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# On extremes in linguistic complexity

## Phonetic accounts of Iroquoian, Polynesian and Khoesan\*

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### 1. *Introduction*

In this paper we examine common motifs in the accounts of the sound systems of Iroquoian, Polynesian and Khoesan<sup>1</sup> languages. In particular, we investigate continuities in the description of their seemingly ‘exotic’ consonant inventories and phonotactic structures when viewed from the perspective of more well-known languages. We show that controversies in descriptions of ‘exotic’ languages remain relevant in modern phonetic research, e.g., the notions of naturalness and complexity of phonological systems as well as their interdependence and parametrization. In addition, notions which were conceived as ‘misconceptions’ have re-emerged as unresolved research questions, e.g., the status of clicks and small and large consonant inventories.

We focus on Iroquoian, Polynesian and Khoesan languages not only as examples of extremes in phonetic complexity but also due to the presence of extensive traditions of phonetic research on these languages and their influence on linguistic theory. On the basis of examples from European and American scholarship between the 17th and early 20th century, we demonstrate the influence of phonetic accounts on the interpretation of other components of language and their role in the construction of a biased image of the languages and their speakers. While the ignorance and misapprehensions regarding so-called ‘primitive’ languages

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1. We follow Traill (2004: 45) and Miller (2011: 423) in the use of the spelling *Khoesan* rather than *Khoesan* since it matches the orthographies of the languages.

have been frequently acknowledged, e.g., by Andresen (1990), Schütz (1994), and Koerner (2002), no attempt has been made to deal systematically with the origin and implications of both lay and professional opinions about their sound systems. Therefore, we re-assess the role of accounts of selected phonological properties of languages belonging to the three families.

By way of introduction we provide an overview of the sound systems in Iroquoian, Polynesian and Khoesan languages. Then we discuss common motifs in phonetic accounts since the 17th century, focusing on such issues as gaps in phonetic inventories, rare and peculiar sounds and vague character of phonetic elements. Finally, we discuss the implications of these accounts for linguistic description and theory, including the interdependencies between language, culture and cognition as well as the notion of invariance of language complexity.

## 2. *Sound systems in Iroquoian, Polynesian and Khoesan*

### 2.1 *Introduction*

Iroquoian, Polynesian and Khoesan languages appear to be 'exotic' in terms of not only their phonetic structure but also their distribution. As is well-known, they constitute the most characteristic cases of extremes in phonetic complexity in terms of segment complexity, size of vowel and consonant inventories, and phonotactic complexity. In addition, languages belonging to the three families have been spoken in remote areas from the perspective of European commentators, and the vast majority of them are now either extinct or endangered. As we will show in Sections 3 and 4, these language-internal and external as well as impressionistic features have contributed to the ambivalent perception of the languages and their speakers.

### 2.2 *Iroquoian*

The original homeland of Iroquoian languages lies in New York State, Pennsylvania and Ohio but the languages are now spoken in various locations in New York State, Ontario, Quebec, Wisconsin, Oklahoma and North Carolina. There are two main branches within the family: Northern, which includes Mohawk, Oneida, Onondaga, Seneca, Cayuga, Tuscarora and the extinct Huron-Wyandot, and Southern, whose sole member is Cherokee. All Iroquoian languages are endangered, with the possible exception of Cherokee, which is spoken by about 11,000 speakers in Oklahoma and North Carolina.

All Iroquoian languages are characterized by small consonant inventories, restricted distribution of labials and nondistinctive voicing. The symbols traditionally used for consonants in the Northern branch are illustrated in Table 1.

|            | alveolar | palatal | velar | laryngeal |
|------------|----------|---------|-------|-----------|
| stops      | t        |         | k     | ʔ         |
| fricatives | s        |         |       | h         |
| resonants  | n, r     | y       | w     |           |

Table 1: *Northern Iroquoian consonants* (Chafe 1996: 553)

If present, labials are largely restricted to specific vocabulary, e.g., borrowings, nicknames and expressive terms (Mithun 1982: 53), and idiolects. For example, in Cherokee /m/ appears in a few nouns, mostly borrowings, and is the only labial for many speakers. While /p, b/ were typically substituted in earlier loanwords by labialized velars, as in *Gwi:da* “Peter”, they now occur in English loanwords in the speech of some speakers, as in *adamo:bi:li* “car” (Scancarelli 2005: 382). Labial-like sounds also appear as contextual realizations of other sounds, e.g., [m] as an allophone of /w/ in Wyandot, and [f] as an allophone of /w/ in Mohawk and Oneida (Lounsbury 1978: 337). The rarity of labials results in a characteristic speech pattern: “aside from such exceptional usages Seneca speakers do not close their lips while talking” (Chafe 1996: 554).

### 2.3 *Polynesian*

Polynesian languages constitute a small branch, consisting of 37 languages, of the Oceanic group within the Austronesian family which encompasses 1257 languages (Lewis 2009). They are spoken in the triangle Hawaii — Easter Island — New Zealand, and include Hawaiian, Rapa Nui, Tahitian, Samoan, Tongan and Maori. We focus here on Hawaiian since it is often found in early phonetic descriptions and impressionistic accounts. Until the early 19th century Hawaiian was spoken by the entire population of the Hawaiian islands; it is now spoken by about 1000 speakers, mainly on Ni‘ihau Island and Island of Hawai‘i (cf. Clark 2009: 782).

With its 8 consonants Hawaiian belongs to languages with a small consonant inventory according to *WALS* (Maddieson 2011a),<sup>2</sup> and includes nasal /m, n/, plosive /p, k, ʔ/ laryngeal /h/, lateral /l/ and approximant /w/ (see Table 2).

Hawaiian has no voicing contrast in plosives and lacks spirants. Uncommon consonants are absent, too. Its vowel quality inventory is average (5); however, vowel length is phonemic. The consonant-vowel ratio is low. Phonotactically, it is a CV language, with the glottal stop (the ‘okina) being the second most frequent consonant.

