

Mark my words!

Writing Namblong, according to Namblong, by Namblong, for Namblong

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Kangaroo Ground, December 2023

Dedicated to Nehemia Iwong

5/9/1948—12/1/2021

*With thanks and praise to God, who spoke the world into being,
gave us voice, and kept the conversation going.*

Abstract

This 'orthobiography' describes the development and implementation of three orthographies for the Namblong people of Papua, Indonesia; one by an external linguist, one by a Namblong committee, and one by collaboration between a linguist, a local committee, and the wider Namblong community.

By evaluating the quality of each orthography according to its appeal, acceptance, accuracy, accessibility, and application, as well as the community's agency and agreement in its development, and the perceived accord between Namblong culture and the different methods of orthography development,

this thesis critiques and qualifies, substantiates and expands the hypothesis that participatory methods of orthography development result in orthographies that are more widely accepted and used than orthographies developed using non-participatory methods (Easton, 2007; Hasselbring, 2006; Kutsch Lojenga, 1996; Markowski, 2009; Page, 2013; Schroeder, 2010; Walker, 1988).

By identifying specific advantages and disadvantages effected by different models of orthography development, it is hoped that these findings will lend greater potential for success to communities engaging in written language development, and that further research in this direction will lead to an eventual theory of orthography design.

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Addenda

Since this thesis was submitted, a few minor typographical errors and turns of phrase have been amended to make the text clearer, and a few additional references added. Paragraph #3 of section 5.2.5a has been substantially re-written and a footnote added for clarity.

Changes have not affected the content or meaning of the text except for the following additions: the final paragraph of section 3.2; discussion of the *Welser Scale* in section 3.7; section 4.4.5; and an extra sentence on over- and under-representation in paragraph #21 of section 5.2.1.

I have also added a glossary of technical terms for non-linguists, and added Appendix C in order to present the ORT more conveniently on a single page.

I welcome feedback and suggestions for improvement at <philip_swan@sil.org>. This paper may be cited as Swan, P. (2023). *Mark my words! Writing Namblong, according to Namblong, by Namblong, for Namblong* [Working Paper]. SIL Australia. <https://www.sila.org.au/resources/working-papers>

Abbreviations

C	consonant
DLL	dominant language of literacy, often, but not always, the same as the LWC
IPA	International Phonetic Alphabet
L1	(one of) an individual's first language(s), acquired as a child, and (in this thesis) spoken at native-speaker level
L2	(one of) an individual's second language(s), acquired subsequent to an L1
LWC	language of wider communication (Fishman, 1969)
pl	plural
Poss	possessive marker
sg	singular
SOV	Subject-Object-Verb
V	vowel

Conventions

{a}	underlying morphemic form represented using the International Phonetic Alphabet
a	lexico-phonemic representation using the International Phonetic Alphabet
/a/	phonemic representation using the International Phonetic Alphabet
*/a/	not a phoneme
[a]	phonetic representation using the International Phonetic Alphabet
[nir]	three-letter ISO 639-3 language code
(a)	orthographic representation
[ə̆]	extra-short vowel
[ə̯]	non-syllabic vowel
/s-sii/	(hyphen) morpheme boundary
[C [◌] C]	(superscripted schwa) a non-phonemic vowel-like sound heard during the transition between the articulatory gestures of two consonants, produced without the addition of a vowel gesture (cf. Hall, 2006, pp. 389, 399)

Glossary of technical terms for non-linguists

writing system/orthography	the conventions for writing a particular language, including a defined set of symbols, and rules for spelling, word-breaks, and punctuation
grapheme	a written sign representing a sound, for example, ⟨m⟩ for the sound [m], and ⟨sh⟩ for the sound [ʃ]
morpheme	the smallest meaningful unit of a language, for example, the word ‘cats’ can be broken down into two morphemes, <i>cat</i> and <i>-s</i> (the plural marker)
phoneme	the smallest unit of sound which, if substituted for another phoneme, will change the meaning of a word, for example, <i>bat</i> and <i>cat</i> share two of their three phonemes
allophone	one of the variant pronunciations of a phoneme, often influenced by the tongue and mouth positions required to produce the surrounding phonemes

Examples

The English **phoneme** /p/ (what we think of as a ‘p’) has three **allophones** [p^h], [p], and [p̚] (the different ways we pronounce /p/ in different contexts):

[p^h] is released with a puff of air, as in the word *pin* (put your hand in front of your mouth to feel it)

[p] is released with no puff of air, as in the word *spin*

[p̚] is unreleased, as in the word *nip*, if the speaker doesn’t re-open their mouth after forming the /p/ (e.g. at the end of an utterance)

over-differentiation	representing multiple allophones of one phoneme with multiple graphemes
over-representation	representing one phoneme with multiple graphemes, often in different environments
under-differentiation	representing multiple phonemes with one grapheme
under-representation	leaving a phonemic feature unwritten

Examples	-differentiation	-representation
over-	imagine if [k ^h] and [k], two allophones of the phoneme /k/, had distinct graphemes ⟨kh⟩ and ⟨k⟩, such that <i>kit</i> and <i>skit</i> were spelt *⟨khit⟩ and ⟨skit⟩	the phoneme /k/ is represented by ⟨c⟩ before ⟨a, o, u⟩ (<i>cat, cot, cut</i>) and ⟨k⟩ before ⟨i, e⟩ (<i>kit, ketch</i>)
under-	two phonemes /θ/ (as in <i>thigh</i>) and /ð/ (as in <i>thy</i>) are both written ⟨th⟩	phonemic stress /' / which distinguishes <i>'rebel</i> (n) from <i>re'bel</i> (v) is not written

Chapter 1 | Introduction

1.1 Written language development

Echoing a declaration made 50 years earlier but still unfulfilled (UNESCO, 1953, p. 6), in the year 2000, the United Nations Educational, Scientific and Cultural Organization (UNESCO) called for “basic education of quality for all, regardless of gender, wealth, location, language or ethnic origin” (UNESCO, 2000, p. 17). To achieve this would require “a relevant curriculum that can be taught and learned in a local language . . . and respect for and engagement with local communities and cultures” (UNESCO, 2000, p. 17).

An obvious hindrance to accomplishing this goal is the lack of curricula, written materials, and—crucially—established writing systems for most of the world’s languages (Eberhard et al., 2020). A hindrance which is less obvious, perhaps, is the question of whether a particular minority-language community *wants* to develop literacy in their language, given that literacy in a more dominant language might provide greater social, economic and educational advantages (M. Bendor-Samuel, 1988; G. Cooper, 2005; Walker, 1988).

Considerations of utility highlight the sad fact that:

speakers of non-dominant languages face significant justice issues arising from a fundamental inequality in the status of their languages. Examples include limited access to services, vulnerability to exploitation, and pressure to make decisions about their languages with long-lasting social repercussions. (Falk, 2020, p. 1)

The benefits associated with a dominant language cannot but emphasise its value, and potentially devalue a minority-language speaker’s cultural heritage, if it is encoded in their ‘less useful’ language.

Approached from this perspective, minority-language development designed to reduce linguistic injustice has been called *language activism* (Adams, 2014; SOAS, 2020; cf. Dobrin & Good, 2009). One aspect of language activism which can bring numerous benefits to a community is mother-tongue literacy (G. Cooper, 2005, Chapter 2).

While those benefits are real, they come at a cost of time which a person might prefer—or need—to use for other things. So, unless minority-language speakers themselves both desire and pursue the ability to read and write their language, “any writing system is abortive” (Smalley, 1959/1964b, p. 51), and attempts to impose literacy upon them (cf. UNESCO, 1953, p. 6) are paternalistic and disrespectful, flowing perhaps from a “monolingual mindset” (Ellis, 2007, p. 178) with a limited understanding of diglossia, and the assumption that multilingual individuals should be equally literate in each of their languages.

In summary, some minority-language speakers desire literacy in their heritage language, while others are content *not* to write their language down, or see literacy in a more dominant

language as a higher priority. But, for those who want to write their languages and are ready to embark on a journey of language development—such as the Machiguenga people of the southern rainforest of Peru, who assert with pleasure, “Reading is for knowing!” (Davis, 2004, p. 1)—or, for speakers of languages who wish to reform or replace an existing writing system, how should they proceed, in order to give themselves the best chance of their orthography being used?

1.2 Changes in approach

For much of the twentieth century, orthography development and literacy programs for minority-language communities were largely instigated and implemented by community outsiders, albeit with assistance from insiders and with the ultimate goal of developing the capacity of the local community (Bosscher, 1988; Dawson, 1989; Smalley, 1959/1964b). However, it has been observed that a community’s engagement with, and agency in, its own development achieves more appropriate, more impactful, and more sustainable development results than development driven by outsiders (Myers, 1999; Hasselbring, 2006; Lewis & Simons, 2016). In a study of 54 vernacular language literacy programs in eight different countries, Walker (1988, p. 29) found that “community involvement had one of the strongest relationships with [vernacular language] literacy [use] of any of the variables examined.”

The development since the mid-1990s of participatory models for community-based language development has sought to harness the benefits of local engagement and agency, which in many cases have been made possible by the already-increased capacity of minority-language community members through some prior education—which was not the status quo in the same communities fifty years ago (Cahill, 2014; Easton, 2003; Kutsch Lojenga, 1996). But while it is commonly accepted that community participation yields better results, no known studies have attempted to quantify the *degree* to which community-based participatory models have improved upon outsider-driven development models.

Against this background, this thesis will evaluate and assess the processes by which three different orthographies were developed for the Namblong language of Papua Province, Indonesia. The different levels of community involvement in the development of each orthography provide a unique opportunity to compare and contrast the actual impact of community participation on the quality and use of the resultant orthographies. Evidence will be presented to substantiate, critique, expand, and qualify the accepted hypothesis that participatory methods are superior to non-participatory methods, and take a step further towards establishing it as theory.

It is hoped that this study will further our understanding of what makes a good orthography, and what makes a good process for developing one, so that minority-language communities who wish to develop vernacular literacy might have the best chance of success.

1.3 The Namblong people and their languages

The Namblong people (pronounced [nə' mbJ^woŋ]), also known as Nimboran (Anceaux, 1965; May, 1997), number approximately 8,500 (Badan Pusat Statistik Kabupaten Jayapura, 2020a, 2020b, 2020c), with most living on their traditional homelands in the Grime Valley, roughly 60 km southwest of Jayapura city, the capital of Papua province in Indonesia. The Namblong language (ISO 639-3 code [nir]) is one of five related languages in the Nimboran sub-phylum of the Trans-New Guinea phylum of Papuan languages (C. L. Voorhoeve, 1975). Its clause structure is SOV, and verbs optionally take multiple suffixes which indicate the numbers and genders of subject, object, and indirect object, as well as tense, aspect, negative, location and direction (May, 1997). There are four dialects (Sawa, 2018) which have minor phonological and lexical differences that do not affect mutual intelligibility.

Adults over 45 years of age (Namblong's grandparent generation) from outlying villages tend to be bilingual in Namblong and the provincial language of wider communication (LWC), Papuan Malay [pmy]. People aged 15–45, and some adults from urban areas, typically have limited oral command of Namblong, or are monolingual in Papuan Malay. All children are effectively monolingual in Papuan Malay. Papuan Malay has a basilect–acrolect relationship with the national language, Indonesian [ind], which is the official language of education, and the dominant language of literacy (DLL). Most Namblong do not achieve fluency in standard Indonesian until adulthood, if at all; in fact, there is some resistance to speaking Indonesian, connected to an underlying Papuan desire to secede from Indonesia.

The Namblong had spoken their tribal language for perhaps thousands of years but never conceived of writing it until a mining survey brought Westerners to the Namblong area in 1903, followed by Ambonese bird-of-paradise hunters (Kouwenhoven, 1956, p. 43). Around this time a group of Namblong guides were astonished to witness a piece of paper somehow telling an Ambonese bird-hunter that one of his family members had died back home; Namblong elders later requested a teacher from the Dutch mission, who finally arrived in 1927 (Griapon & Nasategay-Udam, 1987, Chapters 3–4; N. Iwong, personal communication, 2013). By the time of the present study, almost all Namblong people could read and write in Indonesian, but nobody had yet figured out how to write Namblong in a widely acceptable manner (Sawa, 2018). Attempts were made by Dutch and Australian linguists in the 1950s and 1980s (Anceaux, 1965; May, 1997), and by a group of Namblong around 1988 (E. Waicang, personal communication, 2012), but their tentative orthographies were never promulgated, much less critiqued or reviewed by the wider Namblong community.

Fuelled by a growing desire to produce written materials in their own language, in 2011 the Namblong community invited me to advise and assist a newly-formed Namblong Language Committee in the development of an orthography. The intention was for this orthography to accurately and consistently represent the spoken Namblong language, and be readable and acceptable for speakers of all four Namblong dialects. In conjunction with other language development activities, that orthography gradually came into being over the next six years.

Chapter 2 | Research Aims

2.1 Research aims

The primary aim of this thesis is to critique, substantiate, and qualify the hypothesis that participatory methods of orthography development result in orthographies that are more widely accepted and used than orthographies developed using non-participatory methods (Easton, 2007; Kutsch Lojenga, 1996; Markowski, 2009; Schroeder, 2010; Walker, 1988; Yoder, 2017).

For communities that speak a minority language and who wish to devise or revise an orthography so that their language can better serve their “changing social, cultural, political, economic and spiritual needs and goals” (SIL International, 2020b, para. 2), this study also aims to answer the question: What are the contextual factors and development methods that will give an orthography the best chance of being used by a community?

2.2 Research design

In order to test the (alleged) superiority of Participatory methods of Orthography Development (POD), I first develop a metric for assessing the quality of an orthography according to eight broad characteristics. I identify three primary scenarios of community involvement ranging from zero, to limited, to broad participation. I then draw on documentation and first-hand observation of three minority-language orthography development projects to compare (a) the quality of each orthography; (b) the degree of community acceptance; and (c) the ultimate success of vernacular literacy using that orthography. Finally, I attempt to correlate those results with (d) the amount and type of community involvement in each of the orthography development situations.

Qualitative assessments of the eight characteristics are quantified according to a rubric in order to facilitate comparison between the different orthographies, and I discuss the extent to which POD affected the scores for each characteristic, drawing particular attention to “what the linguist or the community would not have learned without participatory methods or what others before them did not learn by non-participatory methods” (Cahill, 2020).

2.3 Terminology

For the purposes of this thesis, *vernacular* and *minority language* are used interchangeably to refer to “a language which is the mother tongue of a group which is socially or politically dominated by another group speaking a different language” (UNESCO, 1953, p. 46); the dominated group is called a *minority-language community*. *Dominant language* refers to a language which is used between speakers of different vernaculars, and provides more opportunities for its speakers than a vernacular language. *Writing system* and *orthography* are used interchangeably to refer to the conventions for writing a particular language, including its defined set of graphemes (Coulmas,

2003; Daniels & Bright, 1996, pp. xliii, xlv). Use of the term *literacy* is limited to its traditional sense of “the ability to use reading and writing for communication and learning” (Malone, 2018). *Literature* is used to mean any written material published physically or digitally which is intended to be read by a wide audience.

This thesis makes numerous references to ‘a community’ as if all its members think and act as one, which is rarely the case. However, to save repetition, let the reader understand *community* to refer to “a significant portion of the members of a group of people who define their group identity according to something shared in common which is not shared by outsiders”.

2.4 Potential value and significance of the research

Much has been written from a theoretical standpoint about *what* makes an orthography good (Cahill & Karan, 2008; Cahill & Rice, 2014; Gudschinsky, 1970; Karan, 2006; Pike, 1947; Smalley, 1959/1964b) and *how* to make a good orthography (Dawson, 1989; Easton, 2003; Kutsch Lojenga, 1996, Matthews & Dawson, 2000). Some studies exist that compare different orthographies for the same language and discuss their relative merits with reference to both linguistic and sociolinguistic factors (Kieviet, 2006; Roberts, 2008; Smalley 1954/1964a). Some case studies, written from a more practical viewpoint, describe the participatory methods used in developing particular orthographies (Easton, 2007; Hasselbring, 2006; Markowski, 2009; Page, 2013; Wise, 2014; Yoder, 2017). Hasselbring (2006) discusses the influence of sociolinguistic and programmatic factors on cross-dialect acceptance of orthographies in two languages of Ghana. But no known studies exist that compare the characteristics of different orthographies, and the methods used to create them, and then attempt to correlate the methods used with the quality, acceptance, and use of the resultant orthographies. This thesis therefore constitutes a new and original addition to the literature and the body of knowledge on orthography development.

