

A comparison of four descriptions of the Osage sound system*

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Abstract: This paper examines and compares descriptions of the Osage sound system found in four different sources: [La Flesche \(1932\)](#), [Quintero \(2004\)](#), [Quintero \(2010\)](#), and [Wolff \(1952\)](#). While the sources largely agree about vowel quality, there are significant differences when it comes to the description of consonants. Given that there are no longer any L1 speakers of Osage (?), the purpose here is to highlight the similarities and differences found in the extant descriptions of Osage, and this information will be used to inform a larger project which aims to build a more complete description of the sound system that will be linked to recordings from the Carolyn Quintero Collection held at the Sam Noble Museum of Natural History's Native American Languages Collection. What is presented here represents a synthesis of what we know about the segmental inventory of Osage.

Keywords: Osage, Osage Phonetics, Osage Phonology, Revitalization

1. Introduction and overview

Osage belongs to the Dhegiha branch of Siouan languages once spoken widely in the greater Mississippi valley ([Quintero 2004, 2010](#)), and although there are both L2 speakers and learners, there are no longer any L1 speakers ([Quintero 2010](#)). The goal of this paper is to examine and compare the phonetic descriptions of Osage found in La Flesche's Dictionary ([La Flesche 1932](#)), Wolff's *IJAL* article on Osage phonology ([Wolff 1952](#)), Quintero's Grammar ([Quintero 2004](#)), and Quintero's Dictionary ([Quintero 2010](#)). By highlighting the similarities and differences found in these sources, we can identify areas of disagreement and focus our future work with archived recordings on the sounds that are in most need of investigation. Since the focus of this paper is segmental phonetics, I have not included Altshuler's work on quantity-insensitive iambs ([Altshuler 2009](#)) which follows [Quintero \(2004\)](#) for its analysis of phonemes.

This paper examines the sources in their historical order of appearance both to provide a historical overview of our understanding and for ease of exposition.

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2. The four sources

The four sources examined here vary in the degree to which they focus on the sound system of Osage. On the brief end, [La Flesche \(1932:2-3\)](#) uses two pages and a single paragraph to provide a phonetic key for his dictionary. All five pages of [Wolff \(1952\)](#) focus on the sounds of Osage. [Quintero's \(2004\)](#) dictionary has eight pages specifically focused on the pronunciation of Osage, and [Quintero's \(2010\)](#) grammar has a seventy-page chapter on Osage phonology (including detailed discussion of allophonic and dialectal variation), and [?'s \(2010\)](#) dictionary has eight pages specifically focused on the pronunciation of Osage.

2.1. La Flesche 1932

La Flesche's description of the sounds of Osage requires a bit of guess-work precisely because it is brief and because, for the most part, the sounds are almost all explained relative to English sounds; e.g. “*a* as in father, *b* as in bad” ([La Flesche 1932:2](#)).

There are four points where La Flesche's explanation veers away from English. First, La Flesche states that the “[...] continental vowel is used entirely [...]” ([La Flesche 1932:2](#)) and lists some of the vowels as exploded, e.g. ‘*e* exploded *e*’ ([La Flesche 1932:2](#)). Second, there is a set of stops that are listed with an under-dot, *p̣ ṭ ḳ*, and described as “a different sound than the plain letters in English” ([La Flesche 1932:2](#)), e.g. “*ṭ* a medial *t* (between *t* and *d*)” ([La Flesche 1932:3](#)). Third, *x* is listed as “*x* rough German *ch*” ([La Flesche 1932:3](#)). And finally, [La Flesche \(1932:3\)](#) lists *hn* in his key and states “the sound of the initial letter is expelled from the nostrils and is scarcely audible.”

Since *h* appears in combination with other consonants in his dictionary, it is unclear why La Flesche has singled out *hn* in his phonetic key. Perhaps it is intended as a single sound, but it could also be that he just wanted to give a more detailed phonetic description to the cluster. Though his intention is not clear, I include *hn* in [Table 1](#) below as a single segment.

When it comes to *x*, it is safe to conclude that this sound is a voiceless velar fricative (as *ch* is in German), but the “medial” stops are harder to decipher. Because these sounds are not directly equated with English, it is safe to conclude that La Flesche intends for them to be interpreted as distinct from the voiced and voiceless stops of English, perhaps due to aspiration or a fortis-lenis contrast as suggested by later work ([Wolff 1952](#); [Quintero 2004, 2010](#)).

