Endangered Sound Patterns:
Three perspectives on theory and description

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In this essay, I highlight the important role of endangered language documentation and description in the study of sound patterns. Three different perspectives are presented: a long view of phonology, from ancient to modern traditions; an areal and genetic view of sound patterns, and their relation to theory and description; and a practical perspective on the importance of research on endangered sound patterns. All perspectives converge on a common theme: the most lasting and influential contributions to the field are those with seamless boundaries between description and analysis.

1.   INTRODUCTION.[1] The study of sound patterns of spoken human languages has occupied linguists for thousands of years. In this essay, I highlight the important role that work on endangered languages has played and continues to play in identifying, describing, and explaining sound patterns. Three perspectives are presented: in Section 2 I present a long view of the field, with emphasis on phonological approaches grounded in the study of endangered languages; in Section 3 I take an areal/genealogical snapshot of the field, emphasizing specific ways that the study of endangered languages contribute to theoretical debate, and vice versa, and reflecting on some of the world's best known sound patterns from these areas. Section 4 provides a practical view of the topic, briefly discussing some of the many reasons for studying endangered sound patterns.

2.   FROM ANCIENT TO MODERN: A LONG VIEW OF THE FIELD. Phonology is a relatively old science, with early roots in ancient Indic, European, Chinese, and Arabic traditions. One feature of the most influential of these traditions is rarely remarked upon: each is grounded in the study of an endangered, moribund, or already highly marginalized language.

One of the most ancient grammatical traditions is that associated with Pāṇini (ca. 520–460 BCE). Pāṇini's grammar of Sanskrit might be considered the first major work in phonological theory, with implicit recognition of Sanskrit phonemes, natural classes, and alternations (Cardona 1988). It is best known for its simplicity, formal character,

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and theoretical sophistication, with many of these properties reintroduced into modern generative phonology (see, e.g., Kiparsky 1973, 1979; Joshi and Kiparsky 1978). In what way is the study of endangered languages relevant to Pāṇini's work? Luján (2004:214) suggests that Sanskrit stopped being natively acquired by about 500 BCE, while Yakubovich (to appear) puts the date much earlier, due to the absence of regular sound changes from Vedic to Classical Sanskrit. Under either account, it is clear that during Pāṇini's life, Brahmans were essentially diglossic, with Sanskrit used as a language of worship and intellectual discourse, and the Prakrits acquired natively, and used in everyday life. Vedic Sanskrit, then, was described by Pāṇini (and compared with the Prakrit) at a time when it was no longer acquired natively by children. Was Pāṇini aware of the life-and-death cycle of language change? Was part of his codification of Vedic an attempt to save an endangered, moribund, or artificially preserved language? While we will never know the answers to these questions, it is tempting to view Pāṇini, the grammarian, as one of the first phonologists dedicated to the documentation and preservation of endangered sound patterns.

Similar observations can be made regarding founders of other ancient phonological traditions. Several hundred years after Pāṇini, the Tamil grammar *Tolkāppiyam* appeared (Rajam 1981). This work of unknown authorship (ca. 200–100 BCE) includes consonants and vowels as explicit phonological categories, contains detailed discussion of alternations, and even devotes a full chapter, "Mozhi Marabu" to phonotactic restrictions. Based on differences between temple inscriptions and the classical poetic language, it appears that diglossia existed in these ancient times as well. It could be that, like Pāṇini's work, the *Tolkāppiyam* was written to safeguard Ancient Poetic Tamil, no longer used colloquially, from potential extinction. Moving to early Western traditions, we find that explicit phonological categories are described for Ancient Greek in the work of Dionysius Thrax (ca. 170–90 BCE) (Allen 1981). Thrax's Greek grammar, like the works mentioned above, was written at a time when an ancient language was eclipsed by modern vernaculars: in this case, Ancient Greek gave way to Koine. The same is true of Cheng Hsuan's (127–200 AD) historical work on Chinese. His recognition of systematic differences between Ancient Chinese and his own native Han Dynasty Chinese came at a time when the former was known only to scholars (Elman 1982). A seemingly independent phonological tradition was developed by Sibawayh for Arabic. Sibawayh's treatise, *Al-Kitab*, on Arabic phonology (ca. 800 AD) covers contrasts, phonotactic generalizations, and regular consonant and vowel alternations. The Arabic Sibawayh documents lean heavily toward the "Modern Literary" language of his time—a prestige language that was so "endangered" in urban areas that elite families felt it necessary to send their children to remote Bedouin desert tribes to learn it (al-Nassir 1993:1–2).