The existence of three orthographies developed for the Namblong language with different levels of community involvement afforded a unique opportunity to compare the quality of those three orthographies, and then attempt to correlate any relative superiorities or inferiorities with the amount and type of community engagement used in their development. By so doing it was possible to go beyond speculation and record what kinds of differences were actually made by different levels of community involvement, and how significantly those differences affected the orthographies’ eventual use and (thus) ‘effectiveness’ (Cahill, 2014).

By analysing, comparing, and contrasting the three orthographies and their development processes, this thesis will substantiate, critique, and qualify the common claim that increased community participation leads to increased acceptance of an orthography, and will shed light on other advantages and disadvantages of using participatory methods in orthography development. The thesis will thus enable a further refinement of the current understanding of best practices, and inch towards an eventual ‘theory of orthography development’.

It is hoped these findings will be of value to communities wanting to develop a writing system for their language, whether that language has no established writing system, or whether a

writing system exists but—for political, pedagogical, or other reasons—it needs to be reformed or replaced. First, however, it is necessary to review what is already known about effective orthographies and their development.

Chapter 3 | Literature Review

There is not space here to delve into the literature on different *literacies* and their social contexts (Barton, 2007; Heath, 1983; Street, 1984). Neither is there space to outline the history and typology of writing systems and scripts (Coulmas, 1989, 2003; Daniels & Bright, 1996), the relationships between speech, sign, and signified (Coulmas, 1989; Pike, 1947; Schroeder & Schroeder, 2015), or the significance that particular symbols, spellings, and writing practices take on in different societies (Kelly, 2018; Sebba, 2007). Questions about why people choose to write—or not write—in one language or another cannot be addressed here (Davis, 2004; Lewis & Simons, 2016), nor is there space to discuss how a given group of people who share a minority language might arrive at the decision to develop new functions for their language (Crowell, 1988; Harris, 1997; Simons, 2011). Rather, this chapter will address the questions: What is a good orthography? What is good literacy? What is a good method for developing a good orthography for good literacy? and, What is a good measure of orthography quality?

3.1 Orthographies and their use

Of the 7,000+ known languages signed or spoken in the world, roughly 2,100 (30%) possess materials printed in a standardised orthography (Eberhard et al., 2020). Of those, around 540 (8% of all languages) are used in institutions beyond the home and community, and literacy is being sustained through a widespread system of education; the other 1,500+ (22% of all languages) are in vigorous oral use, but literacy is not yet sustainable or widespread. Experience shows that some of these language communities will embrace vernacular literacy, and some will not (Berg, 2020; Lewis & Simons, 2016; Walker, 1988). If members of a community do not perceive themselves to have a need which can be filled by vernacular literacy (S. Dye, 2003), or if there isn't a body of available literature that interests them (Henne, 1988); if the orthography is poorly designed or based on an inadequate phonological analysis (Smalley, 1959/1964b), or is more difficult to read than that of another language in a speaker's repertoire (M. Bendor-Samuel, 1988); if the effort required to reach fluency is greater than the perceived benefits, or there are social, political or economic pressures hindering motivation (Walker, 1988), widespread vernacular literacy is unlikely to become established.

3.2 Language ecology and stable multilingualism

Very few minority-language communities today are isolated from a dominant language (Gracia, 2009; Rice & Cahill, 2014). Thus, minority-language development must be seen in the context of a multilingual community where different languages compete for use in a nexus of

relevance, efficacy, convenience, power, and prestige. A helpful metaphor is that of a *language ecology*:¹

The configuration of multiple language varieties in a speech community forms a language ecology. In the same way that each of the organisms in an environmental ecology fills a specific niche, so do the languages in a language ecology. The niche of a language is identified in terms of the functions that it has within the life of the community. . . . One cannot properly address the development of a local language without first understanding how it fits into its language ecology since development efforts will both affect that ecology and be affected by it. (Lewis & Simons, 2016, p. 63)

The competition of multiple languages for communicative functions in a given language ecology means that, without intentional compartmentalisation and differentiation of use, the dominant language will gradually spread into more and more domains and eventually overwhelm the minority language (R. L. Cooper, 1982). This is known as *language shift*.

The principle of differentiation applies just as much to written as to spoken language. So, for a previously unwritten language, “the acceptance and retention of vernacular literacy requires the establishment of a new domain for the vernacular in written form” (Crowell, 1988; cf. D. Bendor-Samuel, 1990). That domain is best one that the dominant language is unable to fill, or at least one for which the vernacular is preferred. Henne, applying Kelman’s concept of *sentimental* versus *instrumental* uses of language (1971, as cited in Henne, 1988) proposes that “an emphasis on the development of ‘sentimental’ literature is the only hope for any retention of vernacular literacy in countries where national and international languages prevail in most domains of use” (1988, p. 11).

Sentimental language use is *affective*, embodying cultural and group identity—for example, telling myths, singing hunting songs, and communicating with intimates. The vernacular language is well-suited to sentimental domains. Instrumental language use is *effective*, accomplishing a practical function—for example, giving instructions, studying at university, or applying for a job. The vernacular language is suited to some instrumental domains, but for others the dominant language is often better suited. Establishing clear boundaries so that the dominant language does not leach into the preserve of the minority language—dubbed ‘linguistic hygiene’ by Lewis & Simons (2016)—not just at the individual but at the societal level, is an essential strategy for achieving stable multilingualism.

If differentiation is *prevalent*—that is, accepted and practised by a large proportion of the community—and *predictable*—that is, there is (explicit or implicit) consensus and consistent adherence to the conventions of which languages are used for which functions and with whom—and *persistent*—that is, not changing over time, or between generations—then minority language use can be sustained (Lewis & Simons, 2016, pp. 113–115).

¹ See G. Cooper (2005, Chapter 2) for a discussion of the history and usage of the term *linguistic ecology*.

3.3 Interdependence of orthography and literacy

It has been demonstrated many times (e.g., M. Bendor-Samuel, 1988; Berg, 2020; Cahill & Rice, 2014; Kieviet, 2006; Sebba, 2007; Smalley, 1954/1964a), that the eventual use of an orthography by a community does not depend on its phonemic accuracy (cf. Chinese logographs, which are not phonemic) or consistency (cf. English's multiple spellings for identical sounds), but on a community-specific 'right' balance within a constellation of often-competing linguistic, sociological and practical factors (Smalley, 1959/1964b; Walker, 1988). Aside from an orthography's scientific accuracy, Cahill (2014, p. 10) lists several bureaucratic and sociolinguistic factors that can influence an orthography's acceptability, as well as various pedagogical, psycholinguistic and practical factors that influence its usability, each having an influence on whether the orthography is ultimately *used*, and thereby considered effective.

Effective orthographies are thus dependent on successful literacy, which is, in turn, dependent on a quality orthography, along with many other elements such as individual and societal attitudes towards reading, writing, and the language itself; the state's view of its role in supporting literacy in one or more languages; the availability of literate teachers who speak the language; the accessibility of reading materials; and a culture of reading and writing (Barton, 2007; M. Bendor-Samuel, 1988; Rice & Cahill, 2014).

For this reason, in the following attempt to define the characteristics of a good orthography, there is some blurring of the lines between linguistic and non-linguistic factors, and between those issues that relate to orthography and those that relate to literacy.

3.4 What is a 'good' orthography?

The most well-known and oft-quoted "criteria of an adequate writing system" have become known as *Smalley's Maxims*, after their author William Smalley (1959/1964b, p. 34). They have been variously shuffled and re-framed (Barnwell, 2008, as cited in Bow, 2013), conflated (Cahill, 2014), embellished (Person, 2001), or used as-is, but his basic principles are still used as guidelines for orthography development today (cf. G. Cooper, 2005; Coulmas, 1989; Hinton, 2014; Hyslop, 2014; Markowski, 2009; Page, 2013).

This thesis argues for a modified version of Smalley's criteria, identifying five key characteristics of a good orthography into which the elements of Smalley's maxims are redistributed. Three further characteristics which relate to orthography development *method* will be added in section 3.6, but first Smalley's maxims are discussed in turn, building towards the revised schema of characteristics of a good orthography shown in Table 1.

Table 1
Smalley's Maxims and Derivative Works

Characteristic	Smalley	Barnwell	Cahill
Appeal	1. Maximum motivation for the learner,		
Acceptance	and acceptance by his society and controlling groups such as the government	5. Acceptability & Agreement	b) Sociolinguistically acceptable
Accuracy	2. Maximum representation of speech	1. Accuracy	a) Linguistically sound
Accessibility	3. Maximum ease of learning	2. Consistency	c) Usable
	4. Maximum transfer	4. Conformity	
Application	5. Maximum ease of reproduction	3. Convenience	

Note. The *Accuracy* row contains linguistic factors; the other rows contain non-linguistic factors. Adapted from Smalley (1959/1964b), Barnwell (2008, as cited in Bow, 2013), and Cahill (2014); numbers and letters indicate each author's original ordering of factors.

3.4.1 APPEAL and ACCEPTANCE

Each of Smalley's criteria for an adequate writing system both contribute to and are in conflict with the interests of the other criteria; but all are subservient to *Maximum motivation for the learner*. His first maxim highlights both motivation and acceptance, and he notes that acceptance of an orthography is a *prerequisite* for the motivation to learn it (1959/1964b, p. 35). However, some derivative works imply that acceptance is *all* that is required to generate motivation (cf. Barnwell's and Cahill's names for this criterion shown beside Smalley's in Table 1). But in my experience with the Kemtuk [kmt] people of Papua, Indonesia, while they accepted their orthography, they were no longer motivated to learn and use it. To highlight the distinction between motivation and acceptance, and to make explicit the importance of each, I have divided Smalley's first maxim into *Appeal* and *Acceptance*.

Sally Dye (2003) points out that motivation is born of need or desire: to provide maximum motivation for the learner, literacy must be seen as appealing or advantageous. As such, *Appeal* refers not to the appeal of the orthography per se, but to the appeal of reading and writing with it to achieve a desired goal (cf. Karan, 2014, p. 132).

Numerous factors contribute to (or detract from) *Acceptance* of an orthography. It is not an orthography's accuracy but numerous sociolinguistic factors that have the most influence on

whether people will accept and use it (Cahill, 2014). So, for maximum appeal and acceptability, orthography developers should:

adapt [the] writing system as much as possible to the cultural trends, to the prestige, education, and political goals which are likely to win out [over considerations of accuracy]. This, I feel, is the most important consideration in a practical orthography. Without it we will have very few people who want to learn. (Smalley, 1959/1964b, pp. 36–37)

3.4.2 ACCURACY

“Even the most ideal program of encouraging literacy cannot really withstand an opposite trend in motivation or a poor representation of the speech in the writing system” (Smalley, 1959/1964b, p. 44). By *Maximum representation of speech*, Smalley meant writing the phonemes of the language accurately, as spoken. That is:

- one-to-one phoneme-grapheme correspondence;
- phonemes are represented consistently (e.g., diacritics are always written, not only in ambiguous words); and
- maximum extensibility (i.e., the most well-understood dialect is represented, or—if some dialects have merged or split phonemes—the greatest possible diversity of phonemic distinctions across all the dialects is represented, so that readability is extended to as many dialects as possible [Hasselbring, 2006]).

Coulmas calls this *simplicity* (1989, p. 45); the relation between the signs and their values is simple and straightforward. Phonemic accuracy contributes to maximum ease of learning, which contributes to appeal, and thence to maximum motivation for the learner.

There are, however, situations where phonemic accuracy should be set aside in order to prioritise other factors such as community acceptance, easy transfer of literacy skills (by conforming to the dominant language of literacy), or native speakers’ psycholinguistic perception of a word. “Linguistic analysis can be of great service and should be the foundation of any new orthography but it can only serve, it cannot dominate; and its suggestions must be attuned to the variety of factors which constitute sociocultural reality” (Coulmas, 1989, p. 238).

Setting aside phonemic accuracy can sometimes lead to a more readable orthography, especially when word sounds are affected by inflection (Gudschinsky, 1970; Munro, 2014; Nida, 1983; Roberts & Walter, 2012). For example, in order to speed up the reader’s recognition of a morpheme by maintaining a constant word image, the constant, underlying form of a morpheme is represented rather than its changing, phoneme-level realisation in a particular inflection. This is akin to the English plural, where the underlying morpheme {-z} is represented consistently (albeit by an ⟨s⟩ not a ⟨z⟩), even though at the phonemic level it manifests sometimes as /s/ and sometimes as /z/ (see Table 2). An orthography that represents this *morpho-phonemic* level is called a *deep* orthography, while one that represents the *phonemic* level is called a *shallow* orthography.

Table 2
The English Plural

Morpho-phonemic (underlying/deep)	Level of representation			Orthographic
	Lexico-phonemic (medium depth)	Phonemic (shallow)	Phonetic (surface)	
{bi-z}	biz	/biz/	[pɪz̥] ³	⟨bees⟩
{bit-z}	bitz	/bits/ ²	[pɪts]	⟨beets⟩
{bid-z}	bidz	/bidz/	[pɪd̥z̥]	⟨beads⟩
{bit[-z]}	bit[əz] ¹	/bit[əz]/	[ˈpɪtʃəz̥]	⟨beaches⟩

Notes. Adapted from Gardner (2017). English /i/ is inherently long. Australian phonetic forms given.

¹ Output of a (word-level) lexical process: [ə]-insertion between sibilants

² Output of a (phrase-level) post-lexical process: obstruent cluster devoicing

³ Output of a (phrase-level) post-lexical process: word-final devoicing

It is common knowledge that shallow orthographies are easier for beginning readers to learn, but that they slow the reading of established readers (Hasselbring, 2006). Conversely, deep orthographies are better for established readers, but “have an influence on literacy acquisition, primarily by slowing down the rate of acquisition of reading skills” (Joshi & Aarons, 2003, p. xiv).

Snider has argued for a middle depth, one that is deep enough for mature readers, but shallow enough for beginning readers and writers (2014, p. 46). This level of representation is the form a word reaches after undergoing lexical (i.e., word-level) phonological processes, but before undergoing post-lexical (i.e., phrase-level) phonological processes. It has been called the *lexical* level of representation (Gardner, 2017) but I will coin the term *lexico-phonemic* to distinguish it from other uses of the word *lexical*. Snider has claimed that “native speakers are psychologically more aware of the output of the lexical phonology than of any other phonological level” (2014, p. 29, citing Mohanan, 1982).

In fact, the spelling of the English plural reflects the lexico-phonemic level; granting the use of ⟨s⟩ for {–z}, a consistently deep orthography would produce ⟨bees, beets, beads⟩ and *⟨beachs⟩; meanwhile, a shallow orthography would produce *⟨beez⟩, ⟨beets⟩, *⟨beadz⟩, and *⟨beachez⟩.

A key point to be cognisant of here is that decisions relating to orthographic depth are also informed by *grammatical* analysis, not just phonological analysis (Schroeder & Schroeder, 2015). Orthographies that (literally) ‘spell out’ the underlying morphemes and grammar, not just the speech sounds, make the meaning more transparent, helping readers distinguish between, for example, ⟨frees⟩ and ⟨freeze⟩, ⟨Pat’s⟩ and ⟨pats⟩. These examples show that an orthography can be accurate in more ways than one—and even in two ways at once, by visually representing both sound and grammar. An orthography should not always represent the language as it sounds if by representing other, more salient, elements it will make the words and their meaning clearer. For this

reason, Schroeder suggests complementing Smalley's *maximum representation of speech* with "maximum recognition/transmission of meaning" (2010, p. 5), as shown in Table 3 on page 30.

Representing speech sounds and representing underlying morphemes and grammar are two ways of conveying meaning which are sometimes compatible, as in ⟨Pat's⟩ and ⟨pats⟩, and sometimes in conflict, as in ⟨frees⟩, which misrepresents the sound of /z/ in order to show the underlying plural morpheme. Successful resolution of any such conflicts in favour of the spelling that most clearly transmits meaning—often by attuning the orthography to the lexico-phonemic level of representation—is one indicator of an orthography's *Accuracy*.

There is not space to discuss it here, but the use of punctuation also makes an important contribution to the comprehensibility of a text by representing grammatical and prosodic features.

In summary, an orthography may be considered accurate not simply by virtue of representing the *sounds* of words, but by communicating the *meanings* of words, balancing the representation of phonemes and grammar by—amongst other things—using punctuation and writing lexico-phonemically.

