

THE DEVELOPMENT OF WRITING SYSTEMS: A GUIDE

based on

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"Guide pour le développement des systèmes d'écriture des langues africaines"
Yaoundé: Université de Yaoundé & S.I.L. 1988 [UdY]

[2]

Institute for Curriculum Development and Research, Ministry of Education, Addis Abeba,

"A Handbook for Bilingual Education" Part I, 1992
as presented by *Ronald Morren (S.I.L.)* [ICD],

with examples and illustrations from

[3]

Francis Katamba, Jacques Durand, Ian Maddieson, and the
"*LinguaLinks*" Project 1997 (S.I.L.)

translated, compiled and updated by K.& Ch.Wedekind

for use at the

Workshop on

ORTHOGRAPHY DESIGN

10 November - 19 December 1997

Curriculum Department - The Ministry of Education - Asmara

CONTENTS

For details (definition, examples, procedures) see the register at the end

1. GENERAL INTRODUCTION	3
2. AN INTRODUCTION TO LANGUAGE SYSTEMS	4
3. PHONETICS: THE SOUNDS	5
4. PHONOLOGY: THE PHONEMES	7
5. SUPRASEGMENTALS: THE "EXTRAS"	16
6. ORTHOGRAPHY: "FROM SOUND TO SYMBOL"	18
7. CONSIDERING THE ORTHOGRAPHIC CHOICES	20
8. STAGES OF ORTHOGRAPHY DESIGN: A CHECK LIST	33
9. TESTING THE ORTHOGRAPHY	34
10. ANNEX: ON BOOKS, ARTICLES, TABLES OF SYMBOLS, INDEX	37

1. General Introduction

In the discussion of orthography questions, the common experience is that cultural, historical, political, and psychological issues are very prominent. They dominate the discussions and they determine the decisions. And the societal aspect is, in fact, the most important aspect of orthography design: the acceptability to the speakers of the language.

1.1 Why phonology? Why morphology?

For those who have to discuss orthography questions in a responsible manner it is imperative that they argue from a clear understanding of the language itself - especially its sound system ("phonology") and the properties of writing systems. The person who understands the mechanisms and rules of a system will refer to objective facts rather than guesses or opinions.

All sounds of a language are part of a "system". And like other systems - physics, or biology or chemistry - language "systems" also have their mechanisms, "rules" and "laws". It is for this reason that people who wish to handle such a "system" need to have a clear understanding of its mechanisms, "rules", and "laws".

To plan chemical processes without a clear understanding the chemistry involved would be dangerous. To plan orthographies without a clear understanding of the phonology involved would be irresponsible.

Phonology and orthography hang together - but they are not the same.

If the "phonology" of a language is understood, it will be easy to see which choices there are for "the best orthography". A person who argues on the basis of phonological knowledge is free, on the one hand, to offer various choices of possible orthographies, but, on the other hand, s/he will be careful against the dangers of ignoring the logic of the language.

Orthographies are based on "phonologies".

In a few languages such as old Egyptian or Mandarin Chinese, the "pictures" of ideas are used in addition to the "sounds" of ideas - but there is no writing system which functions without reference to "sounds".

Good existing orthographies (like Serbo-Croatian, Korean, Spanish, Tigrigna or Tigre) have been built on the intuitive or explicit knowledge of phonological facts. These orthographies are considered "good" because they do not do violence to the language system which they represent. Instead, they reflect the regularities and symmetries of the language system itself: They follow its inherent laws, because they have been designed with respect for the logic of the language.

The task here is to discover the "logic" and "phonology" of the languages under study.

1.2 Orientation

This guide is based on materials which were developed for the work on "sound systems" and "writing systems" in various parts of the world. It addresses situations where the revision of the writing system is planned, or even where no writing system is in existence.

The guide presents principles and guidelines for the choice or the change of an orthography. The guidelines should make it possible to establish the "rules of orthography" for *any* language.

The guide does not pretend, however, to offer *all* answers for a full-fledged standardization of a new literary language. "Orthography design" is *one* major step towards standardization, but there are other steps - dictionary making, ongoing literary production, for instance - which will not be covered in this book.

2. An Introduction to Language Systems

2.1 Language is a system of systems

Language can be compared to the human body. The human body is made up of various systems (the respiratory system, the digestive system, the nervous system ...) all of which work together to produce life.

Language is made up of systems, all of which work together to produce expressions and messages.

When we study language, we can identify 4 major systems, each of which has its sub-systems. We can think of them this way:

Language	
<p>1. <i>Sounds</i></p> <p>- "Phonetics" and "Phonology"</p>	<p>3. <i>Grammar</i></p> <p>- "Syntax" (some add "Morphology" here)</p>
<p>2. <i>Meaningful Parts of Words</i></p> <p>- "Morphology" (parts which have meanings)</p> <p>- "Semantics" (the meaning of words)</p>	<p>4. <i>Discourse / Text / Literature</i></p> <p>- "Discourse" or "Text Study"</p> <p>(the whole message)</p>

The first part of this guide mainly deals with the first system: "*Sounds*" (phonemes).

Later on, to explain "morpho-phonemic" orthographies, the guide also refers to "*Morphemes*" and "*Words*".

Example (English):

un- lov -ing
 not [love] ADJmarker
 mis- inform -ed bed -s
 wrong give news PAST bed-PL

2.2 Some definitions of technical terms

To talk about language, we need a few technical terms, including some linguistic terms. The register (at the end of the handbook) lists all definitions which are used in any part of this "guide".

The study of such *morphemes* as *un-*, *lov-* is called *morphology*. (For those who want to be more exact: The study of *how* the particles carry meaning, *how* they affect each other, and *how* they are ordered within words - that is called *morphology*.)

2.2.1 Sounds

- Sounds are identified by answering two questions: (1) *How* and (2) *where* are these sounds produced? The study of these two questions is called (*articulatory*) *phonetics*.

The study of the meanings of words, and how these meanings relate to each other (e.g., in synonyms or antonyms like "*hot/heated/cold*"), is called *semantics*.

But the study of *sounds of one particular language*, how these sounds distinguish *meanings*, and how the sounds *change* when they come next to each other, is called *phonology*.

2.2.3 Grammar

- Words are put together to form phrases, clauses, sentences, and paragraphs. There are special morphemes which connect sentences with each other.

2.2.2 Meaningful parts

- Words are those parts of language which carry meaning. But often the words are made up of smaller particles which also carry meaning or perform a grammatical function.

The study of how words relate to each other, and the study of how sentences are formed, is called *syntax*.

These particles which carry meanings are called *morphemes*. (For those who want to be more exact: The *smallest* parts of language that carry meaning are *morphemes*.)

2.2.4 Discourse

- To make a phone call, to read a book, we use "paragraphs" or "discourses". The name which we give to the study of whole messages is *discourse study* or *text study*.

3. Phonetics: The Sounds

"The sounds of a language" are not the same as "the phonemes of a language", and these again are not the same as "the letters of a language". Likewise, "phonetics" differs from "phonology" and this again differs from "orthography". How? The next chapters will show.

3.1 Introduction to "Articulatory Phonetics"

Here we are not dealing with phonetics as such, but with phonetics as the basis of describing "phonemes" and writing systems. Therefore the handbook does not deal with "acoustic phonetics" or "instrumental phonetics", but with the *pronunciation* of sounds, which often is called "*articulation*".

The sounds in this book will always be written ("transcribed") by symbols in square brackets: [...] - and all of these symbols are listed in the "IPA Chart" of the appendix. This consistent presentation is called a "*phonetic*" transcription. Phonetic research has reached a stage where probably the total inventory of human speech sounds is now understood, and the discovery of a "new" sound has become unlikely. With combinations of about 150 symbols the "International Phonetic Alphabet (IPA)" covers all these sounds. (Have a look at the chart which covers the "CONSONANTS" and "VOWELS", and see the "DIACRITICS" and "SUPRASEGMENTALS" of the IPA in the appendix).

Although there are many hundreds of sounds, we shall only be concerned with a few dozen. Phonetic training actually helps to understand, write, and master *all* these sounds and their pronunciation. It should even be possible to master a system as difficult as !Xû.

Our main goal here is (a) to understand the sound system of the own language, in and (b) to be able to present it to others in clear terms, using either scientific terminology or common everyday language.

The world has more than 6 ½ thousand languages, and they employ a very large number of sounds. Each language uses a different selection of sounds than all others. Interestingly, the languages are so different from each other that there is NO sound which is used by ALL languages. And, of course, there is NO language which uses ALL sounds that the human "vocal apparatus" could produce.

3.1.1 The production of sounds

Language sounds are produced by means of air which is "moved" and made to "vibrate". In most cases, this movement starts in the lungs and passes through the mouth and/or the nose. But for some sounds, the movement takes the other direction: instead of being e-gressive (going out), it is in-gressive (being sucked in).

Examples:

English egressive b-sound

[*bo t*] "boat"

Basa (Cam.) ingressive b-sound

[*βo t*] "people" implosive β

All sounds can be identified by describing three aspects:

- the source of the air stream (where the air comes from - lungs, larynx, or mouth)
- the direction of the air stream (where it moves - out or in)
- the places and manners where and how the air stream is changed (These are usually presented in a phonetic chart like the IPA chart, see the Appendix).

3.1.2 The vocal apparatus

The human vocal apparatus is generally considered as consisting of 5 main parts:

- the lungs,
- the larynx (sound box) with the vocal cords,
- three cavities (1 pharynx, 2 mouth and 3 nasal cavity),
- three parts which move (1 velum, 2 tongue, 3 lips), also called "articulators", and
- about 7 places which are touched by the velum, the tongue, or the lips (or "approached" by them);

the 7 "places" are as follows: 1 lips or "labial area", 2 dental area (behind the teeth), 3 inter-dental area (between the teeth), 4 alveolar area (the ridge behind the teeth), 5 palatal area (the highest point inside the mouth), 6 velar area (at the back of the mouth cavity), and 7 pharyngeal area (in the "throat"). The places are usually presented in the form of a "Face Diagram", where the 5 speech organs and the 7 places are shown. See the diagram by Katamba which was provided earlier.)

3.1.3 The air stream

There are 3 kinds of air streams: air of the lungs, air of the pharynx, and air of the mouth.

- 1 *Lung air* - this is the air stream which is used for more than 90% of all sounds, and usually this is "egressive lung air", i.e., which is "going out", like in the normal pronunciation of [a b d e f ...]

- 2 *Pharynx air* - this is only used for "ejectives" like p' s' t' k' (see Tigrigna **Ḗ ṃ Ḥ**) and for "implosives" like b d f g. The pharynx box or "voice box" ("throat") is actually closed, because the vocal cords are pressed against each other. No air can pass from the lungs.

- 3 *Mouth air* - this is only used for "clicks" (see /Xû for examples). The back of the mouth is closed, because the velum and the back of the tongue are pressed against each other. No air can pass from the lungs.

3.1.4 Types of sounds

Some types of sounds are usually grouped together because of their similarities, for instance:

- *Consonants (C) and vowels (V)*. For "vowels", the air has an "open passage" - for "consonants", there are obstacles like closed lips.

- *Voiced and voiceless sounds* - with "voiced" sounds, the vocal cords vibrate, with "voiceless", they don't: Compare "voiced" vvvv with "voiceless" ffff, or zzzz with ssss.

- *Oral and nasal sounds* - "oral" refers to the "mouth" cavity where most sounds are produced - "nasal" refers to sounds like m, n, ñ=j, and ŋ.

3.2 Consonants

For a repetition of the phonetic symbols you can refer to the "IPA Chart" (appendix) or to chapter 1.2.1 of Francis Katamba's handbook "Introduction to Phonology" (handouts).

3.3 Vowels

For a repetition of vowel symbols refer to the comparison of vowel systems (appendix), or the section "VOWELS" of the "IPA Chart", or to chapter 1.3 of Katamba.

3.4 Suprasegmentals

For a repetition of "suprasegmentals" (also called "prosodies" by some linguists) refer to the section "DIACRITICS" and "SUPRASEGMENTALS" of the "IPA Chart", or to chapter 3.3.7 of Katamba.

4. Phonology: The Phonemes

Chapter 3 was about sounds in general. Chapter 4 is about "distinctive sounds" of particular languages.

4.1 Introduction to "Phonology"

The most important concept of phonology for us is the "phoneme". It is important here because it is directly related to orthography questions: Phonemes are at the basis of orthographies. Why?

"Sounds change - phonemes don't."

Although this is not 100% true (languages tend to have a few rules which tell even *phonemes* to change!) - but one of the disturbing things about *sounds* is this: *they change*.

4.1.1 Sounds tend to be modified by their environments.

As the tongue moves between sounds, the "letters" may slur into one another.

However, these "slurred sounds" are not new letters, and they should not be written in the alphabet.

Example:

In English, there often is a "slur" between words like "law of". This sounds like "law-r-of". The sound can be heard, it is a true English "r", and people pronounce it. But "-r-" should not be written. Why?

4.1.2 Sounds tend to slur into silence.

Especially at the ends of words or sentences, vowels may be unvoiced.

However, if the speaker of the language knows that they are there, they should be written.

Examples:

In Cushitic languages, short final vowels like [a] in [minə] will be "whispered". They should be written. In English, "I hoped" often has a weak "t" at the end. But "hopt" should not be written. Why?

4.1.3 Sounds tend to be influenced by the larger units

Around each sound there are larger units (syllables, words, phrases), and they influence the sounds. Listening to the phonemes, one may want to write the words "as they sound" - which is different each time!

However since it is always the same word (or the same morpheme), such variations should not be written. A good orthography considers not only the *phonemes* but also the *morphemes*.

Example: (English, FK 1991:86)

[mis ʃona] "Miss Shona" slow speech

[miʃ ʃona] "Mish Shona" normal speech

Listening to the phonemes only, one might choose to write *Miss*, or *Mish*, or both! Both *s* [s] and *sh* [ʃ] are true English phonemes! But the morpheme "Miss" should not be written differently every time it sounds different. Why?

4.1.4 Sounds tend to take qualities of syllables near them.

Some syllables are long or short, stressed or unstressed, high tone or low tone, clear or nasalized, and the sounds in this syllable all tend to take on those qualities.

However, since this is just a superficial change, it usually is better to write the "underlying", unchanging form.

Example:

wōnder The "o" may be "nasalized" because of the "n". But the "ō" should not be written. Why?

4.1.5 Sounds tend to vary or "fluctuate"

This means: Some sounds vary freely. Obviously people do not always say a sound exactly the same way.

However, these small variations should not be written in the alphabet.

Example:

[ˈbɛtʰəɪ] "better" may be pronounced differently, depending on the dialect, the environment or even the mood of the speaker:

[ˈbɛdɔ, ˈbɛdɔɪ, ˈbɛtʰəɪ ...]. But all these forms should not be written. Why?

The question is: With all these changes, how can we defend a *solid* basis for a writing system?

4.2 Sound Systems

Languages are systems of systems. The "sound system" is one of them. Each language has its own "sound system" - different from all other systems of the world.

4.2.1 Languages of the world and their sound systems

The following passages give an overview of the world's sound systems.

4.2.1.1 Typical and special sound systems

Most languages (70%) only use 20 to 37 letters or "phonemes". When we speak of "phonemes" we include only the "distinctive" consonants and vowels. These 20 to 37 "distinctive phonemes" are only those sounds which help to distinguish meanings (as *t / d* in English "*mat / mad*") and which therefore need to be written. And here are the systems of extremely *low* or *high* numbers of phonemes:

The lowest number is found in a language like "*Rotokas*" (South Pacific) - it uses 11 "phonemes". The highest number is found in the Khoisan language "*!Xû*" (Southern Africa) - it uses 141 "phonemes".

4.2.1.2 Example: The phoneme system of Rotokas

Rotokas is in the books of world records. Why? Because of its small "phoneme inventory":

4.2.1.2.1 The Rotokas consonant system

Rotokas has a non-symmetrical system of only 6 consonants.

	bilabial	alveolar	velar
voiceless plosive	p	t	k
voiced plosive			g
voiced fricative	β		
voiced tap		ɖ	

4.2.1.2.2 The Rotokas vowel system

Rotokas has only 5 plain vowels.

	front	central	back
high	i		u
mid	e		o
low		ɑ	

4.2.1.3 Example: The phoneme system of !Xû (South Afr.)

This probably is the largest consonant system of the world. - Read it to practice the phonetic alphabet!

