an obvious choice; <ng> or <nk> are not ambiguous for /ŋ/ and /ŋk/.
 - b) Even though English /tr/ and /dr/ may be pronounced as [tʃr] and [dʒr], respectively, participants wanted to represent the [tʃr] and [dʒr] pronunciations represented more transparently as <chr> and <jr>.

4. Allow variation for some things:
 - a) to represent dialectal variation as long as it does not create ambiguity (<v> ~)
 - b) to reduce complexity: for example, /h/ only occurs word initially, therefore it can represent other things elsewhere, rather than creating a new symbol (<ʃ> for /ʃ/, <ʈ> for /ʈ/, <ʒ> for /ʒ/); this also allows the <h> to be used at the end of certain words.
 - c) Some patterns established previous to standardization may be retained if they do not conflict with any other principles.
 - d) Due to the relationship with English, it is possible that someone writing Kriol may want to include an English word, which is not generally considered to be a Kriol word. Some English conventions were considered as not needing a Kriol spelling (pneumatic, psychology).
 - e) Initially, it was decided to leave proper nouns in English. However, this was later revised to encourage the transition of proper nouns to using a Kriol spelling.

7.2 Lessons learned: language and orthography development

Another goal of this dissertation has been to demonstrate that an orthography can be created and standardized for a Creole language. We have also discussed the strengths and weaknesses of language management as an intentional development activity. A number of factors have been discussed, such as group identity and attitudes that need to be influenced through status planning. We have considered the fact that language management efforts can be directed at many levels of language use in both international and endangered languages. However, the focus of the discussion has been primarily on smaller, lesser known, endangered languages, and particularly on Creole languages. The Kriol language of Belize was used as a subject for demonstrating the steps for creating an orthography and beginning the process of standardization.

Creole languages have been described by linguists and laymen alike as impoverished speech forms. Even though some Belizeans and linguists said it would not be possible to write Belize Kriol, we know that no language has been found for which it was impossible to create an orthography. We have

demonstrated that linguistically, a Creole language lacks nothing that should prevent the creation of a useful orthography for writing and reading the language. A number of variations have been presented for orthography design that are possible for closely related languages, and particularly Creole languages. Through this example of the creation of an orthography we have seen that a *perfect* phonetic system is not required. In fact, a *good* orthography is one that has been created in response to the community attitudes, which will produce an *imperfect* orthography. People have expectations as to how the orthography for their language will look and these attitudes should be allowed to drive the choices in the creation of the orthography. Furthermore, this example has demonstrated that even within the context of a Creole continuum, where there is considerable language variation and code mixing, people have a sense that enables them to distinguish between speech that is Kriol and that which is English; an orthography was created that people recognize as Kriol, and not English. Through the course of the Belize Kriol Project each objection to the creation of an orthography was addressed, most of which were based on false perceptions. We have seen how language attitudes have changed and a positive environment is developing for the further standardization and use of the orthography. The Belizean Creole people have also proven that they can develop enough of a sense of identity in their language that they will make the effort to learn to read and write it.

From the comparison of Old French literary development and modern language management efforts we see that it is not important, or possible, to insist on a perfect orthography from the start. In fact, as was seen with Latin, efforts to improve an orthography can actually have fatal consequences. It is possible, and maybe even preferable, to begin with several competing orthographies and work towards unification; we saw this with French and somewhat with Basque and Belize Kriol. We saw that Latin lost functionality as a spoken language while French gained functionality as a written language resulting in the decline of Latin and increase of French. The functionality of a written form of the language is critical to the success of the language management efforts.

Throughout this document it has been emphasized that languages are functional; people must have some real or perceived purpose for the use of a given language to provide the motivation to increase and maintain their proficiency in that language. It has been shown that orthography creation and

standardization, aspects of corpus planning, must be done in a larger context along with other language management and community development. Standardization of an orthography, particularly for a Creole or endangered language, cannot be accomplished without status planning. The status of a language, how people feel about and perceive their language, is a critical area of needed development for Creole and endangered languages. They must also believe that their speech form is something different from other speech forms. People who view their language as a dialect of something else will not believe they can develop their variety. This is related to Stewart's (1968a) perception of autonomy and Winer's (1990:252–253) principle of linguistic independence.

