What Does Digital Technology Have to Do with Yaghan?

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1. Introduction

Research that involves the collection of language data is notoriously labor intensive, often requiring fieldwork in remote places, where the travel alone is extremely time-consuming, not to mention expensive. Funding and institutional support for such research is limited, and often impossible to obtain without the attendant claim on the part of the researcher that paradigm-shifting theoretical issues lurk behind the data. Prestige within the academy does not come through careful analyses of the grammatical categories of Oneida, the nasal phonemes of Tequistlatec, or vowel mergers in Pittsburgh, but through pronouncements of innate linguistic structures, the evolutionary development of language or breakdowns in communication between the sexes.

Such realities provide powerful incentives to avoid constructing research projects that entail too great an emphasis on the gathering of primary linguistic data. It is a wonder, then, that so many linguists still do so. And yet most of these data—dutifully recorded in notebooks, computer files, as well as on cassette and video tapes—are hidden away in offices and library collections around the world. Most of this information will never find its way out of these caches. Collectively, linguists know far more about the languages of the world than one might gather from published material, but that knowledge remains disconnected and impossible to access.

Why should this be? Part of the reason, it must be admitted, is the understandable propensity of the scholar to hoard pure data until she has time to analyze the information herself and glean what theoretical wheat may be there. Just as significant, the linguist shelves his fieldnotes because of the failure of tenure and promotion committees to recognize the importance of data collection; the publication of lexicons, for example, is often not recognized as a scholarly contribution, but as something of a service activity.[1] In addition to these two, an equally noteworthy, if not more significant, reason for the failure to make field data available is that there are few convenient ways to disseminate this information. We will highlight the ramifications of this truism by telling the tale of Yaghan and Ona, languages about which little is now known despite the fact that they might have ranked as two of the better-studied languages of South America around the turn of the 20th century, indeed as two of the few that had audio recordings made at that time.

Before moving to the case of Yaghan and Ona, however, it is necessary to consider why the dissemination of large quantities of collected data has never become the routine practice of linguists and anthropologists. There is not great mystery surrounding the issue. The primary venue to share information has been paper and ink, but printed materials are, after all, expensive to create and hard to distribute. Increasingly, in book and journal form, their *raison d'être* is established foremost by the potential for profit, so there are few publishers interested in creating

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[1] The long-term impact of this kind of thinking on both language vitality and the field of linguistics has been summarized by Colette Grinevald (1998), pointing to the urgent need to train and support linguists to undertake serious fieldwork.

dictionaries, text collections, grammars, or other pieces of scholarship with a large descriptive component. This is especially true for minority indigenous languages, where the perceived readership of such materials is so small as to preclude their publication.

But this state of affairs need not be. The advent of digital technology and growing global access to the world wide web has the potential of radically changing the way that we store and access information on languages, and thus of how we linguists and anthropologists think about the data we collect. While the new technologies do not remove the investment of human labor from data gathering and organization, they facilitate the recording of high-quality audio clips and video images that can be shared with relative ease. Such data, in digital form, can usually be manipulated more effectively than older (tape) formats. Transcribed data are arranged and re-arranged as a matter of course and can be compactly gathered in computer files. While a plastic CD may lack the romance of the yellowed pages of fifty field notebooks, we suspect few linguists would deny the advantages of the former over the latter, particularly when it comes to making information about language available to an assortment of people all over the world.

Many of the practical constraints of print media are lifted in the digital age. Data can now be displayed inexpensively for billions of people since the technological infrastructure is largely in place. The time-lags of traditional publications are greatly reduced. Most importantly, the information is not restricted to static graphic images. As many a web site demonstrates already, audio and video data have become a regular part of the transmission of language data.