3.4.3 ACCESSIBILITY

For language communities with no history of vernacular literature and literacy, limited reading material, and perhaps little to gain from vernacular literacy, a writing system needs to be easy to learn and quick to master if the new reader is to stay motivated (Smalley, 1959/1964b, p. 34). Smalley calls this *maximum ease of learning*.

Orthographic *Accuracy* (in the sense of 'accurately communicating meaning', as discussed above) contributes to ease of learning: spelling rules which make psycholinguistic sense are easier to remember and apply when writing. Careful choice and consistent use of symbols facilitates easy recognition of graphemes and words when reading. This means aiming for maximum visual contrast between graphemes (e.g., tall, short, descending, etc.); homogenous, coherent representation of feature sets (e.g., ⟨Cy⟩ for all palatalised consonants); maintaining constant word image regardless of pronunciation changes due to inflection (e.g., ⟨photo⟩, ⟨photographer⟩); and consistent symbolisation of features (e.g., always marking tone, not just when a word would be ambiguous without it marked). Ease of learning makes an orthography more *Accessible*. Another criterion of accessibility is having a *means* of learning, such as access to teachers, classes, and learning materials.

Smalley's next maxim, *maximum transfer*, which relates to both orthography acceptance and ease of learning, means that the phoneme-grapheme correspondence of the vernacular orthography should correlate as closely as possible with the orthography of the dominant language of literacy, in order to enable straightforward transfer of literacy skills. In his study of 54 vernacular language literacy programs in eight different countries, Walker (1988, p. 29) found that the more a vernacular orthography differed from that of the dominant language, and the more difficult it was to read compared with that of the dominant language, the less people read (cf. M. Bendor-Samuel, 1988).

During Kurtöp orthography development in Bhutan, differences between the phonologies of Kurtöp and the dominant language of literacy (DLL) meant that certain combinations of graphemes would be pronounced differently in each language. Confusion was avoided by prioritising *maximum ease of learning* and *maximum transfer* over and above *maximum representation of speech* (Hyslop, 2014). In North America, this same re-ordering of Smalley’s priorities has led L2 heritage learners of some Native American languages to use English-based orthographies rather than phonemically accurate orthographies (Hinton, 2014).

In short, *Accessibility* means the orthography can be learnt, and literacy skills acquired, without too much difficulty.

3.4.4 APPLICATION

Smalley’s last maxim, *maximum ease of reproduction* acknowledges various practical and technological issues which affect whether an orthography can actually be *applied* to use: the availability, typeability, and printability of the graphemes on computers, phones, and printers; and, by extension, the availability of things to write with, and surfaces to write on. For an orthography to be successful it is also critical that there is an appealing *Application* for its use.

3.4.5 Summary

Accurate, consistent representation of phonemes, prosody, and grammar at the lexico-phonemic level lay the foundation for a good orthography: shallow enough to be easy to spell, but deep enough to facilitate fluent reading by mature readers and convey meaning unambiguously. From this foundation, compromises may be made for *Accessibility*: ease of learning and reading, and ease of transfer to or from another orthography used in the area. For the orthography to be *Applied* to practical use, symbols which are easy to read, write, type, and print should be preferred. A solution must be found which is *Acceptable* to the language community, but “which remains readable for the present-day public” (J. Voorhoeve, 1961/1964, p. 60). Finally, the orthography—or rather, the use of the orthography for reading and writing—must be *Appealing* to the community: an orthography might be accepted, accurate, accessible, and able to be applied, but if a community sees nothing to be gained by using it, it will be truly useless.

An orthography which displays all five characteristics may be called ‘good’, and is fundamental to successful literacy. Whether or not a good orthography is also effective—that is, widely used by a community for the functions for which they desire to use it—depends on extrinsic factors such as adequate pedagogy and a good literacy program (Gudschinsky, 1970).

3.5 What is ‘good’ literacy?

Akin to Smalley’s five criteria of an adequate writing system, in 2009 Wayne Dye published eight conditions he had observed were necessary for successful vernacular literacy (T. W. Dye, 2009). Although these conditions were formulated with primary regard to communities’ engagement with vernacular Bible translations—and thus are biased towards reading, not writing—they are nevertheless applicable to literacy in general. Dye’s eight conditions are reproduced (slightly modified) in Table 3 on page 30. They echo and complement Smalley’s criteria, with some additional points about *Acceptability*, *Accessibility* and *Application*.

3.5.1 ACCEPTABILITY of literature

Dye wrote that people will only accept a Bible translation if they agree with the choice of language, dialect, and orthography, and they respect the translators, translation style, and style of language used (T. W. Dye, 2009). Illustrating this, Bible translations in Papuan Malay [pmy] have been embraced by some, while others think the language is not ‘proper’ enough for sacred content (G. Swan, personal communication, 2014). It may be that people don’t want their language written, or prefer to read and write in a different language, as is the case in Switzerland where Swiss German is used for most domestic functions, but writing is done almost exclusively in Standard German (Lewis & Simons, 2016, p. 113).

3.5.2 ACCESSIBILITY of literature

Dye pointed out that the content of literature must be accessible in three ways: First, people must be able to read it (his condition #3), or know someone else who can read it to them, or have access to literacy classes where they can learn to read it for themselves. Furthermore, they must be able to read fluently enough that the text will remain coherent and comprehensible (Dawson, 1989; M. Werner, personal communication, 2011). Second, people must be able to understand a text in order to be motivated to read it. In other words, readers must have enough cultural background knowledge (condition #4) to be able to draw correct inferences and make sense of a text. This applies particularly to translated texts which were written originally for a distant or different cultural group, such as stories in a national school curriculum which have been adapted for vernacular literacy programs, or Bible translations (cf. Scollon et al., 2012, pp. 10–17). Finally, people must be aware that literature is available, not too far away, and not too expensive (condition #5).

Table 3

Characteristics of a Good Orthography and its Interface with the Community

Characteristic	Smalley; <i>plus Schroeder, & Person</i>	T. W. Dye (slightly modified)	Factors
Appeal	1. Maximum motivation for the learner,	6. Desire ¹	relevant: meets felt need; fulfils desired function; valued; beneficial; fosters political, cultural or social advantages of prestige, identity or education
Acceptance	and acceptance by his society and controlling groups such as the government	1. Appropriate language, dialect, and orthography 2. Acceptable content ²	(non-)accord with LWC orthography represents identity, cultural trends, political aspirations; seen as well-devised, authoritative, non-partisan, the 'right' dialect; developers are respected; has institutional approval
Accuracy	2. Maximum representation of speech <i>2b. Maximum transmission of meaning</i>		lexico-phonemic representation; consistent symbolisation of phonemes; extensible to multiple dialects; represents words, grammar, and pragmatic force to convey meaning
Accessibility	3. Maximum ease of learning	3. Ability to read and write ³	learnable, readable, writable: symbol contrast, coherence, consistent use; constant word image; less complex than LWC; teachers, classes, curricula
	4. Maximum transfer		transfer: correlate vernacular phones use correlate LWC graphemes
		4. Background knowledge	readers know enough about the cultural and literary context to understand a text's meaning
		5. Availability	people are aware of literature; literature is accessible and affordable
Application	5. Maximum ease of reproduction		mechanical factors: readable, writable, typeable, displayable, printable; media for reading & writing available
		7. Freedom to commit	supportive environment; institutional support; advantages outweigh costs; opportunities for use exist
Agency	<i>6. Maximum participation and ownership</i>	8. Partnership between stakeholders	community participation, ownership and control; genuine choices exist
Agreement			unity of purpose; able to negotiate and compromise; partnership with NGOs, government, schools, community and religious institutions, politicians, teachers, chiefs and leaders, end users
Accord			linguist assumes appropriate role and level of assistance; OD model ⁴ suits language complexity and ecology, education levels, social structure, decision-making and learning styles

Notes for Table 3. Second column headings #1–5 from Smalley (1959/1964b), #2b from Schroeder (2010), #6 from Person (2001). Third column adapted from T. W. Dye (2009); numbers show original order of Dye’s eight conditions.

¹ Dye called this “Spiritual hunger,” referring to people’s desire to know (about) God, but applied more generally it is hunger for knowledge (Davis, 2004) or a desire to fill a felt need through literacy.

² Dye called this “Acceptable translation” but his concept can be applied more generally.

³ Dye called this “Accessible forms” as he was discussing access to Bible content through print or audio media, whereas here his concept is being applied to written media only.

⁴ *OD model* means the model of Orthography Development used.

3.5.3 APPLICATION of literacy

Dye’s seventh condition, *freedom to commit*, acknowledges the effect the sociolinguistic environment has on a community’s motivation to read and write. Walker (1988) pointed out that language behaviour is determined by language attitudes, which grow out of societal values, which are shaped by social forces. So even an appealing, accepted, accurate, and accessible orthography might still go unused if social forces have influenced a group’s values, attitudes and behaviours away from vernacular literacy. To adopt a new behaviour, people must be free to commit to it without fear of disadvantage—for example, by social sanction or government oppression.

3.5.4 Summary

The relationships of Dye’s first seven conditions to Smalley’s five criteria, and their collation into five key characteristics of a good orthography and good literacy, are shown in the top part of Table 3, along with a summary of the different factors which contribute to each characteristic.

Dye’s eighth condition, *partnership between stakeholders*, introduces two more characteristics, *Agency* and *Agreement*. Along with a final element, *Accord*, these define three key characteristics of a good *method* of orthography development. These are shown in the bottom part of Table 3, and will be discussed in section 3.6.

3.6 What is a ‘good’ method?

Having established that good orthographies and successful literacy are appealing, accepted, accurate, accessible, and able to be applied, the following section will discuss how to make them so—that is, what is a good method for developing a good orthography and literacy program? Just as different orthographic choices have their advantages and disadvantages, so, too, do different methods of orthography development (Easton, 2003, p. 12).

3.6.1 AGENCY and AGREEMENT

Field linguists have claimed that the success of written language development—that is, whether literacy becomes accepted, widespread, regularly used in multiple domains, expanded by locals, sustained with limited outside funding or assistance, and passed on to succeeding generations—is strongly influenced by a language community’s sense of ownership of their language development, which is best engendered by the participation of language-community members as decision-makers and implementers (M. Bendor-Samuel, 1988; Bosscher, 1988; Dawson, 1989; Gudschinsky, 1970; Lewis & Simons, 2016; Schroeder, 2010). As mentioned earlier, Walker’s study found that “community involvement had one of the strongest relationships with [vernacular language] literacy acceptance of any of the variables examined” (1988, p. 29). Recognising this phenomenon, Person appended a sixth criterion to Smalley’s five: *maximum participation and ownership* (2001, p. 175). Participation and ownership can be characterised as community *Agency*.

However, Markowski, working with So speakers in Thailand, found that community agency was not sufficient to enable orthography development to move forward. She explained how the So orthography committee members each held to their own spelling preferences and were unable to achieve consensus until the linguist explained some linguistic principles with which they could assess the different options. Only then were they able to put aside personal opinions and make informed decisions as a group (Markowski, 2009, pp. 11–12).

T. W. Dye has captured Markowski’s experience in his eighth condition for successful literacy: *partnership between stakeholders* (2009, p. 96). Partnership, or working together for a mutual purpose, assumes the agency of all partners, but adds the elements of agreement and cooperation. Thus, I have correlated Dye’s eighth condition with Person’s sixth criterion in the bottom part of Table 3, and identified their key characteristics as both *Agency* and *Agreement*.

In addition to the five characteristics of a good orthography and good literacy, Table 3 now recognises that a good *method* of orthography development will include community agency, and agreement between stakeholders. But how are agency and agreement fostered? One way is through using participatory methods of group decision-making.

3.6.2 Participatory Methods

Group facilitation and participatory decision-making has been a growing movement in the field of organisational development and change since the 1970s in the Western corporate business world. Its two main tenets are: 1) if people participate in and agree with the decisions made, and ‘own’ the solutions to problems, implementation will be more enthusiastically enacted, better understood, and more likely to succeed; and 2) the success of an organisation lies in its “ability to elicit, harness, and focus the vast intellectual capital and goodwill resident in their members, employees, and stakeholders” (Kaner et al., 2007, pp. xi-xii).

Of course, in many cultures of the world, participatory decision-making has a much longer history. Cultures which value group harmony value agreement, even at the expense of a ‘better’ solution. In a study of group problem solving in Japan, psychologist Yutaka Sayeki found that group members would compromise their own individual solutions in order to maintain group harmony and reach consensus (1983, cited in Scollon et al., 2012, p. 138).

As national development and education spread to more remote areas, minority-language communities are increasingly able—if allowed—to become agents in their own development, assuming the roles of activists, decision-makers, and implementers. In 2009, Dobrin and Good wrote, “[academic linguists’] renewed interest in fieldwork is bringing us into contact with speakers who are more assertive, invested, and knowledgeable than ever before, and who are placing their own expectations and constraints on the work we do in their communities” (p. 627).

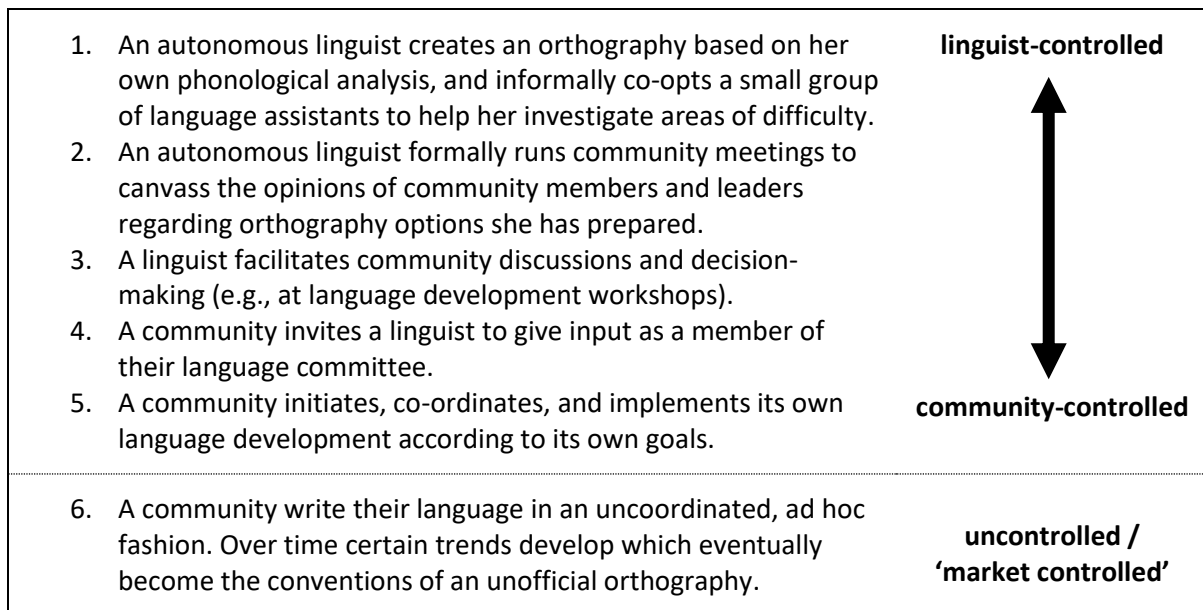
Recognising that vulnerable communities have often been robbed of choices (cf. Freire [1970] on *conscientisation* and self-determination), community development agencies have introduced catch-phrases like *sustainable development*, *capacity-building*, and *empowerment* (Myers, 1999; United Nations, n.d.; World Vision Australia, 2020). World Vision Australia have recently introduced a scheme where sponsor-children choose their own sponsor from a wall of photos. This restores some agency to their lives of limited choices. Linguists, too, should use their unique expertise to empower vulnerable communities to identify and implement their own language development goals, because it is their language, and it should be their choice how they use it (Falk, 2020; Lewis & Simons, 2016; SOAS, 2020). But if they choose orthography development, can such a technical task really be done by a whole community?

As part of a continuing endeavour to shift from outsider-controlled to insider-controlled language development, in the mid-1990s several linguists independently developed participatory methods for linguistic research and orthography development where the linguist acted as a facilitator, guiding a community decision-making process (Easton, 2003; Hasselbring, 2016; Kutsch Lojenga, 1996; Lew, 2019; Rempel, 1996). In this way, the language community were involved as agents in their own language development from the very beginning. Rather than the linguist testing out a linguist-designed orthography ‘on’ native-speakers, the linguist now gave advice to native speakers on a community-designed orthography. These methods have been used successfully to develop well over a hundred orthographies in at least three continents and numerous countries (Easton, 2007, Kutsch Lojenga, 1996; S. Lew, pers. comm., April 12, 2016).