2. Maddieson (2011a) distinguishes the following categories of consonant inventories: small (from 6 to 14 consonants), moderately small (15–18), moderately large (26–33), and large (34 or more consonants).

|             | labial | alveolar | velar | glottal |
|-------------|--------|----------|-------|---------|
| nasal       | m      | n        |       |         |
| plosive     | p      |          | k     | ʔ       |
| fricative   |        |          |       | h       |
| lateral     |        | l        |       |         |
| approximant | w      |          |       |         |

Table 2: *Hawaiian consonants*

#### 2.4 *Khoesan*

The wide use of clicks constitutes the main feature used to group languages referred to as ‘Khoesan’. Otherwise, the languages differ substantially in morphology, syntax and lexicon. The Khoesan “family” consists of around 30 languages mainly spoken in south-western Africa but to a lesser extent also in eastern Africa (Güldemann & Vossen 2000; Traill 2004). The three core branches include Northern, Central and Southern Khoesan, spoken in South Africa, Namibia, Angola and Botswana, together with two languages spoken in Tanzania, i.e., Hadza and Sandawe. The “family” thus excludes the remaining languages with clicks, including southern Bantu languages, e.g., Xhosa and Zulu, spoken in South Africa, Lesotho, Malawi and Swaziland, as well as Dahalo, a Cushitic language spoken in Kenya. Most Khoesan languages are endangered, except for Nama (Khoekhoe, Khoekhoegowab), which has ca. 251,000 speakers in Namibia and South Africa (Lewis 2009).

Clicks are the rarest type of consonants in *WALS* and occur in 1.8% of the languages (Maddieson 2011b). According to Maddieson, all Khoesan languages use four basic clicks, i.e., dental //, (post-)alveolar !/, palatoalveolar /ɕ/ and alveolar lateral //l/. Southern Khoesan is unique in its use of the fifth, bilabial click /ɓ/, while Sandawe and Hadza use only //, //l/ and !/. Miller (2011) identifies up to six types of clicks, including a retroflex !/ (see Table 3).

|                  |   |
|------------------|---|
| bilabial         | ɓ |
| dental           | ǀ |
| (post-)alveolar  | ǃ |
| lateral alveolar | ǁ |
| palatal          | ɕ |
| retroflex        | ǂ |

Table 3: *Clicks (Miller 2011: 417)*

Clicks are phonologically complex segments. Their complexity is manifested in three articulatory areas, i.e., double articulation, overlap of two constrictions

and non-pulmonic airstream mechanism, and along five articulatory dimensions, including place and manner of articulation, laryngeal setting, nasality and velaric/lingual airstream, the latter being unique to these consonants. Language inventories vary widely with respect to the number and types of clicks they exhibit, as shown by the large number of phonological contrasts found in Khoesian languages, involving each of the five dimensions as well as their combinations. Distribution of types ranges from one per language, as in Dahalo, to five, as in !Xóǒ. !Xóǒ has the largest click inventory, which amounts to 83 clicks, out of 122 consonants in the language (Maddieson 2011b). By contrast, Nama has 32 consonants. All Khoesian languages are biased towards clicks, with the proportion in Nama of 8:1. Typically, the languages have five plain vowels. Phonotactically, these are CV languages, while clicks are additionally restricted to the word-initial position.

### 3. *Earlier phonetic accounts of Iroquoian, Polynesian and Khoesian*

#### 3.1 *Introduction*

The extremes in phonetic complexity in Iroquoian, Polynesian and Khoesian languages have been dealt with since the 17th century in accounts which focused on three aspects of their sound systems: a) vowel and consonant inventories, including the complexity of specific sounds, b) phonotactic structures as well as c) intra- and inter-speaker variation and change in sound systems. Accordingly, this resulted in three types of interpretations: in terms of deficiencies in phonetic inventories, presence of rare and peculiar sounds, and, finally, vague and fluctuating character of phonetic elements. As we are going to show in Section 4, these motifs in phonetic description had direct impact on the interpretation of other components of language and the construction of stereotypical images of languages and their speakers.

#### 3.2 *Deficiencies in phonetic inventories*

In the first type of interpretation, Iroquoian and Polynesian languages were commonly attributed with deficiencies in phonetic inventories based on real or alleged gaps among sounds found in European languages, in particular the absence of labials in Iroquoian and the small consonant inventory in Hawaiian.

The first reference to the lack of labials in Huron was made in 1636 by the Jesuit missionary Jean de Brébeuf (1593–1649) in “De la langue des Hurons”. Brébeuf gave an accurate, albeit negative, account of the Huron phonetic inventory and an impressionistic description of the way Huron sounds:

They are not acquainted with B. F. L. M. P. X. Z; and I. E. V. are never consonants to them. The greater part of their words are composed of vowels. They lack all the labial letters. This is probably the reason why they all open their lips so awkwardly,

and why we can scarcely understand them when they whistle or when they speak low. (Thwaites, ed. 1896–1901 X, p. 117)

The absence of labials in Huron was mentioned in most 18th-century publications on the language. An example is provided by the widely read travelogue by Louis Armand de Lahontan (1666–c.1715; cf. Wolfart 1989). Lahontan (1703) pointed to the lack of labials in Huron and similarities in the neighbouring languages, as well as the inability of Huron speakers to pronounce labials in French:

I can't pass by one curious Remark touching the Language of the *Hurons* and the Iroquese; namely, that it do's not use the Labial Letters, viz. *b, f, m, p*. And yet the *Huron's* Language appears to be very pretty, and sounds admirably well, notwithstanding that the *Hurons* never shut their Lips when they speak. [...] we must consider that since neither the *Hurons* nor the *Iroquese* use the Labial Letters, 'tis impossible for either of 'em to learn *French* well. I have spent four days in trying to make the *Hurons* pronounce the Labial Letters, but I could not accomplish it; nay, I am of the Opinion that in ten years time they would not learn to pronounce these Words, *Bon, Fils, Monsieur, Pontchartrain*: For instead of *Bon* they'd say *Ouon*; instead of *Fils*, *Rils*; instead of *Monsieur*, *Caounsieur*; and in the room of *Pontchartrain, Conchartrain* [...]. I do not know that the Letter *F* is used in any of the *Savage* Languages. (Lahontan 1703: 300–301)

Together with Gabriel Sagard's *Dictionnaire de la langue huronne* (1632), which will be discussed in §3.4, Lahontan's book shaped the European view of Huron as “the paradigmatic primitive language” (Hanzeli 1969: 111).