Still, the potential of the digital age to transform the field of linguistics remains just that—a potential. As just one example, current electronic journals tend to be digitized forms of printed versions, and scholarly articles therein continue to be written in a traditional way, not making use of the possibilities of multimedia. In our opinion, this is a serious mistake given the dynamic nature of language coupled with the imminent loss of so many of our planet's languages. Consider the value of word lists and dictionaries in understanding the linguistic scene of the New World in 1850. Now imagine how much more valuable this information would be if it had an audio and video dimension. The significance of sound and audio data for our own generation and for generations to come cannot be overstated.

We now attempt to give a human face to what has been written here as an abstraction, by presenting a brief study on the collection and storage of language data in a past era. It is the story of two languages that are extinct, or very close to it. Despite over a century of interest in the languages, we do not know enough about them to classify them, to make a definitive statement about their phonology, or to say much of anything about how clauses are constructed in these languages. What we do know about them is thanks to some fairly extraordinary efforts on the part of a missionary, a priest, an ethnographer and an explorer. But the technology of their times has left relatively little for us now, putting the possibilities of the digital age for us in relief.

2. The Furlong Collection

Social trends during the period of European colonization resulted in the documentation and description of many languages around the world. The most obvious and well-known to linguists stemmed from the extensive missionary efforts that were undertaken at this time. Then—as today—many of these missionaries and clergy remained with the local populations for years at a time, learning their language(s) and often becoming community members, to varying degrees. The activities of the waves of missionaries can be judged from a number of vantage points, but regardless, one legacy of this group of people is that we have documentation about scores of the

world's languages. Crucially, many of the missionaries were among the first Westerners/Europeans to interact with indigenous groups in other parts of the world, and their written records provide critical data for these indigenous languages prior to contact with an Indo-European language.

A second, less recognized source of linguistic information comes from the explorers of the time. An example is provided by Charles Wellington Furlong, who left behind a healthy amount of personal papers, notebooks, photographs and memorabilia from his adventures. Much of this is housed in our own institution's special collections, the Rauner Library. Furlong joined the Explorer's Club in late 1800's and traveled to a number of remote places in Africa and South America, most importantly for present purposes to Tierra del Fuego in 1907–08. Here, at the "ends of the earth," he became fascinated with the tribes of the region and made recordings of two of the languages spoken there at that time. These are *Yaghan*, more commonly called *Yamana* now, and *Ona* (or *Selknam* / *Selk'nam*). Although Furlong also investigated a third ethnic group, whom he called the *Alaculoof* (more currently known as the *Qawasqar*), there are no audio recordings of this language in our holdings.

Furlong took with him an Edison phonograph with wax cylinders. The recording equipment and cylinders weighed approximately forty pounds, and so, as he himself indicates in his personal papers, the decision to take it on the expedition was itself not trivial. He recognized the importance of the recordings made on this expedition, and some years later assisted in having the wax-cylinder recordings transferred to reel-to-reel tapes, also to be found currently in the Rauner Library at Dartmouth and in the Library of Congress. The significance of such recordings for our time is magnified by the status of the languages with which Furlong had contact, all of which are now either extinct or nearly so.

3. The Fuegian Languages of Furlong's Expedition

Furlong was in Tierra del Fuego in 1907-08. He found what he identified as four distinct ethno-linguistic groups living there, which he grouped together in two larger groups: the *Alaculoof* and the *Yaghan*, or "canoe-people," and the *Haush* and *Ona*, or "foot-people." The actual genetic relationship of the languages of these groups is disputed; Grimes (2000) cites Yaghan (or Yamana) as an isolate, but notes that Tovar (1961) considers it to be closest to Qawasqar (or what Furlong called Alaculoof) and that it has some relationship to Ona. Gusinde (1926) recognizes only three languages as being spoken in Tierra del Fuego at the time of his travels: Halakwulup, Yamana and Selk'nam (Qawasqar/Alaculoof, Yaghan and Ona). Included among Gusinde's own papers on Ona is a three-page manuscript which outlines the distinctive features of Haush. Based on an examination of these materials, Klakowski (1998:198) concludes that Gusinde himself was uncertain of the status of Haush. Furlong (1917) asserts that Haush is not intelligible to either Ona or Yaghan speakers, while Bridges (1933) classifies a number of "Haush" words as "Eastern Ona." Certainly, the six lexical items which Furlong provides as evidence of the difference between Haush and Ona are not compelling proof, especially since one is identical (*show'k'un* 'three') and two others conceivably cognate. No evidence is presented to support or disprove that these could be loanwords. Borrero (1983, 1994) argues that, in light of the overall consistency of both Ona and Haush material culture, together with the absence of definitive evidence to the contrary, Haush is best treated as a specialized branch of Ona.