The general long view, then, is that the field of phonology is rooted in the documentation and analysis of endangered or moribund languages, in the sense that these languages were no longer acquired at home natively by children. Two further observations may be relevant to the remarkable success of these traditions. First, with the probable exception of Sibawayh (a Persian), these ancient grammarians were native speakers analysing varieties of their own languages. Second, in these ancient times, theory and description were not distinguished: analysis and description were one and the same.

If we now compare these ancient traditions to modern ones, we see similarities and

differences. Phonology in America, from early descriptive and generative traditions, to recent emergentist proposals, maintains a solid grounding in endangered sound patterns. For example, Charles F. Hockett's (1955) *Manual of phonology* contains references to 193 different living languages or dialects, representing at least 40 different language families or isolates. Of these, some are now extinct (Chawchila, Gashowu, Chitimacha, Coast Miwok, Takelma, Tillamook, Tonkawa), while others are severely endangered (e.g., Delaware, Fox, Hidatsa, California Athabaskan, Karuk, Tlingit, Quileute). From this American descriptivist tradition to the early generative period, the empirical basis of theories changed little. The language index of the *Sound pattern of English* (Chomsky and Halle 1968) contains references to 101 languages, including one that is no longer spoken (Ubykh), several that are moribund (Chinook, Nez Perce, Quileute, Sahaptin, Snoqualmi), and more from around the world whose future is highly uncertain (e.g., Arrernte, Kutep, Nivxh, Sherbro, Southern Paiute, Tlingit). Descendants of both of these traditions continue to be rooted in the study of endangered sound patterns. *Evolutionary Phonology* (Blevins 2004a), with roots in nineteenth-century neogrammarian analysis and twentieth- century American descriptivism, supports phonetic historical explanations for a range of recurrent sound patterns with reference to over 400 languages, most endangered. Building on the generative tradition, Optimality Theory (e.g., Prince and Smolensky 1993) has also continued to give endangered language data a central role: in Kager's (1999) introductory textbook, many of the 90 languages listed in the language index are on the verge of extinction.

One difference between ancient and modern traditions is the motivation for studying endangered languages. In ancient traditions, language maintenance was the goal, especially under diglossia and the impingement of vernaculars. Within modern traditions, the study of endangered languages is part of a general tendency to extend the typological database in order to understand the range of variation in sound patterns, as well as recurrent aspects of their form and distribution. Hockett (1955:1–2) made this point explicit:

> **We are in an incomparably better position for typologic work now than we were in the thirties. We have reasonably reliable and reasonably homogeneous reports on a much larger number of languages than we did twenty years ago, or even ten …**

Another difference between ancient and modern approaches is the role of native speakers in linguistic analysis. Given the typological basis of modern theory where hundreds of languages may be examined in the construction of a hypothesis, there is no possibility of a linguistic analysis based entirely on native speaker judgements. On the other hand, many phonologists have successfully collaborated with native speakers in the course of fieldwork and language documentation projects. Again, Hockett provides a good example of the ideal to which many aspire (Gair 2003). Though not a native speaker of the 193 languages listed in his *Manual of phonology* index, he was proficient in many, and carried out significant fieldwork on Potawatami, Kickapoo, other Algonquian languages, Sierra Popoluca, Mandarin Chinese, and Japanese. When drafted into the U.S. Army, Hockett learned Chinese, and together with native speaker C. Fang, produced a basic course in spoken Chinese that was used by thousands of Americans over the next decade. When the war was over, and he was sent to Japan, he worked with native speakers to learn the language well enough to teach it to U.S. troops. As a native speaker of English, Hockett did

not shy away from phonological work on his own language, and also tackled earlier forms of it (e.g., Hockett 1959).