The absence of labials in Huron and Iroquoian languages generally constituted a standard example of phonetic properties of primitive languages in 19th-century accounts of the languages and customs of American Indians. In addition to studies specifically dealing with American Indian languages, they were mentioned in accounts of history and customs of American Indians (e.g., Morgan 1851: 408; Richardson 1851: 53; Beauchamp 1900: 24), and in the context of assumed properties of primitive languages in general works on language, psychology and ethnology (e.g., Kraitsir 1852: 145–146; Bastian 1860: 429–430; Müller 1864: 162–163).

Similarly to the missing labials in Iroquoian, the small consonant inventory was regarded as the most characteristic feature of Hawaiian, and a source of “perpetual surprise” (Schütz 1994: 5) for European commentators. Specifically, the features of Hawaiian which struck the first observers include open syllables, the absence of consonant clusters and sibilants as well as the small number of consonants and vowels. For example, Hiram Bingham (1789–1869) regarded sibilants and clusters as “exceedingly difficult, if not impracticable, to the unlettered Hawaiian” (Bingham 1847: 155). In addition, the small inventory, together with the regular CV structure, gave an impression of monotony, as suggested by, e.g.,

Lorrin Andrews (1795–1868) in his grammar of Hawaiian: “As might be expected, where the letters are so few, and their combinations into syllables and words so regular, the language, to foreign ears is very monotonous.” (Andrews 1854: 19).

These deficiencies in phonetic inventories in Iroquoian and Polynesian languages were frequently used together as evidence in claims about the development of language, in terms of both ontogeny and phylogeny. In this context several commentators drew on Lahontan’s (1703) account of the inability of Huron speakers to pronounce labials. For example, the lack of consonants and a guttural, animal-like character of Huron are frequently used to exemplify primitive properties of language in James Burnett Monboddo’s (1714–1799) *Of the Origin and Progress of Language* (1774). According to Monboddo, consonants constitute a more sophisticated stage in the speech of individual speakers and the development of the sound system of a language. Thus consonants are more difficult to acquire later in life, as demonstrated by the inability of Huron speakers to pronounce labials (pp. 502–503). Accordingly, progress from the original inarticulate cries is demonstrated by the presence of consonants and phonotactic complexity in more developed languages. At the same time, Monboddo regarded excessive word length and reduplication as primitive and attributed them to the limitations placed by simple syllable structure, as in Iroquoian, Algonquian, Eskimo and Tahitian, which approaches the “simplest kind of articulation” (p. 506).

Lahontan’s account was also mentioned by Johann Christoph Adelung (1732–1806) in the first volume of his *Mithridates* (Adelung 1806). Adelung considered the presence of consonants as an advancement in the ontogeny of speech which requires overcoming articulatory and perceptual difficulty in their production. This results in variation in consonantal inventories across languages and individual variation:

Viele Völker können kein b und d sprechen; die Tahiter haben keine Sibilanten, welche in andern Sprachen im grössten Überflusse herrschen, und wie viele Völker und selbst einzelne Menschen gibt es nicht, welche kein r und l unterscheiden können? (Adelung 1806: viii)

[Many peoples are unable to pronounce a b and a d; the Tahitians don’t have sibilants, which in other languages abound in excess, and how many peoples and individual humans are not capable of distinguishing between r and l?]

According to Adelung, those differences further influence the perception of phonotactic structure across languages, as shown in the native pronunciation of foreign words by speakers of Chinese and Tahitian.

### 3.3 *Description of rare and peculiar sounds*

Descriptions of the sound systems in the three families also focused on rare and peculiar sounds. In addition to the ‘guttural’ character of Huron, the glottal stop in Polynesian languages and clicks in the languages of Southern Africa are among the most frequent features mentioned in impressionistic accounts of rare sounds in ‘exotic’ languages.

References to the ‘guttural’ nature of Huron constitute the only description of the Huron sound system in Diderot and d’Alembert’s *Encyclopédie ou dictionnaire raisonné* and Johann Gottfried Herder’s (1744–1803) essay. In fact, this phonetic property along with lexical simplicity are the only features of the language mentioned in Louis de Jaucourt’s (1704–1779) entry in Diderot and d’Alembert *Encyclopédie* (1765:356): “La langue de ces sauvages est gutturale & très-pauvre, parce qu’ils n’ont connoissance que d’un très-petit nombre de choses [The language of these savages is guttural and very poor, since they only know very few things]”. Likewise, Herder mentioned the “guttural letters and their unpronounceable accents”, citing the Jesuit Pierre-Joseph-Marie Chaumont’s (1611–1693) grammar of Huron (Wilkie 1831):

Der P. Chaumont, der 50 Jahr unter den Huronen zugebracht, und sich an eine Grammatik ihrer Sprache gewagt, klagt dem ohngeachtet über ihre Kehlbuchstaben und ihre unaussprechlichen Accente: “oft hätten zwei Wörter, die ganz aus einerlei Buchstaben bestünden, die verschiedensten Bedeutungen.” (Herder 1772: 14)

[Father Chaumont, who spent fifty years among the Hurons and who took on the task of writing a grammar of their language, still complained about their guttural letters and their unpronounceable accents: “Often two words consisting entirely of the same letters had the most different meanings.” (Herder 1986 [1772]:93).]

Another characteristic example is provided by the negative review written by Lewis Cass (1782–1866) of the account of American Indian languages in the correspondence between John Heckewelder (1743–1823) and Peter Stephen Du Ponceau (1760–1844) of 1819. Cass (1826) dismissed their characterization of the languages as regular and harmonious, and pointed to the unusual features of their sound systems:

[Wyandot] is harsh, guttural, and undistinguishable; filled with intonations, that seem to start from the speaker with great pain and effort. It is a well known fact, that no man ever became master of it, after he had arrived at years of maturity; and its acquisition is universally considered upon the frontier as a hopeless task. (Cass 1826: 74–75)

In addition to the small consonant inventory, the glottal stop was the most frequently mentioned feature in accounts of Polynesian languages. The glottal stop in Hawaiian did not make an impression of a proper consonant on the first observers, and was referred to as a “peculiar break” and “the guttural sound” (cf. Schütz 1994: 143–144). Therefore, Hawaiian was perceived as a ‘vocalic’ language, consisting predominantly of vowels, which further contributed to an impression of overall simplicity.