The question of the genetic relationships among these languages will probably never be answered satisfactorily since the kinds of linguistic evidence needed to provide proof one way or another are gone. In 1912 Furlong was told that there were five Haush people remaining on Tierra del Fuego, but he himself had found only two in 1908. He suggests that the total of five may well have included the wives of the two Haush men, who would have been counted as Haush after their marriage according to tribal customs, but had married into the Haush from different groups. By the time of Furlong's 1967 manuscript, he maintains that the "Fuegian" languages were already extinct.

The current vitality of Fuegian languages is somewhat difficult to assess, but if the languages are not now extinct, they are nearly so. (Although we note a revitalization program for Yaghan is reported to be in place; see Aguilera n.d.) By 1924–25, each group had a very small population, with the Qawasqar the largest group: Qawasqar 150, Yaghan 40-50, Ona 60–70, and Haush only two or three people (Lothrop 1928:25). Of course, these are population estimates, not speaker counts, so the vitality of the languages cannot be determined from the numbers. Salas and Valencia (1990) report that at least four Yaghan speakers were known to be living in the 1980's, all women married to Chilean Spanish speakers. A report from 1997 asserts that only three Yaghan speakers remained at that time (Reverand Ben Garrett, cited in Klafkowski 1998:210). Ona is presumed extinct, although Grimes (2000) reports it as "nearly extinct," with no population estimates available.

Furlong was not the first Western explorer to reach Tierra del Fuego. He himself maintained that only Charles Darwin preceded him, but in fact European contact was initially established in 1580 by a group of Spanish explorers led by Pedro Sarmiento de Gamboa (Borrero 1994:252). The island itself had been discovered some sixty years earlier by Ferdinand Magellan, who named it Tierra del Fuego 'Land of Fire' due to the plumes of smoke which members of his expedition observed. Magellan, however, is not known to have interacted with the inhabitants of the island.

Historically, the two leaders in research on the languages of Tierra del Fuego are Reverend Thomas Bridges (1842-1898) and Martin Gusinde SVD (1886-1969). Although Bridges was not a linguist, his extended time with the Yaghan (or Yamana, as he called them) made him proficient in their language. He compiled a large Yaghan (Yamana) dictionary, which to date is the most comprehensive lexicon of the language ever published, as far as we know.

Given the significance of this piece of work, it is of great interest that its publication was a precarious endeavor. Bridges had originally arranged to give the manuscript of the dictionary to the Antarctic explorer Frederick Cook for publication, but Bridges died before this took place. Lucas Bridges, son of Thomas, eventually did get the manuscript to Cook under the agreement that the dictionary would be under his father's name and the manuscript returned within one and a half years.

 Eleven years later, the dictionary had still not been printed, nor the manuscript returned. Worse, Cook apparently intended to publish the dictionary under his own name. At the direct request of Lucas Bridges, Furlong investigated the status of the manuscript when he returned to the United States from Tierra del Fuego in 1908. He learned, among other things, that the manuscript had landed in Gusinde's hands, who was charged with translating the Ellis phonetic system (used by Bridges) into a more widely employed phonetic script. Ultimately, at expense to the Bridges family, a limited edition (300 copies) of the dictionary was published by the Anthropos Institut in Mödling in 1933. An annotation to the dictionary, written by Furlong, describes the reasons for the publication delays in greater detail.