A final, and, to my mind, lamentable difference between ancient traditions and modern approaches is the schism between theory and description. In the eclipse of the American Descriptivist tradition associated with Bloomfield and Hockett, it was increasingly the case that writers of descriptive grammars were not the same people as those whose theoretical work was widely disseminated. Theory and description were distinguished more and more, to the point where theoretical work might include no more than a handful of forms or alternations, sometimes taken from grammatical descriptions without consultation with the author, a native speaker, or others with specialist knowledge. This sort of distance from primary data is not only unnecessary in the modern age, but destructive as well. Even if the author is long gone, and native speakers are not available, finding a language expert requires no more than a few quick Google searches or exploratory e-mails. Failure to appreciate the context and nuances of primary data can lead to misinterpretations, which, in turn, may invalidate the scientific conclusions based on them.

The long view of phonological analysis and description is a useful one. Great contributions have been made by linguists concerned with language preservation and documentation of endangered sound patterns; grammatical traditions were founded by linguists working on their native languages; the earliest phonological theories were a fusion of description and analysis, with no distance between the linguist and the primary data. We can learn from this history, in much the same way that Hockett (1993:4) learned from his own mistakes, and observed that:

> **Time and again, what at first appears to be a knotty problem of linguistic analysis smooths out if, approaching a language with patience and reverence, we relax and let it show us how it works—instead of trying to force matters into some conceptual frame of reference we have imported, perhaps without realizing it, from elsewhere.**

3. ENDANGERED SOUND PATTERNS: AREAL AND GENETIC PERSPECTIVES. The second perspective offered on endangered languages is an areal and genetic one. Three very distinct linguistic areas and genealogical distributions are singled out below: North America, an area with relatively small language families and much diversity; Australia, including the medium size Pama-Nyungan language family, which covers most of the continent, and small non-Pama-Nyungan groups; and the Austronesian language family, one of the biggest in the world, with much phonological convergence, complemented by diversity, especially in contact zones. For more information on languages in these three divisions, including genetic groupings, endangered status, primary descriptions, and notable sound patterns, see Mithun 1999 for North America, Dixon 1980, 2002 and Evans 2005 for Australia, and for Austronesian, Blust (to appear).

Phonologies of languages in these areas are notable for three different reasons: (1) they expand our notion of "possible sound pattern," and demand explanation; (2) they counter-exemplify proposed linguistic universals, and demand explanation or theory revision; (3) their phonological systems are "famous," and have played a disproportionate role in theory construction. For each area, I have picked out one particular sound pattern to exemplify each of these three relationships between description and theory, though many more exist.

Subsections within each language area below are numbered .1, .2, .3 to match these three categories.

3.1 SOME ENDANGERED SOUND PATTERNS OF NORTH AMERICA. The 300 or so languages of North America are grouped into many small- to medium-sized families, including isolates, with a great deal of diversity in sound patterns. Genetic diversity is greatest in California, where over fifteen distinct families/isolates are known. Dozens of languages have become extinct over the past 50 years, and the great majority of remaining languages are severely endangered. However, due to enlightened clergy in the early colonial period, as well as the strong descriptivist tradition in the early twentieth century, a range of extinct languages is well documented, from Massachusett dialects (Wampanoag, Natick), as written in Elliot's Bible of 1663 and Trumbell's *Natick dictionary* of 1903, to Mutsun, as transcribed by Father Felipe Arroyo de la Cuesta in the 1800s, and (along with 124 other languages of California and the far west), as frantically scribbled by the amazing J. P. Harrington, based on interviews with the last fluent speaker, who died in 1930.

