

“Spelling by the Ear”: Considerations in Orthography Selection and Maintenance

1. Introduction

In his *Devil's Dictionary*, Ambrose Bierce defines “orthography” thusly:

ORTHOGRAPHY, *n.* The science of spelling by the eye instead of the ear. Advocated with more heat than light by the outmates of every asylum for the insane. They have had to concede a few things since the time of Chaucer, but are none the less hot in defence of those to be conceded hereafter.¹ (Bierce, 2000, pp. 175–76)

Though the chief object of Bierce’s ridicule is the tangle of archaic spelling conventions which persist for English, writing in a systematic way which closely reflects spoken language—“spelling by the ear,” if you will—is no trivial matter, especially in the majority of the world’s languages with no written tradition. How, then, are suitable writing systems to be chosen for such languages in service of documentation and revitalization efforts?

This paper identifies some of the considerations relevant in native communities’ choice of orthography, including linguistic, political, and technological matters.

2. Linguistic factors

2.1. Linguistic ideals vs. necessity

Of obvious concern to the linguist is the degree to which an orthography accurately represents the structure of a language. For many, the ideal has been a phonemic alphabet, with a one-to-one correspondence between phoneme and symbol. But if the goal is literacy in the writing system, this is not necessarily the best approach. In practice, it is often desirable to include a certain amount of *phonetic* rather than phonemic detail, especially if the orthography is intended to be

¹ Bierce adds the following gem:
A spelling reformer indicted
For fudge was before the court cicted.
The judge said: "Enough --
His candle we'll snough,
And his sepulchre shall not be whicted."

accessible for non-fluent learners: “the level of phonetic detail [may benefit] learners who would otherwise have less information about pronunciation available to them when reading texts. [...] The level of phonetic detail must be great enough to give readers enough information for their task, but not so great as to entangle writers in a mass of rules” (Stebbins, 2001, p. 178).

Yet phonetic or phonological accuracy is far from being the only important consideration in crafting a writing system. In fact, Berry (1977) contends that “evidence has been accumulating [...] which shows that acceptance or rejection of an orthography has little to do with its linguistic adequacy” (p. 4). He cites five criteria proposed by Smalley for optimizing new writing systems, only one of which is strictly linguistic: “maximum motivation for the learner”; “maximum representation of speech”; “maximum ease of learning”; “maximum transfer” (to or from other languages of importance for speakers, e.g. English); and “maximum ease of reproduction” given current technology (p. 1).

Eira (1998) analyzes orthography debates as being structured by several “discourses,” which often include the scientific (among linguists), political, pedagogical, technological, historical, and religious (pp. 174–75). Each discourse corresponds to a set of beliefs and priorities that actors—community members, linguists, and other authorities—might take into account when evaluating an orthography (pp. 172–73). In relation to Smalley’s framework, the scientific discourse tends to revolve around “maximum representation of speech”; the pedagogical around “maximum ease of learning” and “maximum transfer”; and the technological around “maximum ease of reproduction.”

We shall see that these factors and discourses sometimes come into opposition with each other, and can lead to sharp differences of opinion among factions involved in the choice of

writing systems for a language—especially when the ultimate survival of the language is at stake.

2.2. Mimicking English

Saulteaux—a.k.a. Plains Ojibway (Gordon, 2005)—has two competing roman orthographies, as well as a syllabic system based on the one for Cree (see below, Section 4). The syllabary seems to be falling out of use: “As far as Saulteaux elders and educators are concerned, [...] [t]he syllabic writing system apparently has no status whatsoever in the Saulteaux community at large and it is not something that Saulteaux children need to be bothered with” (Wolvengrey, 1996, p. 422). Of the two dueling orthographies based on the Roman alphabet, the one officially enshrined for many years (known as SRO²) is “phonemically based”; in particular, it uses <p, t, c, k> for lenis stops, and <hp, ht, hc, hk> for fortis stops (Wolvengrey, 1996, pp. 413–14). The fortis stops are voiceless; “the lenis consonants vary in degree of voicing based on position within the word” (Wolvengrey, 1996, p. 412).