4.2.1.3.1 The !Xû consonant system

<i>Lung air (pulmonic)</i>	bilab	alv	alv velzd	palalv	palalv velzd	pal	vel	vel phgzd	other	labvel
voiceless plosive	p	t	t̥				k			
vl. asp. plos.	p ^h	t ^h					k ^h			
voiced plos.	b	d	d̥				g			
vd. breathy plos.							g̤			
vl. sibilant affricate		ts	ts̥	tʃ	tʃ̥					
vl asp. sib. affr		ts ^h		tʃ ^h						
vd. sib. affr			dz		ɖʒ					
vd breathy sib affr.		ɖʒ̤		ɖʒ̥						
vl fric.		s		ʃ			x			
vd fric.		z		ʒ					ɦ	
vd nasal	m	n					ŋ	ŋ̤		
vd long nasal	m:									
vd breathy nasal	m̤									
vd largzd. nasal	m̥									

vd flap		r								
vd. semi-vowels						j[y]				w

<i>Pharynx air</i>	bilab	alv	alv velzd	palalv	palalv velzd	pal	vel	vel phgzd	other	labvel
vl. eject. stop		t'					k'			
vd. eject. stop (?)	b'	d'					g'			
vl. eject. affr.		ts'		tʃ'						
vd. eject.affr.(?)		dz'		dʒ'						

<i>Mouth air</i>	dent	dent nas	dent nas & vel	dent vel	alv	alv nas	alv nas & vel	alv vel	pal	pal nas	pal nas & vel	pal vel
vl. click					x			x	x			x
vl. asp click					x	x			x	x		x
vl. glottzd click						x	x			x	x	
vd. click					x	x		x	x	x		x
vd. breathy click					x	x			x	x		
vd. glottzd click								x				x
vl. affr click	x			x								
vl. asp affr click	x	x										
vl. glot. affr click		x	x									
vd. affr click	x	x		x								
vd. breathy affr click	x	x										
vd. glot. affr click				x								
vl. lat affr click									x			x
vl. asp lat affr click									x	x		
vl gl. lat affr click										x	x	
vd lat affr click									x	x		x
vd. gl vd lat affr click												x
vd. br. lat affr click									x	x		

4.2.1.3.2 The !Xú vowel system

There are 24 vowels (i e a o u short and long, both nasalized and pharyngealized). In addition, there are 22 diphthongs (ia ei eu ae ao oi oe oa ui, both centralized and pharyngealized). The 24 vowels:

	front short	long	central short	long	back short	long
high (nas./phar)	i ɨ j	ii ɨi ɨj			u ũ ʉ	uu ũū ʉʉ
mid (nas./phar.)	e ē e	ee ēē ee			o ɔ o	oo ɔɔ oo
low (nas./phar.)			ɑ ǣ ɶ	aa ǣǣ ɶɶ		

4.3 The Concept of "Contrast" of Phonemes

Identifying the "phonemes" of a language is the result of a careful process of analysis which sometimes requires special efforts. The reason is that "similar" sounds sometimes are "the same" - but in other languages, they are "different". Any group of similar

sounds - like *n* and *ŋ* and *ñ* - might be "the same phoneme" or "different phonemes".

- Thus, [*n*] and [*ŋ*] are different phonemes in Kuna or English, but they are "the same phoneme" in Tigrigna or Arabic.

- Likewise, [*s*] and [*ʃ*] (=sh) are different phonemes in English - but they are the same phoneme in other languages, e.g. in Busa (Nigeria).

The existence of a phoneme is linked to the relation which it has with other sounds in the system of a particular language. (Just like a person's identity is linked to the it's place in the society.) A phoneme only exists because it differs from other sounds of this system. The environment in which such a difference is found must be either the same environment - or it must be very similar.

Let us look at such "environments".

4.3.1 Contrast in "identical environment"

The idea of "contrast in identical environment" is a very simple idea. Only the technical term is complicated.

4.3.1.1 Analysis

Consider these words of the *Feefee* language (Cameroon):

[sen] "a friend"

[zen] "a dance"

It is obvious that these two Feefee words are very similar. The only difference between the two is the "s" in the one, and the "z" in the other. The environment of "s" and "z" is "identical": The neighbourhood of both "s" and "z" on the left side is zero (or "a pause"), and on the right side, "en":

[en]

[en]

Why do we compare *s* and *z*?

Because according to their articulation, *s* and *z* are similar. They are produced in the same area (alveolar) and in the same manner (by friction).

What creates the difference between the meanings "friend" and "dance"?

It is only the "contrast" between "s" and "z" which creates the distinction between the meanings "*friend*" and "*dance*". Therefore, the two sounds "*contrast in identical environment*".

4.3.1.2 Definitions

Two sounds belong to two phonemes if they "contrast in identical environment", that is:

- the 2 meanings "*contrast*"
- the 2 sounds appear in "*identical environments*"

I.e., these 2 sounds are the only difference between the 2 words.

Such data are called "*minimal pairs*". Try to find which of the pairs show "*contrast in identical environment*"

1st pair:

[si] "see" [si] "sea"

2nd pair:

[si] "see" [se] "say"

3rd pair:

[sit] "sit" [si:t] "seat"

4th pair:

[red] "red" [red] "red (Scottish)"

4.3.2 Contrast in similar environment ("analogous environment")

In the analysis of "phonemes", it is not necessary to rely on "minimal pairs" only. Assume we are interested to find out whether for Ewe "v" and "f" belong to two different phonemes:

Example (Ewe)

[evlo] "he is evil"

[e fle] "he split off"

The environments are as follows:

[e_lo] for "v"

[e_le] for "f"

So the environments are NOT 100% identical! But what is important here is this: The environments are identical as far as it really matters. In this case, for instance, the immediate neighbourhood is the same:

[e_l]

(For those who want to think about this a bit deeper: It is very unlikely that the "o" has changed the "f" to "v", or that the "e" has changed the "v" to "f". It is for this reason that the o and e don't matter here!)

Definitions:

Two sounds belong to two different phonemes if they "*contrast in analogous environment*"

That means:

- the words in which they appear have different meanings
- the different sounds appear in *similar environments*
- i.e., they are the same as far as it matters.

Such data are called "*near minimal pairs*".

Why did we only investigate the pairs "*f*" and "*v*", "*s*" and "*z*", "*rr*" and "*r*" - why not "*l*" and "*o*"? The answer (from our intuitive knowledge of languages) is, of course, that they are similar. It is very unlikely that different sounds like "*l*" and "*o*" might be two pronunciations of the same phoneme. They are too different, and therefore not "*suspicious*" of belonging to the same phoneme. The other sounds, however,

(/v, s/z, or n/ŋ, for example) could well be variants" of the same phoneme, that is, two different pronunciations of one phoneme. They are "suspicious".

4.4 The Concept of "Variation" of Phonemes

The concept of "change" or "variation" is nearly as important as the concept of "contrast". It has been illustrated with many examples above already. There are two kinds of variation:

- Variations which are *conditioned* by the environment - identical or similar (analogous), and
- Variations which are "free" (so-called "free variation")

4.4.1 Variation conditioned by the environment

It is a common experience that the same "letter" or "phoneme" can be heard in different pronunciations. Obviously the pronunciation of a phoneme not only varies from speaker to speaker, but even with the same speaker: There is "variation" which depends on the words or the neighbourhoods or the "environment" in which the sound is found.

Everything is influenced by the environment - especially sounds!

In Semitic languages like Gurage (Chaha), the sounds [g^y] and [g^w] produce different meanings, because they are different phonemes. But now look at the following data:

Example (Nupe, Nigeria):

- [eg^wu] "dirt"
- [eg^wo] "grass"
- [eg^yi] "child"
- [eg^ye] "beer"

Note that Nupe people will never produce words with [... g^yo, ...g^yu, or ... g^wi ... g^we].

(In fact they would find this extraordinary or funny. They would even have problems when trying to pronounce such "un-Nupish" words: They would be against their "system".)

Now consider the "environments" of g^w on the one hand, and of g^y on the other hand. They differ as far as the right side is concerned:

- [g^w_] occurs (is found) before "o" and "u"
- [g^y_] occurs (is found) before "e" and "i"

In the IPA chart, o and u both are "back" vowels, while i and e both are "front" vowels.

Therefore we can say:

[g^w_] can only be followed by back vowels

[g^w_] "excludes" front vowels

[g^y_] can only be followed by front vowels

[g^y_] "excludes" back vowels

The two different variations of g (namely, g^w and g^y) are called "variants" of the same phoneme (some call them "allophones" instead of variants).

4.4.1.1 Definitions

Varying pronunciations of the same phoneme are called "variants".

Where 2 (or 3 ...) words of different meanings differ only in one sound, they are called "minimal pairs".

Where 2 (or 3 ...) variants are linked to different environments, such environments are called "mutually exclusive".

Where 2 (or 3 ...) different variants are distributed (i.e., found) in different environments, this kind of distribution is called "complementary distribution".

4.4.2 The so-called "free variation"

In the case of "g^y" and "g^w", we were able to point out the condition, and even think of some reasons for the variation. But there also is "variation" which cannot be explained as easily as for "g^y" and "g^w" (above).

Example (Bilen)

- [ʃiβik] "hair" [ʃi:βna] "count (Vb.)"
- [ʃibik] "hair" [ʃi:bna] "count (Vb.)"

There is no contrast between the words. They simply are "variants" which "freely" use [β] or [b]. For this "variation" no other "explanation" might be found but tiredness, mood, or personal habit of the speaker. In that case it has nothing to do with "rules of the language". So if the sounds seem to change "freely", and where it has nothing to do with the environment, we call this "free variation". (This is not a very "scientific" concept, because it simply gives a label to something which we cannot explain. But the concept of "free variation" is considered helpful by many linguists, and they use it freely.)

4.4.2.1 Definition

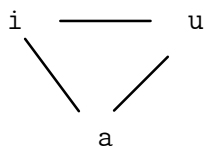
Where a sound varies in a way which cannot be explained by linguistic rules, this variation is called "free variation".

4.5 The Concept of "Symmetry" in Phonological Systems

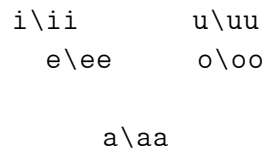
In the analysis of the sound system of one's own language, it is helpful to draw a "chart" of the phonemes, charting the vowels separately and consonants separately.

- To start with, one should arrange all sounds of one's language like in the IPA chart. The reason is that this chart shows how all sounds relate to each

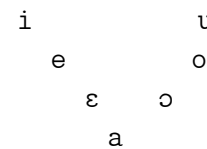
Examples: Arabic



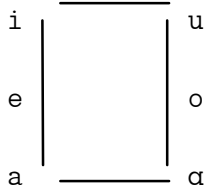
Afar



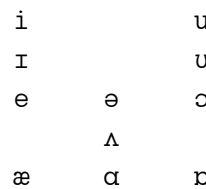
Italian



Examples: Persian:

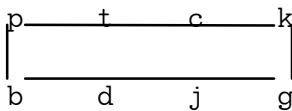


English:

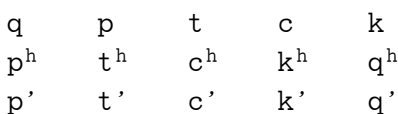


In the same way, the consonants of most languages tend to reveal their symmetry when they are displayed in a "chart". Consider, for instance, the plosives of Czech, or Jaqaru (South America):

Examples: Czech "plosives"

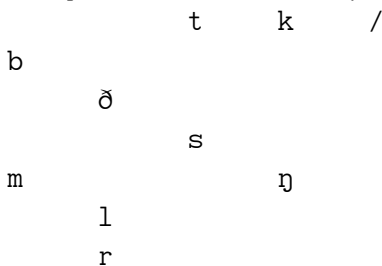


Jaqaru "plosive" consonants



But there are some interesting languages which - maybe because of special events in their history - have very non-symmetrical systems with gaps and empty rows. Consider Palauan (Philippines):

Example: Palauan consonant system



other. The chart may show the "symmetry" of such relations. Languages tend to prefer "symmetry" - and it is this symmetry which in fact makes them stable, predictable, and easy to acquire.

Consider, for instance, the vowel systems of Arabic, Afar, or Italian - all of them are symmetrical in a triangular manner (below).

Or consider, on the other hand, Persian and English - they have "square" symmetrical patterns:

When analyzing one's own language, one may discover such symmetries. It is useful to watch out for such symmetries during the analysis.

4.6 The Phoneme in the "Syllable"

On the one hand, the sounds of a language relate to each other in a "Phoneme Chart".

On the other hand, there is a more important relation, namely: the relation of sounds in words.

4.6.1 The characteristics of "syllable patterns"

For every language, the "syllable" is a well-defined unit - and every language only allows for certain types of syllables - and it will reject others. How do we identify the laws by which a particular language builds its syllables?

In each of the 6600 human languages, every syllable has a "nucleus" - just like an atom. This "nucleus" usually is a vowel, which is written as "V".

- All languages allow for some consonant to start a syllable: "CV".

- Many (but not all) languages also allow for a second C: "CVC".

- But except a few languages, things like "CCCCCCCC" (German "schrumpfst", Russian "borshth") are ruled out by the laws of phonology.

Every language has an exactly defined, limited set of such "CV patterns".

Definition

The different combinations of consonants "C" and vowels "V" in a syllable are called "syllable patterns" (or "syllable structures").

4.6.2 Syllable patterns

Note that we use "C" and "V" to write the formula of a "syllable pattern". Consider some common ones:

Example: (English):

V	a
VC	an
CV	no
CVC	not
CCVC	plan
CCCVC	splash [splʌʃ]

4.6.3 Identifying syllables in words

Syllables build up words - but it is not always easy to see how they do it. Take the example (below) from a Chadic tone language (Chadic is part of "Afro-Asiatic" like Cushitic or Semitic.) The accents stand for tones: upward like in [á] for HIGH pitch, and downward like in [à] for LOW pitch. The dot "." is used to show the "syllable borders" (or "boundaries").

Example (Chadic lg.):

1. sérá "foot"
2. wé "mouth"
3. nàrà "language"
4. kínà "already"
5. mítjà "die"

6. ègzèrè "child"
7. mbèdà "to fall"

Interpretation:

- Words 1-4 are easy to interpret. As in word 2, they all consist of "CV" syllables. Therefore word 1 has the pattern CV.CV (where "." is the border between the two syllables) and we can reject the interpretation CVC.V

- Words 5-7 need more effort: Word 5 has a sequence CCCV which is unusual. Word 7 could be interpreted in different ways: CCV.CV or CCVC.V or C.CV.CV or CV.CV depending on the question whether mb is one consonant (like ^mb), or two consonants (m+b).

It helps to see that the tones of word 5 are the same tones as in word 4. So in word 5 the consonant "m" behaves like a vowel, being the "nucleus" of a syllable. This allows for the interpretation of word 5 as C.CCV or CC.CV - the decision depends on the question whether "tʃ" is one consonant (like "c") or two.

Principle of interpretation:

Start with the clear and simple patterns such as "V" or "CV". Then interpret the difficult syllable patterns (such as words 5-7) in the light of the clear ones (such as words 1-3).

4.6.4 Differences between syllables and grammatical parts of words

The grammatical system of a language and the sound system of a language must not be confused.

When we deal with "grammar" (morphology), words are made up of "word stems", "prefixes" and "suffixes") Example:

crocodile-s.

When we deal with "phonology", words are made up of syllables.

Example:

cro-co-diles.

Remember: "Syllables" are one kind of things - but "word stems" and "affixes" are totally different things. The two do not have the same borders. For instance, there are words of 1 syllable which consist of 2 or 3 meaningful parts, and there are words of 2 or 3 syllables which consist of 1 meaningful part.

Example:

has	"possess-PRESENT-3rd PS"
cro-co-dile	"crocodile"

4.6.5 How to define the syllables of a language

For the work on orthographies it is necessary to define the syllables of a language and to discover the laws by which the language uses syllables to build words. This knowledge serves as a basis for decisions concerning the orthography (e.g., word breaks, word boundaries).

4.6.6 Applying the knowledge of syllable patterns

Once the syllables of a language are defined, the "distribution" of different sounds can be clarified. In this study, "foreign words" should be excluded! The study answers questions such as the following:

- Which sounds function like "vowels" in this language?
- Which sounds function as "syllable nucleus"?
- Which consonants can be the initial consonants of a syllable?
- How many consonants can follow each other? (so-called consonant "clusters" or "lumps")
- Which consonants can be in a "cluster"?
- What happens if a "cluster" becomes too heavy?

NOT A SINGLE WORD MUST CONTRADICT THESE PATTERNS!

All words must fit into one of the syllable patterns which have been identified during this stage of research! The results of this study will be taken up again under "writing words / hyphens / word division" (below).

4.7 Interpretation of Phonemes

"Interpretation" assigns a certain status to every sound.

4.7.1 Interpreting sounds as either "consonants" or "vowels"

In every language there are some sounds which make it difficult to say whether they work as "C" or "V".

- With sounds like *t k f* ... it is obvious that they do the work of consonants. (They can hardly be the center or "nucleus" of a syllable).

- With sounds like *a o e* ... it is obvious that they do the work of vowels (They must be at the centre of a syllable, not at its border).

- But for sounds like *i/y*, or *u/w*, this is often difficult to decide. (In some cases, *m n l r*, *h*, */a*, *-a* are also difficult to "interpret".) So there are questions like "should the sound *i/y* be spelled as *i* or as *y*?" It is actually possible to make clear and solid conclusions about these questions. There are steps to follow.

Procedure:

- Identify the clear syllable patterns - those which are simple, frequent and without difficult sounds. Certainly "CV" will be among these patterns.

- Write them down and consider them as well-established, solid evidence.

- See how the difficult sounds (e.g. *i/y u/w*) fit into the pattern which are established.

- In case they only fit in places where "C" is found, they must also be considered "C".

- In case they only fit in places where "V" is found, they must also be considered "V".