Martin Gusinde was a priest of the Catholic Order of the Divine Word. In 1918 he set off for his first mission to Tierra del Fuego. At the time he arrived, he found a total of approximately 80 Halakwulup and a depressingly small number of Ona/Selk'nam, living in two communities. The one, near Rio del Fuego, consisted of 27 families of 216 individuals, and the other, near Lago del Fuego, of only five families of 32 individuals. By the time of Anne Chapman's missions to Tierra del Fuego (1964-65) she found only six remaining Ona/Selk'nam (see Guyot 1968:20, fn. 3). Of these six, only one (Lola Kiepjan) was old enough to have ever lived the traditional lifestyle ("la vie sauvage"), and was estimated to be 92 years of age then. She subsequently died in October 1966. To the best of our knowledge, the Ona/Selk'nam language is now extinct.

The lack of linguistic data in Gusinde's own publications is remarkable, considering that Gusinde himself was fairly knowledgeable in all Fuegian languages.[2] Klakowski's research into his archives suggests that Gusinde had intended to publish at least two separate linguistic studies on the grammar of Ona and on Alakuluf/Halakwulup, plans which he abandoned around 1930. In contrast to Gusinde's archival materials, as described by Klakowski (1998), Furlong's collection seems rather haphazard. While Gusinde collected extensive word lists and made careful notes about phonology, morphology and syntax, Furlong did not.

4. The Languages of Tierra del Fuego

Having briefly described some of the early fieldwork carried out in Tierra del Fuego, we now move to an even briefer description of what is known about these languages. The term *Fuegian languages* is used to refer to a number of languages indigenous to Patagonia, Tierra del Fuego and its adjacent islands. This is a geographic, not genetic, group which includes Tehuelche, Puelche and the languages/dialects of Tierra del Fuego itself: Selk'nam, Haush, Yaghan, and Qawasqar. Some of these are generally classified as genetically related, while others are not. For example, Selk'nam (Ona) and Tehuelche are Chon languages; Haush is often considered to be a dialect of Selk'nam. Each language has a number of variant names. For example, Puelche (an isolate) is also known as Gennakan, Pampa and Northern Tehuelche according to Grimes (2000), and *Gunua-Kena*/*Gununa-Kena* is given as an alternate name for Tehuelche, while Clairis (1985) cites *Gennakan* and *Pampa* as alternate names for one single language. Language names used here follow Grimes (2000). Some dialect distinctions have been identified within individual languages; Yaghan is reported to have had five dialects (Koppers 1927); an overview of some classification issues is found in Key (1978, 1981).

As this suggests, classification is extremely complicated and is in many ways obfuscated by the many alternate names used for the different languages. The classification problems are well described by Clairis (1985:15):

(1) There has often been a tacit assumption that ethnic sub-groups can be assumed to speak different languages;

(2) Different explorers/researchers who had contact with these groups have referred to them in different ways, such as the use of the word 'man' *Yamana* or the toponym *Yaghan* for one and the same group;

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[2] See Wilbert (1975) for Gusinde's contributions to the collection and study of Ona literature.

(3) When a group was given a different name by neighboring ethnic groups it has often been assumed, for lack of any better position, that these differing names refer, in actuality, to differing languages and ethnic groups;

(4) What are sometimes deemed to be language/dialect differences can often be accounted for in terms of the different notation systems used by various researchers, which in part stem from their own differing languages;

(5) The nomadic lifestyle of these different groups meant that they had extensive contact with one another, increasing the likelihood of contact phenomena, such as lexical and phonological borrowings.

The problems in identification and classification thus stem from a number of problems. One of these is the implicit assumption that the ethnonyms of given groups, or even more oddly the names given them by outsiders, reflect a kind of ethnolinguistic reality that can serve as the basis for genetic classification. This fails to take into account that many subgroups of larger ethnic groups identify themselves according to clan systems, or by place names, and so on. Moreover, some of the confusion reported by Clairis can be traced to a confusion of methodologies (such as the use of different phonetic scripts) and a lack of solid linguistic training. Earlier researchers did have access to these groups at a time when the languages were still spoken by communities of speakers, and yet one result of their inattention to the naming issues, or technical details, is incomplete information about each of these languages.