If a language is not seen as functional and separate, those are the first attitudes that need to change before an orthography can be standardized. Of course, a certain amount of orthography creation, standardization, and acquisition efforts can also be useful for creating a vision of the possible. Language acquisition efforts were also shown as effective in changing attitudes towards languages. We have seen that caution should be exercised during the development phase; when we are trying to improve the status, great care needs to be taken so that any cynical attitudes are not proven accurate.

The relationship between a community's identity and the languages they use is an important part of the determination of what development is possible. Groups that have a stronger identification with their heritage language will probably try to maintain the use of that language as much as possible. If a group has little identification with their heritage language, they may willingly shift to the use of another language that offers them more perceived benefits. In order to develop a literary standard for their heritage language a speech community must have a sense of identity as a group with vitality, with a significant history, and a sense of autonomy enabling them to make their own choices for themselves. It was also explained that the speakers of a dialect must be willing to focus on a higher level of group identification with the wider speech community and not demand that others acquiesce to their own speech variety.

Through this document it has frequently been mentioned that effective language management is accomplished through the collaboration of all the stakeholders. Development through the work of governments and other outsiders has been shown to often prove ineffective when there is no

collaboration with the speech community. As with any human interaction the relationships among the various stakeholders are in a constant state of change and require regular re-negotiation. When working with groups who have been oppressed in some way, the ultimate goal is that these people are better equipped or empowered to make their own choices and have equal access to the fulfillment of their basic human rights and needs. Committees have also been shown to be potential roadblocks to development. However, organization is obviously important if the process of development is to be accelerated faster than the hundreds of years required by French and other major literary languages. The facilitation from a committee should not be forced and much freedom must be extended to new writers, allowing experimentation.

Finally, the activity of creating an orthography for a Creole language has been described as language management. In this dissertation many ideas have been proposed for the future of Belize Kriol, other Caribbean Creole languages, and for endangered languages. In §1.2 two basic questions were proposed for this research:

- Can there be a positive impact on the language status and use of a language, particularly a Creole language, through language management?
- Can the creation of an orthography have a significant impact on language use and status for a Creole language?

It has been reiterated through the findings of others that language management has not had a very good record of success in terms of national level language promotion nor in saving (revitalization or reversing language shift) languages. In spite of the lackluster past, sociolinguists have learned valuable lessons about activities and approaches that will definitely create harm and unrest. Linguists will continue to be involved in language management, and there are examples of successful language management. It is useful to be able to advise what not to do in some language situations, and to be able to identify where there is a more promising environment for language management.

In summary, the factors that are critical for language management include:

1. Factors External to the speech community:
 - a) *Governments*: If a national government prohibits or actively resists the development of a lesser known language, it is very difficult for the language to survive. On the other hand, the financing of language management efforts by a government does not seem to have a significant positive impact. The creation of national borders that divide language groups can also be a hindrance to the survival of languages, as in the Basque example.
 - b) *External Agencies*: There are a number of organizations that get involved with language management: UNESCO, mission organizations, etc. These organizations have a better record of success than governments, although their *successful* efforts tend to only slow language shift. The critical issue is that they can work more collaboratively with the speech community.
 - c) *Neighbors*: Generally, speech communities do not care about the survival of neighboring speech communities. People of a more dominant speech community expect speakers of minority language groups to adapt to their language use preferences. At the least, this has a negative impact on the less prestigious language, and has sometimes resulted in war. Therefore, these neighboring groups are stakeholders. The survival and removal of injustice for the minority group will reduce unrest for the neighboring/dominate group.
2. Objective Internal Factors:
 - a) *Language Variation*: If there is too much variation it may not be possible to create an orthography that everyone will be happy with, such as in the Mixe example. If people in all the dialects agree that one dialect should be the standardized variety, then standardization is possible, as in the Matigsalug Manobo example.
 - b) *Group Size*: It is possible for a speech community to be too small for the maintenance of their heritage language. They may have small population numbers due to low birth rates, disease, war, emigration, or language shift. Increasing birth rates has been known to improve group identity of small speech communities.