Example: In Feefee, there are the following words:

yeh "breathe" *wen* "request help"

But these could also be spelled as follows:

ieh "breathe" *uen* "request help"

Which is the best spelling according to Feefee language? How can a decision be made? Let us suppose there are Feefee words which have syllables such as:

aos, *eak*, *oab*, *eof*, ... These words would show that the language has a syllable pattern "VVC". The "VV" is called a "diphthong".

Therefore, the words above would be spelled as *ieh* "breathe" *uen* "request help"

However, in Feefee this is NOT the case. Instead, most of the words are such as:

man, *bak*, *sif*, *ger* ... These words show that there is a solid syllable pattern "CVC".

Therefore, the words above should be spelled as *yeh* "breathe" *wen* "request help"

4.7.2 Interpreting difficult sounds as "single" or "complex"

For sounds like *tʃ dʒ ts dz* it is not always clear whether they are 1 consonant (in which case they should be written *c, j*) or 2 consonants (in which case they should be written *ts, dz*).

Again the "syllable patterns" can provide the answer: If the language only has V and CV syllables, then the above sounds are ONE "C" each, and should be spelled accordingly (*c, j*).

4.7.3 Interpreting sounds as "automatic" boundary markers

Sounds like the glottal stop [ʔ] are usually limited to the beginning of words, as in English (*/at /is /of*). In these cases the [ʔ] can be considered "automatic": It just comes in "automatically" with the beginning of a word that has no other consonant. In orthographies, word boundaries are already shown by space (*at is of*), and therefore it is not necessary to write this sound.

If, however, this sound would be found in the same places as all other consonants, then it would have to be considered a consonant like all other consonants - e.g. like the "hamzah" of Arabic.

4.8 Distribution of Phonemes

Why are we interested in a language's laws of "distribution" of sounds and syllables?

Because there are special features like "syllabic nasals", "neutralization", "vowel harmony", "nasalization" - and "distribution" provides insights into the mechanics of these. But where there are no problems related to such items, the study of "distribution" is not important.

4.8.1 The meaning of "distribution"

A study of the "distribution" of sounds will show us where - according to the phonological laws of the language - a sound may appear and where it may not. Some sounds are limited to the middle of the syllable, others to the beginning, - and some may appear in "clusters" (i.e., in "lumps" of consonants such as CCC).

This knowledge of the normal "distribution" of sounds allows us to interpret those sounds whose status is problematic.

4.8.2 Steps for finding out about "distribution"

To study the "distribution" of consonants and vowels, follow these steps:

- All syllable types (or word types) are written as separate columns - see below.
- All sounds are written into the respective column, depending on where they are found:

Syllable Types

V	VC	CV	CVC	CVCC	CVCCC
<i>a</i>	<i>in</i>	<i>no</i>	<i>net</i>	<i>lift</i>	<i>hosts</i>
<i>I</i>	<i>as</i>	<i>me</i>	<i>bus</i>	<i>hard</i>	<i>cords</i>

Word Types

1st\2nd	V	CV	CVC	etc.
V	?	<i>icy</i>	<i>anew</i>	
CV	?	<i>soda</i>	<i>model</i>	
CVC	?	<i>hasty</i>	<i>larger</i>	

On the basis of this analysis, the distribution may be summarized in some surprising statement such as:

"*s* is the only last C in CCC."

"*m n ŋ* and *a e i o u* all function like V."

It may be discovered that a *difference* between two sounds *disappears* at the end of certain syllables, or at the end of words: The sounds are "neutralized". If

this happens in a certain language, and if there are questions about how to write such "neutral" sounds, the study of "distribution" will reveal what happens, and why and where the sounds are "neutralized".

On the basis of this study, one may also be able to make statements about the following:

"syllabic nasals" (*m n l r*-sounds may function as a full syllable, and carry tone) - "vowel harmony" - "nasalization" - "labialization" - "palatalization" or other special laws of the phonology. These will be discussed under "suprasegmentals" below.

At this point of the phonological research, all "syllable patterns" and "word patterns" of the language will have become clear. The orthography must not allow for writing any word (other than borrowings) which would contradict the findings of this study.

4.9 The Presentation of a "Phoneme Chart"

Once the analysis of "contrasts" and "variants" has been carried out, the sounds of the language should be drawn up in such a way that the "symmetries" and the "typical" aspects of the system of this language become visible. Only the "phonemes" of the language will be displayed in this chart (no variants).

Here are the steps of producing a "phoneme chart":

- As a first step, the phonemes are inserted at those points where the IPA chart would put them. For this purpose, the grid of an "empty" IPA Chart can be used. (Alternatively, one could use a complete IPA Chart and encircle only the symbols of "phonemes" of this language.)
- As a second step, the phonemes are shifted and arranged in such a way that only the relevant distinctions remain. All empty columns or rows are deleted. For the remaining columns and rows the most fitting labels are selected. All other phonetic distinctions can be ignored: They are not "distinctive" and not relevant for the language under study.
- As a final step, the consonant and vowel phonemes are charted in a final form. This is done both for consonants, vowels. (Tone, length or accent, as well as modifications will be added later - see below.)

5. Suprasegmentals: The "Extras"

Up to now, we have dealt with vowels and consonants. They are called "segments", and the concept of "segment" refers to the fact that speech can be "cut" into "sections".

But languages make use of other dimensions too: The name "supra-segmental" emphasizes the fact that there are aspects of language which cannot be described like "letters", "consonants" or "vowels".

Definitions:

Sounds which are not consonants or vowels, but "above" (*super*) them are called "*Supra-segmentals*". There are three main kinds of "suprasegmentals":

- *length*, i.e., different "*durations*", for consonants this is called "*gemination*"
- *tone* or *intonation*, i.e. different levels or movements of "*pitch*"
- *stress*, i.e. different degrees of "*loudness*"

Some linguists add other "*special features*" to these three:

- *nasalization*, *labialization* ... (See the IPA Chart at the end.)

5.1.1 The functions of suprasegmentals

The three suprasegmentals are found in all languages, but they have different functions in different languages. They produce "*distinctions of meanings*", "*demarcations of boundaries*", or "*expressions of feelings*".

Example:

"*Distinctions*": In more than 50% of the languages they distinguish meanings (lexical or grammatical)

Thus: Tone distinguishes meanings in Busa (Nigeria) distinct lexical meaning:

k̄ "arrow"

kā "put"

kà "crab"

distinct grammatical meaning:

à-tá "he'll go"

à-tà "he went"

Examples:

"*Demarcation*" or "boundary marking": In most languages they show the end of words, phrases or sentences.

Thus: Stress announces the end of the word in Swahili (the last-but-one syllable is stressed):

píga "hit"

pigána "hit each other"

piganísha "cause to hit each other"

tutawapíga "we shall hit them"

Examples:

"*Expressive function*": in all languages the suprasegmentals "express" feelings or emphasis.

Thus: length, high pitch intonation, or stress express feelings in English:

- "*I waited sooooo long*" (Length)

- "*I am só happy.*" (Intonation)

- "*I am 'not a'mused*" (Stress).

5.2 Length or Gemination

Long consonants are often called "geminated". Long vowels simply are "long" (in old books: â ê...).

5.2.1 Contrasts of short and long sounds

In English, there are short and long sounds (with slightly different qualities) Length is often shown in the English orthography - but not consistently:

Examples:

live (short)

leave (long)

lids (short)

Leeds (long)

In East Cushitic languages, length often is the only difference between words such as

mara (short) "to go"

maara (long) "to pity"

ita (short) "to eat"

iita (long) "thus"

5.3 Stress

Stress refers to different degrees of loudness.

5.3.1 Contrasts of stressed and non-stressed syllables

Several Cushitic languages distinguish lexical meanings (like boy/girl) by stress alone. English distinguishes some grammatical meanings (like nouns from verbs) by stress. Since the place of nouns and verbs is predictable in English sentences, these "minimal pairs" do not cause ambiguities:

Examples:

'import 'object NOUN "the 'import" ...

im'port ob'ject VERB "to im'port" ...

5.4 Tone and Intonation

More than half of the world's 6600 languages are "tone languages". Some write tone (Latin America, West Africa, Asia), others do not. Because Mandarin Chinese has been written for thousands of years, it can be shown that certain tones have remained the same over thousands of years.

Tone belongs to syllables or to words - tone languages differ in this regard. Tone languages also differ in the "importance" which tone has: Tone may distinguish *many* words - or *few*. This is called the "functional load" of tone. One method of "weighing" this load is to use "reading tests" (below).

Intonation belongs to sentences rather than words. It usually distinguishes statements, questions, and commands. (Tone languages cannot use intonation as freely as other languages. Often suffixes like *-r* are used instead.)

5.4.1 Contrasts of tones

Most African and American "tone languages" use a combination of 2 or 3 "tone levels" ("*High*", "*Mid*", "*Low*" or combinations of these). Maybe a dozen languages use the maximum of 5 levels.

Most Asian tone languages use different "*up and down glides*".

Example: 5 levels in Benchnon (Ethiopia):

┘	┘	┘	┘	┘
<i>kár</i>	<i>kár</i>	<i>kār</i>	<i>kàr</i>	<i>kàr</i>
"clear	leaf	round	wasp	pudenda"

Example. 9 glides in Miao (China):

λ	↑	∨	↓	∨...
ma	ma	ma	ma	ma

5.4.2 Tonal changes

Except for certain families of tone languages (Omotic, Asian) most tone languages have rules for tonal "changes". The most common ones are these:

- "tone spreading" or "tone copying"
- "downstep"
- tone changes by "floating tones".
- lowering of tones by "depressor consonants"

A good analysis and insight into these "mechanisms" will lead to a *clear and simple* tone orthography.

5.5 Other special features

There are certain features (IPA: modifications) which add "colour" to syllables or words:

5.5.1 Vowel harmony

certain languages (especially Nilo-Saharan) only allow vowels of "the same family" to come together in a word.

5.5.2 Nasalization

Certain languages have distinctive *n*-sound vowels like French *õ* in "*Le Monde*".

5.5.3 Labialization

Certain languages have distinctive *w*-sounds like Bilen *k^w* in */ɪŋk^wa*.

5.5.4 Palatalization

Certain languages have distinctive *y*-sounds (IPA "j") like in Chaha *b^je*.. .

6. Orthography: "From Sound to Symbol"

The first half of the handbook was about "*sounds*", and then about *distinctive sounds*: "*phonemes*". The second half is about how *phonemes* are represented by letters or *symbols*.

6.1 Principles of Orthography Design

Unfortunately, there are no definitive formulae for developing an orthography, and there are very few existing "ideal" orthographies which satisfy all demands. (Two orthographies which are considered among the best are the Serbo-Croatian and the Korean.) Most orthographies are arrived at through balancing various considerations, and through compromises.

Fortunately though, some general principles do exist which provide guidance. It is possible to name these principles, and it is good to consider them where orthography decisions are faced. These principles are listed below. They should be applied to each language individually, with wisdom and balance:

These principles have remained fairly stable over the last generation. Refinements have been made when additional experience was gained with newly-written languages - but the basic principles have remained. William Smalley has already expressed them in 1963, and the following list is based on these principles, with slight modifications:

6.1.1 Maximum motivation

It is important to incorporate those elements which the *people find attractive* - or else they may reject the orthography and literacy altogether

6.1.2 Maximum representation of speech

"Maximum representation" normally means "*one symbol for each phoneme*" (i.e., one symbol for each significant sound of the language). Exceptions are described in points 4 and 5 below.

6.1.3 Maximum ease of learning

The orthography should be as *simple* and uncluttered as possible, in order to facilitate learning to read and write it.

6.1.4 Maximum transfer

Insofar as possible, the letters should follow the symbols used in the national language or the language(s)

of comparable status, in order to *facilitate the acquisition* of the major language(s).

6.1.5 Maximum means of reproduction

It is best to choose symbols which are commonly found on keyboards and in *printing presses*.

6.1.6 Summary and outlook

The orthography should be designed to fit the *language system*. - How can this be accomplished? Study its phonology.

The orthography should be designed to fit the *socio-cultural framework* - How can this be accomplished? Do not ignore the people's history, culture or social setting. (See below.)

The orthography should be designed to fit the *psychological and pedagogical demands* of its citizens. - How can this be accomplished? Test the orthography with different groups of people. (See below.)

6.2 Symbols for phonemes, syllables, words, and more

A good orthography takes care of all "levels" of a language - from the smallest to the largest item: The letters of the alphabet, the word breaks, the punctuation marks, the printing of chapters in books- all of these need to be considered.

The list below is a guide through these 5 or 6 levels, and it points out all the things which need to be decided. It can be used as a check list to make sure that the work of "orthography design" is complete (adapted from Elaine Good 1982, source: R. Morren).

6.2.1 Symbols for Phonemes

- *Things to write*: Phonemes
- *Symbols to use*: Letters of the alphabet or syllables of the syllabary

6.2.2 Symbols for Syllables

- *Things to write*: Suprasegmentals like *tone*, *length*, *stress*, and special pronunciations like nasalization, laryngealization, and changes at the syllable border
- *Symbols to use*: Diacritics like tone marks, accents, or tilde, doubling of letters, numerals

6.2.3 Symbols for Words

- *Things to write*: Word boundaries, compounds, contractions or elisions, proper nouns (names)

- *Symbols to use*: Spacing, hyphens, apostrophe, capital letters

6.2.4 Symbols for Sentences

- *Things to write*: Clauses, phrases, beginning and ending of sentences, sentence types (question, command), direct speech, embedded speech, intonation.

- *Symbols to use*: Capital letters, commands, periods (full stops), question marks, quotation marks, exclamation marks.

6.2.5 Symbols for Paragraphs and more ...

- *Things to write*: Titles, headings, the printing of special "genres" such as proverbs or songs, extended quotes which cover more than 1 sentence, paragraphs.

- *Symbols to use*: Indentation, spacing, italics, bold letters.

7. Considering the Orthographic Choices

Languages give us no choice about *phonemes* - we have to respect *what is there*.

Alphabets and syllabaries give choices - but we have to respect *what people want*.

7.1 Alphabets and syllabaries

Phonetics and phonology contribute to the creation of an alphabet or syllabary, and they help to build the basis for the orthography. But they do NOT provide the letters of the alphabet. There are different types of "scientific transcriptions", and their purposes are different:

- The "*phonetic*" transcription uses the "IPA" the alphabet of the "International Phonetic Association" (see the Appendix) . This transcription is "phonetic", i.e., it represents the differences which can be heard - but these differences may not need to be written! An orthography should never be "phonetic". Why? The phonetic symbols of the IPA are not created for the purpose of being used in an orthography, and a phonetic transcription would show too many differences. This is NOT good enough for the alphabet of the language.

- The "*phonological*" transcription writes the "phonemes" i.e., those sounds which are important for a particular language (the "allophones" are not written). But the symbols used in a "phonological" transcription may not be the best ones, and the shape of certain words may not be acceptable either, unless the transcription tends to change the form of words. A "*morpho-phonemic transcription*" is better, because it not only respects the "phonemes" but also the forms of words or "morphemes". This is NOT yet the alphabet of the language.

- The "*orthographic transcription*" uses those symbols which are acceptable to the people. In addition, the orthographic transcription respects the role of other languages, their phonologies, and their alphabets. Hopefully, the orthography is created by a mother tongue speaker of the language who is also a full member of the speech community - aware of the historical, psychological, sociological and other factors which are important to the people. This is a good basis for the alphabet of the language. But its first version will only be "*tentative*".

- The "*standard orthography*" or "*standard alphabet*" is the accepted system with official status. It is an orthographic transcription which has received the final approval from the relevant bodies who make such decisions.

Before an orthographic transcription is turned into the definite, authoritative "*standard alphabet*" or "*standard orthography*", a few suggestions still need to be considered. These suggestions are about "symbols", "scripts", and other practical questions. They are listed here below:

7.2 Linguistic Considerations

Linguistics and psycho-linguistic provide a few solid principles concerning the "best" orthography:

7.2.1 Principles for a "*Maximum Representation of Speech*"

Linguistically, the best orthography is the one with "maximum representation of speech". But what does "maximum representation" mean in actual practice?

7.2.1.1 *One sound one symbol*

There should be *one* symbol for *one* "phoneme": This is "maximum representation".

(But sometimes exceptions are justified. - E.g., in order to satisfy the desire of the speakers, or to support the transfer into a major language, there may be *two* symbols for *one* phoneme, or *one* symbol for *two* phonemes.)

7.2.1.2 *Slow speech as a guide*

Normally, the forms used in slow speech should be written if fast and slow speech differ from each other. (But for fast speech, some "elisions" may be desirable. E.g., the people may want to have a choice between "*do not* / *don't*".)

7.2.1.3 *True to the language*

The letters should be those which are designed for the phonemes of the language itself.

(But the orthography may provide some letters to represent names or "borrowed words" adequately and consistently. E.g., even if "*v*" or "*p*" may not exist in the language, it will be wise to provide them for loan words.)

7.2.2 *Two Dangers of Mis-Representation*

It happens - but it is bad: Using 2 or 3 letters for 1 sound, or using 2 or 3 sounds for 1 letter!