Issues of genetic affiliation could only be answered by in-depth linguistic analysis. These questions are of special interest with relation to the groups at hand: Yaghan is the southernmost human language, and solid linguistic evidence could do much to inform our understanding of New World migrations. Most of this research remains to be done, and may well never be due to insufficient evidence. The bulk of existing work focuses on issues of phonetics and phonology, often based on the study of word lists. The case of Fuegian languages is so particularly compelling in that they are all seriously endangered or extinct.[3]

4.1 An Example of the Problem: The phonology of Yaghan/Yamana

The absence of systematic descriptive work on Yaghan, particularly on morphology and syntax, is really quite striking when one considers that fieldwork has been carried out on the language for 120 years.[4] Early studies of Yaghan include Bridges (1893, 1933) and Gusinde (1926); Bridges' work served as the foundation of Hestermann-Hamburg's (1929) study of Yaghan pronouns; more recent work includes Guerra (1989, 1992), Poblete Mendoza and Salas (1999), Salas and Poblete Mendoza (1997), and Salas and Valencia (1990); Aguilera F (n.d.) provides a

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[3] The most up to date information on speaker populations is available in Grimes (2000) and is as follows, including most recent date for this information: Tehuelche: 30 speakers in 1983; Qawasqar: 20 speakers in 1996; Puelche: 5-6 speakers; Yaman: 3 speakers in 1990; Ona: 1-3 speakers in 1991.

[4] Ona, a Chon language, along with Tehuelche, was once the majority (principal) language in Patagonia. Compared to Yaghan, it has been considerably less studied. The earliest known word list comes from Magellan's chronicler Pigafetta. A dictionary was published by Beauvoir in 1901, and a longer work with more phonetic information was published by Beauvoir in (1915). Gusinde (1926) provides a brief overview of the phonetics of Ona. Furlong collected a small word list of just under one hundred items (published in Furlong 1917). This list includes a couple of place names, phrases (such as *k'ish pay* 'where is' or *k'ish chain* 'where walks') and directions (e.g. *kayuke* 'west'; *ke'nen'ek* 'from the west'; and 'wind from the west'). Unfortunately, there is no sound recording of the word list to the best of our knowledge.

sketch of the phonology in his discussion of the development of an orthography as part of ongoing efforts at Yaghan revitalization.

In these works, the phonological structure of Yaghan has been studied more thoroughly than any other aspect of the language, and it is in this realm one might expect to find a reliable depiction of the language. Unfortunately, even the phonemes of the language have been described variably.

Most research suggests that the language has seven vowel phonemes (Poblete Mendoza and Salas 1999:108; Salas and Valencia 1990:149):

	front	central	back
high	i		u
mid	e	ə	o
low	æ	a	

There is disagreement, however, in the literature as to the consonant phonemes. Perhaps some of the differences in phonemic inventories may be attributed to dialect differences, as up to five different dialects have been claimed to exist (Campbell 1997; Guyot 1968), but this is impossible to establish.

Salas and Valencia (1990) present the following system of 17 phonemes with, notably, only voiceless stops, affricates and fricatives:

	bilabial	labio-dental	alveolar	alveo-palatal	retroflex	velar	glottal
stop	p		t			k	ʔ
nasal	m		n				
tap or flap			ɾ				
fricative		f	s	ʃ			h
affricate				tʃ	ʂ		
approximant				j	ɻ	w	
lateral			l				

The existence of a glottal fricative /h/ is one discrepancy; a number of other works cite the existence of a velar fricative /x/ and no glottal fricative (Aguilera F. n.d., Poblete Mendoza and Salas 1999). Gusinde (1893:1021–2) cites the existence of both a laryngeal /h/ and a velar /x/. The /h/ occurs only in initial position and is often lost when it occurs in word combinations that place it in post-vocalic position. He further notes that Bridges transcribed this sound differently: as an acute accent in his translation of the Gospel of Luke, and as the letter *h* in his own manuscript. This could be interpreted in a variety of ways, but quite possibly, the /h/ was in a state of flux at the time when Bridges and Gusinde had contact with the Yaghan, and has been subsequently lost.