3.1.1 SIBILANT HARMONY. A sound pattern found in North American languages, but rare elsewhere in the world, is sibilant harmony. Under sibilant harmony, all coronal sibilants within a particular domain (usually the word) agree with each other in secondary place features(e.g.,anterior/posterior;retroflex/nonretroflex;pharyngealized/nonpharyngealized). Sibilant harmony is described for Wiyot (Teeter 1959), an Algic language, for Chumashan (Beeler 1970, Poser 1982, 2004), for Wishram (Chinook) (Boas 1911), and for many Athabaskan languages (see, e.g., Sapir and Hoijer 1967, Shaw 1991). The last speaker of Wiyot died in 1962, and the entire Chumashan language family was gone by 1965. Wishram is moribund, and English is more and more common in Navajo high schools. Outside these four families in North America, sibilant harmony is extremely rare (Hansson 2001), and the one well-studied case, sibilant harmony in Kinyarwanda, differs in many details (Mpiranya and Walker 2005). As a consequence, the endangered sound patterns of these remaining North American languages are the only ones that display word-based harmonies involving apparent feature-agreement at a distance, where intervening segments are transparent. It is probably fair to say that the extensive theoretical literature on sibilant harmony (including e.g., Hansson 2001, Rose and Walker 2004, McCarthy 2007) would not exist if not for detailed descriptions, past and present, of these languages.

3.1.2 KASHAYA PHONOTACTICS. Kashaya (aka Southwestern Pomo) is a Pomoan language of California, currently spoken by fewer than 50 people. Since Southeastern Pomo and Northeastern Pomo are no longer spoken, Kashaya is an important souce of information on sound patterns that were once more widespread in this part of northern California. Kashaya, as described and analysed by Buckley (1994), has at least one basic sound pattern that presents counterevidence to Goldsmith's (1990:125) claimed universal that consonant contrasts allowed in the syllable coda are a subset of those allowed in the onset. Of the 38 contrastive Kashaya consonants, only 28 are allowed in onset position, while 32 occur in coda position (Blevins 2004a:131). These 32 attested codas are not a subset of onsets, as they include voiceless sonorants and glottalized /w'/, /l'/, /y'/ which are not possible onsets. The Kashaya data force one to reformulate prominence models which

dictate that codas will never license more contrasts than onsets.

3.1.3 YAWELMANI YOKUTS. Yawelmani (Yowlumne), a language once spoken in the region of present-day Bakersfield, California, is spoken natively today by no more than a few elders. Yawelmani is a dialect of Valley Yokuts, a subgroup of the Yokuts (or Yokutsan) language family which was once spoken over the entire San Joaquin Valley and in surrounding foothills. Yokutsology began in about 1900, when Alfred L. Kroeber began fieldwork on a range of dialects, and continued into a golden age, marked by the publications of Stanley Newman's (1944) influential *Yokuts language of California* (see Hockett 1973 for a history up to 1967). The impact Newman's work had on the field is evident in the replies of his contemporaries (e.g., Hoijer 1944, Joos 1944), its influence on methodology (Harris 1944, Hockett 1967, Hockett 1973), its central role in generative phonology (Kuroda 1967, Kenstowicz and Kisseberth 1979), its reanalysis in terms of autosegmental representations, prosodic templates, and underspecification (Archangeli 1988), and postgenerative neodescriptivist treatments (Blevins 2004b). But why is Yawelmani phonology so famous? Is it due to the intrinsic interest of its vowel harmonies, neutralizations, templatic verbal morphology, syllable-based alternations, and their complex interactions? Or is there more to be said? I believe that by comparing a range of languages with "famous" phonologies, we can answer this question. Intrinsic interest plays a role, but just as important are the genius and holistic nature of the description. Newman's description of Yokuts has had a disproportionate influence on the field, perhaps because it was so much an example of the stance advocated by Hockett, mentioned above. Newman approached the language "with patience and reverence"; he relaxed, and simply let the language show him "how it works."