7.2.2.1 Under-representation

If *one* symbol (e.g. *s*) represents *two or three* sounds (e.g. *s* and *z*), then a phonological contrast (such as *z/s* in *zeal / seal*) is NOT represented in the orthography, and this will create problems for the *readers* (not for the *writers*). This is called "under-representation" and is considered bad.

Example (German):

Phonemes Spelling - Gloss

[di 'masä] die Masse - "the mass"

[di 'ma:sä] die Masse - "the measures"

This is "under-representation". the difference in length [a/a:] is not shown, and this is annoying to some people. The government launched an expensive "Reform" which attempts to address all orthography problems by the end of 1997.

7.2.2.1.1 Exceptions

But there is one exception where "under-representation" is acceptable: If the contrast which is not written is very rare, and has "a low functional load". A contrast with a "low functional load" creates few problems:

Low functional load:

- e.g. English stress in a few pairs:

- *im'port / 'import*

High functional load:

- e.g. English s/z in many pairs:

- seal/z seal, sip/z zip, sink/z zinc...

7.2.2.2 Over-representation

If a phoneme is written in *more than one* way, this will create problems for *writers* (not for *readers*). This is called "over-representation" and is considered bad.

Example:

Italian (and Spanish) write the 1 phoneme [k], in 2 different ways: as "c" and also as "ch" (Spanish "qu").

- [k] is written as "c" before "a" "o" "u", plus:

- [k] is written as "qu" before "i" "e" (Spanish "qu").

7.2.2.2.1 Exceptions

But there are two exceptions where "over-representation" can actually be helpful:

(A) If the readers from a minority language want to learn Italian (or Spanish), they will need to learn both "c" and "ch" (or "qu"). So even if their own lan-

guage does not distinguish *c / ch* (*qu*), it will be good to introduce these letters "over-representatively".

(B) In some languages, "over-representation" makes it possible to use the same orthography for more than one dialect of a language: a multi-dialect orthography!

This is true where one dialect distinguishes sounds which the other dialect does not distinguish.

Example:

Dialect A has "d" and "z"

Dialect B has "d" only (the speakers always say "d", whether they see the letter "d" or "z")

Here it will strengthen "language unification" if all dialects use both "d" and "z" - in spite of the fact that this means "over-representation" for one of the dialects, namely for B.

7.3 Choosing the Symbols

For 80% of the letters, choosing may be easy. But the other 20% may take 80% of the time and efforts!

7.3.1 Writing Phonemes

From recent experience with newly written languages certain principles can be derived. Most of them apply especially to the Latin script, but they can also be interpreted for other scripts:

7.3.1.1 Symbols available

In the Latin script, three sizes of letters are distinguished.

- *a c e i m n o r s u v w z* symbols of the mid range

- *b d h k l t* symbols which extend above the mid

- *g p q y* symbols which extend below the mid

- *f* symbol which extends both above and below

All of these can be modified by diacritics: *é ü* etc.

Reading tests and writing tests have shown that the reader's attention focuses slightly above the middle of the line, and that certain kinds of letters are easier to read than others.

7.3.1.2 Symbols to be preferred

Based on this experience, certain kinds of symbols should be preferred:

- Single symbols should be preferred to double symbols ("digraphs")

Therefore, *f c j* are better than *ph ts dz*

- Double symbols (digraphs) should be preferred to symbols with "diacritics"

Therefore, *ny gn mm* are better than *ñ ù or m̄*.

- Even non-Latin symbols should be preferred to "diacritics" (if non-Latin symbols are acceptable at all!)

Therefore, $\varepsilon \circ \eta$ are better than $\underline{e} \underline{o} \underline{n}$ and even better than $\acute{e} \acute{o} \acute{n}$.

- Diacritics above the letter should be preferred to diacritics below (if any diacritics are used at all!)

Therefore, $\acute{e} \acute{o} \acute{n}$ are better than $\underline{e} \underline{o} \underline{n}$.

- Diacritics attached to the letter should be preferred to those not attached (if any diacritics are used at all!)

Therefore, $\zeta \grave{d} \grave{s}$ are better than $\underline{\zeta} \underline{d} \underline{s}$

7.3.1.3 How do we symbolize phonemes without proper symbols?

The choice is between these: special symbols / di- or trigraphs / diacritics / ignore the distinction:

7.3.1.3.1 Use a special symbol

(i.e., signs like "ε", based on the IPA or UNESCO alphabet, letters from outside the Latin alphabet)

Hausa $\text{ʔ} [ʔ]$ and languages like Ewe $\varepsilon [ε]$ use this approach successfully.

But this may not be acceptable in your language!

7.3.1.3.2 Use a digraph, trigraph or quadri-graph

These terms "digraph" etc. mean combinations of simple letters: 2 (di-), 3 (tri-) or 4 (quadri-).

English "sh" [ʃ], Italian "cch" [k:], or German "tsch" [tʃ] use this approach. When doubling (geminating) these letters, only the first need to be doubled: ts / tts , ch / cch , dz / ddz (see Daasenech, Italian)

But be careful! the following kind of problems may arise in the use of digraphs, trigraphs or quadri-graphs:

The suggestion may be that [ŋ] should be written as "ng" (as in English "sing").

In this case, you need to study the relation between the sounds [ŋ] and [ng]. If you find that e.g. [aŋa] and [anga] are words with different meanings, then maybe you should NOT use "ng" for [ŋ].

The suggestion may be that [ɲ] should be written as "ny" (as in English "canyon").

In this case, you need to study the relation between the sounds [ɲ] and [ny]. If you find that e.g. [aɲa] and [anya] are words with different meanings, then maybe you should NOT use "ny" for [ɲ].

The suggestion may be that [ɛ] should be written as "e", and [e] as "ee" or "eh"

In this case, you need to study the relation between the sounds [ɛ], [e], [ee], and [eh] ... etc.

7.3.1.3.2.1 Recommendation

In any case:

Choose the symbols with care, so that there is no overlap between the normal letters and the sounds which are written as "digraphs".

7.3.1.3.3 Use a diacritic

(i.e., a small mark attached to the letter, either below or above it)

French $\zeta [s]$, Spanish $\tilde{n} [ɲ]$ etc. use this approach.

But be careful. The following problems come with "diacritics":

- Common keyboards may not have it.
- Printing presses do not like them.
- Readers tend to overlook them.
- Writers tend to forget or ignore them simply just leave them out.

7.3.1.3.4 Ignore the difference

I.e., use the same sign for 2 different sounds, like "e" both for [e] and [ɛ], or "s" both for [s] and [z].

English, French, German use this approach.

But this is called "under-representation", it is considered bad, and it should be avoided. (Actually, it CAN be avoided easily.)

7.3.2 Writing Syllables

Syllables carry tone, stress, or other features. There are several ways of writing them:

7.3.2.1 Stress

Write apostrophe ('import / im'port) - or nothing

7.3.2.2 Length

Write double letters (aa, nn), diacritics (\bar{a} , \bar{n}), vowel plus h (ah) - or nothing

7.3.2.3 Nasalization

Write vowel plus n (like in French "Le Monde", only if $\underline{V+n}$ doesn't exist), diacritics (\tilde{a}) - or nothing

7.3.2.4 Tone

Write diacritics like accents (*á ā à*), use other diacritics or punctuation (where French orthography is dominant), use numbers (like in Latin America) - or nothing.

7.3.2.4.1 Arguments for and against writing tone

Psycho-linguistically, a good tone orthography is a good thing. Socio-linguistically it may be unacceptable.

7.3.2.4.2 For

There is much evidence that writing tone helps the reader - but only if the tone orthography is well done (analysis!), welcome (society!), and introduced well (pedagogics!).

7.3.2.4.3 Against

Recently one linguist found evidence (Bird 1997) that the writing of tone slowed down the readers. The background may be that this orthography had been introduced without sufficient testing.

7.3.2.4.4 Testing the need

If tone is a problem, the following questions should be asked - and a well-designed test may provide the answer to some of these questions:

- Can it be demonstrated that all kinds of people can read fluently if tone is not written? If yes, then do not write it!
- Do readers have to go back in order to *re-read* a passage with the *correct tone*? If yes, then tone has a "high functional load" and the orthographic representation is not sufficient yet. Write it, test it!
- Are there lexical items distinguished by tone alone? Are they many or few? Does context clarify the pronunciation? If the answer is not clear, test it!
- Are there certain grammatical distinctions which are only made by tone? Can they be marked in some way - maybe using signs like "!" or "h" or "' ' "? If the answer is not clear, test it!
- What would happen if tone would only be marked on the most confusing groups of words - e.g. if these are the pronouns, then only write tone on pronouns? Or if they are tense markers, only write tone on tense markers? If the answer is not clear, test it!

7.3.3 Writing morphemes

Finding letters for phonemes is not enough. Why? Because readers look for morphemes, words and phrases.

7.3.3.1 Why is a "morpho-phonemic orthography" considered the best?

Morpho-phonemic orthographies do justice both to "phonemes" and to "morphemes", and for this reason they are considered the best kind of orthography. Based on research of the last 5-10 years, "morpho-phonemic" orthographies have been praised because they are considered "deep".

What does this mean?

It means a "morpho-phonemic" orthography not only shows the "sounds" or "phonemes" (which would be considered "superficial" or "shallow") - but it also looks "deep" into the words and shows how its morphemes go together. Where morphemes change, it looks for the unchanging, "underlying", "deep" form and writes it.

Especially at the "edges" of morphemes and at the "edges" of words, sounds tend to "change". A morpho-phonemic orthography however does not write these changes - even though "superficially" such changes can be heard. Instead, it shows the morphemes as they "really" are.

Example (E. Cushitic languages):

[*nama aye...*]

- Very slow speech: like dictating, or like words appear in the dictionary.

[*nam[a] aye...]*

- Slow speech, the [*a*] of *nama* is weakened.

[*nam aye...]*

- Fast speech, one *a* is "dropped" ("elision")

In such cases it is considered better to write the words in their full form. This respects both the phonemes and the full form of the morpheme.

Therefore the spelling should be:

nama aye...

People will automatically "swallow" the [*a*] when they get used to reading fast and in a natural way.

7.3.3.2 Strengths of a morpho-phonemic orthography

- It uses the phonemes and it respects the shape of the morphemes, even when certain phonemes disappear or change. English uses "morpho-phonemic" spelling - not consistently, but in some words such as these:

Example 1:
 [bos'toniən] "Bostonian"
 ['bɒstən] "Boston"

"Boston" is always spelled "Boston", even where (according to phonemes alone), it might be "Bosten".

Example 2:
 [dɒgz] "dogs"
 [kæts] "cats"

The -s "plural" is spelled "-s" even where (according to the phonemes alone), it might be "-z", see "dogz"

7.3.3.3 Comparing "morpho-phonemic" and "phonemic" orthographies

Morpho-phonemic writing	Phonemic writing
Provides unchanging images of morphemes	Is closely linked to the sound system
Links word shapes and meanings easily	Helps to read new words
Is good for quick readers	Is good for beginner readers
May bridge some dialect differences	Represents the pronunciation of a particular dialect
May satisfy the desire of the speakers	May be easier to teach to beginner readers

7.3.3.4 How a "morpho-phonemic" orthography simplifies the spelling

In a language of the Anga family (PNG), to ask people to "write how they pronounce" would create problems: The verb "to put" would be spelled in 9 different

Example (Angave language, pitch-accent is not shown, Speece 1992):

Phonetic writing (the pronunciation)	Phonemic writing (the phonemes of Anga)	Morpho-phonemic (the orthography)	Meaning
[ti /itɪ]	tiitɪ	tiiɪ	they DUAL put
[tu /wiɪɪ]	tuwiɪɪ	tiwiɪ	we DUAL put
[ta /anə]	taanɪ	tiiɪnɪ	you SING. put
[to /o]	too	tio	he who put
[te /e]	tee	tie	where he put
[tæ /æ]	teaea	tiaæ	where I put
[tɔ /ɔ]	toaɔa	tiao	what I put
[tɔ ma/anə]	timaanɪ	tiiɪnɪ	I may put
[ti ɲə]	tɪɲɔɪ	tɪɲɔɪ	he put

ent ways (column 1). To spell "phonemes" would not be much better (column 2).

To spell "morpho-phonemically" results in a clear orthography (column 3), where the verb "to put" can easily be recognized as always the same:

7.3.4 Writing Words

An orthography must include statements about words and especially word breaks. The normal procedure is to define words according to grammatical and phonological indicators in the language: There will be certain kinds of endings, and certain kinds of pauses and intonations may show that the end of a word is reached - or that it is not reached yet.

But these indicators do not always give clear-cut answers. Sometimes they even contradict each other. In any case it is important to respect the reactions and instincts of the average speaker of the language.

7.3.4.1.1 Word boundaries - principles

To know where to type a "space", to know where to write a "word break" and to know which parts to glue together by means of a hyphen, we need to know the "word boundaries" of the language.

But finding the "word boundaries" is not easy. The reason is that it is always difficult to find a 100% correct definition of "word" for any particular language. For 90% of a language this usually is easy - while there always seem to be 10% which do not fit the easy rules or intuitions.

But the following principles have proven to be useful for the definition of "words":

Definitions:

A word is ...

- not less than one syllable - words cannot be smaller than a phonological syllable of the language
- defined by its syllable pattern - in some languages you can tell that words should be CV.CV
- where no pauses fit in - if you can insert a natural pause, you have 2 words
- not smaller than the smallest meaningful unit - words have meanings, so *ca* of *cat* isn't a word
- not shorter than a minimal answer - this definition is like the preceding one
- where no other word fits in - *automobile* is one word; you can't have *autobusmobile*
- the parts of which cannot be shifted - *depart-ment-s* is one word; but you can't have *smentdepart*
- defined with reference to the person/number system of the verb - endings/prefixes form words
- defined with reference to the tense/aspect system of the verb - like the preceding principle
- defined with reference to possible "elision" - *can't* is one word, so is *we'll*.

Sometimes this is difficult to decide because of conflicting considerations. In such cases let a test decide!

7.3.4.1.2 Neutralization

Another consideration concerning word boundaries is called "neutralization". Suppose all "phonemes" of a language have been identified, and the following sounds are found to be "different phonemes":

Example (German):

voiceless	<i>p</i>	<i>t</i>	...	<i>s</i>
voiced	<i>b</i>	<i>d</i>	...	<i>z</i>

Suppose that no "voiced" sounds are heard at the end of words (as is the case in German). The problem for the orthography is that at the end of words, the difference between *b/p d/t g/k z/s* simply disappears: The difference is "neutralized". (Consequently, for Germans it is difficult or impossible to say *grab*, *hauz* etc.)

So we only find words like the following:

<i>gr<u>a</u>p</i>	grave
<i>ba<u>t</u></i>	bath
<i>hau<u>s</u></i>	house

Some of the sounds (those which are underlined) change when they are NOT at the end of the word any more:

<i>gr<u>a</u>bes</i>	grave (GEN)
<i>ba<u>d</u>es</i>	bath (GEN)

hauzes house (GEN)

The question which decides between "phonemic" and "morpho-phonemic" is:

Should these changes be written? Maybe as follows:

grap - *grabes*?

Or should the words always look the same? As follows: *grab* - *grabes*?

The best answer is this: *The "morphemes" should always look the same!* This is the principle of "morpho-phonemic" writing. The sound change is NOT written. (For the speakers it is "automatic" anyway!)

7.3.4.2 Hyphens

In an orthography using Latin script, hyphens will be needed at the end of lines where words are "divided". There is a difference between *word breaks* (shown by the *space*) and a *divided word* (shown by a *hyphen*): If there is not enough room on one line, the first part of the word ends with a hyphen, and the second part goes to the next line.

7.3.5 Writing Sentences, paragraphs, and more ...

With regard to sentences and larger units, decisions have to be made about capital letters and punctuation. The transfer to major languages is important to consider.

7.3.5.1 Capital letters

Usually the first letter of a sentence is a capital letter. For the Latin script it has been demonstrated that scripts which systematically use capital letters allow for easier understanding and for higher speed of reading.

Scripts like Sabeian or Arabic do not have to make the decision between upper and lower case letters.

7.3.5.2 Punctuation

Watch the reactions of different speakers. - Punctuate at natural pause points. - Consider the signs used in major languages.

7.3.5.2.1 Punctuation

All rules of punctuation should be developed at the same time, to avoid conflicting statements. Be sure to take care of all of them:

. ! ? full stop, exclamation and question mark (for sentences). Note Spanish ¡No! ¿Donde? Some languages with question suffixes (like -~~Q~~) do not need "?"

: " " « » colon, quotation marks (for quotes).
Some languages, where beginning or/and end of quotes are indicated by words do not need " ".

, ; ... comma, semicolon, three dots etc.
(inside sentences). Usually these are no problems.

7.3.5.3 Quotation marks

In languages which use many diacritics (' ^ `) quotation marks may be confusing (' ' or « » or " " or “ ”). All quotation marks can be omitted if the language shows quotations grammatically, e.g. by using a particular lexical item.

7.4 Socio-linguistic Considerations

Experts tend to agree that for orthography design, the non-linguistic factors are more important than the purely linguistic factors. The non-linguistic factors include social, political, and psycholinguistic factors (how people feel and think about their language). Some anthropologists would even say that the acceptance or rejection of an orthography has little to do with its linguistic adequacy.