A proposed revision to the official orthography, RRO³, is seen as better suited to language learners. RRO uses <b, d, j, g> for voiced stops and <p, t, c, k> for voiceless stops, more closely approximating the use of these symbols in English. Rather than relying on the reader’s knowledge of rules governing the environments for each phoneme’s voiced vs. voiceless allophones, RRO provides a *phonetic* representation of stops.

This simplifies the teaching of reading, especially for those acquainted with English writing—and due to “[t]he overwhelming influence of English and the English sound and spelling systems on Saulteaux children,” “the spelling of apparently voiced lenis stops with what are symbols for voiceless sounds in English is seen as detrimental to language learning.” In fact,

² Standard Roman Orthography

³ Revised Roman Orthography

“[a] number of language teachers have observed that, even when children learned the correct sounds first, subsequent introduction of the SRO simply confused the students, leading to the loss of proper pronunciation and the adoption of hypercorrect English-based spelling pronunciations.” The RRO, on the other hand, has proved to be easier for students to grasp. Given the priority placed on language revitalization through education, the RRO is seen by much of the community as the better choice (Wolvengrey, 1996, pp. 417–19). Similarly, some within the Yurok community “insist that words should be spelled ‘like they sound,’ that is, using some subphonemic distinctions” which may, in fact, vary by speaker (Hinton, n.d.; A. Garrett, p.c.).

In general, the desire among native communities for a new orthography to resemble, in both appearance and spelling conventions, that of a nearby language with socioeconomic strength and prestige—be it English, Spanish, or Russian—has been well documented (see e.g. Fishman, 1977, p. xii; Grimes & Gordon, 1980, pp. 96–98)⁴, and falls under the “maximum transfer” criterion in Smalley’s rubric. Sadly, the importance for Saulteaux language advocates of adjusting the orthography to better suit English speakers is due to Saulteaux’s threatened status; according to Wolvengrey, “[t]he debate has been fuelled by the urgency resulting from the fact that Saulteaux is in the process of being lost (or indeed is already virtually unused) in many if not all of those communities” (1996, p. 410–11). This is increasingly the case for native languages:

Since for a large proportion of communities the languages are sadly moribund, the responsibility for revitalization is falling increasingly on the shoulders of semi-speakers and second language learners. In a growing number of cases, the community leaders of the language programs thus developed are dominant and highly literate in English, and

⁴ Venezky (1977) discusses *transitional orthographies* intended to help speakers gain literacy in their native language as a stepping stone to achieving literacy in some other language: see pp. 42, 48–49.

may insist on utilizing English spelling rules in the writing system for their heritage language. (Hinton, n.d., p. 3)

Hinton describes the tensions that can arise between community members and linguists when proposed orthographies go beyond the straightforward phonetic representation seen in the RRO, incorporating many of the inconsistencies and idiosyncrasies of English spelling at the expense of linguistic accuracy and economy. Such conflicts arise, she argues, due to a “Bias of Familiarity” where linguists view phonetic (or phonemic) systems as easy to learn and maximally representative of the language, but others literate in English see them as foreign and intimidating to learn (n.d., p. 7). These biases are consistent with different goals: linguists are interested in “descriptive adequacy and documentation of ‘best speakers’” to facilitate their research, “whereas community members increasingly see writing systems as a language teaching tool” (n.d., p. 17). Ultimately,

no matter how logical and efficient the internal design of a writing system, it is unlikely to prevail when (a) there is no on-going means for educating users in the writing system and its spelling rules; and (b) the system is substantially different in terms of its spelling rules than the language in which users were educated. (Hinton, n.d., p. 11)

3. Political fireworks

While there is a desire to emulate English orthographic conventions in the Sauteaux orthography, political attitudes towards other groups also motivate the preference for the revised orthography. It has been argued that the established orthography, SRO, is linguistically preferable because it better resembles the orthography of one of Sauteaux’s linguistic relatives, Plains Cree. (Wolvengrey, 1996, pp. 415–16) But proponents of RRO argued that Sauteaux “is [...] not Cree and does not need to be associated with it through a similar orthography.” In fact,

Wolvengrey writes of an “overwhelming sentiment [...] that the spelling systems employed for other Algonquian languages are as irrelevant as those used for Siouan, Sino-Tibetan or Bantu languages and have no bearing on Saulteaux” (1996, pp. 420–21). Thus, members of the community see a more distinctively Saulteaux orthography—that is, a less Cree-like orthography—as a source of pride, even if it does in some sense resemble that of English.