Another, relatively minor, issue is the distribution of phonemes: Salas and Valencia (1990:152, fn 6) assert that in isolated words, vowels in initial-position can be pronounced with a prolonged onset which can be heard as a lenis pronunciation of a glottal stop. They do not see this as phonemic. Rather, it is a coarticulation process that is associated with the initial vowel; they state elsewhere (p. 155) that the glottal stop cannot occur word-initially. Furthermore, they

cite individual variation among speakers as to whether it occurs at all. In contrast, Poblete Mendoza and Salas (1999:109) assert that all consonants in Yaghan occur word-initially; their example of the glottal stop is *?a -nan* 'canoe'.

Even more curious is Gusinde's (1893) description of Yaghan sound system which includes a range of voiced consonants. (Salas and Valencia 1990:152 are very clear on this point: "Stops, affricates and fricatives are always voiceless." All modern descriptions cite these as only voiceless, in all positions. Gusinde (1893:1022), however, describes the sound system in terms of the voiced pairs: /p, b, t, d, s, z, k, g/. Gusinde does not provide minimal pairs for these consonants, but does show them in contrastive environments. Some examples are:[5] Ellis system of transcription which he used, are:

pátux̥	wide	belaka	rain
palaala	stranger	ʃaabaguta	be content
lekkex	night	tagu	give
aki	hit	geiguʃ	seagull
teska	laugh	datu	walk
asikata	dolphin	aizex	strong

Gusinde's description is open to a number of interpretations. It could be that he was describing a dialect that has since been lost, or one that at least differs from those described by current linguists. Alternatively, the voiced consonants could have been lost, possibly due to language attrition, language change or some other factor. Given the careful phonetic description that Gusinde provides, we find it to be unlikely that his analysis is simply flawed. Gusinde—who also relied on Bridges' own work—clearly paid close attention to phonetic detail.

The possible existence of a voicing distinction is just one of the intriguing, but unanswerable, issues surrounding Yaghan. Given that phonemic descriptions tend to be among the very first aspects of language analysis for fieldworkers, the uncertainty found in this realm of Yaghan grammar highlights that the mere collection of language data is not so valuable as a systematic collection of data and—crucially—the dissemination of the information. This, of course, is what Charles Furlong had in mind when he filled notebooks with observations about Yaghan and Ona and when he decided to haul forty odd pounds of recording equipment with him on his journey to Tierra del Fuego. So what went wrong?

5. The Legacy of C. W. Furlong

Charles W. Furlong arrived on Tierra del Fuego at a time when the Ona and Yaghan communities were still fully vital, as a member of an explorer's club, whose goal was basic discovery of new lands and peoples. Yet Furlong's interest in Tierra del Fuego was more than passing, and he did collect materials with every intention of bringing his discoveries to public attention through publications. There was an self-professed urgency to his work as he recognized the imminent danger to the vitality of the people and languages of Tierra del Fuego; his 1917

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[5] The Yaghan here is presented in a simplified version of Gusinde's transcription; he followed the Ellis system of transcription, which uses a number of diacritics omitted here for readibilty on HTML. Anyone wishing to pursue the issue of voiced consonants in Yaghan should consult Gusinde's original article.

article ends with a plea to the "magnanimity" of the governments of Chile and Argentina to intervene in the situation which was causing the erosion of Ona land and culture, asserting that "thus could Christianity, spiced with justice and common sense, be meted out to a splendid aboriginal tribe" (1917:444).