The following are the main factors for acceptance or rejection of an orthography:

7.4.1 People decide, not principles

After the presentation of some linguistic principles which supply the basis for the creation of an alphabet, it is important now to repeat that the final orthography choices and decisions will NOT be made by the yardstick of abstract scientific principles, BUT on the basis of psychological, historical and other forces which are present in a society.

There may also be very many and very different people who desire to be involved in the design of the orthography of their own language. Ideally, all of them should be able to take part at some point,

e.g. in

- the basic linguistic research
- the testing
- the evaluation and discussion
- the final decision making.

Even after an orthography has been settled it obviously is not enough to spread the alphabet chart and a few primers. These are very important signals, but there also must be a large enough body of literature to support the development of the written language.

It is the support in schools - the interest and participation of the people - the presence of original writers - the variety of books and periodicals - all of these

can make the difference between a fruitless literacy campaign and a living literature.

7.4.2 Languages are Systems of "Arbitrary Signs"

Languages seem to be "arbitrary" in the way they assign forms to meanings. When linguistics became a science (early 1900), one of the first claims by one of the first linguists (De Saussure) was this: "Language is a system of arbitrary signs". He pointed out that English "tree", French "arbre", German "Baum" all refer to the same item:



It is *only by convention* that people use names like አምፕ ገረብ - it is not because of the nature of "trees" that trees must be called "tree". In the same way, the orthographic representation of a sound can be considered "arbitrary".

It is *only by convention* that the sound "p" is written as "p" - it is not because of the nature of "p". In a different language, it might look quite different (such as in Greek which has "π").

During the history of writing, different systems have been developed, and different languages have borrowed from different systems - most of them from Latin. Even where 2 languages have borrowed from the same Latin system, they usually still differ: (French, for instance, differs from English by the signs ç cedilla, è accent grave, é accent aigu, ê accent circonflexe, and ë tréma.)

7.4.3 National policy

Clearly the national policy is decisive in all points where it is explicit.

7.4.4 Contact with other written languages

Official languages: The national or official language and the symbols used by it should be taken into account

Trade languages: The trade language(s) and the symbols used by them should be taken into account

Neighbouring languages: With neighbouring and related languages, it may be advisable to maintain common symbols - maybe even across the language family (e.g. S. Semitic: Geez, Nilo-Saharan: Latin, etc.)

7.4.5 *Bilingualism*

The degree of bilingualism will influence orthography decisions: If speakers of a minor language group are already literate in another language, they may have strong feelings about how their own language should be written - either "different" or "the same".

7.4.6 *Spelling of "loans", borrowed or foreign words, and names*

Words from abroad may want to obey foreign "phonology laws":

7.4.6.1 *Loans*

"Loan words" have been absorbed into the language and pronounced according to the phonology of the language. The best is to spell them according to the regular orthography of the language.

7.4.6.2 *Borrowed or foreign words*

"Borrowed words" have not yet been absorbed into the language, and people still feel its foreign origin. The best is to keep to its original spelling.

7.4.6.3 *Names of people and places*

The same procedure as for "loans" applies here. Often the names of people and places have already been decided long before the orthography is established, and it probably would be fruitless to try and change them. With loans and borrowings, it is helpful to test readers' reactions from time to time. Attitudes may change when words become more familiar.

7.4.7 *Free choices*

Try to write consistently, but give the freedom for writing alternative spellings. Be guided by the reaction of the people themselves.

Example: English

Conservative spelling is "*Programme to-day*", but "*Program today*" is also accepted.

7.4.8 *Attitudes of the people*

Attitudes towards the own language will differ depending on the historical background: People may feel "our language is inferior. In order to raise its prestige, we want to make it like the (respected) language X. Therefore it should use *the same symbols* as X" Or they may feel "our language is superior / distinct / unique, therefore it needs to *use different symbols*" from X.

- Attitudes towards special symbols: E.g., tone marks or symbols may not be found in the national orthography and may therefore be rejected - even though they would be needed to represent the language accurately.

- Attitudes towards previous orthographies: An old and revered alphabet may be wanted rather than a new one.

- Attitudes towards transfer: The people may consider "mother tongue literacy" only as a stepping stone to another language (LWC), and they may want to use an alphabet which is as *similar* as possible to that language.

- Attitudes towards a religion: In Muslim areas, the people may want the Arabic script to be preserved, no matter what is taught in schools.

- Attitudes towards a script: A certain kind of script may be associated with national consciousness, domination, religious affiliation, prestige, etc.

- Attitudes towards dialects: People may consider a certain dialect "pure" or "old" or "rich", and therefore they may prefer the way it is written.

7.4.9 *Size of the language group*

Consider how many people there are in each dialect, how coherent or spread out the settlements are. There may be different attitudes in different areas.

7.4.10 *Who supports the orthography?*

Consider who supports the different orthographies and who leads the opinions:

- elitists in the capital only? - grass roots citizens? - factions? - certain leaders? - the educated elite? - or teachers who will influence the opinion in the countryside?

7.4.11 *Effect on communication*

- what about inter-ethnic communication?
- what about the regional governments?
- what about splinter groups in other countries, and what about emigrants?

7.4.12 *Motivation*

- are people eager to use the script?
- is there resistance, and if so, why?

7.4.13 *Attitudes of influential people*

Local officials, educators, anthropologists, linguists, people abroad - they all may have their convictions. Some of them have already written their own lan-

guage in a certain form. Consultation and public relations are needed with all these people, if the orthography is to receive full support.

7.4.14 The Role of "Language Committees"

In the 1980s the majority of African languages had no writing system yet.

In the 1990s this is changing rapidly because - on the one hand - small languages are receding or dying, while - on the other hand - many communities of larger languages are articulating their awareness, and many of them have started to develop their own languages. In the last two decades, the speed of both - decay and development - seems to have increased.

7.4.14.1 Tasks and studies for developing a writing system

Several tasks face the community who have decided not to let their language die, but to develop it:

- the first task is "Designing an Orthography" (also called "Graphization")
- the second task is "Standardization"
- the third task, "Modernization", is an ongoing process in all languages.

Usually some institutions of culture or higher learning will address these needs - but the driving force may be a grassroots institution such as local "language committees" or an "association" for the study and promotion of language and culture.

7.4.14.2 Functions of a "Language Committee"

The functions of an institution such as the "Language Committee" are like those of the traditional "Language Academies" (the first of which was established in France in 1635):

The institution ("Academy", "Association", or "Committee") is concerned with the study of the language, and it establishes the norms for writing the language. It may also address the question of a "reference dialect". Once the norms are agreed upon, the institution puts them down in "reference works" such as dictionaries and "reference grammars".

The same institution may create a "literary climate" - i.e., a socio-cultural environment where the value of "writing" is appreciated and supported. This includes writing personal letters, displaying local news sheets, creating regional journals, encouraging local writers, and creating a treasury of folklore and traditional knowledge. This institution will link up with local schools and ministries, it creates libraries in order to -

keep track of - display - or circulate all works which become available in the language.

Another task of this "Institution" may be the creation of pre-reading materials, follow-up primers and general reference books.

7.4.14.3 Forming a "Language Committee"

The number of members in a "Language Committee" need not be limited, and all different interest groups should be represented to avoid a bias.

At the centre of this institution, there should be a core of people who are (a) available and (b) able to discuss and decide about issues at hand. These "core" members may form a sort of "technical study group" in the committee.

In this "technical study group" the following should be represented:

- all dialects
- all groups of different interests and backgrounds.

This includes non-schooled people as well as intellectuals, monolinguals as well as multilinguals, women as well as men, plus the various religious and political groups of importance.

- Some "committee members" should be able to give *all* their time to the tasks of this institution. Ideally, they should be professionals or people who proceed to get the relevant training. They should have access to specialists and to resources such as specialized libraries.

- There should also be "technical advisors" who are experienced in procedures such as phonological descriptions, orthography design, publication of reference books and basic pedagogical materials. Preferably such advisors should be at home in the language concerned and live in the language area.

- Other people of different backgrounds may be able to make very different contributions: By administering language programs or cultural rallies - by providing pedagogical assistance - by editing journals - by translating important books or gathering folklore - by writing original novels - or by providing workshops for further developments of the language.

7.4.15 Language "Standardization"

"Standardization" follows "Orthography Design" (also called "Graphization" - and it leads to "Modernization". Of these three stages, "modernization" obviously is an ongoing process in every written language.

7.4.15.1 *The feasibility of having a language "standardized"*

Standardization implies a writing system which serves all the speakers of a language. The criteria for selecting a standard dialect have been worked out, e.g., by M. Sadembou.

In principle every *dialect* of every language of the world could be written - but for practical reasons it is not even feasible that every *language* should be written and standardized - or even be "saved".

Usually the following factors are important where graphization is considered:

- Number of speakers
- Degree of bilingualism
- Degree of social transition into a language of wider communication (LWC)

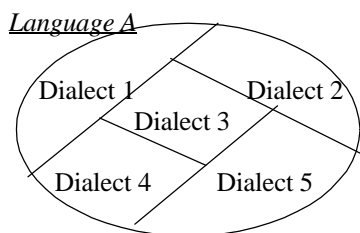
- Obvious communication needs in the language

Usually the following factors are most important when it comes to standardization:

- Presence of leaders engaged in the standardization process
- Presence of a committee concerned with standardization

7.4.15.2 *The reference or standard dialect*

A reference dialect serves to unify the language. The aim is that the whole language community chooses to use one standard of writing. The aim is NOT to make all members of the community SPEAK in the same way! But the unity of the language will develop around the standard dialect.



- Suppose that in a "Language A" there are the dialects "D1 D2 D3 D4 and D5", and the speakers of all dialects have no problems in communicating with each other.

- Suppose that Dialect 3 is chosen as the "reference dialect", and suppose that this choice is based on insight, on democratic principles, and on true agreement.

- What does this choice mean in actual practice? It means that a unification of the language will start, because all speakers of Dialects 1, 2, 4 and 5 will begin to *write* like the speakers of Dialect 3. How-

ever, they will NOT start to *speak* like them: They will not pronounce their own writing like the speakers of Dialect 3: They will continue to pronounce the written words like they have always done.

In addition, the speakers of Dialects 1, 2, 4 and 5 will retain (preserve) certain peculiarities of their own dialects - so that many of these can eventually be introduced into the entire language. This will enrich the standard. Thus, by agreeing to strengthen a "standard", the entire language will gain strength, increase and refine its vocabulary. All this would NOT happen if the dialects would split up and use different systems.

7.4.15.2.1 Why is standardization needed?

Languages profit from dialect unification (standardization) for several reasons:

- First: There hardly is any language which does not have different dialects. So the question of "unification" is unavoidable and found all over the world.

Those languages which have been standardized are now profiting from it.

- Second: It is obviously impractical to standardize two or three dialects of a language instead of one. Even if this would be done, the problems would not disappear which need to be faced in the standardization of one dialect alone.

- Third: The reason for choosing more than one standard dialect would be non-linguistic reasons: political, religious, ideological - or maybe just the desire of a few privileged individuals.

- Fourth: The expenses of research and literary production are considerable. These expenses cannot be justified for unlimited numbers of dialects. (Actually, the costs of printing and of paper would remain the same, but the costs of researching, writing and translating would be higher.)

7.4.15.2.2 The work of standardization

The work of "dialect unification" or "standardization" needs to be carried out on at least two levels: (1) by specialized "Standardization Agents", and (2) by the Language Community.

7.4.15.2.2.1 *The "Standardization Agent"*

Usually the "Standardization Agent" is a person (maybe a member of a group) who has made up his/her mind that a certain language needs to be written.

- This person(s) is aware of the national situation, where the task is to unify - not to multiply writing systems

- This person must be aware of the idea and the advantages of "standards". He must realize that it will never be possible for everybody in the language to write exactly as they speak. Usually, spoken and written language are not the same.

- This person must be aware of the problem that some speakers of some dialect may refuse to accept the reference dialect as "standard". The "Standardization Agent" must awaken a positive attitude in his/her people.

- This person, or the committee, should remember that they are not handling a neutral "thing", but an item to which very personal feelings are attached. It is also important to remember that people do not like to give up their habits and allegiances, such as writing in a certain way, or identifying themselves with the dialect of a particular clan.

7.4.15.2.2 The Language Community

The committee has, before all, the responsibility to encourage literary production, or to actually produce manuals, journals, and other communications which spread and reinforce the standard. They should be aware of different ways of expressing the same idea, and harmonize these where possible. Where this is not possible, they should encourage people of different opinions to agree.

It may be necessary to allow for a "transition phase", where certain dialect forms can still be written "like pronounced". (This, however, should not lead to a "double standard". In fact, "a double standard" is exactly what must be avoided.)

7.4.15.2.3 Additional Principles in Standardization

The following principles should be considered where "standardization" is becoming a difficult issue:

- *Simplicity*: Look for the simplest solutions.

Example: Instead of [ndz], one may prefer [nz].

- *Uniformity*. The same word should preferably always be written in the same way. The same form should be preserved across dialect boundaries and across phonological differences.

Example: ~~dogz~~ cats / dogs cats

- *Usage*: Priority should be given to those words which have the widest distribution

Example: words which are known in 4 dialects should be preferred to those known only in the central dialect.

- *Functionality and diversity*: One has to accept that the same spellings will be pronounced differently in different areas. This probably will not be a problem.

But there will be *practical problems* such as these:

- What is the best in the case of a writer, for instance, who comes from a non-standard dialect? Suppose there is an author who writes dramas, but in a minor dialect? It is true that such writing can be edited to some extent - but this should only be done where it is absolutely necessary. In general, such works should be accepted as they are. It would be a pity to lose an author, or to lose an original contribution.

- What is to be done in the case where 2 "standards" had already been established?

It is wise to use them next to each other for a certain period, while supporting especially the standard that was decided upon. What is published in one form, should not be published in the other again. After a while, one "principal" standard will make its way by its own power.

7.4.16 Multi-Dialect Orthography

In speech, the phonological differences are likely to have the greatest immediate effect on the acceptability of one dialect to speakers of another. By preserving those phonological differences in the written forms we could be preserving obstacles to acceptance."

A "multi-dialect orthography" would "mask many of the most obvious differences between the dialects and to emphasize the similarities which would help to make more of the existing literature more widely usable."

The sounds of two dialects of Dani (PNG) differ.

In spite of this, a common orthography was designed:

Example (Dani, PNG, see G. Simons 1994)

Western Dialect			
<i>mb</i>	<i>nd</i>	<i>ng</i>	<i>ngw</i>
<i>ph</i>	<i>tsh</i>	<i>kh</i>	<i>kwh</i>
<i>p</i>	<i>t</i>	<i>k</i>	-
(<i>β</i>	<i>r</i>	<i>g</i>	<i>gw</i>)

Grand Valley Dialect			
<i>p</i>	<i>t</i>	<i>k</i>	<i>kw</i>
<i>h</i>	<i>s</i>	<i>h</i>	<i>h</i>
<i>p</i>	<i>t</i>	<i>k</i>	-
<i>β</i>	<i>r</i>	<i>g</i>	<i>gw</i>)

Common Orthography

"Multi-Dialect"

b	d	g	gw
ph	ts	kh	kwh
p	t	k	kw

variants (at the mid or end of syllables) are not written

7.4.17 The Importance of Creating "Reference Works" for Standardization

A dictionary is the one most important tool for establishing a standard orthography. Alphabet tables, posters, announcements, primers etc. will also help - but an authoritative dictionary is a decisive tool. Dictionaries contain "entries" and definitions. The form of entries, dictionary definitions, and dictionary sections will be discussed under "dictionary making". There are many themes to cover, and if no dictionary exists, it is good to start to prepare it early. The following themes give a rough guide to the themes which should be included: Nature - animals - food - clothing - settlements and houses - furniture - society - trade - communication and transport - culture and entertainment - religion - human body - life cycle - human relations - peoples and nations - activities - feelings - senses - qualities - time - space and movement. The "annex" of a dictionary is a good place to present culturally important sets of items such as number systems, special calendars, cultural terms covering the entire music terminology, folklore etc. With the publication of such a dictionary, the spelling of different kinds of words will be settled.

7.4.17.1 The linguistic terminology

In its introduction, a dictionary establishes the "linguistic terminology" for a language. It should include "linguistic terms" such as the following: Copula - numbers - pronouns - ideophones - adverbs - tense and aspect words - negation - conjunctions. With the publication of such a dictionary, the discussions of language issues will have a solid basis.

7.4.18 The Importance of "Literary Production" for Standardization

Without a "literature", the knowledge of reading will be useless. What is the "minimum" for a new language? The following items were found to be important:

- Literature of different levels: There should be various levels of books: easy - challenging
- Literature covering different areas of knowledge: There should be books for various areas of knowl-

edge: information for the family - history - fiction - fact

- Literature of different genres: There should be books of different "genres": novels - drama - poetry
- Reference books: There should be books to refer to: grammars - general reference books.

7.5 Psycho-linguistic Considerations

Psycho-linguistics takes its instruments from psychology to deal with language - e.g., with reading.