3.2 SOME ENDANGERED SOUND PATTERNS OF AUSTRALIA. At the time of European contact, there were over 200 Aboriginal languages spoken on the Australian continent. Today, most are gone, and fewer than 20 are being learned natively by children. Unlike the North American patchwork of over 50 language families or isolates, most of the Australian continent was once blanketed with speakers of a single language family, Pama-Nyungan. At the northern fringe of this area, non-Pama-Nyungan languages are spoken, divided into approximately 16 small families and isolates, some of which may be distantly related to Pama-Nyungan (Evans 2003). Since the history of linguistic work in Australia is younger than that in America, there is much more salvage work to be done, and a few languages are known only from scattered word lists and perhaps a song, like Tasmanian, whose last fluent speaker died in 1905.

3.2.1 INITIAL CONSONANT LOSS. A sound pattern common in Australian languages, but rare elsewhere in the world, is the dropping of initial consonants. Hale (1962, 1964) documented the historical loss of initial consonants in comparative studies of Arandic and Northern Paman and, to date, over 50 Australian languages have been noted with similar sound patterns (Blevins 2001a). In all of these cases, words that begin with consonants evolve to be vowel-initial, and in some cases, synchronic variability is in evidence utterance-initially. Since many theoretical approaches claim cross-linguistic preferences for onsetful syllables over onsetless ones, the pattern of initial C-loss, which spans genetic and areal

groupings in Australia, demands an explanation. Hypotheses range from the intrinsically weak status of certain initial consonants and the contextual predictability of utterance-initial words, to articulatory settings of "openness" at initiation of speech (Blevins 2001a:486–87). Some of these hypotheses cannot be tested, as the languages involved are no longer spoken. However, phonetic study of the remaining endangered sound patterns of Australia may ultimately reveal an explanation for the frequency of this sound change in Australian languages, and its rarity elsewhere.

3.2.2 OYKANGAND AND ARRERNTE SYLLABIFICATION. In at least two different subgroups of Pama-Nyungan, we find syllabification patterns that appear to counter-exemplify two claimed universals of syllabification. The first is that, in the absence of extenuating prosodic conditions, VCV is syllabified as V.CV (not as *VC.V). This condition, sometimes called "the CV-rule," is formalized in certain modern accounts by a universal phonological constraint which demands that syllables have onsets (see, e.g., Kager 1999:93–94). A second crosslinguistic claim is that, where possible, onsets are maximized (Vennemann 1972; Kahn 1976), so that the syllabification of VCCV is expected to be V.CCV if CC is a possible onset, and elsewhere, VC.CV, but never *VCC.V. Again, certain modern accounts propose universal constraints: onset maximization is preferred by invoking a constraint that bans codas (see, e.g., Kager 1999:94–95), and the same constraint, combined with onset preference, predicts a cross-linguistic absence of *VCC.V syllabications. In light of these theoretical proposals, data from the Oykangand languages, Uw Oykangand and Uw Olkola of central Cape York and Arrernte of the Alice Springs area, are of interest and importance. In both of these languages, there is good evidence that VCCV is consistently syllabified as VCC.V, with maximization of codas at the expense of onset. It is somewhat shocking that Sommer's (1969, 1970) arguments for VCC.V syllabification in Oykangand predate theoretical proposals predicting the absence of such sound patterns. More reassuring is Breen and Pensalfini's (1999) analysis of Arrernte, which demands a rethinking of original universalist proposals. To date, these endangered sound patterns may provide the strongest evidence for word-based language-specific syllabification algorithms of the type proposed in Blevins 2004a:232–35.

3.2.3 LARDIL. Lardil is a Tangkic language of Mornington Island, in the Gulf of Carpentaria, whose traditional form is nearly extinct. In 1960 and again in 1967, Ken Hale did extensive fieldwork on the language, but by that time, most children were learning English as a first language. Hale's extensive work on Lardil is best known from his lengthy 1973 article, which put both Māori and Lardil on the phonological map in terms of relationships between potentially abstract underlying forms, their surface realizations, and canonical aspects of syllable structure and general phonotactics. More recently, Hale and Nash (1997) detailed the unusual sounds patterns of Damin, a ceremonial language of advanced initiates, and contrasted it with that of Lardil proper. In addition to sounds produced with a pulmonic egressive airstream mechanism, Damin also made use of velaric and glottalic airstream mechanisms, including two sounds unattested (contrastively) in any other language of the world: a voiceless lateral fricative with pulmonic ingressive airflow (as opposed to the more common egressive sound), and a velaric egressive bilabial sound (as opposed to ingressive bilabial clicks found in languages of southern Africa). As with Newman's