In her paper entitled “Orthography Wars” (n.d.), Hinton explains that writing “can be a lightning rod for all the personal, social and political issues that wrack speech communities” (p. 1). She cites an example from the Havasupai and Hualapai communities that illustrates this sentiment. As they speak two similar dialects of the same language, their respective writing system committees sought to develop a common orthography; yet, “despite the obvious practical benefits of having a single writing system, the tribal councils had different ideas: they insisted that since they are politically separate entities, they wanted the writing systems to reflect this difference. They wanted clearly and obviously different orthographies” (n.d., p. 4). Again, sociopolitical considerations (the desire to symbolically distinguish the two groups by means of orthography) have superseded the ideals of practicality and linguistic accuracy.

While on the surface, heated debate over how a language should be written might seem quite superficial, it bears reminding that language is extremely symbolic of identity and culture. Itself a particularly salient representation of language, *writing* thus receives intense scrutiny among those who care about the language. Surely deciding how one’s heritage language is to be written is no more trivial than attempts in the U.S. to establish an official language, or to eliminate flag burning as a protected form of expression. One hopes, though, that native communities are able to reach necessary compromises rather than becoming divided and discouraged in orthography wars.

4. When in Canada: A syllabic script

Additional considerations arise for writing systems not based on the Roman alphabet. In North America, one such system of interest is the syllabic writing used for native languages of Canada.

4.1. Origin and Spread of Evans's Syllabary

In the late 1830s, a Methodist minister by the name of James Evans developed an innovative system of syllabic writing (Berry & Bennett, 1991, p. 5). This syllabic system would be applied first to Cree, then spread rapidly among speakers of other Algonquian languages in Canada, including Ojibway, Inuktitut, and Slave. The system was so successful that “by the 1850s it was in wide use in the North” (Berry & Bennett, 1991, p. 5). The script is remarkable in its economy: orthographies for most Cree languages employ under a dozen syllabic symbols (in contrast, the famed Cherokee syllabary had 85) (Berry & Bennett, 1991, p. 13). The resulting orthography was simple enough to be learned in a matter of days (Berry & Bennett, 1991, p. 12), and knowledge of the script was transmitted on a person-to-person basis (Berry & Bennett, 1991, p. 5) to the point where “[a]t the turn of the century, Cree people had what was arguably one of the highest literacy rates in the world” (Berry & Bennett, 1991, p. 12).

This explosion of literacy probably would have been impossible but for the distinctive way in which the syllabics represent the sounds of Cree. Made possible by the consonant-vowel structure of Cree syllables, Evans's system requires just a few symbols—one for each consonant—and uses each symbol's orientation to encode the subsequent vowel. The four orientations correspond to the vowels /a/, /e/, /i/, and /o/; if the vowel is long, a dot is added above the symbol.⁵ The only other forms which need to be learned are for word-final consonants

⁵ However, no dot is used for /e:/, since no short counterpart /e/ exists in the language.

(Cree words may end in closed syllables). Berry and Bennett note that “these latter signs, called ‘finals,’ are in fact more ‘alphabetic’ than syllabic” (1991, pp. 13–15).

Perhaps even more remarkable than the aptness of Evans’s syllabary for Cree is the unorganized manner in which his innovation spread. Berry and Bennett write:

The success of this script, its rapid transmission and nearly total penetration of the Cree-speaking population, took place without any of the pedagogical tools so familiar to us: there were no schools, no teachers in the specialized sense of the word, no standard writing materials, and very little printed (or written) matter to read [...] moreover, [...] there was little time or energy to expend upon matters not pertaining to immediate survival. Yet, at the present time nearly all Cree over the age of forty-five are capable users of the syllabic script and nearly all of these state that their parents were literate as well. Most, in fact, say it was their parents who taught them to read and write. (1991, p. 12)