7.5.1 Intuition and feeling

The mother tongue speakers of a language often can "feel" how it works, even if they may not be able to explain the feelings in terms of grammar, phonology, or other rules. When suggestions are made concerning the orthography symbols, the intuitive reaction of the mother tongue speakers must by no means be ignored.

A number of tests have been devised which can be of help where the research focuses on these "feelings" of the mother tongue speaker. This is especially the case for difficult decisions which concern issues such as writing tone - writing length - writing syllable breaks - writing word breaks - or the choices between different spellings of special words.

7.5.2 Liking and learning

THE BEST ALPHABET IS THE ALPHABET WHICH THE PEOPLE LIKE
--

It has been found that people learn to read those alphabets best which they *like* - even linguistically "bad" ones. They learn them better than linguistically "good" alphabets which they *don't like*!

7.6 Pedagogical Considerations

Ambiguities in the writing - e.g., words which might be read in two different ways - present problems which are especially difficult for the new readers. The alphabet designer should carefully experiment with the orthography, noting where the students consistently have problems, and try to mend the reasons for these problems. The system chosen should make reading *easy*.

7.6.1 Practical problems

The choice of "scripts" types needs to be considered under a pedagogical perspective.

7.6.1.1 Script types

Latin - unlike other scripts - uses 3 or 4 different script types for most of its letters, e.g:

printed, serif	<i>a</i>	<i>b</i>	<i>c</i>
capitals	<i>A</i>	<i>B</i>	<i>C</i>
printed, sans serif	<i>a</i>	<i>b</i>	<i>c</i>
capitals	<i>A</i>	<i>B</i>	<i>C</i>
cursive	<i>a</i>	<i>b</i>	<i>c</i>
capitals	<i>A</i>	<i>B</i>	<i>C</i>

Fortunately it is not necessary to introduce them all. The recommendation in Cameroonian schools is, for instance, NOT to introduce the "cursive" style for handwriting. Several reasons are given for NOT using the "cursive" style:

- To teach "cursive" script is un-economical; the children gain nothing by knowing it.
- its use is limited to handwriting.
- the borders between letters are not always clear.
- it is difficult to read than printed script. Letters are not as different from each other as in printed script.
- it allows pupils to develop "bad handwriting". This is not the case in printed script.
- the special letters of some African languages - like ε ω ϕ - are not as clear as in "printed style".

7.6.1.2 Types of handwriting - printing fonts

Decisions need to be made about "cursive writing" - whether and when it should be introduced and whether it should differ from "printing". It may be preferable to avoid "cursive writing" altogether.

Concerning the different fonts for printing, various tests have shown that the "serif" fonts (e.g. Times - I J K L - i j k l) are easier to recognize than "sans serif" fonts (e.g. Arial - I J K L - i j k l).

7.6.2 Different needs of different readers

What makes an orthography pedagogically "easy"? This question is not easy to answer. On the basis of their research, various scholars point out that different kinds of readers profit from different features in the orthographies (see J. Kavanagh and R. Venezky, eds., 1980, Orthography, reading and dyslexia, Baltimore):

- *New readers* need an orthography which helps them, step by step, first to distinguish the letters, then to link these letter to sounds, then to pronounce the words, and finally to connect the words to whole phrases and sentences. They prefer a "phonemic" writing system.

- *Post-primer readers*, however, need an orthography which allows them to develop speed, to recognize words of high frequency quickly and to read discourse with comprehension - not only reading out loud and slowly, but also fast and silently. To gain this speed, they need an orthography which avoids unnecessary differentiation of symbols. They prefer a "morpho-phonemic" writing system.

It means that *slow readers* profit from an orthography which shows the differences of phonemes (such as, for instance, the different pronunciations found in the English plurals of *cat-s*, *class-es*)

It means that *fast readers* profit from an orthography which shows the identity of morphemes (such as, for instance, the identical forms also found in the English plurals of *cat-s*, *dog-s*)

Here again, to satisfy both the demands of the beginner and the demands of the experienced reader, a focus on both "*phonemes*" and "*morphemes*" seems the best: this combination of both is called a "*morpho-phonemic*" orthography, as was already shown above.

7.6.3 Need to transfer

Some symbols may cause confusion in the transfer of reading skills to the major language. Such confusion should be avoided. The system of the major language should be considered.

Example: Machiguenga (Peru)

- The letter "u" is used for the sound [ü] of Machiguenga (avoiding the diacritic sign " ¨ ").

- The letter "u" is used for the sound [u] of Spanish

This caused problems for students from the Machiguenga area who wanted to apply their reading skills to Spanish: In Spanish the letter "u" is pronounced "u" - not "ü" as the students wanted to pronounce it whenever they say "u". So if "ü" would have been used for the sound [ü], the transfer into Spanish would not have been so confusing.

7.6.4 Need for a firm foundation in MT writing

Pedagogically, it usually is best to give the students a firm foundation in *one* writing system before introducing a *second* writing system of another language. The reason is that the *same* symbols will be used in *different* ways.

It cannot be avoided that a child will be exposed to the teaching of different languages within a short time. But it should at least be attempted to make the child feel at home in the *first* writing system before it

is taught the conflicting symbolization from a *second* writing system.

8. Stages of Orthography Design: A Check List

Orthography making is more than 1 step. This list helps to make sure all steps are considered:

8.1 Analysis of the language

- Study the phonological system.
- Study other important issues, e.g. changes in "morphemes".
- Write a summary of the results.

8.2 Comparative analysis of other dialects

- Consider those dialect differences which may affect the orthography.

8.3 Study of any existing orthographies

- Study the existing orthographies of your own dialect area.
- Study the orthographies of neighbouring dialects and languages.

8.4 Comparison with phonologies and orthographies of major languages

- Compare them in order to identify those points where "transfer" may be desirable

8.5 Assessment of local opinions and attitudes

- Be aware of the "motivating" factors.

8.6 Orthography conference(s)

- Hold conference(s) at the main decision point.
- Hold conferences at various regional levels, if these differ.

8.7 Decision on a tentative orthography

- Decide! Do so, bearing in mind point 1 2 3 4 5 above.

8.8 Testing and evaluation of the orthography

- Do tests, by presenting some alternatives
- by systematic testing of all points in question
- by use of trial materials

8.9 Modification of the orthography where needed

- Do all possible improvements which you have discovered.

8.10 Repeated "Testing" and "Modification"

The last two steps - "Testing and evaluation" - "Modification" - should be repeated until the orthography is generally accepted.

Tick off / comment on / steps that have been taken:

1	Analysis and Write-Up
2	Other Dialects
3	Existing Orthographies
4	Major Language(s)
5	Local Opinions and Attitudes
6	Conference(s)
7	Decision on Tentative Orthography
8	Testing, Evaluation
9	Modification
10	General Acceptance

9. Testing the Orthography

At various points it has been pointed out that only testing - not phonological analysis alone - will provide the decisive answers. Here are some considerations which can guide the preparation of orthography tests.

9.1.1 Why test?

Certainly an orthography should be *right*, *liked*, and *easy*? - Then there are several reasons to test it:

9.1.1.1 Correctness

To expose the analysis and the suggestions to the people and by doing so, to confirm or question them.

9.1.1.2 Preferences

To find out which symbols are preferred by the people.

9.1.1.3 Readability

To measure readability. If for instance the readers must re-read several times to understand the meaning, then the orthography needs to be improved!

9.1.2 What to test

When you prepare a reading test, be sure to cover all difficult points, for instance:

9.1.2.1 Testing for sounds

Test the analysis of problematic sound sequences

9.1.2.2 Testing for word breaks

Where there are alternatives, try them both. See which version gives the easiest and most fluent reading. Watch out for versions which always cause stumbling and uncertainty. You certainly will want to avoid those.

9.1.2.2.1 Opinions

Simply ask the speakers for their opinions about the way their language is written.

9.1.2.2.2 Observations

Observe how unconditioned speakers of the language write word breaks "instinctively". See if there is any consistent pattern. (Maybe you can find a "rule" behind this pattern.) This may give you a guide to a more formal analysis.

9.1.2.3 Testing for word division

Test difficult word divisions. Watch whether the words end in the right place.

9.1.2.4 Testing representation

Test some words with over-differentiation (i.e. more than one symbol for one sound) if there are such words. Watch whether this causes problems for the reader or not.

9.1.2.5 Testing under-representation

Test some words with under-differentiation (i.e. more than one pronunciation for one symbol) if there are such words. Watch how much can the reader guess. Is the load too high?

9.1.2.6 Testing morpho-phonemic spelling

Test some words in *phonemic* spelling against the same words in *morpho-phonemic* spelling. What do people prefer? Which spelling do they read best?

9.1.2.7 Testing for social acceptability

Test various spellings of some words which have been the cause of discussions. Watch what makes the orthography acceptable.

9.1.3 How to test

9.1.3.1 Testing informally, by asking questions

When testing, watch the following principles

1. Allow time for experimentation and feedback
2. Silently watch for difficulties in reading or spelling, gather those cases which are consistently misspelled
3. Ask about attitudes: Expect that people want to decide, and that they want to take responsibility. Watch for things which cause social acceptability or rejection
4. Write things in different ways. Let people read them and ask about their impressions.
5. Write down lists of items which have been problems, include those items which usually raise discussions and which need to be decided.

9.1.3.2 Testing formally

1. Present different ways of spelling and ask: "Is this the same or different?"

2. Give spelling choices, ask: "Do you prefer this or that?"
3. Measure the readability of two different orthographies: Here is a method which has proven to be practical:
 - Write little stories in two different ways
 - Let various kinds of people read these stories aloud
 - Record the reading on tape
 - Look for those spellings which cause the smallest number of problems (errors, hesitations, backing-up).

9.1.4 Whom to test

To avoid bias, all representative groups should be tested - including the group to which the "father of the orthography" may not like to listen:

9.1.4.1 People of different educational background

Test both naive and sophisticated mother tongue speakers

9.1.4.2 People of different linguistic background

Test both monolinguals and bilinguals

9.1.4.3 People with orthography exposure

Test both people who have been exposed to a certain orthography already and others who have not

9.1.4.4 Potential bias

Beware of the following:

- your own assumptions, desires and other biases
- the testees' understanding of the test purpose
- factors which will bias the results, such as these:
 - ability to read the national language - experience with linguistics - general attitude to the mother tongue - a desire to please you.

9.1.5 Testing Sociolinguistic Preferences

The speech community is the "owner" of the orthography. It has the right to be listened to first.

9.1.5.1 Testing for word preferences

- Choose words for which you want to determine the preferred spelling. Do not write the word down (use pictures or the national language to present the word).
- Ask the testee to write the word down.
- Watch how s/he spells it.

9.1.5.2 Testing for letter preferences

- Choose sounds for which you want to find the best alternative.
- Write down some words which have these sounds., but delete the letter in question.
- Ask the testee to fill in the letter.
- Watch how s/he spells it.

9.1.5.3 Testing the "functional load"

Steps:

- Write 2 stories in 2 orthographies (A and B), divide the stories in 2 halves:
 - Orthography A is the richest, most expanded form, e.g., with full indication of tone or length.
 - Orthography B is the slimmest, most reduced form - e.g., with no tone or length etc. indicated.
- Let different readers read one half in orthography A, the other half in orthography B.
- Record the reading on tape.
- Compare the recordings for fluency, hesitations, errors, pauses, re-readings, guessing, and speed.
- Watch for the best spellings.
- Re-write the 2 stories if you have found any possible improvements.
- If improvements or changes were made, repeat the test with the re-written orthography.

If the point which you are testing is very important (e.g., if in the past it has already given rise to many discussions) then do sufficient "sampling" to get "representative" results. Only with such results you can make solid conclusions and present convincing recommendations.

9.2 Psycholinguistic testing

After you have analyzed the phonology as well as parts of the morphology, and after you have devised a tentative orthography, some "trial literacy" material may reveal more problem areas. These problems tend to be in the area of individual sounds, word breaks, length, neutralization, or morpho-phonemic writing.

9.2.1 The practical test of teaching reading

On the one hand, your phonological analysis predicts areas of difficulty in the teaching of reading (everyday literacy). On the other hand, the teaching of reading (everyday literacy) provides a check of the phonological analysis and of the orthography.

An orthography is not fully established unless there has been feedback from "trial literacy".

9.2.2 The psycholinguistic test of an orthography

You may test the following points to make sure your orthography recommendations are valid or not.

9.2.2.1 Testing the spelling of suprasegmentals

This test uses "minimal contrasts". It may convince some speakers of the need to write tone or length.

Example: (Siane, PNG)

To test length:

Is it eru "sea" or eeru "stone"?

To test tone:

Is it némá "louse" or němà "bird"?

Arrange for two MT speakers to sit back to back. In front of each of them, put some objects or pictures, including the minimal pairs which you want to test.

Point out one object to one speaker. He says the word and the other speaker writes it. Then they change roles.

To test whether the writing of tone or length is necessary, prepare a selection of text with and without marking the critical item (letters, length, tone). Use different kinds of readers, observe which texts are the easiest to read and understand.

9.2.2.2 Testing other choices of spellings

To test "reading ease", prepare cards which offer a "multiple choice" of spellings. Test which is read best.

To test "preferences", prepare a list and ask the readers to cross out all spellings which they do not like.

Example 1:

If "m" and "ʁ" are two possible spellings of the same phoneme, ask

"How should the words be written? Using ʁ? - using m? - using ʁ only in certain words?"

Example 2:

If a choice has to be made between "aa" "ah" or "â", give sample words and ask:

"Which words are the easiest to read?"

9.3 Final remarks about testing

These are just a few of the tests which have been used in various countries of the world. Other kinds of tests can be designed to address specific problem areas in designing an orthography.

10. Annex

10.1 Alphabets

Note that the "IPA" alphabet is only designed for linguistic analysis - not for use in orthographies!

10.1.1 IPA Chart:

Alphabet of the "International Phonetic Association" Update of 1996

THE INTERNATIONAL PHONETIC ALPHABET (revised to 1993, corrected 1996)											
CONSONANTS (PULMONIC)											
	Bilabial	Labio-dental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k ɡ	q ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill	ʙ			r					ʀ		
Tap or Flap				ɾ		ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative				ɬ ɮ							
Approximant	ʋ	ɹ		ɻ		ɻ	j	ɰ			
Lateral approximant				l		ɭ	ʎ	ʟ			

Where symbols appear in pairs, the one to the right represents a voiced consonant.
Shaded areas denote articulations judged impossible.

CONSONANTS (NON-PULMONIC)

Clicks		Voiced implosives		Ejectives	
⊙	Bilabial	ɓ	Bilabial	ʼ	Examples:
	Dental	ɗ	Dental/alveolar	pʼ	Bilabial
!	(Post)alveolar	ɟʼ	Palatal	tʼ	Dental/alveolar
‡	Postalveolar	ɡʼ	Velar	kʼ	Velar
	Alveolar lateral	ɠ	Uvular	sʼ	Alveolar fricative

VOWELS

Close	i y	ɨ ʏ	ɯ ʉ	u
Close-mid	e ø	ɘ	ɤ	ɞ
Open-mid	ɛ œ	ɜ	ɝ	ɠ
Open	ɶ	æ	ɶ	ɑ ɒ

Where symbols appear in pairs, the one to the right represents a rounded vowel.

10.1.2 "African Reference Alphabet": UNESCO recommendation of 1981

a	α	b	β	c	ç	d	ḍ	ḍ	ḍ	ḍ	ḍ	e	ε	A	Α	B	Β	C	Ç	D	Ḍ	Ḍ	Ḍ	E	Ε
ə	f	f	g	ɣ	h	ḥ	i	ɪ	j	k	k	l	ɛ	F	F	G	Ƴ	H	I	I	J	K	K	L	M
m	n	ŋ	o	ɔ	p	q	q	r	r	s	s	ʃ	N	Ŋ	O	ɔ	P	Q	Q	R	R	S	S	ʃ	T
t	ṭ	ṭ	u	u	v	ʊ	w	x	x	y	ʏ	ʏ	T	ʦ	U	U	V	ʊ	W	X	X	Y	ʏ	Z	
y	z	z	z	z	ʒ	ʹ	˘	˘	˘	˘	˘	˘	Z	Z	Z	?	!	()	«	»	,	,	.	

10.2 Orthography comparisons

The following tables display 4 LWC vowel systems and orthographies, with Geez symbols for reference.