In addition to community ownership through agency and agreement, Markowski recognised two other advantages of participatory orthography development (POD): faster progress and a better-quality orthography (Markowski, 2009, p. 11). Other proponents of participatory methods (e.g., Easton, 2007; Kutsch Lojenga, 1996; Schroeder, 2010) have listed numerous benefits, summarised in Appendix B.

Needless to say, there is variation in both the design and implementation of different participatory methods developed in different countries for different language families, cultures, and language ecologies. It is beyond the scope of this thesis to describe them, but Easton (2007, pp. 22–

Figure 1
Models of Orthography Development



Note. Models 1–5 summarised from Easton (2007, pp. 22–23). The linguist is generally assumed to be an outsider, but this is not always the case; see section 5.2.7.

23) found that the numerous methods could be categorised into five broad models, with progressive degrees of authority embedded in the community, as shown in Figure 1. I have added a sixth model—the absence of a method—which is also community-controlled but in a different way. This last model can be observed in the development of SMS orthographies, where conventional abbreviations are established through uncoordinated community consensus over time.

3.6.3 ACCORD

Easton's study (2007), which took place within the consensus-based decision-making cultures of Papua New Guinea, implies that the more authority embedded in the community, the better. Lew (2019), however, has written that in Southeast Asian hierarchical societies, where decisions tend to be made on behalf of the group by group members of higher social status, and a "community's level of self-motivation in new practices often is low," "a significant degree of outsider input" is preferable (p. lxvii), corresponding to Easton's models #2 and #3. She has argued that "an academic may have to act more as a superior supervisor than a peer participant. This way, community members can develop trust in the capabilities of their consultant and are more likely open to receive the needed guidance" (p. lxx). This resonates with Markowski's case study (2009), where less linguist input would have decreased the effectiveness of the POD.

Easton describes indigenous Papua New Guineans with little education being trained to run POD independently using the "Alphabet Design Workshop" (ADW) model (2003, p. 12). Clearly there is a compatibility between the model and the culture which makes this possible. In contrast, Lew

(2019) implies it would be difficult for a Southeast Asian community to facilitate their own orthography development. In my own experience, the Namblong Language Committee were quite bewildered by the phonological complexity of their language compared to the DLL, necessitating a higher degree of guidance from me than the ADW model provides. (This makes Nimboran orthography #2, developed without expert linguistic help, all the more impressive).

Based on these observations, I have added an eighth characteristic to Table 3: *Accord* between the model of orthography development used and the local context: the education-levels of community members; the complexity of the language; the language ecology; and the culture of the community—their social structure, decision-making style, and learning styles. Note that the model with the greatest *Accord* might be participatory or non-participatory, one of those defined by Easton (Figure 1), or something else entirely.

3.7 What is a ‘good’ measure?

Although several case studies have been written describing methods and experiences of POD (Easton, 2007; Hasselbring, 2006; Markowski, 2009; Page, 2013; Wise, 2014; Yoder, 2017), no known studies exist which have attempted to *measure* the benefits of POD. This is partly because those benefits would be difficult to measure, and partly because to do so properly would require developing two orthographies using different methods *for the same language*, such that the quality of the two orthographies could be compared and an attempt made to correlate their different qualities with the different methods used. This is, of course, the aim of this thesis; if it can be demonstrated that different OD methods effected qualitative differences between orthographies, the measure of difference in orthography quality will equal the measure of superiority of the method.

Once again, however, although much has been written about the characteristics of good orthographies (Cahill & Karan, 2008; Cahill & Rice, 2014; Gudschinsky, 1970; Karan, 2006; Pike, 1947; Smalley, 1959/1964b), no known studies exist which have attempted to *measure* orthography quality. Nevertheless, Welser (2009) has described a tool which, with some modification, could be used for this purpose.

3.7.1 *The Welser Scale*

In 1999, Matt and Marcia Welser developed a tool to assess how well any given community’s linguistic ecology meets Dye’s eight conditions for successful vernacular literacy (T.W. Dye, 2009; Welser, 2009). Individual stakeholders give an intuitive rating on a scale of 0–10 for each of the conditions, then the assessors’ scores are tallied to identify the area(s) with the greatest need for intervention. Welser has noted that it “is an intuitive scale because it is not possible to even approach an objective, quantifiable evaluation” (2009, p. 2). As such, what has become known as the ‘Welser Scale’ can only be used to compare the relative strengths of the eight conditions within the same sub-group of language users, as seen by the same group of assessors at the same time; the

scale does not facilitate comparison between languages, nor even between different assessors' scores of different conditions in the same language (T. W. Dye, 2009, p. 91).

However, if it should prove possible to identify common factors which contribute to realising a particular condition (for successful vernacular literacy) or characteristic (of a good orthography), and to generalise those factors into a set of criteria, then by investigating how many such criteria have been met in a given language ecology (or orthography) it should be possible to quantify the results such that the strengths and weaknesses in one language *can* be compared to those of another. Such is the approach of this thesis, as will be described in chapter 4.

Chapter 4 | Research Design & Methodology

4.1 Background

This study involved two steps: first, assessing the quality of each orthography and its method of development; and second, determining if there was any correlation between each orthography's development process and its relative strengths and weaknesses. The findings have been tentatively extrapolated and applied to orthography development in general, with a view to providing guidance to future orthography developers.

To assess orthography quality, a list of criteria was developed, which were indicative of the eight characteristics of a good orthography. Orthography-specific observations and examples were then adduced to determine how well each orthography met the criteria. Next, a simple rubric was used to give the orthographies ratings for each of the eight characteristics. Observation of the development processes was then drawn upon to correlate process factors with quality factors. Combining these results with common knowledge about orthography development, generalisations were tentatively advanced as best practices for orthography development.

4.2 Rating the quality of an orthography

4.2.1 *The Orthography Rating Tool*

Table 4 (page 39) presents an orthography rating tool (ORT) for assessing an orthography according to the eight characteristics of a good orthography defined in chapter 3 and summarised in Table 3 (page 30). These characteristics and their associated criteria are based on what has been observed and reported in the relevant literature, and are firmly grounded in the widely-accepted criteria established by William Smalley (1959/1964b) and T. Wayne Dye (2009).

As the structure of every language is different, and the requirements each language places on its orthography are different, it is not possible to establish quantitative measures which can be broadly applied to assess disparate orthographies. Attempting to devise objective yet comprehensive rating criteria for orthography characteristics would be of limited value, as societal acceptability of a sociocultural artefact is not easily or usefully expressed in absolute numerical terms.

Instead, the ORT supplies researchers with a rubric to give an orthography (and a community's interaction with it) qualitative ratings for the degree to which it exhibits the eight characteristics. The rubric is designed to be general enough to assess any orthography—alphabetic, syllabic, or logographic; with or without tone; devised with or without community participation—yet specific enough to enable meaningful comparisons between different orthographies of the same or different languages.

An orthography is given a rating for each characteristic based on a number of criteria. It might do well according to some criteria, and not so well according to others. Nevertheless, a single, overall rating is awarded for each characteristic, and any individual weaknesses are noted for future intervention.

The ratings are not absolute numerical scores but relative marks A, B, C and D. A is assigned for a positive result, where the criteria for a given characteristic have been met to the point of having a positive influence on the use of the orthography. B is assigned for a neutral result, where the criteria have been met sufficiently well that there is no negative effect, but not well enough to have a motivating effect on the orthography's use. C is assigned where there are some problems which might demotivate or hinder use of the orthography. D is assigned where enough of the criteria have not been met that the associated characteristic is deemed absent.

Receiving more As than Cs does not guarantee an orthography's use, since different characteristics carry different weights, and even their relative importance can change in different linguistic ecologies, as demonstrated in the studies by Hinton (2014) and Hyslop (2014) mentioned in Section 3.4.2. The characteristics in the ORT are listed in the order of importance proposed by Smalley (1959/1964b), but might better be considered a dynamic constellation of influences than a neat hierarchy of requirements. The only characteristic with a certain weight is *Appeal*, a kind of trump suit. Humans tend not to do things they are not motivated to do, whether by inclination or by persuasion. Thus, a C for *Appeal* will override straight As for the other characteristics, and an A for *Appeal* might outweigh straight Cs for the other characteristics.

If an orthography receives all Bs, it is anticipated that it will receive limited use; for example, only in official printed materials, or used only by a segment of the population.

A D for any of the characteristics will most likely disqualify the orthography from use, with two exceptions: first, if community agency is denied, as in cases where orthographies are designed autonomously by linguists or mandated by governments, the orthography might still be used, as was found by van den Berg (2020). Second, compulsory literacy education can overcome negative ratings for any of the characteristics, as in the cases of Chinese and English.

4.2.2 Using the Orthography Rating Tool

To help assessors choose appropriate ratings for the characteristics, and to facilitate consistency between different assessors working in different settings, A/B/C/D acrostics have been devised for each characteristic, with each word supplemented by a short rubric (see Table 4).

To determine a score, somebody familiar with the language community and their sociolinguistic context considers the extent to which each characteristic is evident, according to its associated criteria. For each relevant criterion, they identify language-specific spelling issues and community-specific sociolinguistic phenomena which demonstrate how well that criterion has been realised. Once they have assembled evidence of how well the orthography meets the criteria of a particular characteristic, they refer to the Rating Rubric in order to choose the A/B/C/D rating word

Table 4
Orthography Rating Tool (ORT)

Characteristic	Rating	Rubric	Select Criteria
Appeal	Advantageous	- offers valued, desired benefits	relevant: meets felt need; fulfils desired function; valued; beneficial; fosters political, cultural or social advantages of prestige, identity or education
	Beneficial	- offers some benefits	
	Costly	- benefits are not worth the effort	
	Destructive	- literacy will cause trouble	
Acceptance	Accepted	- represents language aspirations and identity perfectly	(non-)accord with DLL ¹ orthography represents identity, cultural trends, political aspirations; seen as well-devised, authoritative, non-partisan, the 'right' dialect; developers are respected; has institutional approval
	Borne	- could be better but will do	
	Criticised	- some don't like some elements	
	Disliked	- nobody likes it	
Accuracy	Accurate	- matches psycholinguistic reality	lexico-phonemic representation; consistent symbolisation of phonemes; extensible to multiple dialects; represents words, grammar, and pragmatic force to convey meaning
	Basic	- mostly OK	
	Crude	- doesn't always make sense	
	Defective	- doesn't reflect the language	
Accessibility <i>of orthography</i>	Accessible	- anyone can easily learn and use	learnable, readable, writable: symbol contrast, coherence, consistent use; constant word image; less complex than DLL; teachers, classes, curricula; transfer: correlate vernacular phones use correlate DLL graphemes
	Bearable	- surmountable inconveniences	
	Challenging	- challenging to learn and use	
	Difficult	- insurmountable difficulties	
<i>of literature</i>	Accessible	- everybody knows where to buy, and understand what they read	readers know enough about the cultural and literary context to understand a text's meaning; people are aware of literature; literature is accessible and affordable
	Bearable	- books and content are accessible with some effort	
	Challenging	- books are hard to get or understand	
	Difficult	- books and content are inaccessible	
Application	Applied	- used by many or all	mechanical factors: readable, writable, typeable, displayable, printable; media for reading and writing available; supportive environment; institutional support; advantages outweigh costs; opportunities for use exist
	Bounded	- used in official materials or by a segment of the population only	
	Confined	- used by very few, or only found in rare materials	
	Dormant	- understood by few, used by none	
Agency	Agentive	- community controls orthography decisions and use	broad community participation; shared ownership; community control; genuine choices exist
	Bilateral	- control is shared between the community and outsiders	
	Constrained	- community have some input but outsiders have the final say	
	Denied	- orthography/literacy proscribed, or prescribed without choices	
Agreement	Assent	- all stakeholders agree freely	unity of purpose; able to negotiate and compromise; partnership with NGOs, government, schools, community and religious institutions, politicians, teachers, chiefs and leaders, end users
	Brokered	- compromise is reached	
	Conflict	- some parties boycott	
	Dissent	- nobody can agree to anything	
Accord	Apt	- OD model ² suits the context well	linguist assumes appropriate role and level of assistance; OD model ² suits language complexity and ecology, education levels, social structure, decision-making and learning styles
	Benign	- OD model & context compatible	
	Clashing	- some aspects of OD m & c clash	
	Disparate	- OD m & c are incompatible	

Notes.

¹ DLL — dominant language of literacy, often the language of wider communication

² OD model — Orthography Development model used, e.g., (non-)participatory

which best describes how that characteristic of the orthography is experienced by the language community. The first letter of that word provides the final rating which can be written in the box beneath the characteristic's name. In this way, the rating given is subjective but not arbitrary, qualitative but evidence-based.

Thus, for each row of the table, the following sentence could be used to describe the orthography and the community's role in its development, substituting the bracketed column headers for the appropriate content from each column:

"The degree of [Characteristic], that is, how well the orthography/community (is) [Criteria], is experienced by the community as [Rating], that is, (it) [Rubric]."

For example, "The degree of [Acceptance], that is, how well the orthography [represents identity, is seen as authoritative, has institutional approval, etc.], is experienced by the community as [Borne], that is, it [could be better but will do]."

In this case, the orthography would receive a B rating for *Acceptance*.

For the purpose of the case study in chapter 5, it was not possible to present evidence for every criterion within the limitations of thesis size. Therefore, the criteria for which the most informative evidence was available have been selected to illustrate the assessment of each characteristic.

4.3 Selection of candidates for comparison

The best way to test the differences made by using different methods of orthography development would be to create multiple orthographies, independently of each other, at the same time and in the same community, involving the same stakeholders, eliminating all variables except the one being tested—different degrees of community participation (Nunan, 2012). Unfortunately, this is impossible. Nevertheless, in selecting orthographies to compare for this study, the aim was to get as close to that ideal as possible, in order to reduce interference from other variables.

Admittedly, this, too, is difficult. Roberts (2008) and Kieviet (2006) describe cases of multiple orthographies for languages in Togo and French Polynesia, respectively. However, none of those orthographies was developed with wide community involvement. Furthermore, in both countries, one orthography is used predominantly in the Catholic church, and another predominantly in Protestant churches. The influence institutions have on literacy habits, combined with the disparate traditions and groups of users, would make any comparison of community attitudes and use of those orthographies unscientific.

The three Namblong orthographies chosen for this case study were not developed by or for a church or any other institution. Unfortunately, there is a 30-year gap between the development of the first and the third orthography, during which time the language ecology changed; most significantly, children born during that period did not grow up speaking Namblong, as their parents did. However, the community members who were involved in designing all three orthographies

were mostly of the same generation, and some of the individuals involved with the second orthography were also involved with the third. Furthermore, all three orthographies were developed in the south-eastern dialect area with L1 Namblong speakers in mind as the end-users. So, while there remain some unwanted variables which reduce their comparability, the orthographies and their contexts are similar enough that this is nevertheless a valid and useful study.

To mitigate any skewing of results occasioned by differences between orthographies which might have been influenced by unwanted variables, criteria were chosen which could be compared fairly across all three orthographies. For example, for the characteristic of *Accuracy*, the criterion *lexico-phonemic representation* was assessed by looking at how each orthography dealt with consonant clusters. The other criteria chosen will be explained together with the data in chapter 5.

4.4 Limitations of the study

4.4.1 Reliability of the study

The assessment of high-inference behaviours such as motivation and acceptance introduced challenges to the reliability of the study. These challenges were mitigated by breaking the characteristics of *Appeal* and *Acceptance* down into lists of contributing criteria, for which lower-inference, observable factors could be adduced as evidence of the criteria's manifestations.

The orthography scores were self-assigned; a second opinion is lacking. However, this was inevitable, as there is nobody with a comparable knowledge of all three orthographies with whom I could have discussed and rationalised the scores. Nevertheless, to compensate for the lack of a second opinion, I have attempted to be as transparent as possible in explaining the reasoning behind the various scores assigned. Furthermore, I was able to seek verbal validation of some of my interpretations through conversations with the creator of orthography #1, and with co-creators of orthography #3.

4.4.2 Internal validity of the study

As discussed in Section 4.3, it was impossible to eliminate all unwanted variables, though efforts were made to mitigate their interference with the results. Issues common to all three orthographies were studied to provide evidence of the degree to which each orthography met selected criteria. It is also worth noting that although the orthographies were developed in different decades and therefore in different socio-historical contexts, thus challenging the internal validity of the study, the differences in time and context were not deemed sufficient to invalidate the comparison of the orthographies. This is because some of the individual stakeholders, the intended users and uses, the language and location, the wider language community, and the issues studied remained the same. Threats to the credibility of the orthography comparison caused by history effects were compensated for by shared selection effects, setting effects, and construct effects (LeCompte & Goetz, 1982, as cited in Nunan, 1992, Chapter 3).