- c) *Community Organization*: The internal political structure of a speech community can be a factor that unifies and gains group solidarity towards accomplishing goals, as in the Matigsalug Manobo example. However, the lack of group cohesion can perpetuate language shift, as may be happening in the Mixe and Yemba examples.
3. Subjective Internal Factors:
- a) *Attitudes*: One of the biggest factors in the maintenance or shift of a language is the attitude people have towards their own heritage language and other languages. If they perceive that their heritage language has functionality, they will maintain it. If an orthography is seen as increasing the functionality of their language, they will maintain it. Sentimental attitudes are generally not sufficient for sustainability in the long term.
 - b) *Identity*: If people believe that their language is a significant part of their identity they will be motivated to put effort into the language. Parents unwilling to teach the heritage language to their children will have a very negative impact on the maintenance of the language.
4. Factors Related to the Development Process:
- a) *Assessment*: It has been demonstrated that the use of the Sustainable Use Model is an effective tool for identifying the vitality of language use in a community and the appropriate response to the community's linguistic needs. While we did not discuss much about the importance of sociolinguistic assessments, it is possible to waste a lot of time, effort and resources if proper assessment is not carried out. Several examples could be presented in which there was not sufficient assessment done before development work was begun. Then at some later time, it was realized that the work being done in two places was duplicated, or development work was unappreciated by the local community.
 - b) *Analysis*: As was demonstrated in the Yemba and Kaingang examples, improper linguistic analysis can lead to confusion and frustration.
 - c) *Planning*: The involvement of a significant number of stakeholders, representing the different interests in development, is necessary for good planning and eventual acceptance of changes. It appears that the lack of stakeholder involvement in planning and implementation in

the Kaingang example may have resulted in frustration. It might have resulted in rejection of all the language management effort of the outside agency.

- d) *Design*: As was shown through the French and Belize Kriol examples, the orthography does not need to be perfect. In fact, as was seen in the Mixe example, being too restrictive and prescriptive with an orthography can have a negative response.
- e) *Implementation*: There are several important aspects to implementation: trying to force standardization too quickly can have a negative effect on acceptance, outsider-driven programs must work to enable the local speech community to gain their ownership of the effort, and the lack of stakeholder involvement in planning and implementation may alienate the speech community.
- f) *Acquisition*: Activities intended for informing and teaching some new change is not only necessary for the implementation of those changes but it can also have a positive impact on the speech community by increasing their perception of the functionality of their heritage language.

7.3 Proposal for further language management of English-lexicon Creole languages of the Caribbean

In §1.2 several basic research questions were posed for this research. The third question asked: What is necessary for the successful development of an orthography for a Creole language? One answer is to address the issues raised by Stewart's (1962a) taxonomy of language types. While Stewart's taxonomy says that a Creole language cannot be standardized, it may be more accurately stated that the taxonomy simply points to the issues that need to be addressed in perceptions of the community towards their language. Stewart says there are three qualities missing for Creole languages: historicity, autonomy, and standardization. In Belize, raising consciousness about the role of their language in their culture and history had the effect of changing attitudes supporting a sense of historicity. Many of the former colonial territories of the Caribbean have gained independence during the last century. In Belize it appears that this independence is having an impact on the Belizeans' sense of autonomy. Through the Belize Kriol Project's creation of the orthography and production of various forms of literature there is a growing awareness that their language can be

standardized. While these changes in attitudes are not necessary for the actual creation of an orthography, they are necessary for the community to embrace the orthography and use it. In other Creole-speaking territories these same issues will need to be addressed.

Another important issue in the language management and orthography development for Creole languages is the identification of a unique function for both the oral and written forms of the language. While it has been observed that Creoles in many locations feel endearment to their language, regardless of what they may say, the pressure of the major lexicon languages, like English and French, will continue to dominate in both oral and written functions. There need to be intentional efforts to identify domains of language use where the lexicon languages are seen as insufficient, such as in traditional story-telling. The unique role of the Creole language in these functions needs to be celebrated and emphasized as an important part of the culture.

Orthographies have been developed for other Creole languages around the world, and more specifically in the central Atlantic region. Some of them are more standardized than others. On the West African coast there are four Creole languages that are written: Cameroon Pidgin English, Nigerian Pidgin English, Sierra Leone Krio, and Cape Verdean Creole, a Portuguese-lexicon Creole. On the western side of the Atlantic there are also several written Creoles: Haitian and St. Lucian French-lexicon Creoles; Papiamentu, a Spanish/Portuguese-lexicon Creole; and Jamaican, Islander (the Creole of the Colombian archipelago of San Andrés and Providencia), and Gullah, all English-lexicon Creoles. Of the English-lexicon Creoles with orthographies, all of them have basically phonemic IPA-based writing systems, except for Gullah, which is more like the English-Modified model.