Horatio Hale (1817–1896) in his account of Polynesian languages (Hale 1846) referred to the glottal stop in Samoan as “a hiatus or catching of the breath” (p. 231), and in Hawaiian as “the guttural break” (p. 257). However, Hale did not include the sound among the “elementary sounds proper to the Polynesian languages” (p. 231). The consonant was also described as a prosodic marker in other contemporary studies. For example, Andrews (1854: 19) noted that “[t]he guttural sounds are frequent, for many vowel sounds come together which do not form diphthongs”. Likewise, Bingham (1847: 152) referred to the glottal stop as “abrupt separations or short and sudden breaks between two vowels in the same word”. In contrast, the glottal stop was recognized as a proper consonant by William D. Alexander (1833–1913) in his Hawaiian grammar. According to Alexander (1864: 3), “[t]his guttural is properly a consonant, and forms an *essential* part of the words in which it is found.”

Finally, clicks in Khoesan languages were typically described by European commentators as highly unusual and unlearnable. At the same time, due to their frequency clicks were acknowledged as an important component of the structure of the languages. For example, Henry Tindall (1831–1909) in his *Grammar and Vocabulary of the Namaqua-Hottentot Language* referred to clicks as both “strange and barbarous” and “essential” (Tindall 1857: 11):

The clicks constitute the most peculiar feature of the Hottentot language. The principal, if not the only, difficulty to a European of ordinary capacity and industry, in learning it, consists in these strange and barbarous articulations. They occur so frequently, and form such an important part in the root of many words, that they appear to have become an essential element in the language, and could not be dispensed with unless it were entirely reconstructed.

In fact, the response to the Khoesan sound systems among Europeans had direct consequences for the fate of the languages. In his sketch of the language death of Cape Khoekhoe, Traill (2004: 32) pointed to a persistent prejudice against the language which was regarded as “utterly bizarre, unpleasant, inarticulate and not human” and therefore unlearnable, resulting in an official policy which prescribed learning of the colonial language as early as 1663.

### 3.4 *Vague character of phonetic elements*

Finally, largely due to methodological limitations, sounds in ‘exotic’ languages were described as ‘confused’, ‘vague’, or ‘fluctuating’ with respect to the contrasts they were expected to produce.

The earliest reference to the supposedly vague character of Huron is found in the Franciscan Recollect brother Gabriel Sagard-Théodat’s (c.1600–1650) *Dictionnaire de la langue huronne* (1998 [1632]), which also provided the first account of the sound system in Iroquoian languages. Sagard found an “instability of speech” among the Huron in terms of inter-speaker variation (“dans un mesme village, & encore dans une mesme Cabane” (p. 344)) as well as diachronic change between ancient and modern Huron, which he further attributed to ageing:

Nos Hurons, & généralement toutes les autres Nations, ont la mesme instabilité de langage, & changent tellement leurs mots, qu’à succession de temps l’ancien Huron est presque tout autre que celui du present, & change encore, selon que j’ay peu conjecturer & apprendre en leur parlant: car l’esprit se subtilise, & vieillissant corrige les choses, & les met dans leur perfection. (Sagard 1998 [1632]:346)

[Our Hurons and generally all the other nations have the same instability of language, and change their words so much that in the course of time the ancient Huron has become almost totally different from that of today and is still changing according to what I have been able to conjecture and find out by talking to them: for the mind becomes subtler and while ageing corrects the things and puts them in their perfection. (Translation from Schreyer 1996: 113)]

Following Sagard, Monboddo (1774: 483) treated these properties of Huron as evidence of its primitive character: according to him, Huron and other primitive languages “can have no standard, or any thing fixed and established in the use of them, such as we see in formed languages”.<sup>3</sup>

Apparent confusions in earlier descriptions of Hawaiian involved the pairs /t-k/, /l-r/, /p-b/, /v-w/. The confusions were due to dialectal variation, as /t/ was used on Ni’ihau and Kaua’i, whereas /k/ occurred in other parts of Hawai’i (Schütz 1994: 76–78), the lack of aspiration of /p/, due to which it was sometimes perceived as /b/ and, finally, other misperceptions of liquids and labials. For example, according to Dwight (1848: 227), sounds in Polynesian languages are “confounded”: “In all the islands there is a great want of discrimination between some of the gutturals or palatals, linguals, dentals, and labials; the sounds formed by each organ usually being confounded.” Such vacillation was already mentioned in the first grammar of Hawaiian by Adelbert von Chamisso (1781–1838) of 1837:

3. The vague character of phonetic elements in ‘exotic’ languages as a remnant of primitive speech was also discussed in several other 19th-century works, e.g., by Dwight (1848), Renan (1858), Shea (1873), Sayce (1874) and Brinton (1888).

Wie der Sachse die harten und weichen Buchstaben *p* und *b*, *t* und *d* leicht verwirrt und der Spanier das *b* mit dem *v* verwechselt, so schwankt im Munde der Hawaiier der Laut fast unentschieden zwischen *k* und *t*, *l* und *r*, dem englischen *w* und dem französischen *v*. (Chamisso 1837:5)

[Like the Saxon, who easily confuses the hard and soft *p* and *b*, *t* and *d*, and the Spaniard, who confuses *b* and *v*, in the mouth of the Hawaiians the sound vacillates between *k* and *t*, *l* and *r*, the English *w* and the French *v*.]

Citing Chamisso, Heinrich Ernst Bindseil (1803–1876) attributed the confusion between /t/ and /k/ in Hawaiian to an articulatory cause: “Physiologisch erklärt man sich dieses Schwanken wohl am leichtesten aus einem unwillkürlichen Vertauschen des vordern und hintern Theiles beim Anstemmen der Zunge an den Gaumen [Physiologically this vacillation is best explained by an involuntary exchange between the front and the back part when pressing the tongue against the alveolar ridge]” (Bindseil 1838: 344–345). As we will show in §4.4, such fluctuation was further related to cognitive and articulatory limitations of the speakers.