4.4.3 *External validity of the study*

This study aims to draw general conclusions about the relationship between orthography quality and orthography development methods, yet all three orthographies studied were developed for just one language, one people, and one script. Nevertheless, while the lists of criteria in the ORT are explicit enough to improve the study's reliability, they remain general enough to maintain its external validity. Inherent in the ORT is the flexibility of allowing a researcher to select language-specific indicators for each of the criteria, facilitating cross-linguistic comparison of the characteristics of disparate orthographies. It is hoped that other researchers will be able to use the ORT in other contexts, and contribute to its further refinement and development.

4.4.4 *Mnemonic devices*

The use of alliterative patterns and acrostics in the ORT for the characteristic names and their A/B/C/D ratings might be interpreted by some as frivolous or gimmicky. However, given the complexity of the exercise and the potential for confusion, these literary devices have been purposefully incorporated into the ORT to improve its learnability and clarity. The alliteration is a memory aid, and the acrostics provide evocative descriptors to assist assessors in assigning relevant, consistent ratings. It is hoped the descriptors will reduce the subjectivity of assigning ratings, and facilitate cross-linguistic comparison.

4.4.5 *Predominance of SIL literature*

It is regrettable that more reference is not made to non-SIL sources (in particular, *Creating Orthographies for Endangered Languages* [Jones & Mooney, 2017], which was unavailable to me at the time of writing). However, this reflects the fact that the bulk of the literature on orthography development has been written by SIL linguists, who, corporately, have accumulated a wealth of experience in the field.

Having now introduced the methodology, sociolinguistic context, and limitations of this study, Chapter 5 presents the data and discussion of the three Namblong orthographies.

Chapter 5 | Data, Analysis & Results

The focus of this study is the impact different orthography development methods had on how well the resultant orthographies represented the Namblong language. As such, I will not substantiate Namblong phonology here, but follow May's (1997) analysis with slight modifications as outlined below. Only select, illustrative features of the phonology and orthographies will be described. However, charts of the three orthographies in relation to the entire Namblong phonemic inventory are given in Appendix B, along with some other relevant orthographical differences.

After briefly introducing the three orthographies and their development, the eight characteristics of a good orthography will be discussed in turn. For each characteristic, the three orthographies have each been given a rating according to the ORT (**Error! Reference source not found.**). The criterion perceived to have made the most significant contribution to each characteristic will be introduced, followed by examples of how each orthography addressed that criterion, and a discussion of the quality or efficacy of each solution. The contributions of the different methods of development to the success or otherwise of each orthography's solution is then appraised.

5.1 Development of the three orthographies

5.1.1 Orthography #1 – linguist-controlled

The first Namblong orthography was devised between 1981 and 1984 by Australian linguist Kevin May based on phonological analysis of the language as spoken by his assistant, Tomas Mallo, and others in the village of Sarmai Atas in the south-eastern dialect area (May & May, 1981, as cited in May, 1997).² Mallo was able to read and write it, as were perhaps two others. It was intended to be used for wider literacy, but circumstances meant the only material ever printed was a small number of trial copies of a booklet about native animals, written by Tomas' cousin Zakarias (Mallo, 1980), and there were never any literacy classes (K. May, personal communication, December 16, 2020).

The autonomous linguist-controlled method of orthography development used for orthography #1 corresponds with Model #1 from Easton's models of orthography development (Figure 1, page 34), labelled "community-external non-participatory" by Lew (2019, p. lxxiii). Orthographic data used for this study comes from Mallo (1980), and a digital dictionary database compiled by May (1998).

² May had access to an earlier description of Namblong phonology by Dutch linguist Johannes Anceaux (1965) but May and May (1981, as cited in May, 1997) made several improvements on Anceaux's analysis.

5.1.2 Orthography #2 – committee-controlled

There is not much information available about the second Namblong orthography. My informant Elly Waicang was unable to be contacted at the time of writing, but he told me (personal communication, 2012) the orthography was devised around 1988 by a group of about ten Namblong men at the encouragement of either an Indonesian clergyman or an Indonesian publisher (perhaps he was both). It was devised in under two months, and was used for writing Namblong songs and documenting Namblong culture and traditions. Waicang was the main writer, and the spelling reflects his own dialect, also the south-eastern dialect. The only known publication is a vernacular songbook, *Segala Yang Bernafas*, (1988) which was published by *Gereja Kristen Injili* (GKI), the main Protestant denomination in Papua, but was not popular. Some short texts and Namblong vocabulary are found in other books published since, but it is not clear whether or not they were intended to be written according to this orthography. The orthography was never promoted for use by the general public.

The method of orthography development used was similar to Model #5 from Easton's models of orthography development (Figure 1) in that it was controlled by native speakers, except that it was developed by an unrepresentative committee without wider community input. Lew (2019, p. lxxiii) labels this a "community-internal non-participatory" orthography. Orthographic data for this study was taken from the songbook *Segala Yang Bernafas* (1988), and a text typed by Waicang (2012) just before he joined the orthography #3 language committee, which demonstrates similar spelling to the 1988 songbook.

5.1.3 Orthography #3 – community-controlled

The third Namblong orthography was developed between 2011 and 2018 through collaboration between another Australian linguist (myself), a language committee of around twenty native speakers (including Elly Waicang), and the wider Namblong community. The committee chose the alphabet and some basic spelling rules with advice from the linguist, after which a smaller sub-committee started writing with it. The sub-committee included representatives from three dialects, of whom one member was familiar with all four dialects. As spelling issues arose which could not be resolved by the sub-committee, they noted them down for future discussion and survey with the wider community. Once a year, representatives were invited from all thirty villages to a language day, where spelling preferences were polled through a combination of group discussions, group polls, and individual surveys. The results of polls and surveys were subsequently collated by the sub-committee, and new spelling rules were added accordingly. This continued for six years. After three years a picture dictionary was published, giving the community the opportunity to comment on spelling and dialect issues. Having adjusted the tentative orthography accordingly, at the end of six years a reading and writing lessons book was published, and literacy tutors were trained to run reading groups with it (writing groups were not planned until people had completed the reading lessons, which had not yet occurred when this thesis was written). The orthography was intended

for wider literacy, which has not yet eventuated. Published materials include a second edition of the picture dictionary, a literacy lessons book, and some Bible stories. Some of those who attended language days are now using the orthography to write song lyrics and send SMSes.

I facilitated community discussions and decision-making, giving advice but not making decisions, corresponding to Model #3 from Easton’s models of orthography development (Figure 1), and Lew’s (2019, p. lxxiii) “facilitated participatory approach”. Orthographic data for this study comes from *Sam Nmbuo Yalúm* (2015) and Yaung et al. (2018).

A summary of metadata for the three Namblong orthographies is shown in Table 5. Specific orthographic and methodological differences will be detailed in the relevant sections below.

Table 5
Metadata for the Three Namblong Orthographies

	Orthography #1	Orthography #2	Orthography #3
Developed	1981-1985	1988	2011–18
Instigator	Outside linguist	Publisher?	Community
Agents	Outside linguist	Local committee	Linguist, committee, & community members
Model	Autonomous	Committee consensus	Community survey
Lew’s label:	Community-external non-participatory	Community-internal non-participatory	Facilitated participatory
Easton’s model:	#1	#5	#3
Purpose	Literacy	Songbook and Documentation	Literacy
Depth	medium depth	shallow	medium depth
Dialects	South-eastern	South-eastern	All four
Authority	Linguist	Select chiefs	Linguist & many chiefs
Implementation	Linguist’s tenure cut short prior to community ratification and implementation	No literacy campaign	Literacy workbook produced and literacy classes commenced
Users	Linguist	Committee	Linguist, committee, and a few community members
Published materials	Trial copies of animal booklet	Songbook and possibly fragments in some otherwise Indonesian-language books	Bible portions, picture dictionary, literacy workbook, banners

5.2 Data & discussion

The characteristic of *Accord* is dealt with first as it contains cultural information referred to in succeeding sections.

5.2.1 ACCORD (*Various criteria*)

Orthographies are not developed for languages, but for people. They are made not in laboratory cultures but in human cultures. So, as I set to work with the Namblong Language Committee, their culture and context influenced everything we did, from the technical design of the orthography to our efforts to operate in a culturally relevant and sensitive manner. This required me to develop anthropological insight into Namblong society.

The following paragraphs briefly describe some facets of Namblong culture which were relevant to the orthography design process. After describing each facet, I will show how well the development method used for each orthography was able to incorporate or make allowance for that particular cultural trait, which will enable me then to assign each orthography a score for *Accord*.

Orthographies #1, #2, #3 – Parallel truths

When I asked a friend why a certain word was only taboo for her clan, she shrugged and said she couldn't speak for the other clans, she only knew what her elders had told her. On several occasions after being told a Namblong Legend, I heard statements like: "That's your story. My grandfather told it to me like this: . . ." People didn't attempt to correct other clans, but made it clear that they believed something different. In this way, different 'truths' were tolerated, and existed in parallel traditions.

However, this did not apply to dialects. People from one mountaintop would tell me the village across the valley said a certain word incorrectly; the next day those on the other mountaintop would laugh and tell me the first village could not say it properly because they had "short tongues." Sometimes people from different dialects tried to correct each other's speech. In this way, many Namblong would not tolerate parallel speech traditions.

Although these two examples appear to illustrate tolerance and intolerance, in neither situation was there any negotiation or compromise. The Namblong are loyal to their clans. Adams (2014) observes that community-based orthography development does not create unity where it did not exist before, but instead can amplify pre-existing disunity and conflict: "Without a previous background of negotiating conflict successfully, groups will not acquire this ability during orthography development" (p. 242). For this reason, even though the dialects were very similar, I wondered how Namblong inter-clan attitudes would affect their orthography development, since I would be recommending that they establish one orthography for the whole language community.

During my time living in Papua, on a few occasions I was told that Kevin May didn't visit other villages much, but stayed mostly in his home village of Sarmai Atas. It was also mentioned that the Mallo clan kept him to themselves. In this way, orthography #1 and any literature published might have been seen as clannish; however, it's also possible that May might have been regarded as clan-neutral and his work accepted.

Orthography #2 involved Namblong men from at least two dialects but was spelt according to the south-eastern dialect. It was not shared with others, so would likely have been shunned as clannish.

When it came to orthography #3, shared Namblong identity and the threat of language loss proved stronger than clan loyalties. The community adopted the catch-cry "four dialects—one language" and I was touched by some selfless gestures of orthographic compromise from representatives of the two main dialects.

Orthographies #1, #2, #3 – Consensus-based decision making

In my first year working with the Namblong, I noticed that community meetings went on for what seemed to me an inordinately long time. In Australia I was used to meetings governed by Robert's *Rules of Order*—we started on time with a small quorum, discussions were brief, motions were proposed promptly, debate was often limited to two speakers for and two against, decisions were based on a majority vote, and meetings had two main aims: get through the agenda, and finish on time.

In stark contrast, Namblong meetings were governed by *musyawarah-mufakat*—a 'family meeting' style of deliberation leading to consensus. They started an hour after the advertised time to allow everyone time to arrive, discussions were lengthy, everybody in the room stood and said all they wanted to say, and asked all they wanted to ask, and decisions were not 'made' but rather 'emerged' as the talking spiralled slowly closer to a mutually agreeable resolution. These meetings also had two main aims: respect everyone's ideas and opinions, and reach consensus. There was no such thing as running overtime; meetings ran precisely until the time stipulated on the invitation: *sampai selesai*—until finished.

On occasion a decision was made which did not take into consideration the interests of a particular stakeholder, and I could see that a small adjustment would provide a better solution for all parties. However, if that stakeholder had chosen not to attend the meeting, they would not advocate for reconsideration, but accept the consequence of their non-attendance. If, however, they had not been invited, they would have nothing to do with the activity since they had thus been disrespected.

Orthographies #1 and #2 were not brought before public meetings, so it's possible they would have been boycotted.

Orthography #3 used a participatory orthography development process spread over several years, with the committee sharing their progress openly each year and seeking input from the wider

community. In this way, anyone could voice concerns, ask questions, and contribute to the decision-making through group discussions and surveys. This was congruous with Namblong culture, and probably influenced the wide acceptance of the orthography observed later.

Orthographies #1, #2, #3 – Social structure

While decisions are made by consensus, authority structure in Namblong society is hierarchical. Older siblings and cousins have authority over their juniors. The oldest member of an extended family represents them as a figurehead. Each major clan has its own chief and his four under-chiefs, who are responsible for the clan's wellbeing. The chief traditionally interceded for his clan morning and night with the Creator Spirit, who sees all and has authority over all.

In the context of this hierarchical society, it was vital to have chiefs involved in the orthography development, in order to give the orthography legitimacy and approval. It also meant that I, the linguist, was treated deferentially, and that my opinion potentially had undue influence.

Unfortunately, it also meant that it was difficult for younger people to contradict their seniors if they disagreed about an orthographical issue. However, by incorporating individual surveys into the set of polling instruments, the language committee were able to collect people's opinions without them needing to toe the family line or risk disrespecting their elders.

Lamber Mallo, May's village patron and the father of his language assistant, Tomas, was a respected chief who led his people well (A. Yang, personal communication, 2013). This, along with May's status as a foreign linguist, would have lent authority to orthography #1.

Elly Waicang, and probably some other men in the 1988 committee, was a respected chief, which would have lent authority to orthography #2.

Orthography #3 had the involvement of numerous chiefs from several villages, along with some respected school teachers. Its development method thus suited Namblong hierarchical social structure.

Orthographies #1, #2, #3 – Ethnic pride

From the first Western contact in 1903, the Namblong were described as "friendly but reserved" and "proud" (Kouwenhoven, 1956, p. 43). The older men talk proudly of the role of Namblong people in the development of the wider region under the Dutch administration from 1917 until 1961, of their part in fighting the Japanese army during World War II, and of their resistance to Indonesian control when Papua was annexed by Indonesia in 1962 (three anonymous informants, personal communications, 2012–2014). They are proud of their culture, their history, their fertile valley, their specialty dishes, and their language.

I am not privy to discussions about graphemes for orthographies #1 and #2 and do not know how ethnic pride was manifested at the time of their development. In orthography #2, however, it is

more likely that the use of Indonesian ⟨c⟩, ⟨j⟩, ⟨f⟩, and ⟨u⟩ to over- and under-represent Namblong /t/, /d/, /p/, and /ʈ/ (see Appendix B) was a result of phonological naivety, not a deliberate choice to align with Indonesian spelling.

For orthography #3, the Namblong's pride in their language was manifested in their desire to represent some of their unique phonological features with unique graphemes, departing from the spelling conventions of both Indonesian and neighbouring Kemtuik [kmt]. POD enabled them to articulate this desire through discussion, identify the relevant phones, then choose spelling options based on the principles of identity and difference they had established.

Orthographies #1, #2, #3 – Learning style

A Namblong friend who had a small business baking cakes and snacks once told me she was unable to learn a new cake from a recipe, but had to watch someone cooking it (R. Yaung, personal communication, September 2018). A recipe abstracts knowing from doing; the Namblong generally learn new skills in a real-life context, gradually moving from observation to participation in a community of practice. Even though she was an experienced cook, competent with numbers and measures, and a university graduate who was clearly capable of learning from books, for a practical skill like baking a cake she relied on what Lave and Wenger have called *situated learning* (1991).

I am not aware how much this learning style was utilised in the development of orthographies #1 and #2.

This hands-on learning style was used in different ways throughout the development process for orthography #3. Sometimes we went around the room saying the same word one-by-one to feel it in our mouths and watch each other's lips and listen carefully. Other times the committee would discover and solve spelling problems through writing stories.

Discussion

The overall ratings for *Accord* are: orthography #1 – C; orthography #2 – C; orthography #3 – A.

Of all the characteristics, this was the hardest to rate as it was not clear at what point the development methods stopped being compatible with the culture and started to have a negative effect, nor how much weight to assign each of the criteria. However, it was clear that for orthography #3, POD was especially well-suited to Namblong consensus-based decision making, hierarchical social structure, expression of identity, and hands-on learning style, when compared to the contribution made to *Accord* by non-POD methods in orthographies #1 and #2.