10.2.1 Tigrigna Vowels

IPA	simplified	Geez	Order
[ɑ] or [ɑ:]	a	አ	4th
[ɛ] or [ɛ:]	e	ኤ	5th
[i] or [i:]	i	ኢ	3rd
[ɔ] or [ɔ:]	o	ኦ	7th
[u] or [u:]	u	ኡ	2nd
[ɪ]		እ	6th
[ə]		አ, ኧ	1st

10.2.2 English Vowels

IPA	simplified	Geez	Spelling	Examples
[ɑ]	-	አ	[DOES NOT EXIST]	-
[e] or [ɛ]	e	ኤ	<u>e</u> , <u>a</u> , <u>ea</u> , <u>ai</u> , <u>ie</u>	bed, <u>any</u> , <u>read</u> [past], <u>said</u> , <u>friend</u>
[ɪ]	i	እ	<u>i</u> , <u>y</u> , <u>i-e</u> , <u>ui</u> , <u>e</u> , <u>u</u>	<u>big</u> , <u>baby</u> , <u>give</u> , <u>build</u> , <u>pretty</u> , <u>busy</u>
[ɔ] or [ɒ]	o	ኦ	<u>o</u> , <u>o-e</u> , <u>a</u> , <u>ow</u>	<u>hot</u> , <u>gone</u> , <u>want</u> , <u>knowledge</u>
[u]	u	ኡ	<u>u</u> , <u>oo</u> , <u>oul</u> , <u>u</u>	<u>put</u> , <u>good</u> , <u>could</u> , <u>full</u>
[ɑ:]	aa	አ...	<u>a</u> , <u>ar</u> , <u>ea</u> , <u>a-e</u>	<u>father</u> , <u>car</u> , <u>heart</u> , <u>are</u>
[e:]	-	ኤ...	[DOES NOT EXIST]	-
[i:]	ii	ኢ...	<u>ie</u> , <u>ee</u> , <u>ea</u> , <u>e</u> , <u>ey</u> , <u>ei</u> , <u>eo</u>	<u>field</u> , <u>see</u> , <u>teacher</u> , <u>me</u> , <u>key</u> , <u>re-ceive</u> , <u>people</u>
[ɔ:]	oo	ኦ...	<u>or</u> , <u>a</u> , <u>aw</u> , <u>al</u> , <u>ar</u> , <u>au</u> , <u>ough</u>	<u>for</u> , <u>fall</u> , <u>caw</u> , <u>walk</u> , <u>war</u> , <u>cause</u> , <u>ought</u>
[u:]	uu	ኡ...	<u>u-e</u> , <u>oo</u> , <u>o</u> , <u>o-e</u> , <u>oe</u> , <u>ue</u> , <u>ou</u> , <u>ew</u>	<u>use</u> <u>moon</u> , <u>to</u> , <u>lose</u> , <u>shoe</u> , <u>blue</u> , <u>you</u> , <u>flew</u>
[ə], [ɪ:]	other	ኧɪ	[unstressed vowel, vowel + r]

10.2.3 French Vowels

IPA	simplified	Geez	Spelling	Examples
[a]	a	አ	<u>a</u> , à (oi)	Paris, bo <u>is</u>
[e]	e		<u>é</u> , e, <u>œ</u>	café assie <u>d</u> , œ <u>d</u> ème
[ɛ]		ኡ	<u>è</u> , ê, e, <u>ai</u>	père, être, <u>elle</u> , j' <u>ai</u> me
[ə]		አ, ኧ	e	semest <u>re</u>
[i]	i	ኢ	<u>i</u> , <u>ie</u>	Paris, <u>vi</u> e
[o]		ኣ	<u>o</u>	solide
[o]	o		<u>o</u> , ô, <u>au</u> , <u>eau</u> ...	zone, bloc, <u>au</u> , l' <u>eau</u>
[u]	u	ኤ	<u>ou</u> , <u>ou</u>	soupe, sou <u>l</u>
front round:				
[y ø œ]			<u>u</u> , eu, <u>œu</u>	bu <u>s</u> , il pleu <u>t œu</u> vre
nasalized:				
[ɛ̃ œ̃ ɔ̃ ɔ̃]			<u>in</u> , un, an, on ...	
long:				
[ɛɛ ɔɔ]	ee oo	ኡኡ...	<u>è</u> , ai, <u>aie</u> o, <u>eau</u> , <u>ô</u>	Crète, sa <u>u</u> ce, C <u>ô</u> te d'Ivoire

10.2.4 Italian and Spanish Vowels

IPA	simplified	Geez	Spelling	Examples (Italian)
[a]	a	አ	<u>a</u> / with irregular stress: à	ancora / àncora
(Ital. [e:])	e		<u>e</u> / è	franc <u>e</u> se
[ɛ]		ኡ	<u>e</u> / è	ben <u>e</u> / per <u>ch</u> è
[i]	i	ኢ	<u>i</u> / ì	virtù / pr <u>in</u> cipi
(Ital. [o:])			<u>o</u> / ò	sal <u>o</u> ne
[o]	o	ኣ	<u>o</u> / ò	on <u>d</u> a / fal <u>ò</u>
[u]	u	ኤ	<u>u</u> / ù	br <u>u</u> tto / trib <u>ù</u>

10.3 The experience of others- a bibliography with notes

The list of references is given to make available some of the experience from other countries in a more direct way. Most of the articles are available as paper copies, some only on CD-ROM, others in abbreviated form.

Andrzejewski B.W. 1974	The Introduction of a National Or- thography for Somali	The article describes how 1972 the new orthography was introduced in the entire country - with vigor, speed, and clarity. Observers were surprised by the success or impact.	African Lan- guage Studies 15 pp. 199- 203
Besner, Derek, and Marliyn Chapnik Smith 1992	Basic Processes in Reading	Subtitle: Is the Orthographic Depth Hypothesis Sinking? Presents current knowledge about reading "deep" and "shallow" orthographies.	pp. 45-66 in Frost, R. and Katz, eds.
Bird, Steven 1997	E-mail letter to Wedekind	Bird writes about a recent study in Cameroon where tone writing was worse than no tone writing!	E-mail 1997
Bolli, M., Egner, I., S.I.L., and Jacques Ron- gier, I.L.A. 1996	Une orthographie pratique des lan- gues ivoiriennes	This is an official policy document of how Ivoirians plan to develop the writing systems of the remaining languages. There are alphabet tables and examples (including special symbols, length, tone).	Institut de Linguistique Appliquée, Univ. d'Abid- jan, S.I.L.
Bosscher, Kath- leen 1995	Perceptions of Language and Literacy	Kathleen reports typical conversations like these: - Would you like to learn to read? - Yes, I would like to learn LWC (Hindi, Swahili, Spanish). - But would you like to read in your own language? - No, I want to learn the LWC letters.	Notes on Lit- eracy, 21 3 pp. 23-24
Dyken, Julia R. van 1992	What literacy teachers should know about lan- guage [Sudan]	A study in the Sudan shows that teachers must learn - to recognize language segments [C, V] - to identify parts of language [syllables, words] - to attach meanings to visible forms [morphemes]	Notes on Lit- eracy, 18 1 p.32
Frost, R., and Shlomo Bentin 1992	Reading Conso- nants and Gues- sing Vowels	The article shows that readers seek the maximum of information from their writing system. This is especially true for "deep" orthographies like Hebrew or Arabic.	pp. 27-44 in Frost and Katz, eds.
Gilley, Leoma, for Wanda Pace 1991	Orthography and the Influence of Morphophonemics	Shilluk is considered very difficult to write (e.g., writing of SG./PL.) "Morphophonemic" spelling seems to be the solution to the problems of readers and writers.	Notes on Lit- eracy, 17 3 pp. 57 ff.
Goodman, Ken- neth S., ed. 1973	The Psycho- linguistic Nature of the Reading Process	Presents solid proofs that a good orthography - a good relation between letters and phonemes - helps children to achieve better reading. (Buddell 255ff.) In 12 articles, the book addresses the question of what goes on "between eye and brain".	Detroit: Wayne State Univ. Press

Hasselbring, Sue 1996	Orthography Testing in Botswana	Stories were read aloud and recorded to test different orthographies against each other. People had strong opinions and preferences, but the test helped to pacify the "battle of opinions".	Notes on Literacy, 22 2 pp.34-37
Hohulin, E. Lou 1993	The First Language Component: A Bridging Educational Program	To improve the test scores of elementary students, a gvt. program was devised as a bridge from the MT to Filipino and English. The writing of Filipino and English sounds was a problem, especially k s c, f v x th and the English vowels.	Philippine Journal of Linguistics 24: 1, (also NOL)
Hudson, Joyce 1986	An Orthography Chosen by Those who Speak Gooniyandi	Members of a small committee of an Australian minority language choose the symbols for their language. The resulting "phoneme chart" is discussed.	Notes on Literacy, 49 pp. 11-13
Institute of Curriculum Development and Research 1992	A Hand Book for Bilingual Education Vol. 1	The first part of this book was used in the present "Guide".	Addis Abeba: Ministry of Education, ICDR
Katamba, Francis 1991 (2nd ed.)	An Introduction to Phonology	The first chapters show how to analyze the sound system of any language. Many exercises and examples are provided.	London, N.Y.: Longmans
Katz, and Frost, R. 1992	The Reading Process is Different for Different Orthographies: The Orthographic Depth Hypothesis	All writing systems of the history are surveyed. The reading of "good", "flat" (shallow) orthographies [like Serbo-Croatian] is compared with the reading of "deep", problematic orthographies [like English].	pp. 67-48 in Frost, R. and Katz, eds.
Kutsch Lojenga, Constance 1986	Some Experiences in Writing and Teaching Tone in Africa	Nilo-Saharan and other tone languages have different systems of writing lexical and grammatical tone. Tone analysis and teaching are discussed.	Notes on Literacy, 1 pp.59-65
Lewis, M. Paul 1997	Language maintenance, standardization and national trends	Subtitle: Lessons learned from the Quiche survey Lewis argues that for the Quiche people (1 million), dialect differences should not be preserved in the writing system (pro "multi-dialect" orthography).	LinguaLinks CD-ROM
Lock, Arjen and Maija 1993	The Development of an Orthography	Presents "participatory research" - including linguistic studies on the village level. Lists the materials which need to be prepared for these. Describes the decision making process.	in: Read, April 93, vol. 28 no. 1 pp. 18ff
Maddieson, Ian 1987 (repr.)	Patterns of sounds	Lists several sound systems (all phonemes) from every language family of the world.	Cambridge MA: CUP
Malone, Susan 1991	Planning for Literacy in Papua New Guinea	A Handbook for Literacy Coordinators. Presents "7 strategies", including research - resource development - materials production, etc.	Department of Education, Papua New Guinea

McCormick, Tom 1994	Alternative Approaches to Literacy	A series of S.I.L. videos, including: Reading as social process - reading as "festivity" - present knowledge about decoding print to sound - our understanding of early reading.	Notes on Literacy, 20 2 pp. 10-12
Rempel, R., et al. 1995	Alphabet Development Guide	Practical steps for developing an alphabet and a spelling system. A worksheet is attached which explains all steps of this "Socio-Orthographic Model".	in: Read, Oct. 95, vol. 30, no. 2 pp. 2 ff.
S.I.L. staff 1991 (2nd ed.)	Alphabet Makers	A history of the world's writing systems. Many illustrations, taken from S.I.L.'s "Museum of the Alphabet "	Waxhaw: S.I.L.
S.I.L. staff 1997	Getting started in orthography development	Outlines a procedure, with examples. Mouse clicks lead on to all relevant articles and chapters.	LinguaLinks CD, first module: 2pp
S.I.L. staff 1997	LinguaLinks Literacy Bookshelf	The CD diskette includes several hundred pages of reports. Various articles refer to "creating orthographies" around the world.	Notes on Literacy, 22 4 p.60
S.I.L. staff 1996ff.	Literacy Information On-line	Current issues are presented on e-mail. An ongoing service.	Notes on Literacy, 22 4 p.60
S.I.L. staff 1997	Methods for testing an orthography	The method of testing an orthography depend upon the degree of literateness of the speech community. The methods include: formal orthography testing - oral orthography testing - written orthography testing - informal orthography testing	LinguaLinks CD ROM
S.I.L. staff 1997	Orthography development	Module 1 presents the steps for "participatory orthography development". This leads to 11 further modules, from "Establishing a tentative orthography" to "Assessing decisions".	LinguaLinks CD, first module: 2pp
Sadembouo, E., Tadadeju, M., and Wiesemann, U. 1988	Guide pour le développement des systèmes d'écriture des langues africaines	"Designing Writing Systems: A Guide" - most of this book has been translated for the present "Guide"	Yaoundé: Université de Yaoundé / S.I.L.
Simons, Gary 1994	Principles of Multidialectal Orthography Design	Offers principles and procedures. Shows an example how 1 orthography serves 2 very different dialects.	Notes on Literacy, 20 2 pp.12-34
Snider, Keith L. 1992	"Grammatical Tone" and Orthography	On the problem whether or not to write grammatical tone. If yes, what needs to be done?	Notes on Literacy, 18 4 pp. 25-30
Speece, R. and M., 1992	When a Phonemic Orthography Doesn't Work	An example of how morpho-phonemic writing makes the orthography simpler.	in: Read, April 92, Vol. 27 no. 1, pp. 4ff.

Stringer, Mary D. and Faraclas, Nicholas G. 1987 [1997]	Working together for Literacy	Explains a "multi-strategy method" for teaching reading and writing. Combines "syllable method" with "holistic methods".	S.I.L.: Lin-guaLinks CD ROM [chapters 1 & 3]
Trudell, Barbara 1995	Making Readers Literate: Translation Literacy in Sub-Saharan Africa	Speaks about "Alphabet charts", "Spelling book" and other transition materials for the classroom. Considers the difficult symbols of the main language (digraphs, diacritics).	Notes on Literacy, 21 3 pp. 47-58
Unseth, P. and C. 1991	Analyzing Ambiguity in Orthographies	Unseths try to predict the readers' problems if tone, length and vowel differences (o\o) are NOT written. Includes some Nilo-Saharan examples.	Notes on Literacy, 1991 no. 65 pp. 35-51
Waltz, Carolyn 1986	Bilingual Guanos Lead us to a Simple Alphabet	Even if there are only very few - the literate people should take responsibility for deciding their own orthography. The article illustrates this decision making	Notes on Literacy, 1986 no. 50 pp. 11ff.
Weber, David J. 1992	With only six letters	Words that the learner encounters in a primer should generally not contain untaught letters. An illustration shows how primer stories can be written with only 6 (frequent, controlled) letters.	Notes on Literacy 18 2 pp. 25-40.
Wiesemann, Ursula 1987	Standardisation d'une langue	Describes the stages of "typical" "standardization" programs. [English summary] The paper insists that standardization takes time and is a self-balancing process, leading to "consolidation" eventually.	Journal of West African Languages XVII, 1 pp. 74-79
Wiesemann, Ursula 1995	Tone Orthography and Pedagogy	Exemplifies rules for writing tone. Discusses how best to teach the rules.	Notes on Literacy, 21 3 25-31
Williams, Ray 1990 (2nd ed.)	Readable Writing	A manual for authors and editors of educational textbooks [based on English] Chapter 2 has a brief discussion of the reading process" "between the eyes and the brain".	Harlow: Longman
Wrigley, Matthew 1991	Community Involvement in Orthography Development	Describes a 3 day workshop where common people designed, discussed, and decided their own orthography. Shows what kind of materials should be prepared for holding this kind of a workshop.	Notes on Literacy, 17 3 pp. 19 ff.