work on Yawelmani, Hale's presentation of Lardil phonology has had a lasting impact on the field. It became another case study in Kenstowicz and Kisseberth's (1979) *Generative phonology* textbook, and was reanalysed in prosodic terms by countless generations of graduate students (see Wilkinson 1988 for a published solution). More recently, Lardil has played an important role in the development of Optimality Theory (Prince and Smolensky 1993, McCarthy 2003). As with the discussion of Yawelmani above, we can ask why it is that of all the sound patterns of Australia, Lardil's is probably the best known. Is it due to the unusual truncation and augmentation patterns themselves, or do other factors play a role? As with Newman's influential description of Yokuts, the impact of Lardil sound patterns on phonological theory may be due, in significant part, to the approach of its author. Ken Hale's analysis of Lardil alternations has had an impact because it reveals the internal workings of the sound system without forcing it into an imported conceptual frame of reference, and because it is contextualized within a broader understanding of Lardil language structure. Hale's insights are lasting because they are built on patience, reverence, and a relaxed stance, allowing the language to reveal its internal structure to those open to discovering it.

3.3 SOME ENDANGERED SOUND PATTERNS IN AUSTRONESIAN. The Austronesian language family is one of the largest in the world, with an estimated 1,200 languages, perhaps one-fifth of the world's total. Austronesian languages, as they developed in situ also cover the widest geographic area, spreading from the hypothesized Proto-Austronesian homeland in South-East China and Taiwan, to westernmost Madagascar and easternmost Rapanui (Easter Island). Many Austronesian languages became extinct in historic times, including at least twelve Formosan languages; of the fourteen remaining, all are seriously endangered. Unlike the indigenous languages of North America and Australia, Austronesian includes several 'national' languages spoken by millions—Malay, Indonesian, and Tagalog. While these languages are well documented and not endangered, their status as national languages has resulted in massive language shifts, with many Austronesian languages disappearing in the twentieth century.

3.3.1 LOW VOWEL DISSIMILATION. A sound pattern found in a range of Oceanic languages, but rare elsewhere in the world, is low-vowel dissimilation. Low-vowel dissimilation effects sequences of syllables with low vowels, typically taking aCa > {i,e}Ca. It is attested both as a regular sound change, and evidenced in synchronic alternations. Low vowel dissimilation is found in Ere of Manus Island, Papua New Guinea, in several Micronesian languages, and in many languages of southern Vanuatu (Bender 1969, Blust 1996a, b; Lynch 2003). Interesting aspects of this sound pattern are potential blocking segments and clusters. While general approaches to dissiimilatory sound changes have been proposed (e.g., Ohala 1981, Blevins 2004a:148–49), details of this recurrent sound pattern and its seeming association with Oceanic languages have yet to be explained.

3.3.2 ANTI-ANTIGEMINATION. In a widely read paper, McCarthy (1986) presented the discovery of a new phenomenon he termed "antigemination." The sound pattern involved the failure of syncope to apply just in case its output was a sequence of adjacent identical consonants. McCarthy (1986) attributed resistance of syncope to the Obligatory

Contour Principle which prohibits adjacent identical segments. Subsequent to this work, counterexamples, referred to as "anti-antigemination," were brought to light by Odden (1988), and a reanalysis of the original antigemination phenomenon based on paradigm internal homophony avoidance was proposed (Blevins 2005). Blust 2007 shows that anti-antigemination, or syncope between identical consonants only, is widespread in the Austronesian family, with at least ten independent developments. At least half of the languages showing this sound pattern may be considered endangered.