The stereotyped and often erroneous nature of the descriptions we have considered can be attributed to such methodological limitations as inadequate tools of phonetic/phonological analysis, confusion between sounds and letters as well as lack of overall linguistic training. These limitations and the resulting erroneous analyses were in fact frequently acknowledged in the period under investigation, e.g., by Jean-André Cuoq (1821–1898) in his critique of Renan (Cuoq 1864: 14–16) and Franz Boas (1858–1942) in his famous “Introduction” to the first volume of the *Handbook of American Indian Languages* (Boas 1911: 16–18). At the same time, descriptions of ‘exotic’ languages in many cases provide detailed and accurate accounts of their sound systems. For example, disparaging views on pre-19th century linguistic descriptions have been questioned by Hanzeli (1969: 101) in his study of French missionary accounts of Iroquoian and Algonquian languages, which are described as “... far from being as whimsical and incomplete as their critics have claimed them to be.”

#### 4. *Biased images*

##### 4.1 *Introduction*

Descriptions of ‘exotic’ languages in European and American scholarship between the 17th and early 20th century reveal often contradictory arguments concerning the ‘primitive’ nature of the languages, and, more specifically, demonstrate recurring claims in the description of their lexicon and grammar. Typical examples of such misconceptions include the supposed absence of grammatical rules as well as lexical deficiencies, e.g., lack of generic and abstract terms. Another characteristic motif involves disregard for morphological complexity, where the

expression of grammatical categories was interpreted as a property of the lexicon, which, in turn, was alternately regarded as evidence of wealth or poverty. Such real or alleged deficiencies were seen as a barrier to cognitive, cultural and social development. Assumed cognitive deficiencies included an incapacity for abstract and rational thought, deductive reasoning, categorization and counting (e.g., Spencer 1882; Morris 1892). In addition, polysynthetic morphology and the supposed lack of abstract terms were related to moral decadence, absence of social values, indolence and alcoholism (Lubbock 1889; Lefèvre 1894) as well as the ultimate extinction of Native American Indians (e.g., Morris 1892; Lefèvre 1894). As we will show now, the accounts of phonological properties of ‘exotic’ languages reviewed above also contributed to a construction of a biased image of the languages and their speakers. In particular, phonetic properties were mentioned in three descriptive contexts: descriptions of languages, speaker-oriented accounts of language and, finally, descriptions of speakers themselves.

#### 4.2 *Description of languages*

Descriptions of Iroquoian, Polynesian and Khoesan sound systems are characterized by two interwoven types of reflection concerning the complexity of phonetic structure and more impressionistic impressions it evoked. Both the lack and overabundance of vowels and/or consonants as well as the overall complexity of inventories informed the discourses involving the concepts of the ‘primitive’ and ‘natural’. Based on such conflicting criteria, phonetic structure was interpreted as that of a yet undeveloped or basic form of spoken communication. Thus both the absence of consonants and phonotactic complexity in Polynesian languages as well as the unusual sounds and complex inventories in Khoesan languages were said to characterize the primitive state of language. In addition, the sounds of ‘exotic’ languages evoked a range of often contradictory impressions — from derogation (barking, spitting, guttural) to praise (poetic, melodious, bird song). Finally, phonetic accounts also influenced the interpretation of other components of the languages.

In addition to the absence of labials, several 18th century accounts of Huron emphasized either its noble and euphonic character or its unpleasant ‘guttural’ sound. For example, as mentioned above, according to Lahontan (1703:300), Huron “appears to be very pretty, and sounds admirably well” (cf. also Lafitau 1724:186; Charlevoix 1744:196). Analogous accounts were later given by Colden (1747:15), according to whom Huron “abounds with Gutturals and strong Aspirations, these make it very sonorous and bold”, and Hale (1883:105), who suggested that “[t]he absence of labials and the frequent aspirated gutturals give to the utterance of the best speakers a deep and sonorous character which reminds the hearer of the stately Castilian speech.” In contrast, as shown above, the

descriptions of the Huron sound system in Diderot and d'Alembert's encyclopedia and Herder's essay are reduced to the negative epithets of 'guttural' and 'unpronounceable'. Likewise, the lack of labials and the 'guttural' sound of Huron were used by Monboddo (1774:479) to demonstrate their animal-like character: "their language [...] seems to be little better than animal cries from the throat, of different tones, a little broken and divided by some guttural consonants". The negative characterization of Iroquoian languages as 'guttural' can also be found in 19th-century studies, as in the review of the correspondence between Heckewelder and Du Ponceau by Cass (1826), who pointed to seemingly painful effects of their sound systems.

The extremes in phonetic complexity in Polynesian and Khoesian languages frequently evoked contradictory impressions. On the one hand, Hawaiian was typically characterized as soft and melodious. For example, Manley Hopkins,<sup>4</sup> Hawaiian Consul-General described it as "[...] so soft as rather to be compared to the warbling of birds than the speech of suffering mortals" (1862: 347). At the same time, despite its pleasing sound, Hawaiian was also considered to be insufficient as a means of linguistic expression, as in the following comparison between the speech of American Indians and Hawaiians:

[Hawaiian] may, on the whole, be considered as pleasing and agreeable to the ear after a time, though at first it sounds childish, indistinct and insipid. It lacks [...] everything like force and expression; and though the natives, both men and women, are fond of "speechifying," and even of preaching, yet they are by no means to be compared, as orators, with the aborigines of North America. [...] In short, the language is not capable of reaching the lofty strain of the Blackfeet, the Crees or the Sauteaux, but flows on in a mellifluous feebleness, which, though it never offends the ear, always leaves it unsatisfied. (Simpson 1847:252–253)

At the other extreme of complexity, Khoesian sound systems were also seen as a remnant of primitive speech but typically evoked much less favourable impressions. For example, the more primitive nature of Khoesian was used as evidence in proposed genetic classifications, e.g., by Wilhelm Heinrich Immanuel Bleek (1827–1875):

This knowledge that the great mass of African languages is reducible to two families is mainly due to comparative researches which had taken as their basis the Hottentot and Kafir languages, as exhibiting in general the most primitive state of the two races, in speech, customs, &c. (Bleek 1862: 8)

Unsurprisingly, Khoesian languages were typically regarded as barbarous. In his grammar of Nama mentioned above, Tindall (1857) refers to its sounds as

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4. He is best known as the father of the English poet Gerald Manley Hopkins (1844–1889).