The simplicity of the syllabic system and its suitability for the Cree language “explain *how* the rapid spread of syllabic literacy was possible [...] but not] *why* it took place” (Berry & Bennett, 1991, p. 16). Berry and Bennett suggest three factors that may have motivated this spread: a tradition of symbolic communication by means of *trail signs*, markers left by traveling parties to give information to future travelers⁶; the necessity (due to the scarcity of game) of living in small, isolated groups, making written communication the only real means of staying in touch with others; and cultural attitudes which make some spoken interactions (such as direct requests) prohibited or uncomfortable, rendering written communication as an attractive alternative (1991,

⁶ Such markers were “made from sticks or other natural objects” and “could include the number and (in a gross way) the relative age of people in a traveling party, the direction in which they intended to travel, whether or not they intended to return, the time of day they had passed by or the time of day they expected to return” (Berry & Bennett, 1991, p. 17).

pp. 17–19). This shows that cultural practices as well as cultural attitudes can play a role in the success of an orthography.

4.2. Current status of Cree writing

More recently, radio and telephone have impinged significantly upon the use of the Cree script in certain domains of communication (Berry & Bennett, 1991, p. 22), as has the growing influence of English (Berry & Bennett, 1991, pp. 25–26). Yet the syllabary's cultural significance remains strong among the Cree; "the vast majority of the Cree know the script, and [...] use it for a wide variety of purposes" (Berry & Bennett, 1991, p. 26). Furthermore, over the last several decades the writing system has enjoyed new institutional support: originally banned from the classroom in government-run schools after World War II, the Cree language and writing were introduced into the curriculum in the 1970s. Berry and Bennett predict that "[w]ith the continuing implementation of 'Native control' of education [...] and the current push for 'self government' in many communities, we may expect to see an increased reliance upon the Cree language in the schools, and possibly an increased use of the syllabic script as well" (1991, pp. 21–22). Again, we see that political and pedagogical forces affect orthography use. Were the Cree language as endangered as Sauteaux, we might expect an insistence among community members to abandon the syllabic script in favor of an English-based roman orthography.

4.3. Inuktitut syllabics

As was mentioned earlier, Evans's syllabary was put to use not just for Cree, but "has been adapted to various Cree and Ojibwa dialects, to Chipewyan and Slave [...] and to Eastern Eskimo" (Walker, 1969, p. 159). The case of the Inuit (a.k.a. Eskimo) is particularly instructive. In some areas, they have used a variant of the syllabary for the Inuktitut language "for over a century" (Harper, 1993, p. 18), resisting attempts to replace the syllabics with a roman alphabetic

orthography. But roman orthographies for Inuktitut were introduced in other areas. Ultimately, the desire for a unified writing system resulted in a 1976 compromise wherein a standardized form of the syllabary and a dual roman orthography were adopted (Harper, 1993, pp. 23–24).

That both a roman orthography and a syllabic orthography should be used for Inuktitut is not particularly remarkable—Cree, for instance, has been written with a variety of roman orthographies as well as the syllabary (Burnaby & Anthony, 1979, p. 107). What is interesting is that, though their syllabic system originated with the Cree, for some it became a powerful symbol of Inuit identity:

[S]yllabic writing had a psychological advantage because it looks so different from English or French printing and writing. It was often used as a parallel text for translations in bilingual publication, and in this way it appeared as “our” language. [...] The notion of syllabic writing as the true Inuit written language gave this writing very strong emotional ties in the areas where it was used. (Petersen, 1980, p. 137)

Harper (1993) writes that “Inuit of the Eastern Arctic are still devoted to the use of the syllabic writing system. New computer technology has made it easier to use syllabics in publishing and the system is used extensively in schools in the Northwest Territories and Arctic Quebec” (p. 24). Inuktitut is an official language of the Nunavut province in Canada, and as such the syllabics can be found on government websites (Office of the Languages Commissioner of Nunavut, 2004; Government of Nunavut, n.d.).

5. Developing orthographic standards

Stebbins (2001) distinguishes between selecting a set of orthographic symbols and establishing *conventions* for using that orthography (i.e. standardizing the spelling of words):

The choice of orthography is generally made between one set of characters and another.

This may be a choice between syllabic and alphabetic systems, or it may be a choice between different alphabetic systems. The decision to adopt one orthography over another is made with reference to a complete set of characters [...] it is (or at least can be) the subject of explicit discussion in the community, and it has easily identifiable (if rarely explicated) political meanings attached.