3.3.3 ROTUMAN. Rotuman is an Oceanic language spoken on the isolated island of Rotuma, near Fiji. Though there may be as many as 10,000 Rotuman speakers in the world today, most are adults, bilingual in English, and literate. While literacy can often promote language conservation, the Rotumans face the problem of having little to read in their native language (Vamarasi 2001). For most phonologists and historical linguists, Rotuman needs no introduction: it is used as a textbook example of regular metathesis/umlaut (e.g., Antilla 1972:62 ff), where these processes are part of a fixed set of relationships between the "complete phase" or long forms of words (unmetathesized, with historical final vowel intact) and the "incomplete phase" or short word forms (metathesized, umlauted, apocopated). Most of what we know about Rotuman grammar is due to the work of the Reverend C. Maxwell Churchward, a Methodist missionary who lived in Rotuma from 1923–31, and again in 1935–37, during which time he appears to have acquired native fluency in the language. His best known publication on Rotuman is the *Grammar and dictionary* (Churchward 1940), but he also collaborated with Mesulama Titfanua on wider documentation, translating into English the myths and legends she collected from Rotuman elders (Churchward 1938–39; Titifanua and Churchward 1995). Churchward's grammar has been criticized by many for its confusing organizational structure, and for including far too many details and exceptions where clear patterns are in evidence. Milner (1971:404–5) went so far as to say that the grammar gives "a general impression of confusion and complication … The confusion is doubtless not in the mind of the author, but the very extent of his knowledge of the language seems to stand in the way of his ability to abstract and to generalise ..." Despite this, the grammar has had a lasting influence on the field (Schmidt 2000), especially in its documentation of sound patterns associated with the two phases which have been reframed in autosegmental terms (Besnier 1987), metrically (Blevins 1994), in evolutionary terms (Blevins and Garrett 1998), and given optimality treatments (McCarthy 2000). Churchward was another linguist who approached language analysis by letting the language speak to him, producing grammars in which description and analysis are fused to a point where details sometimes overwhelm generalizations. Nevertheless, the approach is evident, not only in his publications on Oceanic languages, but in other work as well. On Churchward's death in 1968, his wife revealed the title of his forthcoming book on English grammar: it was to be called *Let English speak for itself*.

3.4 SOME OBSERVATIONS. Whether one takes a historical long view, or a genetic/areal view of the role of endangered languages in defining phonology, two factors stand out. First, the languages or language families with the greatest impact on the field were described and analysed in much the same way as those of the ancients: with integration of theory and description. Put differently, in all of these cases, the best description was also the best

analysis, conforming to Hockett's (1993:4) reflection above on how to go about linguistic analysis. Second, as more and more sound patterns from different language families are described, the notion of "possible sound pattern" expands. For all but the most trivial phonological universals, there are notable counterexamples. As these are recognized, the theoretical challenge shifts, from defining what is possible, to explaining why some sound patterns are extremely common, others rare, and still others strongly associated with certain language families (Blevins 2004a, 2006a, Blust 2007).

One factor not mentioned explicitly above is the central role of the study of endangered languages in establishing language geneologies, including family relationships yet to be discovered. In the context of North America, rich descriptions of Athabaskan phonologies (and lexicon), and similar work on endangered Eyak and Tlingit and the Yeneseic languages (of central Siberia), have resulted in the establishment of the first genetic relationship between languages of the old world and those of the new (Vajda 2006). In Australia, the language of Tasmania disappeared before useful descriptions were made, but the study of all remaining endangered languages may result not only in more refined phylogenies, but also in potential reconstruction of population movements on a continent where humans have been present for at least 50,000 years. Endangered languages, especially those in Taiwan, have played a major role in understanding higher-level Austronesian phylogeny, while endangered Negrito languages of the Central Philippines may still hold clues to an earlier non-Austronesian substrate (Reid 1994).