“harsh and peculiar” (p. 3); in turn, the Bushmen languages are said to “exceed the Hottentot in the uncouthness and barbarity of the sounds of which they are composed” (p. 5). According to Archibald Henry Sayce (1845–1933), while the polysynthetic languages of North America preserve an early form of grammar, Bushman languages preserve a remnant of an early form of the sound systems, thus constituting “the bridge that marks the passage of inarticulate cries into articulate speech” (Sayce 1880 I, p. 281).

Since phonetic description constitutes the starting point of a description of a language, accounts of sound systems not only reflect the theoretical and methodological assumptions of the commentators but also influence the interpretation of other components of language. Imperfect phonetic description typically resulted in inaccurate presentation of the lexicon and morphology of polysynthetic languages such as Iroquoian.

An example of a negative treatment of these components is provided by Frederic Farrar’s (1831–1903) critique in his *Families of Speech* (1870) of the earlier enthusiasm for ‘savage’ languages. In particular, Farrar criticized not only Du Ponceau’s account of the regularity of polysynthesis in American Indian languages and the description of the noble character of Huron by Pierre François de Charlevoix (cf. §4.3), but also John Whittle Appleyard’s (1814–1874) treatment of the languages of Southern Africa as “highly systematic and truly philosophical” (Appleyard 1850: v). In response, Farrar pointed to the remnants of primitive forms in “very crude and sensuous” languages, e.g., “dissonant clicks” in Hottentot as well as “guttural and immeasurable polysyllables” in Eskimo and Cherokee (Farrar 1870: 152). According to Farrar, such peculiarities constitute “defects rather than merits” (p. 181).

#### 4.3 *Speaker-oriented accounts of language*

Another descriptive context involves speaker-oriented accounts of language, in which the sound systems of ‘exotic’ languages were interpreted as characteristic of features attributed to the speakers themselves, in most extreme cases comparing them to animals.

The sounds of Huron were considered in the 18th century as evidence of not only the noble and regular character of the language but also of the primitive eloquence of the speakers, e.g., in Joseph-François Lafitau’s (1681–1746) “*Moeurs des sauvages américains*” (1724) and Pierre François de Charlevoix’s (1682–1761) *Histoire et description générale de la Nouvelle France* (1744). For example, Charlevoix praised the richness and nobility of the language as well as the rhetorical prowess of the Huron:

La Langue Huronne est d'une abondance, d'une énergie, & d'une noblesse, qu'on ne trouve peut-être réunies dans aucune des plus belles, que nous connoissons, & ceux, à qui elle est propre, quoique réduits à une poignée d'Hommes, ont encore dans l'ame une élévation, qui s'accorde bien mieux avec la majesté de leur Langage, qu'avec le triste état, où ils sont réduits. (Charlevoix 1744: 196)

[The Huron language is of a richness, energy and nobility hardly found together in any of the most beautiful languages known to us, and its speakers, although there are only a handful of people left, have still an elevation of the soul much more commensurate to the majesty of their language than to the sorry state they are reduced to. (Translation from Schreyer 1996: 108).]

Along the same lines, Hawaiian was frequently viewed as 'childlike' and 'feminine', this in contrast with a 'masculine' language like English. An early example is found in Chamisso's grammar of Hawaiian, where the languages of the Pacific are described as increasingly simple and childlike in their structure and sound systems the further to the east one travels (Chamisso 1837: 5). A more well-known example is provided by Henry Sweet's (1845–1912) *The History of Language* (1900), where Sweet compared Polynesian languages to "the language of children" in a section on "phonetic looseness":

Such languages are like the language of children: they are always starting afresh, and are in a constant ferment of experiment and phonetic licence, checked only by the necessity of being intelligible to a small circle of hearers. The temperament and circumstances of these people are both those of children, and their sound-changes have a childish character. The instability of their surroundings gives their speech that tentative character which we observe in the articulation of infants. (Sweet 1900: 30)

A related interpretation is found in Otto Jespersen's (1860–1943) *Growth and Structure of the English Language* (1905). Jespersen attributed structural differences between languages to supposed male and female traits: a 'masculine' language is endowed with simplified morphology and a fixed word order, as well as such phonological properties as a 'neat' consonant system, complex consonantal clusters and clearly pronounced sounds. For example, English is described as "positively and expressly *masculine*, it is the language of a grown-up man and has very little childish or feminine about it" (p. 2). In contrast, Hawaiian appears as "childlike and effeminate" on account of its unique sound system:

[...] no single word ends in a consonant, and a group of two or more consonants is never found. Can any one be in doubt that even if such a language sound pleasantly and be full of music and harmony, the total impression is childlike and effeminate? (Jespersen 1905: 3)

As we will show in the following section, in these last two interpretations phonetic properties of Polynesian languages were further related to cognitive and environmental factors, respectively.

Another type of accounts involves evolutionary interpretations of ‘exotic’ sound systems. As mentioned above, Sayce (1880 I, p. 281) regarded clicks as borderline cases between “inarticulate cries” and “articulate speech”. Elsewhere, he argued that “it would seem as if no line of division could be drawn between man and beast even when language itself is made the test” (ibid., p. 308). Cases of apparent confusion among sounds in Hawaiian were treated in similar terms: according to Max Müller (1823–1900), such confusion “is a characteristic [...] of the lower stages of human speech, and reminds us of the absence of articulation in the lower stages of the animal world” (Müller 1864: 172). A comparison with animals was also made in interpretations of peculiar sounds in primitive languages as resulting from articulatory restrictions, e.g., by Schultze (1900: 72).

#### 4.4 *Description of speakers*

Finally, simplistic interpretations of sound systems were instrumental in creating images of the speakers in terms of their cognitive ability, cultural and social characteristics and natural environment. Phonetic elements were thus seen as an indication of the “original mental tendencies” of individual races (Bleek 1862: 9), as well as more general cognitive and cultural properties of ‘primitive’ people.