The choice of conventional spellings for particular words is a much more fragmentary process. [...] It is one thing to learn the set of characters used in a particular orthography, and quite another to learn conventional spelling for the majority of words that one needs to be a fluent writer. (p. 165)

5.1. Coping with dialect variation

The standardization of spelling in a new orthography can be complicated considerably if there is variation among speakers' dialects. Stebbins explains how such variation can lead to tensions within the community, especially when no dialect is established as "standard":

Linguistic variation arising from geographic associations is frequently confused with—and indeed, is sometimes very difficult to distinguish from—other types of variation, including individual attrition or incomplete learning. [...] [S]tandardization is an increasingly thorny issue in the community, since people tend not to want a prestige norm to be based on any dialect but their own. (Stebbins, 2001, p. 167)

For Sm'algyax, a.k.a. Coast Tsimshian (Gordon, 2005), the solution has been to develop a standard that is something of a compromise, incorporating aspects from different dialects. The hybrid resulting from such an inclusive strategy is not universally accepted; some community members "believe that the form taught in schools is inauthentic because it does not accurately

represent any one of the Sm'algyax dialects associated with particular villages" (Stebbins, 2001, p. 188).

As with Saulteaux, the debate over how Sm'algyax should be written reflects broader political attitudes. In particular, which dialects the unified Sm'algyax language should represent is symptomatic of a "tension between village and Nation [that] is reflected in many other areas of community life":

The conflicting desires for "nationhood" (strength and political independence from the provincial and Canadian governments, through unity) and for village/tribe independence [...] are deeply felt within the community. So too are the linguistic aspects of this division. Through unity, it may be possible to restore the language to the whole Tsimshian community, but this may come at some cost to the place of dialects within the political discourse. (Stebbins, 2001, pp. 188–89)

6. Writing in the digital age

Computers can be invaluable tools in compiling and disseminating both linguistic documentation and pedagogical resources in a native language. Likewise, it is desirable to be able to type, view, and edit text in the language, preferably without having to invent a separate orthography for computer use. Hence, technological simplicity is sometimes cited as a motivating factor for basing an orthography on the Roman alphabet—in many cases, even restricting the set of symbols to those that appear on a standard American English keyboard (these are known as ASCII characters). Even some linguists are wary of the complications that might result from a non-roman system: those currently working on a Pomo dictionary project have elected to use an ASCII-only representation to avoid having to deal with phonetic fonts (L. Hinton, p.c.).

If a modified roman orthography is used, it is likely to have diacritics to represent features such as vowel length, nasalization, or tone. These can complicate computer entry:

There is a strong inverse correspondence between fluency in Sm'algyax and confidence in using computers. As a result, the people who tend to type text into the computer [...] are not the most fluent speakers, and they may miss a number of diacritics in their typing. The fact that the more complex combinations of symbols require more complex keystrokes is another factor that reduces the consistency with which these phonemes are represented in writing. (Stebbins, 2001, p. 175)

The problem of diacritics is not restricted to Sm'algyax. Software supporting only basic roman characters has complicated the sending of emails in Potawatomi, which contains an accented vowel é (Buszard-Welcher, 2001, p. 343). Different workarounds have been employed for such problems—a website for Haida uses the underline formatting style where an underline *diacritic* would be preferable (but is currently not available in most fonts) (Sealaska Heritage Institute, 2005), and Buszard-Welcher notes that in some German text online, the letter *e* has been substituted for the umlaut accent on vowels (2001, p. 343).

Still, modified roman orthographies such as Sm'algyax's tend to be easier to represent electronically than syllabics (Buszard-Welcher, 2001, p. 339). Only recently have computers supported encoding special scripts in a way that is software- and platform-independent. With what is known as the Unicode Standard, characters in a wide range of scripts have been assigned unique numeric codes, thus eliminating the ambiguity that existed in the past (where the encoding of special characters depended on the application and operating system being used) (Harvey, 2004, p. 128).