From 1998 through 2005 this author conducted further research in several locations around the Caribbean. During this research more people were found in other territories who were interested in orthography development and SIL consultants were invited to return to lead several more workshops.

	/i:/	/i/	/ie/	/e:/	/e/	/a:/	/a/	/u:/	/u/	/uo/	/o:/	/o/	/ai/	/ou/
ii	JNI													
y	I													
ee	B													
i		A												
ie			JNI											
ay				B										
e					A									
aa						A								
a							A							
uu								JNI						
oo									B					
u									A					
uo										JNI				
oa											B			
o												A		
ai													A	
ou														JNI
ow														IB

Table 29: Comparison of four orthographies

J = Jamaican, N = Nicaraguan Creole, I = Islander,
 B = Belize Kriol, A = All four

In the following three sections other Caribbean English-lexicon Creole orthography efforts will be described. Table 29 above presents a comparison

of the choices that have been made for representing the vowels in the four Caribbean English-lexicon Creole varieties with working orthographies: Jamaican (J), Belizean (B), Islander (I), and Nicaraguan (N). (A) in Table 29 indicates a choice that was the same for all locations. Since the phonologies of each of these varieties are similar, it is possible to align the vowel phonemes along the top of the chart. The spelling symbol choices are listed down the left side of the chart. For example, we see that the diphthong /uo/ (in the top row) is found in Jamaican, Nicaraguan, and Islander, but not Belizean. In all three of the locations (JNI) <uo> was chosen as the way to represent the diphthong (as seen in the left hand column). Notice that many of the choices are the same for all locations.

Aside from these aforementioned Caribbean territories, this author conducted sociolinguistic research in Sint Maarten, Antigua and Barbuda, St. Kitts and Nevis, Barbados, and St. Croix, U.S Virgin Islands.

7.3.1 San Andrés

In January 1998, this author, along with A. Keener, conducted a survey on the islands of San Andrés and Providencia, a Colombian archipelago off the coast of Nicaragua (Decker & Keener 2001a). The Islander Creole, as they call it, is quite similar to Belize Kriol. The primary difference being that several of the pre-verbal tense markers are different from Kriol. At the time of the visit the San Andrés Christian University was just in the beginning process of developing a trilingual education program (see Morren 2010), Creole to English to Spanish. Several meetings were held with educators and administrators discussing the possibility of using their Islander language in schools and as part of a multilingual education program. During these meetings written materials from Belize were presented and the orthography was explained to them. Initially, they decided to adopt the Belize system and try to use it for a while to see if it worked for them. It later was adjusted to a greater similarity with Jamaican.

By February 2001, momentum was building for the Trilingual Education program, and they needed to develop primers and other training materials. By that time enough people had tried to use the orthography and they decided that they wanted to reduce the long vowel spelling options to make it more of a one-symbol to one-sound spelling system. There were two significant differences in the phonology of Islander that forced the orthography to be more like Jamaican, two of the long vowels in Belize

Kriol, /e:/ and /o:/, are diphthongs, /ie/ and /uo/, in Islander and Jamaican. They chose to write those vowels like Jamaican, <ie> and <uo>, respectively. Interestingly, there were two variations that they kept. They continue to use <y> for /i:/ at the end of a word and they kept both <ou> and <ow> spellings for the /ou/ diphthong with the rule that /ow/ is used at the end of a word. A comparison of the four orthographies is shown in Table 29 above.

7.3.2 Nicaragua

In January 1998, this author, along with A. Keener, conducted a survey in Bluefields, Nicaragua studying the English-lexicon Creole spoken along the Caribbean Coast of Nicaragua (Decker & Keener 2001b). In some ways Nicaraguan Creole is linguistically more like Belize Kriol and in other ways more like Islander. At the time of that visit there were positive attitudes towards Creole development for language and culture preservation, but there were no definite next steps proposed.

In January 2002, Silvaana Uds, from the Belize Kriol Project, was invited to lead an orthography workshop in Bluefields. At the workshop she presented the revised Belize Kriol and Islander orthographies. Nicaraguan Creole, like Islander, has the /ie/ and /uo/ diphthongs like Jamaican. They chose to make their orthography more like Jamaican. A comparison of the four orthographies is shown in Table 29 above.