Examples of cognitive readings are provided by the influential works by Max Müller and Henry Sweet. Müller (1864: 167) attributed the confusion between plosives in Hawaiian to “the inability of some races to distinguish, either in hearing or speaking, between some of the most normal letters of our alphabet”. Likewise, in the section on ‘phonetic looseness’ referred to above, Sweet (1900: 29–30) argued that “[n]or must it ever be forgotten that language is only a means to an end. Civilized languages [...] must be precise in their articulation”, and further, with reference to Samoan and other languages of the Pacific, “[a]mong the island populations of the Pacific the tendencies to careless articulation which exist everywhere are allowed greater scope partly from the intellectual indolence of the speakers, partly from the want of external restraint.”

Phonetic form was also seen as both indicative of and resulting from cultural properties of the speech communities. According to Fritz Schultze (1846–1908), the extensive gaps in consonantal inventory in Iroquoian and Polynesian languages point to the limited means of expression, which in turn indicates a lower level of cultural development:

*Diesen Sprachen stehen nicht so viele Ausdrucksmittel zu Gebote wie den Kultursprachen; mithin können sie auch nur weniger ausdrücken. Warum? weil sie*

*überhaupt weniger auszudrücken haben. Warum? weil die geistige Entwicklung überhaupt noch auf niedriger Stufe steht.* (Schultze 1900: 73; italics in the original)<sup>5</sup>

[These languages do not have as many means of expression at their disposal as the languages of culture; at the same time, they can express fewer things only. Why? because they only need to express that much. Why? because their mental development remained at a lower level of intellectual development.]

The unusual phonetic traits of Iroquoian and Polynesian languages were also related to social, demographic and environmental factors. For example, Daa (1856:254–256) attributed the small number of consonants and indistinct pronunciation to the use of these languages in isolated communities and the resulting close social ties: “Everybody who speaks must be understood, because his hearers almost know beforehand what he is to say. The most arbitrary changes of language are thus introduced continually”. A similar explanation of ‘phonetic looseness’ was offered by Sweet (1900: 30), according to whom “[i]n small, scattered communities, which are constantly liable to be broken up into still smaller ones, the instability of external circumstances reflects itself in the language.” Most famously, the characteristic phonetic features of Hawaiian were related to environment factors by Jespersen:

You do not expect much vigour or energy in a people speaking such a language; it seems adapted only to inhabitants of sunny regions where the soil requires scarcely any labour on the part of man to yield him everything he wants, and where life therefore does not bear the stamp of a hard struggle against nature and against fellow-creatures. (Jespersen 1905: 3–4)

Such interpretations are reminiscent of 19th-century racialist anthropology in which phonological, lexical and grammatical properties were linked with supposed cognitive, cultural and environmental factors.

## 5. *Concluding remarks*

The controversies that we have examined in descriptions of the sound systems of ‘exotic’ languages reflect several methodological and theoretical problem areas in phonetic/phonological research. These include the role of the available tools of phonetic analysis and the socio-political context as well as the continuous presence of issues which remain relevant and at least partially unresolved in modern phonetic research such as the notion of complexity.

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5. The absence or disfigured pronunciation of labials was also attributed to the mutilation of nose and lips, explicitly with reference to Nez Percé (Penutian) and by implication to other American Indian languages (Daa 1856; Sayce 1874).

In the first place, phonetic descriptions were shaped by the ‘auxiliary’ status of phonology<sup>6</sup> in linguistic training and practice. They reflected the lack of phonological training among the missionaries whose linguistic accounts were “built on a highly rudimentary phonological basis” (Hanzeli 1969: 43). The limited phonological knowledge often led to confusion between sounds and letters, which in turn correlated with the ‘orthographic’ understanding of phonology in early grammars.<sup>7</sup> For instance, Hanzeli (1969: 77) reported that the missionaries were unable to systematically represent the lack of voicing contrast in obstruents, while blaming the natives for confusing the letters. This further resulted in over-differentiation in the representation of consonants.

Secondly, phonetic descriptions were influenced by the prevailing attitudes and prejudices to ‘exotic’ languages and cultures, e.g., the idea of the Noble Savage (cf. Lauzon 1996). Professional accounts were strongly conditioned by lay reports coming from linguistically naïve observers who were incapable of overcoming the prejudices of their own language and culture. As a result, stereotypical images were created of languages and their speakers, which in turn adversely affected their received status: the vast majority of the languages we discussed are either dead or dying due to, among others, neglect of language education (cf. the status of Cape Khoekhoe mentioned in §3.3).

Finally, a moot idea of linguistic complexity transcends the descriptions we have discussed. Specifically, the accounts of ‘exotic’ languages tend to revolve around extremes in the complexity of their phonetic properties as well as extremes in their interpretation by the observers. The inventories are either large or small, the sounds are either simple or complex, or missing or in abundance, and the structures are either minimal or elaborate. These phonetic extremes receive extreme evaluations ranging from very positive to utterly negative, e.g., efficient vs. primitive, bird song vs. barbarous. Such structural and impressionistic observations about extremes in complexity raise the issue of complexity invariance.

We have shown that phonetic descriptions of ‘exotic’ languages were strongly influenced by ideological, cultural and political considerations. As Joseph & Newmeyer (this volume, p. 361) conclude, the doctrine of equal complexity was motivated by “a well-intentioned rejection of racial superiority”. The principle of equal complexity became a bedrock assumption of 20th-century linguistics (cf. Dixon 1997: 118), with evidence of equal complexity sought in complexity trade-offs, e.g., in morphology vs. syntax (cf. Hockett 1958: 180–181). Importantly, the

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6. Phonology was seen as “‘ancilla morphologiae’, a minor aid in the study of grammar, diction and versification” in 17th-century school grammars (Hanzeli 1969: 80).

7. The order of description was from symbol to sound, and the appropriate section of the grammar was called orthography not phonology (cf. Schütz 1994: 55).

principle of invariance was common to descriptivists and generativists despite their opposing views on the nature of language. Ideologically, differences in ideas expressed in primitive and advanced societies were explained as due to different practical needs and not psychological, racial or ecological factors (Boas 1911).