5.2.2 APPEAL (Criterion: Fulfils desired function)

Of the various criteria that contribute to the appeal of reading and writing in Namblong, examined below is how each of the orthographies catered to a desired literacy function. Remember

that in order not to have to compete with the DLL, a function needs to be identified which the DLL is unable to fill, or for which the vernacular is preferred. Two such functions are vernacular song lyrics and the documentation of Namblong vocabulary, traditions, and stories.

Orthography #1 – Rating: C/D (Costly/Destructive)

Traditional Namblong songs were sung for working, mourning, and celebrating, but these used only vocables with no known meanings (A. Yaung, personal communication, 2016). May told me that, up until 1984 when he left Papua, the Namblong did not consider their language suitable for singing hymns or praying, but used Indonesian for these functions (personal communication, 2015). In this context, the appeal of singing Namblong lyrics was low, and singing hymns in Namblong might even have been seen as destructive—that is, disrespecting God by using their ‘unsuitable’ language.

In the four years after a handful of the animal booklet (Mallo, 1980) was printed, there was no community demand for more copies, suggesting that it had low appeal (K. May, personal communication, December 16, 2020).

Orthography #2 – Rating: C (Costly)

The GKI vernacular songbook included six traditional Namblong songs for which new, Christian lyrics had been written. It was not popular; the GKI congregations preferred their Indonesian hymn book (*Segala Yang Bernafas*, 1988, p. 3).

Whilst it occurred before the orthography was developed, two of the men thought to have been in the 1988 spelling committee had a book published in Indonesian by GKI (Griapon & Nasategay-Udam, 1987). It contains numerous Namblong words and some short texts, spelt like orthography #2. In my ten years working with the Namblong, only Elly Waicang ever talked about other Namblong written materials, and I saw only one other book with some Namblong content. I take this to mean that written documentation of Namblong traditions was of little interest to the community.

Orthography #3 – Rating: B (Beneficial)

In the last thirty years, there has been a change in attitudes about using Namblong for praying, preaching, and singing in church. During the last ten years, and partly through the public meetings run by the Namblong Language Committee, there has been a growing interest in translating and singing hymns and secular chorales in Namblong. These have traditionally been sung in Indonesian. As the oral use of Namblong spreads into this domain, and as people enjoy singing and desire to learn and exchange more songs in Namblong, a new function has been created for Namblong reading and writing too.

In 2020 a *Komunitas Kidung* (Chorale Club) started meeting weekly to sing, discuss, edit, and share each other's translations. People in numerous villages are enthusiastically translating hymns and chorales. They have asked members of the Namblong Language Committee to assist them with spelling according to the standard orthography (R. Bay, personal communication, September 23, 2020). The group is not restricted by church affiliation but is open to any who want to participate. Through a culturally-valued practice of performing items in church, *Komunitas Kidung* members will introduce Namblong hymns to congregations in several villages, and the practice of singing hymns in Namblong might receive institutional support and spread from performances to congregational singing. At present songs are shared through photocopied, hand-written sheets, but a printed hymnbook is planned for the future which will further establish the practice of singing in Namblong.

A Namblong-Indonesian-English picture dictionary and literacy workbook were published in 2015 (*Sam Nmbuo Yalúm*) and 2018 (Yaung et al.), and are being used to teach vocabulary to children (R. Bay, personal communication, December 6, 2020).

Discussion:

Writers of orthographies #1 and #2 pioneered new functions for written Namblong. However, there were only a few who wrote, and the functions were of limited interest to the community at large. Only once language attitudes had changed, allowing the singing of hymns in Namblong, did the function of writing Namblong become useful and desirable for meeting a felt need. Similarly, a need to write the language in order to teach it to Namblong children as an L2 is a result of changes in the language ecology: 30 years ago, children still learned Namblong as an L1 and needed no written curriculum.

Thus, although orthography #3 has a higher appeal than orthographies #1 and #2, this is largely attributable to changes in societal values and the linguistic ecology. It is difficult to know how much influence POD had on the higher appeal by raising people's awareness of writing and singing in Namblong (at our community spelling discussions) and by including the community in their own language development. I do believe that by inviting representatives from every village, POD fostered interest, crystallised people's feelings about language loss, and increased community awareness of and support for the efforts of the language committee. If the language committee had worked on their own without engaging the community in POD, their work would have been less well-known, and other initiatives like the *Komunitas Kidung* might never have arisen.

Therefore, while acknowledging the significance of other social forces, I believe POD contributed to the *Appeal* of writing Namblong in a way non-participatory methods did not in the past, and would not have done in the present.

5.2.3 ACCEPTANCE (*Various criteria*)

Whether an orthography is similar to the dominant language of literacy (DLL) is seen positively or negatively depending on cultural trends (Sebba, 2007; Walker, 1988). This perspective, along with whether the orthography is seen as well-devised, authoritative, and non-partisan, and whether it has institutional approval, are all criteria which can contribute to an orthography's Acceptance (T. W. Dye, 2009).

Orthography #1 – no rating

Orthographies #1 and #2 were never promoted beyond their creators, so it can only be speculated how they would have been received. It would be unfair to rate the acceptance of orthography #1 because it was still a work in progress; the linguist was preparing to poll community reactions, and was already anticipating certain changes, when he had to leave Papua unexpectedly and the work stalled.

Orthography #2 – no rating

In contrast to Orthography # 1, orthography #2 was considered completed. Two features are noteworthy: First, it stays closer to the Indonesian alphabet than the other two orthographies by means of over-differentiating Namblong allophones [ϕ, tɕ, dz], which are phonemes in Indonesian, and spelling them ⟨f/v, c, j⟩, the same as in Indonesian. (Orthographies #1 and #3 also over-differentiated [tɕ] and [dz], but spelt them differently to Indonesian). I believe this would have been received positively based on the following: When new people were first shown orthography #3, they usually protested about representing [ϕ], an allophone of /p/, with ⟨p⟩. To the Namblong, [ϕ] is perceived to be like Indonesian /f/, so they expected to see Namblong [ϕ] written with ⟨f⟩ or ⟨v⟩, as in Indonesian. To the uninitiated reader, spelling [ϕ] with ⟨p⟩ looked like an error, reducing their confidence in the integrity of the orthography, and delaying—if not disqualifying—their acceptance.

On the other hand, orthography #2 sometimes spells /ii/ and /ei/ with ⟨ik⟩ and ⟨ek⟩, and often spells the morpheme /de/ with ⟨ge⟩, reflecting south-eastern dialect pronunciation. These allophones are generally regarded as sub-standard Namblong, influenced by the neighbouring Klesi language [grs] (Anceaux, 1965; May, 1997) and might trigger some people's intolerance of parallel speech traditions, as discussed in Section 5.2.1.

Orthography #3 – Rating: A (Accepted)

As mentioned, phonemic spelling of /p/ in orthography #3 met with some resistance. However, when allophonic variation and the rationale of constant word image were explained,

protests stopped. It is not clear whether this meant the spelling was accepted or simply tolerated, given the Namblong culture of parallel truths.

However, a few indicators of acceptance were observed. First, orthography #3 was endorsed by the head of the Namblong Tribal Council, an important and well-respected chief (Sawa, 2018), and he continues to encourage all Namblong to use it (N. Iwong, personal communication, December 12, 2020). Second, from June 18–20, 2018, thirty Namblong people attended literacy group leader training with the intention of starting reading groups in their villages. They knew they would receive no remuneration for attending the training or for running reading groups—in fact, some even paid a registration fee to attend. This was remarkably counter-cultural given that the government-run residential training events with which the Namblong are familiar provide for participants’ transport, food, and hotel accommodation, plus they receive an honorarium for attending. Third, the *Komunitas Kidung* so wanted to use the orthography, rather than ad hoc spelling, that they asked language committee members for help. Furthermore, they shout down anyone who tries to defend their own idiosyncratic spelling choices (N. Iwong, personal communication, December 17, 2020).

Discussion

The participation of a broader group of people in the development of orthography #2 might have weeded out the lower-prestige dialect features, improving the orthography’s acceptability.

Once again, I cannot know for sure, but I believe the desire of the *Komunitas Kidung* to use orthography #3 was a result of POD. The autonomy of each clan, clan loyalties, and the acceptance of parallel truths could easily have led to idiosyncratic spelling. Without POD, the work of the committee could have been met with suspicion rather than goodwill. But POD brought different villages together and generated a sense of ownership and even unity across different clans and dialects. Participation in discussions where they received some linguistic training and heard the reasoning behind certain spelling choices might have contributed to people’s confidence in the quality of the orthography, and even perhaps to seeing it as representative of a wider Namblong identity.

5.2.4 ACCURACY (Criterion: lexico-phonemic representation)

Correct interpretation of what is a phoneme, and what is not, contributes to an orthography’s *Accuracy*. If spelt lexico-phonemically according to an emic perspective, a printed word matches the L1 reader’s psychological concept of the word, which makes the orthography easier to accept and read. Lexico-phonemic spelling can also convey word meaning more accurately, by removing homographic ambiguity, as was accomplished in orthography #3 by eliminating Namblong inter-consonantal schwas.

Hall (2006) identifies two kinds of inserted vowels, cross-linguistically: epenthetic vowels, which are phonologically ‘visible’, effecting and being affected by phonological processes; and what she calls intrusive vowels, which are not really vowels at all but “phonetic transitions between consonants” (p. 387), and are phonologically ‘invisible’. Intrusive vowels can appear, to a non-native speaker, to add a syllable to a word, while a native speaker does not consider the sound to be a phone at all, much less a syllabic nucleus. For example, the Polish place-name *Gdańsk* is pronounced with an intrusive schwa in the initial consonant cluster ⟨gd⟩, viz. [gǝˈdaɲsk]. Native speakers consider such words to be monosyllabic (Hall, 2006, pp. 397–399; E. McMaster, personal communication, 2015). Being non-syllabic, an inserted schwa is not a vowel phoneme, nor is it an unstressed allophone of a vowel phoneme like the first /a/ in English ⟨canal⟩, viz. [kʰǎˈnæɫ], but rather a phonetic “vowel-like transition between consonants” (Hall, 2006, p. 387). This intrusive schwa is common between consonants in syllable onsets of Namblong and the other four Nimboran languages.

Orthography #1 – Rating: B (Basic)

The Indonesian orthography is based on an interpretation of [ɛ] and [ə] as allophones of /e/ in complementary distribution, and both are represented with ⟨e⟩. Namblong orthography #1, based on the non-native linguist interpreting intrusive schwas as unstressed allophones of /e/, mirrors Indonesian orthography and represents [ǎ] with ⟨e⟩, thus introducing a disparity between the number of written syllables and the number of perceived syllables. This spelling also introduces ambiguity by creating non-homophonous homographs such as ⟨tesing⟩ |tsiŋ| [t͡ɕ͡sɪŋ] ‘bear fruit’ and ⟨tesing⟩ |tesɪŋ| [t͡ɕ͡sɪŋ] ‘left behind’. This is inaccurate and makes the orthography harder to read. In fact, syllable quantity disparity is one of the struggles experienced by readers in neighbouring Kemtuik [kmt] (M. Werner, personal communication, 2013), whose orthography is also based on a phonemic interpretation of intrusive vowels (Wilden & Wilden, 1975).

There are a few cross-linguistic homophones between Namblong and Indonesian which are equivalent at the phonetic level, but different at the phonemic level. Table 6 shows that Namblong orthography #1 spelt these homophones the same as their Indonesian counterparts, whereas orthography #3, recognising the non-phonemic status of the intrusive schwa, did not.

Table 6
Namblong Spellings of Cross-Linguistic Homophones

Homophone	Indonesian	Namblong #1	#3
[t͡ɕ͡nɛŋ]	/tenaŋ/ ⟨tenang⟩ ‘calm’	/tnaŋ/ ⟨tenang⟩	⟨tnang⟩ ‘true’
[s͡ɕ͡nɛŋ]	/senanŋ/ ⟨senang⟩ ‘happy’	/snaŋ/ ⟨senang⟩	⟨snang⟩ ‘eternal’

Orthography #2 – Rating: B (Basic)

Orthography #2 was developed by native speakers without linguistic training. Although they followed Indonesian closely in their grapheme choices, they represented the schwa unpredictably in two different ways, sometimes with ⟨e⟩ written like in Indonesian (e.g., ⟨tenang⟩), and sometimes along phonemic lines with ⟨e⟩ omitted (e.g., ⟨tnang⟩). At other times the absence of the grapheme ⟨e⟩ was acknowledged with an apostrophe (e.g., ⟨t'nanɡ⟩). These three spellings show how the influence of Indonesian had led to them sometimes writing surface forms rather than lexico-phonemic forms, introducing ambiguity through non-homophonous homographs.

Orthography #3 – Rating: A (Accurate)

Orthography #3 initially followed orthography #1 by writing the schwa with ⟨e⟩, but Namblong speakers denied the presence of a vowel, both explicitly (by claiming in conversation that words like [bǎ'kiɛ] contained consonant clusters, viz. |bkie|), and implicitly (by omitting those schwas in their writing). Three things convinced me of the phonological fidelity of their perception: first, schwa was never stressed like the other vowels, so it was probably not a phoneme. Second, in words like [tǎ'sɪŋ] 'bear fruit', and [tǎ'sɪŋ] 'left behind', schwa contrasted with unstressed [ɛ̃], an allophone of /e/, so schwa couldn't also be an unstressed allophone of /e/. Third, the Namblong always spelt cross-linguistic homophones with an ⟨e⟩ when writing in Indonesian, but often without an ⟨e⟩ when writing in Namblong (as in Table 6). I could see no other reason for them doing this than the 'psycholinguistic unreality' of the schwa.

Recognising these phonetic schwas as non-syllabic transitions between consonants in word-initial clusters led to the re-interpretation of schwas between consonants word-internally. By writing [ɛ̃] as ⟨e⟩ but not writing [ǎ] at all, different suffixes which had been homographs could now be distinguished. Choosing not to represent schwa in the orthography removed the written ambiguity, with gains in unequivocal, economy, and simplicity of representation (Coulmas, 1989, p. 45). The change made the orthography more accurate in its representation of both phonology and meaning.

Discussion

Several non-native linguists assumed the phonetic schwa was phonemic (cf. orthography #1), and I initially presented the community with reasons why it should be written. The speaker community knew intuitively that the schwa was not a vowel phone, but on their own (cf. orthography #2) lacked the confidence to break away from Indonesian spelling and omit it completely. Only when native intuition was combined with the perceived authority of the linguist (once he had been convinced) was the schwa accurately (un)written. This example in particular shows that POD (with a linguistic advisor) creates a more accurate orthography than development by either a non-native linguist or a native-speaker committee alone.

5.2.5a ACCESSIBILITY of orthography (Criterion: Transfer of graphemes)

Orthography #2 – Rating: C (Challenging)

By over-differentiating Namblong allophones [ɸ, tɕ, dz] and spelling them the same as Indonesian phonemes /f, tɕ, dz/, orthography #2 was shallower, more familiar, and thus easier to learn—that is, more Accessible. The disadvantage of this was that some words were written differently depending on their phonological context, which slows down advanced readers for whom a constant word image is more beneficial (Dawson, 1989, p. 2).

By under-differentiating /ɰ/, orthography #2 introduced no unfamiliar, non-Indonesian graphemes. Under-differentiation makes an orthography easier to write, but introduces ambiguity for readers by creating homographs.

Over-representation of /^og/ reduced visual clutter: it was generally written ⟨ngg⟩, as in Indonesian, but since Namblong has no */g/ phoneme, ⟨g⟩ was co-opted to represent /^og/ word-initially.³ This meant words with reduplicated /^og/ like |^og^oguu| [ᵑgᵑgəu] ‘to peel’ could be spelt ⟨gguw⟩ rather than ⟨ngngguw⟩. However, it reduced the transfer value since ⟨g⟩ had different phoneme-grapheme correspondences in Namblong versus Indonesian.

These examples demonstrate a paradox: ⟨gguw⟩ is more accessible to the eye than ⟨ngngguw⟩, but less accessible to the brain which is used to associating ⟨g⟩ with [g]. Over-differentiation of [p] and [ɸ] makes words more accessible to novice readers who are reading for sound, but less accessible to advanced readers who are reading for morphemes. The same orthographic choice simultaneously contributes to one criterion of accessibility, and detracts from another.

Reading fluency and comprehension testing would be required to determine if orthography #2’s combination of strengths and weaknesses proved more readable than those of the other orthographies.