In April 2002, URUCCAN⁴⁶ invited this author to lead a writing workshop for a group of Creole teachers. URUCCAN has been leading an effort to create educational materials for the Creole community (Koskinen 2010). While there were only two days allotted for writing, the participants were encouraged that they had a workable orthographic system, in which they could quickly pickup writing skills, and they understood some of the necessary steps for developing more materials. As educational materials have been developed in San Andrés they have been shared with people at URUCCAN.

⁴⁶ University of the Autonomous Regions of the Caribbean Coast of Nicaragua (URUCCAN)

7.3.3 St. Vincent

In March and April 2003 an SIL colleague, David Holbrook, had conducted a sociolinguistic survey on the island of St. Vincent in the eastern Caribbean. Dr. Holbrook had contact during that time with a Canadian NGO called Literacy for Leadership, as well as local educators and Christian ministers. He found that there was considerable interest in developing a bilingual education program, which would require a certain amount of Creole language development.

In April 2005, further research was conducted in the form of an orthography workshop, led by this author. This workshop was designed much like the original Belize orthography workshop except that the Historical-Etymological Model was not presented. Unfortunately, the participants were not able to make the decisions needed to complete the task. They resolved to meet again at a later date, but this has not occurred yet.

7.4 Further studies

Language management is a young applied science and there is much room for further development. Fishman's GIDS (Graded Intergenerational Disruption Scale) scale has been gaining widespread acceptance and application. The EGIDS (Expanded Graded Intergenerational Disruption Scale) scale is an improvement and hopefully it will gain acceptance as superior to Fishman's scale. This scale provides a way of categorizing languages in a way that can be correlated to appropriate language management strategies. The SUM (Sustainable Use Model) model provides a good tool to associate language vitality with the FAMED (Function, Acquisition, Motivation, Environment, Differentiation) conditions of language sustainability. Acceptance and application of this tool in more language management situations should be helpful in guiding many language management efforts. Case studies developed from the use of this tool would also provide verification of the accuracy of the Model. Such case studies would also provide theorists with data upon which to base theories as to why some language management efforts are more successful than others. There have been enough development projects around the globe that it would be helpful for there to be a cataloguing of development activities. Using the FAMED conditions and EGIDS scale we can create a list of situations where language management efforts may be worth implementation. For example,

what activities can help a speech community move from a level 7 in Functions to a level 6b? If a speech community wants to move from a level 6a in the Differentiation condition to level 5, what activities have been tried? If a community is resolved that they are going to shift to the use of another language, but they want to attempt to maintain their heritage language for identity purposes, what activities will help keep the language in their memory, at level 9? Such a catalogue could provide guidance and ideas that could be implemented in other speech communities for any stage of development.

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Summary

THIS dissertation focuses on orthography development. Orthography development has not been embraced as a major focus by any sub-field of linguistics. In structuralist linguistics there has been some interest in the relationship between sounds and symbols and the creation of "scientifically-based" orthographies that emphasize the correlation between the sounds and symbols. Orthography development as an aspect of language management focuses on sociolinguistic or social scientific, or even socio-political, concerns of developing minority languages in multilingual environments. Orthography development has also been undertaken in efforts to revitalize endangered languages. In each of these areas there have been problems in the approaches that have been used to develop new orthographies.

Through the last century there have been many language management efforts intended to mediate the linguistic complexities of multilingual nations. In retrospect, many of these efforts have been criticized for their lack of response to the actual needs of the people impacted by those management efforts. When members of the language community become involved in orthography development, there are many sociolinguistic issues that conflict with the goals of creating a scientifically accurate and precise orthography. If an orthography is to be used, it must comply with the desires of the language community, and this requirement is paramount. To negotiate conflicting goals the language community must be intimately involved in the development process. Orthography development must also be part of a larger development effort. There needs to be development in terms of the status and functionality of the language, which includes developing ways for people to learn and use the new orthography.

Sociolinguistic issues must take precedence over linguistic elegance, but attention must also be given to an unambiguous relationship between phones, morphology, and symbols. The development of a good orthography requires a thorough foundational study of the phonology and morphology of the language. The International Phonetic Alphabet (IPA) was created for linguists to have a precise way to document languages. This alphabet has

been used by many linguists as the basis for choosing symbols in the creation of new orthographies. However, most non-linguists are not familiar with the IPA, although they are familiar with the orthography of at least one major literary international language. Orthography developers need to give strong consideration to the influence of these other orthographies.