10.4 Register: definitions, examples and procedures

—A—

academy: to promote literary activities, 28
accent, 15, 18; symbol for tone, 22
acceptance, 33; of orthography, 26; of orthography, 27, 34; orthography, 34
Afar, 12
African languages, 27
Afro-Asiatic, 13
air stream, 5; source, 5
allophone: see variant, 11
alphabet, 3, 7, 20; the one people like, 31; revered, respected, 27; simpler, 44
alphabet table: **example**, 41; importance of, 43
alphabets: creators of, 43
alveolar, 8
ambiguity: orthography, 44
analogous environment: see similar environment, 10
analysis, 34; in phonology, 9; stage in orthography design, 33
apostrophe, 19, 22
Arabic, 12, 14, 41
Arabic script, 25, 27
arbitrariness: of symbols, 26
articulation, 5
Asia: tone languages, 17
association: promoting an orthography, 28
attitude, 27; assessment, 33; in different language areas, 27; readers, 27; **testing**, 34
author: role, 30

—B—

back vowel: **example**, 8, 9
beginner reader, 24
bias, 28
bilabial, 8
bilingualism, 28; influence on orthography decisions, 26
bilinguals: in **testing** an orthography, 35
bold letter, 19

books: availability, to strengthen literacy, 26
borrowed: word, 27
borrowed word: spelling of, 26
Botswana, 41
boundary: marking, 16; of word, border, 14
bridging programme: to LWC, 42

—C—

C: consonant, 12
capital letter, 19, 31; advantage of, 25
cavities, 5
central vowel: **example**, 8, 9
Chadic, 13
change: conditioned by environment, 11; of sounds, 10
Chinese: writing system, 3
clause, 4
click, 6. See cluster, 14; **definition**, 14
colon, 25
command, 19
committee: for standardization, 28
community: tasks in orthography design, 27
community involvement: in orthography design; participatory, 44
complementary distribution: **definition**, 11
compound, 18
consonant: structural **definition**, 14; type, 6
contrast, 21; **definition**, concept, 9; identical environment, 10; in identical environment, **definition**, 10
convention: in choosing letters, 26; in language, 26
costs: of standardization, 29
culture, 18
cursive, 31; handwriting, 32; script to be avoided, 32
cursive style: disadvantages, 31
Cushitic, 13, 16, 23
CV pattern: see syllable pattern, 13

Czech, 12

—D—

Daasenech, 22
decision making: **example**, 42; influential people, 27; MT speaker, 44; orthography, 43; participatory, 26, 42; pedagogical consideration, 32; preparation, 26
deep orthography, 41
definition: of linguistic terms, 4
demarcation: border marking, 16
dental, 5
diacritic, 18, 22; attached vs. not attached, 22; overloading, 25; preference above vs. below, 22; preferences, 21; problems, 22
diacritics: problems, 43
dialect: considered pure, prestige and script, 27; in orthography, 24, 33; representation of, 28
dialects: and attitudes to scripts, 27
dictionary: role in standardization, 28
dictionary making, 3
digraph, 21; **definition**, 22; problem of, 22; problems, 43
diphthong: **definition**, 14; **example**, 9
direct speech, 19
discourse, 4
distinctive, 15; see contrast, 8
domination: and attitudes to script, 27
double letters, 18, 22
downstep: tone, 17
duration: see length, 16

—E—

ease: of learning a phonemic orthography, 24; of orthography, 32; **testing** reading ease, 36
ease of reading: **test**, 36

educated elite: and orthography decisions, 27
education: background of **testees**, 35
educators: role of, 27
egressive air, 5
Egyptian: writing system, 3
elision: writing of, 23; writing or, 25
emigrants: their input regarding orthography, 27
English, 12; vowels, 39
English vowels: problem of, 42
environment, 10, 11; identical, 10; influence on sounds, 7; mutually exclusive environments, 11; similar, **definition**, 10
errors: in **testing**, 35
ethnic communication: and orthography, 27
evaluation: participatory, 26
exclamation mark, 25
exclamation mark, 19
expressive function: of suprasegmentals, 16

—F—

face diagram, 5
fast reader, 24
fast speech, 20; and elision, 23
feedback, 35
feelings: about orthography, 26, 31; about spelling particular words, 27
Filipino, 42
floating tones, 17
fluctuation: see variation, 7
fluency: in **testing**, 35
fluent: reading tone, 23
fluent reading: in **tests**, 34
folklore, 28
folklore treasury, 28
foreign word: excluded, 13; spelling of, 26
French, 22, 26; vowels, 40
frequency of phonemes, 44
fricative, 8

front vowel: **example**, 8, 9
full stop, 25
functional load, 21, 34;
testing, 35

—G—

Geez, 26
gemination, 22; **definition**, see length, 16;
see length, 16
genre: how to write, 19
German, 25
going back: in reading
tone, 23
grammar, 4
grammatical meaning, 16
grammatical tone, 42, 43
graphization: **definition**,
28; important factors,
28; stage, 28
guessing: instead of read-
ing, 34

—H—

hamzah, 14
handwriting, 31, 32;
disadvantages of cur-
sive style, 31
harmonization: of dialect
differences, 29
Hausa, 22
heading: how to write, 19
Hebrew, 41
hesitations: **testing**, 35
high: tone, 17
high vowel: **example**, 8,
9
history, 18; role of, 26
history of writing sys-
tems., 43
hyphen, 19; in orthoga-
phies, 25

—I—

implosive, 5
indentation, 19
indicator: for writing
word break, 24
interpretation: **definition**,
14
inferiority: feelings about
appearance of own or-
thography, 27
ingressive air, 5
initial: syllable initial
consonants, 14
instinct: of naive speak-
ers of the language,
24
inter-dental, 5
interpretation: phono-
logical, 13

intonation, 16; indicator
for writing word
break, 24
intuition, 31; about or-
thography, 31
IPA, 20
IPA chart, 5, 12; update
1996, 37
Italian, 12, 21, 22; vow-
els, 40
italic, 19
Ivory Coast: orthography
policy, 41

—K—

keyboard: choice of sym-
bols, 18
Khoisan, 8
Korean, 3, 18

—L—

labial, 5
language: attitudes found
in different areas, 27;
policy, national, 26;
systems of, 4; system,
4; unity of, 29
language committee:
role, 27
language community:
orthography design,
29
language death, 28
language family: com-
mon symbols, 26
language of wider com-
munication: transition
(LWC), 28
laryngealization, 18
larynx, 5
Latin, 26; script, 25
Latin alphabet, 22
Latin America, 22
Latin script, 21, 26; pref-
erence, 21; problem of
capital letters, 25
length, 15, 16; **example**,
41; of sounds, 35; to
write or not to write,
36; writing of, 22
letter: from other lan-
guage, 20
letters, 18; 2-4 sizes of,
21; untaught, in a
primer, 44
lexical meaning, 16
lexical tone, 42
line break, 25
linguistics: terminology
for newly written lan-
guage, 31
literacy: in major lan-
guages, 26; rejection,

18; what people think
it is, 41
literacy campaign, 26
literary climate: creation
of, 28
literary language., 3
literary production, 3;
importance for stan-
dardization, 31
literature, 26; living, 26
loan word: spelling of,
26
local news sheet, 28
loudness: see stress, 16
low vowel: **example**, 8, 9
lower case, 31
lungs, 5
LWC: language of oppor-
tunity, 27; reading of,
41

—M—

major language: in deci-
sions about orthogra-
phy, 25; transfer, 18
maximum ease of learn-
ing: **principle**, 18
maximum motivation:
principle, 18
maximum representation:
definition, 18; excep-
tion to, 20; **principle**,
18
maximum reproduction:
principle, 18
maximum transfer: **prin-
ciple**, 18
meaning, 4; in the **defi-
nition** of a phoneme,
10
meaningful unit: word
definition, 24
message, 4
Miao Chinese: tone, 17
mid: tone, 17
mid vowel: **example**, 8,
9
minimal pair, 10; **defini-
tion**, 10
minuscule, 31
mis-spelling: in **tests**, 34
modernization, 28; stage,
28
modification: IPA sym-
bols for, 5
monolinguals: in **testing**,
35
morpheme, 23; **defini-
tion**, 4; same shape,
24; unchanging im-
age, 24
morphology, 4, 13; **defi-
nition**, 4
morpho-phonemic: type
of orthography, 7

morpho-phonemic or-
thography: advantages
of, 32
morpho-phonemic writ-
ing, 23; comparison
with phonemic writ-
ing, 24; **example**, 24;
principle, **example**, 24;
of, 25; simpler, 41,
43; **test** of, 34, 35
mother tongue: founda-
tion in writing, 32
mother tongue speakers:
intuition, 31; naive
and sophisticated, in
testing, 35
motivation: factors, 33
mouth air, 6
multi-dialect orthogra-
phy, 21; **example**, 30,
43; Quiche, 42

—N—

names: of people and
places, spelling, 27;
spelling, 18; spelling
of, 26
nasal: cavity, 5
nasal sound: **definition**,
6
nasalization, 7; to write,
18; writing of, 22
nasalized vowel: **exam-
ple**, 9
national consciousness:
and attitude to script,
27
national language, 26;
and attitudes, 27;
bias, 35
national orthography, 41;
influence in decision
making, 27
neighbourhood: of
sounds, 10
neutralization, 14, 25, 35
Nilo-Saharan, 26
novel, 28
nucleus: of a syllable, 13;
of syllable, **definition**,
12
numeral, 18
numeral: to write tone,
22

—O—

occurrence: **definition**,
11
Omoti: tone, 17
one symbol for one pho-
neme: **principle** of
maximum representa-
tion, 20

opinion leaders: orthography support, 27

opinions: as a method of **testing**, 34; assessment, 33; changed after a **test** campaign, 41

oral sound: **definition**, 6

orthographic depth hypothesis: critique, 41; discussion of, 42

orthography, 3, 7; acceptance, 18; acceptance and rejection, 26; bias in selection of, 35; conference, 33; considered best, 7; considered good, 3; decision making, 18; deep and shallow, 41; established habits, 27; ideal, 18; introduction of, 41; multi-dialect, 43; previous, influence on decisions, 27; rejection, 18; shallow and deep, 42; simplicity, 18; standard, 20; support and rejection by groups, 27; support of, 26; tentative, 43; tentative stage, 33; **testing** stage, 33; trial materials, 33

orthography decisions: factions, 27; grass roots, 27

orthography design: advisory body, 28; check list, 18; compromise, 18; **example**, 43; guide, 43; linguistic, 26; participatory, 27. See: policy, 41; **principles**, 18; stages, 28, 33; standard, 27; **steps**, 42; successful **example**, 41; UNESCO reference alphabet, 39

orthography of LWC: **example**, 39

orthography **testing**: **procedure** and evaluation, 41

overlap: between normal and digraph writing, 22

over-representation, 21; advantage for multi-dialect orthography, 21; danger of, 21; **definition**, 21

over-representation: **test** of, 34

—P—

palatal, 5

Palauan, 12

paragraph, 4, 19

participatory orthography development, 43

participatory research: **example**, 42

particles, 4

pause: indicator for writing word break, 24

pauses: **testing**, 35

pedagogical materials., 28

pedagogics of first writing system, 32

pedagogy: demands on orthography, 18

people abroad: role of, 27

period, 19

periodicals: for strengthening literacy, 26

Persian, 12

pharyngealized vowel: **example**, 9

pharynx: air, 6; pharyngeal cavity, 5

phoneme, 7, 10; average inventory, 8; chart, 15; **definition**, 7; in orthography, 23; interpretation as consonant or vowel, 14; maximum representation, 20; number of phonemes, 8; same or different, 9, 10; size of system, 8; symbols to use, 18

phoneme system: **example**, 8

phonetic transcription, 5

phonetics, 4; articulatory, 4, 5

phonology, 3, 4, 7; **definition**, 4; introductory book, 42; process, 3

phrase, 4, 19

place of articulation, 5

places of articulation, 5

plosive, 8, 12

plural: morpho-phonemic writing of, 23

policy: on orthography design, 41

political groups: representation of, 28

practical problems, 30

prestige: and attitude to scripts, 27

primer: introduction of letters, 44

primer stories: with 6 letters only, 44

principles: of orthography making, 18

printing: type, 32

printing presses, 22; role in decision making, 18

problem areas: for **tests**, 35

production: reading materials, 42

profit: of standardization, 29

promotion of writing, 28

pronoun: marking tone of, 23

pronunciation: articulation, 5; different for same orthography, 29

proper nouns: spelling, 18

prosody: see suprasegmental, **definition**, 6

proverb, 19

psycholinguistics: **definition**, 26; **testing** an orthography, 36

psychology, 3, 18, 26

punctuation, 25; principles, 25

—Q—

quadrigraph, 22

question, 19

question mark, 19, 25

Quiche, 42

quotation mark, 25; not needed because of grammar, 25

quote, 19

—R—

readability: **testing**, 34

reader, 23; beginner and fast reader, 24; different needs, 32; fast, 32; reactions, 27; slow, 32

reading: theory of, 41

reading material: ceation of, 28

reading **test**, 35; results concerning symbols, 21

reference, 29

reference books: importance for standardization, 30

reference grammars, 28

reference works, 28

regional governments: and orthography, 27

regional journal, 28

rejection: of orthography, 26; of symbols, 27

religion: and writing system, 27

religious affiliation: and attitude to scripts, 27

re-readings: in **testing**, 35

research: as orthography preparation, 42; participatory, 26

resistance: against orthography, 27

rules: behind patterns of errors, 34; writing tone, 44

—S—

Sabean script, 25

sampling: when this is needed, 35

schools: attitudes to script, 27

script: attitudes toward, 27; printed type, 32; types of, 31

segments, 16; in the reading process, 41

semantics, 4; antonym, 4; **definition**, 4

Semitic, 13, 26

sentence, 4, 19

Serbo-Croatian, 3, 18, 42

shallow: orthography, 42

Shilluk, 41

sibilant, 8

similar environments: also called analogous environment, 10

sizes of letters, 21

slow speech: as guide, 20, 23

slurred sounds, 7

socio-cultural framework, 18

socio-linguistics: in orthography decisions, 26

sociology, 18

socio-orthographic model: **steps** of, 42

Somali: introducing a new orthography, 41

sound: change, 7; difficult to interpret, 14; types of, 6

sound change: to write or not to write, 25

sound system, 3, 7; from each language family, 42

sound systems: how to analyze, 42

space: in orthography, 25

spacing, 19

Spanish, 3, 21, 25, 32; vowels, 40

special symbols, 41;
attitudes, 27
speed: in reading, 32; of
reading, by using
capital letters, 25
speed of reading: **testing**,
35
spelling: preferred spell-
ing of word, 35; spe-
cial words, 31; **testing**
alternatives, 34; **test-**
ing preferenes, 36
spelling book: impor-
tance of, 43
spellings: and different
pronunciations, 30;
options, 35
standard, 29; already
established, 30; and
publication policy, 30;
dangers of double
standard, 30
standard dialect: selec-
tion of, 28
standard of writing, 29
standardization, 3; ad-
vantages and obsta-
cles, 29; agent, 29;
cost, profit, 29; fac-
tors important in, 28;
feasibility, 28; **prin-**
ciples, 30; role of ref-
erence books, 30;
stage, 28; stages of,
28; takes time, 44
stop, 9
stories: as **test** material,
35; in reading **tests**,
41; in **testing** an or-
thography, 35
strategies of reading:
festivity, 42; holistic,
43; holistis, 43
stress, 16; **example**, 16;
writing of, 22
study: need to study rela-
tions of sounds, 22;
stage in orthography
design, 33
Sudan: reading problems,
41
superficial form, 7
superiority: feelings
about own orthogra-
phy, 27
support: of new orthog-
raphy, 27
suprasegmental: in or-
thography, 22; spell-
ing of, 36; to write, 18

Swahili, 16
syllabary, 18, 20
syllabic nasal, 15
syllable, 12, 13; analysis,
13; different from
grammatical parts, 13;
influence on pho-
neme, 7; relation to
word, 13
syllable border: changes,
18
syllable break, 31
syllable method: strategy
of reading, 43
syllable pattern, 14;
definition, 12; **exam-**
ple, 13; formula, 13
syllables: in reading, 41
symbol: most fitting, 18;
to be preferred, 21;
used in other lan-
guages, 26
symmetry, 12; **example**,
non-symmetry of Ro-
tokas, 8; lack of, 12;
of a sound system, 15;
of language system, 3
syntax, 4
system, 10; sub-system,
4

—T—

tape recording: for **test-**
ing, 35
teachers: and orthogra-
phy decisions, 27
teaching reading, 35
technical advisor: role of,
28
technical studies: group
for, 28
tense marker: marking
tone of, 23
test: by observation, 34;
designing reading
tests, 34; for writing
tone, 23; formal, 34;
functional load, 35;
how to do **testing**, 34;
informal, 34; of or-
thography alterna-
tives, 34; of prefer-
ences, 34; orthogra-
phy, 26; people to
test, 35; **principles** of
testing, 34; problem-
atic sound sequences,
34; psycholinguistic,
36; readability, 34;

social acceptance, 34;
word break writing,
34; word division, 34
testing: procedures, 35
Tigrigna, 3, 39; punctua-
tion, 25
title: how to write, 19
tonal changes, 17
tone, 13, 15, 16; **exam-**
ple, 16; feelings about
writing tone, 27;
level, 17; of syllables,
13; problem of re-
reading, 23; to write
or not to write, 36;
tone language, 17;
writing of, 22
tone mark, 18
tone orthography, 17
tone spreading, 17
tone writing: **example**,
41
trade language, 26
transcription, 5; pho-
netic, 5, 20; phono-
logical, 20
transfer: attitudes to, 27;
of skills; to major
language, 32; prob-
lems because of or-
thography, 32; to ma-
jor languages, 25
transition: printed to
cursive, 32
trial literacy, 35
trigraph, 22

—U—

underlying form, 7
under-representation, 44;
danger of, 21; **defini-**
tion, 21; **test** of, 34;
to be avoided, 22
understanding: **test**, 36
UNESCO: orthography
recommendation, 39
UNESCO alphabet, 22,
31
unification: of a written
language, 29; of dia-
lect, 29
unification of the lan-
guage, 29
uniformity: in standardi-
zation, 30
upper case, 31
usage: of word, 30

—V—

V: vowel, 12
variant: also called allo-
phone, **definition**, 11;
variations of pronun-
ciation, 7
variation, 11; defintion,
11; unexplained
sound changes, 11
velar, 5, 8
velum, 5
vocabulary: increase of,
29
voiced, 8, 25
voiceless, 7, 8, 25; **defi-**
nition, 6; whispered
vowels, 7
vowel: plus n, 22; sounds
which function as
vowels, 13; structural
definition, 14; type, 6
vowel harmony, 15;
definition, 17
vowel plus h, 22
vowel system: **example**,
8

—W—

word: boundary, 18;
spelling of loan word,
borrowed word, 26;
various **definition**, 24
word boundary: changes,
23; how to find out,
24; **principles** for de-
fining, 24
word break, 31, 35; **defi-**
nition, 25; writing of,
24
word division: **defini-**
tion, 25
workshop: language de-
velopment, 28; or-
thography design, 44
writer, 22, 23; contribu-
tions of, 30; local, 28;
problems for, 21
writing system, 3, 7;
importance of first be-
fore second, 32; mul-
tiplication of, 29
writing tone: arguments
pro and contra, 23;
pro, 23
written languages: influ-
ence on new orthog-
raphy, 26