The vowels are less tricky than the consonants. Presumably, by “continental vowel,” La Flesche intends a pronunciation of /i, e, a, o, u/ as is typical in many European languages, similar to the sounds of the International Phonetic Alphabet. To the extent that we frequently encounter languages containing precisely these five vowels, this would appear to be a safe assumption; however, later work gives /u/ as a central vowel (not a back vowel), and European ‘a’ is not the “*a* as in *father*” and since [Quintero \(2004:xv\)](#) also uses “*a* as in *father*” I persist with /a/ rather than /a/ here. Finally, [La Flesche \(1932:2-3\)](#) only lists two nasalized vowels “*i*ⁿ nasalized *i*” and “*o*ⁿ nasalized *o*.”

The term ‘exploded vowels’ is harder to pin down. However, when considering the inclusion of glottal stop ([Wolff 1952](#)) and glottalized consonants ([Quintero 2004, 2010](#)) in [§2.2](#), [§2.3](#), and [§2.4](#) below, we can make some sense of the term “exploded vowels” by assuming that they are vowels that immediately follow glottal stops/glottalized consonants.

Table 1 presents an interpretation, using IPA where possible, of the sounds of Osage based on the pronunciation guide in La Flesche’s (1932) dictionary.

Table 1: Osage phonemes in La Flesche (1932)

VOWELS	IPA
ORAL	/i e a o u/ (/e/ as in <i>prey</i>)
NASAL	/ĩ õ/
“EXPLODED”	/i ‘e ‘a ‘o ‘u ‘ĩ ‘õ/
CONSONANTS	
STOPS	/p b t d k g/ & /p̣ ṭ ḳ/
FRICATIVES	/θ ð s ʃ ʒ x h/
NASALS	/m n/ & /hn/
APPROXIMANT	/w/

2.2. Wolff 1952

Wolff based his description of Osage primarily on fieldwork he carried out in 1951 with two speakers, Fred M. Lookout and Robert Bighorse (Wolff 1952:63). He was careful to note that he encountered two distinct styles of speech, a normal conversational style and a deliberate emphatic style (typical of elicitation work), and while he noted “long or overlong vowels” and “preaspirated or long stops” in the emphatic style, he chose to base his description primarily on the sounds he heard in the conversational context (Wolff 1952:63). In all, Wolff identifies 17 consonants and 5 vowels “plus a phoneme of nasality /ç/, stress //, and syllabic juncture /#/” (Wolff 1952:63). While Wolff used APA symbols to represent Osage sounds, (e.g. *c* for /ts/), Table 2 presents a list of the IPA equivalents.

Table 2: Osage phonemes in Wolff (1952)

VOWELS	IPA
ORAL	/i ε a o u/ (mid-front /e/ = [ε])
NASAL	/ĩ õ ã/
CONSONANTS	
STOPS/AFFRICATE	/p br t k ʔ/ & /ts/
FRICATIVES	/ð s z ʃ ʒ x h/
NASALS	/m n/
APPROXIMANTS	/l w/

A few things stand out about Wolff’s list of phonemes. First, when Wolff introduces the mid-front vowel ⟨e⟩, he provides a phonetic symbol for a mid-low front vowel [ε]. Given the use of [ε], one might expect to see the equivalent mid-low back vowel symbol used, but ⟨o⟩ is matched with the phonetic symbol [o], a mid-high back vowel (Wolff 1952:65). Second, the sequence ⟨br⟩ is listed as a single phoneme among the stops, and Wolff notes that “the phoneme /br/ depends on the dialect. (L) has [bl] or [bəl] and [bəð] in one instance; (B) has [br] or [bər].” (Wolff 1952:64;

Wolff's ⟨r⟩ should really be taken as /ɾ/. For the affricate ⟨c⟩ [ts], Wolff notes that there are three allophones [ts], [tʃ], and [ʃ], with some variation between speakers, and the sound /l/ has some occasional realizations as [dl] and [gl] inter-vocally (Wolff 1952:64).

Finally, among the stops, Wolff noted that there were both pre-aspirated and long variants (of /p t k/ in particular); however, the analysis suggests that they only occur when uttered in “slow delivery and emphatic syllable division” and he speculates on whether some of these sounds might be “sonant-surds [...] consisting of a voiced on-glide and a voiceless off-glide” (Wolff 1952:65). Finally, when discussing syllable types, it is clear that Wolff allowed for glottal stop to serve as the second member of a two-consonant sequence (e.g. the ⟨cʔ⟩ of “cʔé-a-ðe I killed him”; ⟨c⟩ = IPA [ts]; Wolff 1952:65) where Quintero saw this as glottalization of a single consonant.