To gain a better understanding of the difficulties encountered by orthography developers during the last century five case studies are presented. To gain a better understanding of the successful historical development process of modern major literary languages, the history of the development of the French orthography is described and analyzed. Principles that are derived from the analyses of these case studies are combined with models for orthography development as developed by other linguists. Foremost among these principles are the importance of community involvement and compromise, allowing time for development and adaptation, and the expectation that there will be revision and inconsistencies.

These principles are then applied to the development of a new orthography for Belize Kriol, an English-lexicon Creole language. Due to their close relationship to other international languages, Creole languages present unique challenges for orthography development. Attitudes internal and external to the language community consider that Creole languages are deficient linguistic systems that cannot be written. Most Creole languages are lexically related to languages that have had orthographies for centuries, which do not have a close relationship between sounds and symbols. If one is to attempt to create an orthography for a Creole language, there are conflicting attitudes as to how it should look. Some feel that it should look as similar as possible to its related international language, for example, that written Belize Kriol should look like English. Others feel that it should look as different as possible to establish that it is a separate language. This creates a situation in which sociolinguistic concerns drive the choices for symbols to represent the sounds.

In conclusion, this research shows that there is nothing intrinsic about a Creole language that prohibits the development of an orthography. An orthography for Belize Kriol has been in development for twenty years and is increasingly being used in different sectors of the Belizean community.

Samenvatting

DE focus van dit proefschrift ligt op de ontwikkeling van orthografie, een onderwerp dat binnen geen enkel deelgebied van de taalkunde als hoofdthema fungeert. Het structuralisme heeft wel belangstelling gehad voor de verhouding tussen spraakklanken en symbolen, en voor het ontwerp van „wetenschappelijke orthografieën“ waarin het verband tussen spraakklanken en symbolen benadrukt wordt. Orthografieontwikkeling is een onderdeel van taalbeleid en taalmanagement, en omdat politiek-dominante talen allemaal geschreven worden, houdt orthografieontwikkeling zich sociolinguïstisch of sociaalwetenschappelijk bezig met de belangen van minderheidstalen in meertalige omgevingen. Orthografieontwikkeling werd ook toegepast in programma's die als doel hadden om bedreigde talen nieuw leven in te blazen. In al deze gebieden ontstonden echter problemen in de manier waarop men nieuwe orthografieën trachtte te ontwikkelen.

Gedurende de laatste eeuw waren er veel taalmanagement projecten met als doel om te bemiddelen in de talige complexiteit van meertalige landen. Terugblikkend werden vele projecten in orthografieontwikkeling bekritiseerd vanwege onvoldoende sensibiliteit voor de reële behoeften van de mensen die door de verschillende taalbeleidsbeslissingen getroffen werden. Wanneer leden van de taalgemeenschap betrokken werden bij de ontwikkeling van een orthografie, kwamen een groot aantal sociolinguïstische belangen aan het licht die haaks stonden op het doel om een wetenschappelijk nauwkeurige orthografie te ontwikkelen. Als verlangd wordt dat een orthografie ook daadwerkelijk gebruikt wordt, moet die wel overeenstemmen met de wensen van de taalgemeenschap. In de omgang met deze tegenstrijdige belangen moet de taalgemeenschap bij het ontwikkelingsproces nauw betrokken worden. Verder moet de ontwikkeling van een orthografie opgenomen worden als onderdeel van een groter ontwikkelingsproces. Ook de status en functionaliteit van de taal moet ontwikkeld worden, hetgeen inhoudt dat mensen de nieuwe orthografie moeten leren gebruiken.

Sociolinguïstische vraagstukken moeten altijd de voorrang krijgen boven taalwetenschappelijke elegantie, waarbij men ook aandacht moet hebben voor een eenduidige verhouding tussen spraakklanken, morfemen en symbolen. De ontwikkeling van een goede orthografie veronderstelt een diepgaande analyse van de fonologie en morfologie van de taal in kwestie. Het Internationaal Fonetisch Alfabet (in het Engels afgekort als IPA) werd voor taalkundigen ontwikkeld om spraakklanken op een precieze manier vast te leggen bij de documentatie van talen. Veel taalkundigen hebben het IPA als uitgangspunt voor orthografieontwikkeling gebruikt. Hoewel de meeste niet-taalkundigen onbekend zijn met het IPA, zijn ze toch bekend met de orthografie van minstens één internationale literaire taal. Orthografieontwikkelaars moeten daarom grote aandacht schenken aan de invloed van deze andere orthografieën.