Orthographies #1 & #3 – Rating: C (Challenging)

Under the influence of linguists, orthographies #1 and #3 were slightly more consistent and homogenous in their symbol choices and maintained constant word images with minimal over-differentiation and no under-differentiation. However, they both introduced a new letter for /ɰ/ and many similar-looking vowel digraphs, which were potentially confusing for novice readers.

³ This was not possible for /^mb/ and /ⁿd/ which contrast word-initially with /b/ and /d/. See Appendix B.

Discussion

The non-participatory development of orthography #2 by native speakers without input from a linguist or the wider community made it less accurate, but more immediately accessible.

POD made orthography #3 less accessible to uninitiated readers, but gave POD participants a head-start on learning it, and also kept the information load low by spacing out discussions of different phonemes and spelling conventions over a period of years (compared to literacy classes). It also helped people understand why things were spelt the way they were, which contributed to acceptance.

Dawson (1989, p. 2) recommends designing an orthography for fluent users, not beginning users. Both #1 and #3 would cater well to experienced readers, but be less accessible to anyone who had not learned their spelling rules.

Ultimately, differences in accessibility between the three orthographies are insignificant compared with the fact that Namblong is much more phonologically complex than Indonesian. The number of vowel phonemes and the strings of consonant clusters will always make it challenging for people to access written Namblong, and no method of orthography development could have changed that.

5.2.5b ACCESSIBILITY of literature (Criterion: Awareness)

Orthographies #1, #2, & #3 – Awareness of literature

Very little was published in orthographies #1 and #2, nor were they promoted for public use, so it would be pointless to give them ratings for accessibility of classes or literature. However, it is clear that POD made more people aware that literature was soon to become available in orthography #3 than would have known without POD. Thus, by increasing awareness, POD increased the accessibility of Namblong literature.

5.2.6 APPLICATION (Criteria: Typeable; Institutional support; Opportunities)

The capacity to be typed on modern mechanical or electronic devices, institutional support, and opportunities to use the orthography—particularly as an extension of an already-established oral function—are three criteria that contribute to an orthography's application.

Orthographies #1, #2, #3 – Typeable

All three orthographies use the same script as Indonesian (Roman) and are thus easy for the Namblong to write and type, except for the sixth vowel /ʉ/, which is not present in Indonesian. Orthography #2 avoided this problem by under-differentiating /ʉ/, spelling it ⟨u⟩, the same as /u/.

Orthography #1 used ⟨ú⟩, which was easy to type on a typewriter. (Mobile phones and computers were not yet a commodity requiring consideration at that time). In early discussions for orthography #3, Namblong Language Committee members also chose ⟨ú⟩, aware that it could (only) be typed on a computer using dead keys or a customised keyboard. ⟨v⟩ had been suggested because it was similar in shape to ⟨u⟩, and was rare and somewhat redundant in Indonesian, since it was pronounced the same as /f/ and only written in a small number of foreign words. The Namblong rejected ⟨v⟩ because they wanted a unique letter for their unique vowel, not a letter which was associated with another phone. However, ⟨v⟩ was later accepted as a secondary allograph for ⟨ú⟩ which could be used when typing on older mobile phones on which ⟨ú⟩ was unavailable.

Discussion

Orthographies #1 and #2 were both typeable on the technology of their era.

Orthography #3 can be typed on a typewriter, computer, and some smartphones, and also on old phones by substituting the allograph ⟨v⟩ for ⟨ú⟩. Collaboration with a linguist resulted in orthography #3 being more difficult to use than orthography #2, by virtue of him validating the distinction between /u/ and /ʉ/, and suggesting different letters. However, increased difficulty of application was willingly traded for increased acceptability and appeal, as the community were pleased to represent their unique phonological identity marker with a distinctive grapheme.

Orthographies #1, #2, #3 – lack of institutional support

Indonesian is the dominant language used in the liturgical GKI churches, from the very formal language of the accepted Bible translation (*Alkitab Terjemahan Baru*, 1974), to the hymn book (*Nyanyian Rohani*, 1947/1981), and the preaching of the tertiary-educated, often non-Namblong clergy. More Namblong is used in the semi-independent Pentecostal churches which tend to have local ministers with less formal education, but it is currently limited to oral use: the contemporary Namblong songs they sing have less lyrics than the GKI hymns and are sung from memory, and prayers, testimonies, preaching and announcements are oral forms, not written.

Since 1962, the language of formal education in Papua has officially been Indonesian, though—unofficially—teachers use Papuan Malay much of the time in order to be understood (M. Maniagasi and Y. Aiboy, personal communication, September 29, 2018). There is time allocated in the school week for *Muatan Lokal*—‘local content’—where local language may be taught, but the government department of education does not provide a curriculum, so those class times often get used for other activities like tidying the school grounds (V. Hembring, personal communication, January 2018).

Thus, none of the orthographies has so far benefitted from the institutional support of churches, schools, or the government.

Orthography #3 – opportunities for use

However, orthography #3 seems to be on its way from *confined* to *bounded* application (see the rubric in Table 4), with a few community initiatives emerging which could lead to wider institutional support.

One of the aims expressed by the Namblong Language Committee in early 2012 was to develop a *Muatan Lokal* curriculum. This has yet to occur, but in 2018 two Namblong-language children’s choirs were formed in *Imestúm* and *Berab* villages; in 2019 *Warombaim* primary school started teaching Namblong language and literacy during *Muatan Lokal* periods (J. Napo, personal communication, September 2019); and in 2020 a *Sekolah Alam*—‘Nature School’—began in *Takuo Bleng* village, teaching a class of kids ranging from pre-school to year 9. They use the literacy lessons book for theory, sing songs, and go into the jungle to learn plant names (R. Bay, personal communication, December 6, 2020).

The *Komunitas Kidung* (Chorale Club) mentioned on page 51 also functions as a proxy reading and writing program. The head of the Namblong Tribal Council has been enjoining the community to use the orthography, saying, “we have a spelling system now, so use it, we don’t want anybody writing any other way” (N. Iwong, personal communication, December 17, 2020). Some people have brought songs along with idiosyncratic spellings, but there is strong social pressure to follow the orthography and their lyrics have been quickly corrected by the others. Young people have been joining *Komunitas Kidung* too, wanting to learn to sing and read and write in Namblong. Some Pentecostal ministers have said the *Komunitas Kidung* will revitalise the language, and they want everyone to be able to speak, read, and write.

The *Application* ratings for the three orthographies are as follows: #1 – D (Dormant); #2 – C (Confined); #3 – B (Bounded).

Discussion

When I asked a member of the Namblong Language Committee why he thinks interest in singing and translating hymns in Namblong has ballooned in the last two years—in 2012 there was just one man who was writing and translating hymns in Namblong—he said it is because the language committee have come alongside the community and encouraged them and quietly promoted both singing and literacy in Namblong (N. Iwong, personal communication, December 17, 2020). In contrast, he said the developers of orthography #2 kept it to themselves, for their own writing only.

An important observation must be emphasised at this point. While there was initial enthusiasm from thirty Namblong people to be trained to lead literacy classes in their villages (using orthography #3), not many classes commenced, and those that began dissolved before finishing the lesson book. Namblong people learn practical skills through *situated learning* (Lave & Wenger, 1991). They love to talk about things, but learning from books is not common. The *Sekolah Alam*

class have been using the lesson book, but sparingly, in combination with singing and field trips. In keeping with the Namblong's preferred 'hands-on' learning style, it would seem that the most liked and successful literacy activities have been the practical ones. The promotion of literacy *in direct connection with a culturally valued oral function* (singing) has been the most successful so far.

The effectiveness of the *Komunitas Kidung* in promoting literacy has benefitted from two other factors: first, singing is a highly sentimental domain and thus eminently suited to vernacular language use (Henne, 1988, p.11); and second, meetings give the members opportunities to think and talk about language and meaning from written materials, in a setting outside the family and school, with "provision for involvement for both genders and across generations," three of Shirley Bryce Heath's favourable predictors of literacy retention (1987, as cited in Davis, 2004, p. 32).

The application of orthography #3 through *Muatan Lokal, Sekolah Alam*, and the *Komunitas Kidung* includes nothing that could not have been achieved in a literacy program based on an orthography developed without community input. This has occurred in other languages documented by van den Berg (2020), amongst others. Perhaps the emergence of the *Komunitas Kidung* resulted from the confluence of other factors in the linguistic ecology, and its coincidence with participatory orthography development was itself a coincidence.

It is impossible to know for sure. But four observations stand out: first, POD did not disadvantage the application of orthography #3, and there is no reason to think non-participatory methods would have been superior. Second, it was fully eight years after orthography development commenced that the *Komunitas Kidung* was formed. If its formation was influenced at all by community awareness of and discussion of vernacular literacy (and it is hard to imagine that it was not), then the sooner those discussions start, the better. There is no need to wait until an orthography is 'finished' before commencing literacy promotion. Third, many of the core members of the *Komunitas Kidung* were also core participants in the POD. It does seem that this group is a natural offshoot of the POD movement. Finally, over the first few years, attendance at annual community spelling discussions grew. On the other hand, attendance at literacy classes has declined from small to tiny. It seems the discussion of literacy, and involvement in developing their own orthography, was more appealing than attending literacy classes. So, had the language committee got alongside the community and encouraged them to sing and write songs with a completed orthography they had not seen before, did not know the principles of, did not see the value of, and were (thus) unmotivated to learn, it seems probable that the committee would have had less success in establishing the use of a standard orthography. The alternative, ad-hoc spelling, would have had negative implications for ease of learning, communication of meaning, and attaining fluency. As it happened, involvement in orthography discussions raised people's awareness of their language's structure, and has given them greater confidence in the integrity of the orthography and its usefulness, and consequently a greater willingness (and capacity) to learn and use it.

5.2.7 AGENCY (Criterion: Community control)

Community agency refers to how much the orthography development is controlled by the language community, compared to how much it is controlled by outsiders.

Orthography #1 – Rating: C (Constrained)

Community agency was constrained in orthography #1. Although the linguist-designer discussed spelling with a native speaker, he retained control of the orthography decisions (K. May, personal communication, December 16, 2020).

Orthography #2 – Rating: both A and D (Agentive and Denied)

Orthography #2 reveals a flaw in the ORT and in Easton’s five basic models (Figure 1), which are shown to be one-dimensional where two dimensions are needed. Easton’s models and the ORT focus on the balance of power being biased more or less towards either an external linguist or a speaker community. However, a second dimension, the breadth of community involvement, is required. For example, Roberts (2008) and Kieviet (2006) both give examples of native-speaker linguists creating autonomous orthographies; and in the case of Namblong orthography #2, a native-speaker committee had agency, deeming the orthography “community-controlled,” but the wider community were denied input.

Orthography #3 – Rating: A (Agentive)

For orthography #3, POD sought to diffuse control of the orthography amongst all stakeholders. In Indonesia, there are no government stipulations for minority-language orthography development, nor did we have a publisher, nor did the NGO for whom I was working place any requirements on what we did. The language committee had identified two major goals for which they needed the orthography: Bible translation, and school and pre-school curricula. This meant that the main stakeholders were the Namblong Language Committee, GKI and Pentecostal churches, schools and pre-schools, the Namblong Tribal Council, and the various clans.

The team wanted to produce materials that all Namblong clans could accept and read—they didn’t want materials to be seen as belonging to a particular dialect, nor was there time or money to produce materials in different orthographies for different dialects. To produce one orthography that would be accepted and used by the whole Namblong tribe, it was clear that any language development needed to be consensus-based, done publicly and openly, with representation from as many clans as possible. Namblong society is hierarchical, so the language committee felt that inviting a few representative chiefs and leaders from each village was sufficient (cf. Lew, 2019). Church elders from the different denominations, and schoolteachers were invited; other ethnic Namblong

simpatisan ('enthusiasts') were welcomed; and a few non-Namblong people were invited by virtue of their position in the community and their support for local cultural expression (e.g., the local police, the commander of the local military outpost, and district council members).

Discussion

POD cultivated the maximum participation and agency of all stakeholders by employing various collaborative instruments: workshops, seminars, focus groups, informal discussions, group and individual surveys, orthography testing, and requests for feedback on trial publications. The orthography promulgation process also attempted to quickly decentralise literacy expertise from the language committee to the wider community by training tutors to run reading and writing groups in their own villages. Participatory methods granted more agency to more stakeholders than non-participatory methods could have done. Given the aspects of Namblong culture described in section 5.2.1, it is almost certain that the inclusion of representatives from many clans has been a major factor in the widespread acceptance of orthography #3 and the community's commitment to using a single standard orthography.

5.2.8 AGREEMENT (Criterion: Unity of purpose)

As is clear from the two-house parliamentary system, shared agency does not guarantee agreement. Agreement is born of shared understanding and compatible goals, and a desire to work together.

Orthography #3 – Rating: A (Assent)

In the development of orthography #3, POD fostered unity across the whole language group which added a sense of camaraderie and momentum to those engaged in written language development in Namblong. As a form of consensus-based decision making (a skill the Namblong already possessed), POD validated the contribution of all participants and fostered a sense of ownership and responsibility for the orthography in each person. This bodes well for implementation to be more enthusiastically enacted, better understood, and more likely to succeed (Kaner, 2007).

Orthographies #1 & #2 – not rated

Orthographies #1 and #2 have not been rated for *Agreement* because there was limited partnership, for which they have already been marked down under *Agency*.

Discussion

If discussion alone does not lead to consensus, participatory methods can facilitate deeper understanding of the issues (as in Markowski's example earlier), and deeper understanding of the other party's concerns (as when I finally tuned in to what the Namblong were saying about the non-syllabic schwa). Participatory methods can help bring shared values and goals into focus and foster a unity of vision, increasing the effectiveness of language development efforts. Conversely, factions and competing orthographies make each party weaker (Adams, 2014).

5.3 Summary of results

Table 7 presents the ORT ratings of all three orthographies for each of the eight characteristics. Unfortunately, by virtue of orthographies #1 and #2 not being promoted for wider use, it was not possible to rate and compare their levels of *Acceptance*, *Accessibility* of literature, or *Agreement* between stakeholders.

Table 7
ORT Ratings for All Three Orthographies

Characteristic	Orthography #1 linguist-controlled	Orthography #2 committee-controlled	Orthography #3 community-controlled
Appeal	Costly/Destructive	Costly	Beneficial
Acceptance	-	-	Accepted
Accuracy	Basic	Basic	Accurate
Accessibility (orth.)	Challenging	Challenging	Challenging
(literature)	-	-	Bearable
Application	Dormant	Confined	Bounded
Agency	Constrained	Agentive & Denied	Agentive
Agreement	-	-	Assent
Accord	Clashing	Clashing	Apt

Chapter 6 | Conclusions

6.1 Summary of main findings

This study aimed to discover any correlation between orthography quality and method of development, by comparing three orthographies devised for the same language. The orthographies were rated for their appeal, acceptance, accuracy, accessibility, and application, for the level of community agency and agreement in their development, and for accord between the local context and the methods used. Not all orthographies could be rated for all characteristics, but for those characteristics for which data was available, it was observed that:

- 1) Differences in *Appeal* were not grounded in the orthographies themselves, but in what functions could be played by literacy in the everyday life of the community.
- 2) POD had a positive impact on people's *Acceptance* of orthography #3 by involving them in discussions which helped them see how the orthography matched their language, and helped them feel like co-owners of the end product.
- 3) POD improved *Accuracy* by combining the theoretical expertise of the linguist with the intuitive emic understanding of the native speakers.
- 4) Each orthography, and each method of orthography development, had different strengths and weaknesses in terms of *Accessibility*. Ultimately the complexity of the language itself made all three orthographies challenging to learn and use.
- 5) While POD contributed to people's awareness of literature becoming available, POD cannot be shown to have provided any clear advantage over other methods of orthography development with regard to the *Accessibility* of literature.
- 6) Orthography #3 benefitted from a new function for its *Application*, connected to an emerging oral function. The extent to which POD contributed to the rise of those functions is impossible to quantify. POD was a more fun and engaging, more culturally relevant way to learn the orthography—just as song-writing is now proving to be—than learning from a book in a literacy class. POD probably made a more significant contribution to orthography #3's application than non-POD would have done.
- 7) Cultural factors make it likely that broad community involvement and *Agency*—as opposed to committee control—was a major contributing factor to the acceptance of orthography #3 and the people's commitment to the application of a single, standard orthography. This was found to be one of POD's unique strengths.
- 8) It would be hard to deny that POD facilitated *Agreement* and partnership between stakeholders more than non-POD could have done.
- 9) Finally, POD had a particular *Accord* with the Namblong hierarchical social structure, consensus-based decision making, and hands-on learning style.