4. WORKING ON UNDERSTUDIED SOUND PATTERNS: A PRACTICAL OUTLOOK. The focus of this journal is language documentation and conservation. While the documentation of endangered languages is, for many, a more urgent imperative than that of nonendangered ones, there are many understudied sound patterns in the world's languages, and good practical reasons for documenting all of them. Here I offer just a handful of practical reasons for documenting endangered sound patterns, based, in part, on my own experience.

Documenting understudied sound patterns can play an important role in maintaining and revitalizing languages. Phonetic and phonological descriptions are useful in helping to train native speakers as language teachers, linguists, and writers. In my work with the Muwekma Ohlone Tribe of the San Francisco Bay area, efforts to revitalize the Chochenyo languages would have been impossible without Harrington's detailed phonetic transcriptions of Chochenyo and related Costanoan languages. The fact that no Costanoan language has been spoken natively for half a century has not thwarted the efforts of Muwekma and Mutsun tribal members, whose dedication to language revitalization is all the more remarkable in the context of the wholesale takeover of their tribal lands.

Documenting and describing understudied sound patterns may reveal a sound pattern never before attested. New sound patterns, like the Kashaya phonotactics and Oykangand syllabifications, may disconfirm claimed universals, or document predicted but not previously found sound patterns. In this second category, consider the analysis of 'harmony' in vowel harmony systems. There is no principled reason why any vowel feature could not take part in a vowel harmony system. Nevertheless, until Robins's (1958) description of Yurok, there was no published record of a language with rhotic vowel harmony. Finally, unique segment types may be discovered, such as the Damin ingressive pulmonic lateral fricative mentioned earlier (for more examples, see Ladefoged and Maddieson 1996). An

important facet of such documentation is the phonetic record. However interesting a sound pattern may appear, without proper phonetic documentation, descriptions may not be subject to the rigors of the scientific method and general hypothesis testing (Bhaskararao 2004).

Describing understudied sound patterns may result in new examples of the same pattern in unrelated languages, suggesting novel explanations, or distinct accounts of superficially similar patterns. The sibilant harmony patterns of North America are all similar in that they apply within the word, and treat intervening segments as transparent. In contrast, recent work on Kinyarwanda shows sibilant harmony that differs in many details (Mpiranya and Walker 2005), with stem-boundedness, and opaque palatal and coronal stops. This example is instructive, since Kinyarwanda is spoken by millions of people, and is not in the class of seriously endangered languages. In addition, Kinyarwanda phonology has received monograph-length treatment (Kimenyi 1979). However, the sibilant harmony system of Kinyarwanda, until quite recently, was underdescribed, and filling this gap has demanded a rethinking of properties necessarily associated with sibilant harmony systems.

Documenting unstudied sound systems as part of a larger language documentation project on a language with unknown genealogical status could lead to future research illuminating long-distance family relationships. Above, I mentioned the work of Vajda (2006) relating Yeneseic languages to Athabaskan-Eyak-Tlingit. Vajda's work is solidly grounded in his own phonetic and phonological documentation of Ket, an endangered Yeneseic language (Vajda 2004). Without this groundwork, especially where lexical prosodemes are concerned, the etymologies relating these languages would not be possible.

For those with training in phonology, careful and considered description of an understudied sound pattern may bring a deeper appreciation of the abstract nature of sound patterns, and the full range of abstractions we call "phonology." In my own work on Yurok, the analysis of glottalized resonants as single segments seemed straightforward, until I was faced with the fact that speakers consistently placed a syllable break between the two halves of the segment when speaking slowly, and that similar divisions were evident in (untaught) orthographic practices (Blevins 2003). A phonological analysis demands a choice of /'w/ as a single segment, or a sequence of glottal stop + /w/. But what evidence do we have that speakers must choose between these two analyses for the language as a whole? Could it be that the same sound is analysed by the native speaker as a cluster under some circumstances, and as a single segment in others?

Finally, if you are a trained linguist with the opportunity to document an endangered language, there is one very good reason to do it: if you don't, maybe no one will. For those of us who have worked with the last speaker of a language who has passed from this world, this reason may overshadow all others (Blevins 2001b; Blevins 2006b).

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