Recognizing the importance of his contact with these people, Furlong generated copious fieldnotes and a number of sound recordings and during his stay on Tierra del Fuego. Crucially, he had access to native speaker communities, where Yaghan and Ona were the community languages, spoken as a first language by a primarily monolingual population. From this standpoint, Furlong's work should be invaluable, particularly since oral recordings of these languages in a vital stage are now impossible to create: the few known speakers of Yaghan no longer constitute a speech community, but live separately from one another in a Spanish-speaking environment, and Ona is no longer spoken at all.

The Furlong sound archives total several hours of audio recordings, consisting primarily of songs, some forest calls, and a few snippets of speech. Of the latter, one of the most audible is a translation of the Lord's Prayer into Yaghan, unfortunately read by a non-native speaker (Bridges, presumably), with intonation that is remarkably reminiscent of Church Latin. The remaining speech recordings are short, nearly inaudible, and have not been transcribed. An excerpt has been digitized and is available here:

<<See HTML version for sound file>>

The song recordings are in many ways even less helpful: the acoustic distortions are much greater and, without any kind of transcription, it is impossible to determine which segments are language and which not. Despite Furlong's good intentions, he ultimately was foiled by the state of the technology of his time.

Equally regrettable is the fact that Furlong lacked the technical training necessary for reliable linguistic analysis. Consider some of his comments regarding Ona: "The Ona language is indescribably guttural and unmusical, full of clicks, and may be likened to a man clearing his throat meantime breaking an egg-shell or two in his mouth. These clicks are similar to the Zulu" (Furlong 1917:439). The presence of clicks in a language indigenous to Tierra del Fuego would indeed be a significant finding, but should undoubtedly be viewed with extreme skepticism. One can only regret that Furlong had no training in phonetics, and that his recordings do not in any way illustrate these sounds.

Some of Furlong's analyses did find their way into print. The vast majority did not, perhaps with good reason given his lack of linguistic knowledge, but no doubt also because Furlong never ventured beyond a descriptive account of the languages. One of the more intriguing items in the Furlong archives is a brief (three pages, double-spaced) manuscript written by Furlong entitled "Fuegian Linguistics." The paper provides a sketch of the lexicon, phonology and morphology of the languages that Furlong studied. It is accompanied in the archives by a short rejection letter from the editor of *Language*, William Bright, dated February 19, 1967. Bright's note is succinct and to the point:

"Thank you for bringing your very interesting Fuegian researches to my attention. I am sorry to say, however, that your paper does not seem to me suitable for LANGUAGE, which is in general devoted to much more technical articles. Your manuscript is returned herewith."

6. Conclusion

Charles Wellington Furlong set out for Tierra del Fuego in a radically different time, with markedly different goals from those of modern linguists. Almost 100 years have passed since Furlong's first expedition to Tierra del Fuego. From our current standpoint, the impact of his work is minor, and the materials he has left behind are frustratingly incomplete. While he recognized the value of the languages and cultures he encountered and did his best to record them for posterity, the technology he used, along with his lack of focused methodology, meant that there is little of value for analysis.

One of the basic issues opened by this case study is the use of technology for preserving and distributing linguistic data. Clearly, if Furlong had had access to better technology, the recordings he has left us would be solve some rather basic questions about the languages of Tierra del Feugo. We live in a time where the technology does exist, but continues to be underutilized.

This is not to say that there are not many significant issues surrounding the use of technology in the field. For the immediate future, at least, we simply do not know how technology will develop, and the possibility that digitized data will become obsolete is real. In the case of sound recordings, there are important questions about the effect of digital formats on phonetic detail. for all forms of digital data, there are questions of long-term degradation.

However, our work with the Furlong materials has driven the following point home: We are currently at a critical moment in the history of linguistics with the imminent and permanent loss of hundreds of languages. Though not perfect, the technology at our disposal opens up possibilities unimaginable to previous generations of fieldworkers and linguists. The creative exploitation of this technology, maximizing its effectiveness and usability, depends on developing a culture within our field that expects both established and upcoming linguists to "become digital." The field would certainly be better for it.

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