Involving a broad cross-section of the Namblong language community over several years in their own orthography development through writers' workshops, surveys, informal discussion, focus groups, seminars, tutor training, etc., whilst simultaneously producing written materials in the language, allowed the community time to grow in their language awareness, to give their input and feedback as the orthography evolved, to understand what was at stake, to come to terms with disputed letter choices, and to grow in their interest in and support of a unified writing system.

By virtue of their different perspectives, the native speakers and the non-native linguist contributed unique insights which challenged each other's preconceptions about the language, resulting in an orthography which neither could have devised on their own, and which better represented the language and its speakers' identity.

POD led to an orthography which was more lexico-phonemically accurate, more readable, more widely accepted, and thus more likely to be used by writers and understood by readers than the two orthographies developed by a small group of native speakers, and an autonomous linguist.

6.2 Implications for orthography development

Anyone considering developing an orthography would do well to consider first the community's language behaviours and attitudes, and the societal values and social forces at play in their unique linguistic ecology (Walker, 1988), namely:

- a) Is there a niche for another orthography in the community's repertoire? That is, is there a function for which literacy in that language will be both unique and desired?
- b) Are the environmental factors conducive to vernacular literacy? That is, will people be able to acquire and use the orthography?
- c) Is the community able to work together? If not, are there people whom they trust and are willing to follow, who can develop the orthography for them?

If any of the answers is "no," orthography development should be postponed until that issue is resolved, if possible. If all of the answers except the last are "yes," there are quite likely benefits to proceeding with a participatory method of orthography development. Before commencing, an understanding of the culture and linguistic ecology is required, including the phonology of the minority and dominant languages spoken (and their orthographies, if written), and the social structures, decision-making and learning styles, in order to determine which model of POD will be the most suitable and effective. Of course, there will also be many practical considerations such as an accessible meeting place, distraction-free time to work, and catering.

6.3 Further research

A study of orthography development for only one language, where two of the orthographies were unable to be assessed for some of the identified characteristics, cannot provide sufficient data to confidently extrapolate generalisations about orthography development to other languages. I

hope that others will be able to replicate this study in other places to increase our understanding of successful orthography development cross-linguistically, and to move us towards a set of best practices for orthography development and, ideally, a theory of orthography development.

I also hope that the ORT can be improved, modified, and used in new ways for other research.

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Appendix A

Benefits of participatory orthography development

Summarised from Easton, 2007; Kutsch Lojenga, 1996; Markowski, 2009; Schroeder, 2010.

- gives agency to the language owners
- provides native speakers with informal training in phonological and grammatical analysis, orthography design, and writing (composition), which builds their capacity to implement their language development goals
- builds a sense of ownership of language development, often leading to greater involvement in and enthusiasm for further development
- affirms native speakers' identity and develops positive language attitudes: they enjoy discovery and discussion of linguistic features and (in some cases) realise they speak a 'real' language
- raises native speaker awareness of linguistic features of their language, which
 - helps them distinguish the differences from the LWC
 - helps them accept differences from the LWC orthography
 - helps them understand the orthographic decisions made
 - helps them justify and teach the orthography to other community members
 - leads to subsequent and deeper insights, the more they know
- external linguists make unsystematic errors of transcription, but native speakers make systematic transcriptions (and systematic errors) which will
 - give quicker and more obvious insight into the phonological system (for example, gaps in distribution highlight possible cases of complementary distribution)
- native speakers are more attuned to their phonemes than an external linguist, so it
 - speeds the process of analysis and contributes to its quality
 - does analysis from an emic, not an etic, perspective, which means symbol choices better match native-speaker perceptions of the phonemes
- maximises interference from the LWC (as opposed to an 'objective' scientific orthography), which will maximise transferability
- allows the community time to become accustomed to (and make changes to) the symbols chosen as they determine symbol-sound pairs progressively
- brings generations together to pool their knowledge and expertise, building unity
- helps identify people with natural insight, ability, and interest, who can be recruited for future language development activities
- follows a non-Western consensus-based reason-result decision-making style of spiralling towards a solution, as opposed to a Western top-down result-reason "here's what I've decided, and this is why, take it or leave it"
- gives the community confidence that decisions were authorised by community leaders and based on collaborative research between a linguistics expert (the external linguist) and language experts (the native speakers), aiding acceptance and application of the standard orthography

Appendix B

Phoneme-grapheme correspondence of the three Namblong orthographies

Table 8 and Table 9 show all Namblong phonemes and their main allophones in IPA side by side with their representation in the three Namblong orthographies and an example word. Allophones which occur in complementary distribution are shown on separate lines, while allophones which occur in free variation (including dialectal variants) are shown on the same line. Multiple graphemes over-representing a single phone are shown on the same line—there is not space to discuss rules of distribution here. A hyphen in the orthography column does not mean the orthography under-represents that phone, but that no word containing that phone occurs in the available data. Under-representation of phonemes is not attested in the data; over-representation is highlighted **yellow** below. Under-differentiation is shaded **green**, and over-differentiation is shaded **blue**.

Table 10 and Table 11 show the three orthographical representations of some post-lexical features.

Table 8
Orthographic Representations of Namblong Vowel Phones

	Phoneme	Allophones	Orthography			Example ¹	Gloss
			#1	#2	#3		
Monophthongs	/i/	[i]	i	i, y	i	kli	to run away
		[ɪ]	i	i	i	klɪŋ	frog
	/e/	[ɛ]	e	e	e	kle	to extinguish
	/a/	[ɐ]	a	a	a	kla	to hunt
	/o/	[ɔ] ~ [ɒ]	o	o	o	klo	hole
	/u/	[u]	u	u, w	u	klu	to collapse
	/ʉ/	[ʉ]	ú	u	ú	klú	to disperse
Diphthongs (Stress is on first vowel in all)	/ii/	[əi] ~ [ɪk]	ii	ii, ik, eik	ii	klii	to weave
	/ei/	[ɛi] ~ [ɛk]	ei	ei, ek	ei	klei	to obstruct
	/ai/	[ɛi]	ai	ai	ai	klai	bribe
	/au/	[ao] ² ~ [ɛu]	au	aw	au	klau	to sweep
	/ou/	[ɛu] ~ [ɔu] ²	ao, ou	ou, ow	ou	klou	to erase
	/uu/	[əu] ~ [ɔu]	uu	uw	uu	kluu	to plant
	/ʉʉ/	[əʉ]	eú	-	úú	klúú	to slice
	(eʉ) ³	[ɛʉ]	eú	-	eú ³	yeú	to guard
	/aʉ/	[aʉ]	aú	-	aú	yaú	aunt
	/ie/	[iɛ]	ie	ie	ie	kie	hand
/ʉe/	[ʉɛ] ~ [ʉə]	úe	ue ⁴	úe	klúe	frenzy	
/ou/	[ɔʉ]	uo	uo	uo	kluo	arrow wound	
Triphthong	/aʉe/	[aʉɛ] ~ [aʉə]	awe	-	aúe	aúe	chilli

Notes. ¹ Examples are spelt according to orthography #3.

² [a] is a front vowel, [ɛ] is a central vowel, and [ɔ] is a back vowel.

³ Probably a south-east dialect-specific allophone of /ʉʉ/, in which case orthography #3 over-differentiates */eʉ/ and /ʉʉ/.

⁴ ⟨ue⟩ does not under-differentiate /ʉe/ from */ue/ since */ue/ does not occur. However, ⟨ue⟩ under-differentiates /ʉe/ from /we/, which is also written ⟨ue⟩.

Table 9
Orthographic Representations of Namblong Consonant Phones

	Phoneme	Allophones	Orthography			Example ¹	Gloss
			#1	#2	#3		
Plosives	/p/	[p]	p	p	p	sip	place
		[ϕ]	p	f, v	p	púe	to blow
	/t/	[t̚]	t	t	t	tap	path
		[t̪͡ɕ]	ti	c	ty	ityake	centipede
	/k/	[k]	k	k	k	kip	fire
	/b/	[b]	b	b	b	bu	water
	/ ^m b/	[^m b]	mb	mb	mb	mbli	luck
	/d/	[d]	d	d	d	du	child
[d̪͡ʒ]		di	j	dy	idyó	yard	
/ nd /	[nd]	nd	d, nd	nd	ndang	root	
/ ^{ng} / ²	[^{ng}]	ngg	g, ngg	ngg	nggie	sap	
Lateral flap	/ɺ/	[ɺ]	l	r, l	l	lep	to drink
		[ɺ̪]	r	r	l	ilam	chief
		[ɺ̪͡j]	-	-	l	bieilatam	they (pl) open it
Nasals	/m/	[m]	m	m	m	mo	sago
	/n/	[n]	n	n	n	nu	eye
	(n ^j) ³	[n ^j]	ni	ny	ny	inyom	middle
	/ŋ/	[ŋ]	ng	ng	ng	ngo	I (1.sg)
Fricatives	/s/	[s]	s	s	s	song	mosquito
	(s ^j) ³	[s ^j]	si	sy	sy	insylú	people
	/h/	[h]	h	h	h	heni	body
Approx- imants	/w/	[w]	w, u	w, u	w	wai	sun
		[ɥ]	w	w, u ⁴	w	weng	burnt
	/j/	[j]	y, l	y	y	yú	bird

Notes. ¹ Examples are spelt according to orthography #3.

² */g/ is not a phoneme; [g] only occurs as an allophone of /d/ in [gɛ], an allomorph of the word ⟨de⟩ ('Poss') occurring after /ŋ/ or a high vowel; see orthography #2 in Table 11.

³ [n^j] and [s^j], allophones of /n/ and /s/, masquerade as phonemes word-initially. The south-western dialect has re-timed the [i] gesture which triggers palatalisation of /n/ and /s/, thereby dropping the word-initial /i/ but retaining the palatalised consonant allophones. This has created minimal pairs in that dialect such as ⟨nom⟩ '3.sg.DAT' vs ⟨nyom⟩ 'middle', and ⟨su⟩ 'small.bird.variety' vs ⟨syu⟩ 'let's.go!' Word-initial /i/-dropping is also beginning to occur before coronal plosives in some words, for example ⟨tyka⟩ [t̪͡ka] 'leech', but this has not resulted in minimal pairs, there being no correlate words such as, for example *(tka).

⁴ The under-differentiation here is obviously not between the two allophones of /w/, but between the representation of /we/ (i.e., [ɥɛ], or [ɥɛ] with the stress on [ɛ]) and /ɥe/ (i.e., [ɥɛ] with the stress on [ɥ]) which can both be written ⟨ue⟩.

Table 10
Orthographic Representations of Intrusive Schwa

	Phonemic	Phonetic	Orthography			Gloss	
			#1	#2	#3		
Intrusive schwa within ...	Roots	/tbau/	[t ^ə bəu]	tebau	tbaw	tbau	<i>to join</i>
		/tmien/	[t ^ə mien]	temien	temien, t'mien	tmien	<i>large</i>
		/nbo/	[n ^ə mbuo]	nembuo	n:mbuo, n'buo	nmbuo	<i>word</i>
	Reduplication	/mednetəm/	[J ^ə mɛd ^ə nɛ'təm]	lemedenetúm	reme dnetum, r'me denetum	lmednetúm	<i>becomes</i>
		/ttwou/	[t ^ə twou]	tetwou	t'twou, tetwou	ttwou	<i>to fell</i>
		/ddam/	[d ^ə ndem]	dendam	-	dndam	<i>to eat</i>

Note. Non-syllabic intrusive schwa (Hall, 2006) is superscripted, as a transition between consonants.

Table 11
Orthographic Representations of Word Breaks and Place Assimilation

	Morphemes	Orthography			Gloss	
		#1	#2	#3		
Word breaks before ...	Suffixes	u-ken-t-úm	ukentúm	u kentum	ukentúm	<i>raining down</i>
		tii-i-len-ken-di	tiilenggendi	teik lenggendi	tiiilengkendi	<i>hand down to us</i>
		lwou-i-la-d-u	lwoiladu	ruok iradu	lwoiladu	<i>I will speak of it</i>
	Post-positions	yamo ne	yamo ne	yamone	yamo ne	<i>to (the) house</i>
		yano ne	yano ne	yano ne	yano ne	<i>to (the) village</i>
		dou de	dou de	douge, dow ge	dou de	<i>having taken</i>
Place assimilation	Plosive	s-sii so	sesii so	ssiiso	ssii so	<i>by squeezing</i>
		t-twou so	tetwou so	t'tuow so	ttwou so	<i>by felling (trees)</i>
		dam de	dam de	dam be	dam de	<i>having eaten</i>
Place assimilation	Nasal	plip de	plip de	plipbe	plip de	<i>having put aside</i>
		lei de	lei de	leige	lei de	<i>having laid</i>
		dkou de	dekao de	dkouge	dkou de	<i>having tied</i>
		blong ne	blong ne	blongne	blong ne	<i>to above</i>
	tang ne	tange, tane	tangnge	tane	<i>go back</i>	

Note. Orthography #2 is not consistent. It usually breaks verbs between the root and the first suffix, and it more often than not attaches post-positions to the previous word. It usually shows the assimilation of the plosive in the post-posed particle <de> to the place of articulation of the previous segment, as pronounced in the south-eastern dialect. It is less consistent in its representation of nasal assimilation in the particle <ne>.

Appendix C

The Orthography Rating Tool presented on one page

See next page.

Characteristic	Rating	Rubric	Select Criteria
Appeal	Advantageous	- offers valued, desired benefits	relevant: meets felt need; fulfils desired function; valued; beneficial; fosters political, cultural or social advantages of prestige, identity or education
	Beneficial	- offers some benefits	
	Costly	- benefits are not worth the effort	
	Destructive	- literacy will cause trouble	
Acceptance	Accepted	- represents language aspirations and identity perfectly	(non-)accord with DLL ¹ orthography represents identity, cultural trends, political aspirations; seen as well-devised, authoritative, non-partisan, the 'right' dialect; developers are respected; has institutional approval
	Borne	- could be better but will do	
	Criticised	- some don't like some elements	
	Disliked	- nobody likes it	
Accuracy	Accurate	- matches psycholinguistic reality	lexico-phonemic representation; consistent symbolisation of phonemes; extensible to multiple dialects; represents words, grammar, and pragmatic force to convey meaning
	Basic	- mostly OK	
	Crude	- doesn't always make sense	
	Defective	- doesn't reflect the language	
Accessibility <i>of orthography</i>	Accessible	- anyone can easily learn and use	learnable, readable, writable: symbol contrast, coherence, consistent use; constant word image; less complex than DLL; teachers, classes, curricula; transfer: correlate vernacular phones use correlate DLL graphemes
	Bearable	- surmountable inconveniences	
	Challenging	- challenging to learn and use	
	Difficult	- insurmountable difficulties	
<i>of literature</i>	Accessible	- everybody knows where to buy, and understand what they read	readers know enough about the cultural and literary context to understand a text's meaning; people are aware of literature; literature is accessible and affordable
	Bearable	- books and content are accessible with some effort	
	Challenging	- books are hard to get or understand	
	Difficult	- books and content are inaccessible	
Application	Applied	- used by many or all	mechanical factors: readable, writable, typeable, displayable, printable; media for reading and writing available; supportive environment; institutional support; advantages outweigh costs; opportunities for use exist
	Bounded	- used in official materials or by a segment of the population only	
	Confined	- used by very few, or only found in rare materials	
	Dormant	- understood by few, used by none	
Agency	Agentive	- community controls orthography decisions and use	broad community participation; shared ownership; community control; genuine choices exist
	Bilateral	- control is shared between the community and outsiders	
	Constrained	- community have some input but outsiders have the final say	
	Denied	- orthography/literacy proscribed, or proscribed without choices	
Agreement	Assent	- all stakeholders agree freely	unity of purpose; able to negotiate and compromise; partnership with NGOs, government, schools, community and religious institutions, politicians, teachers, chiefs and leaders, end users
	Brokered	- compromise is reached	
	Conflict	- some parties boycott	
	Dissent	- nobody can agree to anything	
Accord	Apt	- OD model ² suits the context well	linguist assumes appropriate role and level of assistance; OD model ² suits language complexity and ecology, education levels, social structure, decision-making and learning styles
	Benign	- OD model & context compatible	
	Clashing	- some aspects of OD m & c clash	
	Disparate	- OD m & c are incompatible	

Notes. ¹ DLL — dominant language of literacy, often the language of wider communication

² OD model — Orthography Development model used, e.g., (non-)participatory