Om een beter inzicht te krijgen in de moeilijkheden die ontwikkelaars van orthografieën ondervonden in de afgelopen eeuw, worden vijf gevalstudies beschreven en besproken. Om beter te begrijpen waarom de moderne grote literaire talen zich in de loop van de geschiedenis zo succesvol ontwikkelden, beschrijven en analyseren we de geschiedenis van de Franse orthografie. De richtlijnen die uit de analyses van deze gevalstudies afgeleid worden, worden vergeleken met modellen voor orthografieontwikkeling die door verschillende taalkundigen zijn voorgesteld. De belangrijkste richtlijnen betreffen de betrokkenheid van de taalgemeenschap, de bereidheid tot compromis, voldoende tijd voor ontwikkeling en aanpassing, en de verwachting dat herzieningen en tegenstrijdige belangen en wensen onvermijdelijk zullen zijn.

Deze richtlijnen worden dan vervolgens toegepast voor de ontwikkeling van een nieuwe orthografie voor Belize Kriool, een creoolse taal dat de Engelse woordenschat als basis heeft. Als gevolg van hun nauwe relatie met andere internationale talen, stellen creoolse talen ons voor unieke uitdagingen in de orthografieontwikkeling. Zowel binnen als buiten de taalgemeenschap vindt men het standpunt dat creoolse talen gebrekkige taalsystemen zijn waarvoor het niet goed mogelijk is om een orthografie te ontwikkelen. De meeste creoolse talen zijn lexicaal verwant met talen die eeuwenoude orthografiën bezitten, maar waarbij er geen eenduidige relatie is tussen spraakklank en symbool. Als iemand probeert om een orthografie te ontwikkelen voor een creoolse taal, zal blijken dat er tegenstrijdige ideeën bestaan over hoe die orthografie er uit moet zien. Sommigen menen dat de

orthografie zoveel mogelijk op de verwante internationale taal zou moeten lijken, dus dat Belize Kriol op het Engels zou moeten lijken. Daarentegen vinden anderen dat de orthografie zo weinig mogelijk op de dominante taal zou moeten lijken om te onderstrepen dat het gaat om een aparte en zelfstandige taal. Dit leidt tot een situatie waarbij sociolinguïstische factoren gaan bepalen hoe de spraakklanken door symbolen worden weergegeven.

In dit onderzoek komen we tot de conclusie dat niets in de aard en hoedanigheid van creoolse talen de ontwikkeling van een orthografie in de weg staat. Een orthografie voor Belize Kriol is al gedurende twintig jaren in ontwikkeling, en wordt in toenemende mate in verschillende sectoren van de Belizaanse maatschappij gebruikt.

About the Author

KENDALL 'Ken' Decker was born April 14, 1955 in Henderson, Kentucky, USA. After graduating High School in Bradford, Pennsylvania, where he disliked any language classes, he enrolled at Colorado State University in Wildlife Biology studies. After following a path as a rock climber for several years and getting married, Ken completed his BA in Industrial Education in 1981 at Purdue University.

In 1985, Ken and his wife Sandy became inspired by the language development work of SIL International. After a year and a half of intensive training they went to Pakistan and joined an SIL team of linguists conducting sociolinguistic research on the languages spoken in the mountains of northern Pakistan. After three years of research they returned to the USA and Ken enrolled in the University of Texas at Arlington and earned an MA in Linguistics. After finishing his MA in 1992, Ken and Sandy moved to Belize in Central America and began studying Belize Kriol. Ken and Sandy served as consultants to the Belize Kriol Project from 1993 to 2001. From 1998 to 2005 Ken conducted numerous surveys and orthography workshops around the Caribbean, including: Honduras, Nicaragua, Colombia, Venezuela, Guyana, Turks and Caicos, Antigua and Barbuda, Sint Maarten, St. Barths, St. Kitts and Nevis, Barbados, Dominica, St. Vincent, Trinidad and Tobago and St. Croix, US Virgin Islands. He also supervised other researchers who conducted further surveys in Brazil, Mexico, Chile, Panama, Costa Rica, Bahamas, British Virgin Islands, Anguilla, Grenada, and St. John's, US Virgin Islands.

In 2005 Ken became the International Language Assessment Coordinator for SIL International overseeing sociolinguistic research around the globe. In his spare time Ken enjoys rock climbing, sailing, spending time with family, and reading.

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