Now that the latest versions of Windows and Macintosh operating systems and many applications support Unicode, special characters such as Cree syllabics can be represented and disseminated fairly easily. They can be typed with special software that maps syllabic characters onto the keys of any keyboard; syllabic text can then be viewed by any user who has an appropriate font (several Unicode fonts which support syllabic characters are available on the Web for download) (Harvey, 2004, p. 131).

A number of websites dedicated to native languages have taken advantage of this, and now sport multilingual interfaces including a syllabic orthography—examples include a multimedia site devoted to the East Cree language (EastCree.org, 2006), a Naskapi lexicon (National Library of Canada, 2003), and an Inuktitut lexicon (Nunavut Department of Culture, Language, Elders, and Youth, 2000). Since the Nunavut province has Inuktitut as one of its official languages (Office of the Languages Commissioner of Nunavut, 2004), its official website can be viewed in the syllabic script (Government of Nunavut, n.d.). Progress is also being made towards making other native languages computer-friendly; SIL offers a workshop designed to assist in the development of new fonts for native languages (L. Hinton, p.c.), and developers of the OpenOffice application are considering making the software available with interfaces for Native American languages (L. Buszard-Welcher, p.c.). Provided that users have appropriate fonts, Unicode should also alleviate many of the headaches caused by diacritics.

Buszard-Welcher (2001) notes that many websites devoted to endangered languages place a “considerable focus” on orthography; she argues that

this focus probably reflects the orthography debates taking place in many Native communities. However, probably the most significant reason for addressing writing on Web sites is that Internet technology has developed around the written channel for

communication. Email is the most obvious examples of this, but even with the graphic capabilities of the Web, most sites rely heavily on writing for content as well as site navigation. [...] The dominance of text for communication on the Web makes it very difficult to create language Web sites that do not depend on writing, and poses a particular problem for the development of Web sites for communities with unwritten languages. (p. 339)

Since orthography seems to be a prerequisite for a language to establish a true Web presence, the opportunity to use the Internet in the service of revitalization efforts could provide additional impetus for the development of new writing systems. Harvey (2004) discusses the potential benefits offered by such a presence:

Modern computer technology can help to level the playing field for minority languages the world over by making even uncommon characters available to all. [...] [G]iving an Aboriginal language a presence on the web can provide an active means to use the language on a daily basis, help ease communications between distant speakers, and promote awareness and research in the language. It is also a psychological boost for the community of speakers, showing for all to see that their language can thrive, on equal terms with the world's more dominant languages [...]. (p. 134)

Technological considerations, of course, are not new with the advent of computers; non-roman characters and diacritics were far more problematic with typewriters. Writes Berry (1977): "However distasteful, the fact that has to be accepted that it is the typewriter and typesetting machines that call the tune today" (p. 11). Indeed, in 1970 Thomas and Arima proposed crudely adapting the technology to accommodate the orthography for Nootka:

[The orthography is] designed for ease of learning by persons accustomed to English spelling and that can be typed on typewriters with standard English keyboards. Only one minor modification of the type is needed: to make the glottal stop sign, ʔ, the dot of the question mark must be taken down slightly with a sharp file or, better still, with a fine emery cloth or carborundum (silicon carbide) paper. (p. 1)

Though the technology has come a long way since then, one wonders whether the kludges sometimes necessary on today's computers—such as resorting to non-Unicode fonts for special scripts, or using formatting as a substitute for underline diacritics—are really just the digital equivalent of silicon carbide paper.

However, it is clear that recent technology has empowered communities to maintain the use of non-roman orthographies for online projects, and in a few years it will hopefully cease to be a barrier to writing systems with non-ASCII symbols. Communications technology (such as television) has undoubtedly contributed to shift away from minority languages; but perhaps information technology will prove to be a boon to native language revitalization efforts and the maintenance of minority orthographies.

7. Conclusion

Writing systems for native languages are not developed in a vacuum. Rather, the process depends on beliefs that are linguistic, cultural, pedagogical, technological, and political in nature. While the benefits of having an orthography may be substantial, the development process is likely to be contentious and difficult, especially if few fluent speakers remain. Therefore, it is important for participants to be sensitive to different views and priorities regarding the orthography. Then, with effort and compromise, it may be possible to start changing the future of the language simply by writing it down.

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