New linguistic data and analyses have challenged the equal complexity principle. According to Trudgill (2011), the degree of complexity depends on community size, social stability, density of social networks as well as the amount of adult language contact. Thus, for example, creoles are simpler than 'old' languages; 'large' languages like English are simpler than languages of preliterate/intimate societies. In addition, complexity trade-offs have been questioned, e.g., based on evidence from Pirahã (Muran; Amazonia) by Everett (2005) and from varieties of Malay/Indonesian by Gil (2008, 2009). Further, Maddieson (2007) found no evidence of compensation across phonological subsystems.

The "recent decline in popularity" (Joseph & Newmeyer 2012:341) of the equal complexity principle brings us back to the extremes in phonetic complexity we have discussed in this paper, since their existence challenges the principle, too. What remains largely unresolved are the criteria and measure of complexity. Phonetics seemingly offers a more straightforward and objective measure of complexity in terms of articulatory features, size of phonetic inventory and combinatorial possibilities. Maddieson (2009) offers to calculate phonological complexity relying on such factors as: inherent phonetic complexity, combinatorial possibilities of the elements (e.g., possible syllables), frequency of types of the different phonological elements, variability and transparency (with reference to processes). At the same time, Maddieson admits that combining these factors remains a problem. In turn, Ohala (2009) lists a global number of articulatory features, intrinsic phonemic complexity and the overall size of the phonetic space used in a language as a potential measure of complexity.

Joseph & Newmeyer (p. 360–361) point out that while there are no measures of overall linguistic complexity, proposals have been made for measuring individual components of grammar. In phonology, as they mention, this has been for instance Chomsky & Halle's (1968) evaluation metric. Phonological complexity has appeared to be particularly well-suited for measuring due to its reliance on concrete phonetic features which may be rendered, if needed, in absolute terms. Both absolute and relative metrics have been devised to express degrees of markedness, or alternatively, naturalness of phonological systems across a variety of theoretical frameworks (most recently in Optimality Theory). Still, none of those measures succeeds in comprehensively accounting for the complexity of sound inventories, individual segments and phonotactic structures.

The answer may come from experiments. Increasing reliance on empirical methodology (fieldwork, typological surveys, experiments, corpora) not only

contributes to the ongoing fall of the complexity invariance principle, but may also help to measure degrees of complexity. Analysis of complexity growth during lifetime and of differences in competence among individuals appears to be a promising direction (cf. Trudgill's 2011:35 suggestion regarding absolute differences in learning difficulty among languages). We agree with Joseph & Newmeyer's (p. 361) conclusion inspired by Boas that "the question of linguistic complexity needs to be detached from any extrapolation to broader judgments about the culture in which a given language is spoken". Respect for other languages and cultures means recognizing their linguistic and cultural diversity rather than insistence on interpreting them "as minor variations on a European theme" (Sampson 2009: 18).

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### SUMMARY

This article examines common motifs in the accounts of the sound systems of Iroquoian, Polynesian and Khoesian languages as the most well-known cases of extremes in phonetic complexity. On the basis of examples from European and American scholarship between the 17th and early 20th century, we investigate continuities in the description of their seemingly 'exotic' inventories and phonotactic structures when viewed from the perspective of European languages. We also demonstrate the influence of phonetic accounts on the interpretation of other components of language and their role in the construction of biased images of the languages and their speakers. Finally, we show that controversies in descriptions of 'exotic' languages concern issues that remain relevant in modern phonetic research, in particular complexity of phonological systems, while notions which were conceived as 'misconceptions' have re-emerged as unresolved research questions, e.g., the status of clicks and small and large consonant inventories.

### RÉSUMÉ

Cet article est consacré aux motifs communs dans les analyses des systèmes de sonorisation des langues: iroquoises, polynésiennes et khoïsan où on retrouve des occurrences, bien connues, de l'extrême complexité phonétique. Sur la base d'exemples, tirés de sources savantes européennes et américaines entre le XVIIe et le début du XXe siècle, nous étudions les continuités dans la description de leurs inventaires et de leurs structures phonotactiques, d'apparence "exotiques", dans la perspective des langues européennes. Nous démontrons également l'influence des analyses phonétiques sur l'interprétation des autres composantes de la langue et leur rôle dans la construction des images biaisées des langues et de leurs locuteurs. Enfin, nous montrons que les controverses dans la description des langues 'exotiques' restent pertinentes dans la recherche de la phonétique actuelle, surtout en ce qui concerne la complexité des systèmes phonologiques. Par ailleurs, les notions qui ont été conçues comme des 'idées fausses' réapparaissent sous forme des questions non résolues de recherche, i.e., le statut des clics et les inventaires consonantiques petits et grands.

## ZUSAMMENFASSUNG

Die vorliegende Arbeit untersucht gemeinsame Muster in Bezug auf die Lautsysteme von den irokesischen und polynesischen Sprachen sowie Khoisansprachen als die bekanntesten Fälle von Extremen in ihrer phonetischen Komplexität. Anhand von den Beispielen aus der europäischen und amerikanischen Wissenschaft aus dem Zeitraum vom 17. bis zum frühen 20. Jahrhundert untersuchen die Autoren Kontinuitäten in der Beschreibung von ihren scheinbar 'exotischen' Konsonantenbeständen und phonotaktischen Strukturen aus der Perspektive der europäischen Sprachen. Sie zeigen auch den Einfluss der phonetischen Aspekte auf die Interpretation anderer sprachlicher Komponenten und ihre Rolle in der Konstruktion voreingenommener Vorstellungen von den Sprachen und ihren Sprechern. Schließlich zeigen wir, dass sich Kontroversen in der Beschreibung von 'exotischen' Sprachen auf die Themen beziehen, die in der modernen Phonetik-Forschung relevant bleiben, insbesondere auf die Komplexität phonologischer Systeme, während die als 'falsche Annahmen' aufgefassten Ansichten als ungelöste Forschungsfragen wieder aufgetaucht sind, z.B. der Status von Klicks und kleinen bzw. großen Konsonantenbeständen.

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