2.3. Quintero 2004

To the best of my knowledge, the phonology chapter of Quintero's *Osage Grammar* (2004:16-87) is the most detailed and thorough source we have for the sound system of Osage. Quintero describes 8 vowels (5 oral, 3 nasal; 2004:36-37) and 31 consonant phonemes (2004:16-35), and each sound is described in prose and instantiated with examples. The phonemes described in Quintero (2004) are listed in Table 3 below.

Table 3: Osage phonemes in Quintero (2004)

VOWELS		IPA
	ORAL	/i e a o u/ (/u/ often = [y] or [ʉ])
	NASAL	/ĩ õ ã/
CONSONANTS		
	VOICELESS STOPS	/p t ts tʃ k/ ([ts], [tʃ] may be allophones of /t/)
	GLOTTALIZED STOPS	/pʰ tsʰ tʃʰ kʰ/
	PRE-ASPIRATED STOPS	/hp ht hts htʃ hk/
	ASPIRATED STOPS	/pʰ tʰ kʰ/ (but these never surface)
	VOICED STOP	/b/ (but /b/ only occurs with [ɾ])
	FRICATIVES	/s z ʃ ʒ x ɣ h/
	NASALS	/m n/
	APPROXIMANTS	/ð ɾ l w/ (/ɾ/ only occurs with /b/)

For the vowels, Quintero points out that the high rounded vowel *u* is often realized as [y] (which she describes as front or central vowel, implying that it could also be [ʉ], and which she says frequently unrounds to [i]; 2004:35-39), and she notes that /õ/ and /ã/ are often in variation with one another although there are a few minimal pairs for the two phonemes (Quintero 2004:36-37). In addition, she mentions vowel length, and provides minimal pairs illustrating the phonemic quality of length; however, she also states that “[o]ne fairly intractable issue in the data is long vowels” since long vowels often shorten and short vowels may also lengthen, though the exact conditions are not well understood (Quintero 2004:37).

The consonantal system is more complex than that found in Wolff (1952) or La Flesche (1932) because she includes five series of stops: 1) plain stops (and she describes [ts] as an

allophone of /t/; [Quintero 2004:25](#)), 2) glottalized stops (while /tʃ/ is included in her table of phonemes, it is not discussed explicitly in the section on glottalized stops, and she is non-committal about the whether the glottal stop should have phonemic status or not; [Quintero 2004:23-35](#)), 3) pre-aspirated stops which “sometimes appear as geminates” and which include /hts/ and /htf/ even though these may be in complementary distribution with /ht/ ([Quintero 2004:29-34](#)), 4) aspirated stops which “never emerge on the surface” ([Quintero 2004:31-33](#)), and 5) the voiced bilabial stop /b/, included to better match speaker intuitions even though /b/ only occurs in combination with /r/ and can frequently be derived phonologically from underlying /wa + ð/ ([Quintero 2004:23](#)).

For the fricatives, Quintero lists four voiceless and three voiced sounds, but she notes that there is evidence “to suggest that perhaps voicing may not have been the distinctive feature differentiating *z* and *ž* [ʒ] from *s* and *š* [ʃ]” ([Quintero 2004:17](#); bracketed IPA is mine). In addition, she notes that “the tenseness of *s* and [ʃ] is so pronounced that it can easily be mistaken for length” ([Quintero 2004:17](#); bracketed IPA is mine). Finally, she includes both [x] and [ɣ] but states that “the two sounds, once distinct, are merging in modern, obsolescing Osage” ([Quintero 2004:18](#)).

The nasals and approximants fit together in an interesting way. Quintero notes that despite present-day minimal pairs, “the segments *n*, *ɲ*, and *l* are historically related” ([Quintero 2004:19](#)). And while the inclusion of *ɲ* as an approximant, rather than a fricative, may be surprising at first glance, Quintero provides a phonological argument for this. She points out that many instances of the approximant /ɲ/ can be shown to derive from *ɲ* and also that *ɲ* alternates frequently with the palatal approximant *j* ([Quintero 2004:20](#)), and, thus, *ɲ* seems to pattern similarly to and have close connections to other approximants.

2.4. Quintero 2010

In terms of the phoneme inventory, there are few differences between the *Osage Grammar* ([Quintero 2004](#)) and the *Osage Dictionary* ([Quintero 2010](#)). The vowel inventories are identical, though in the *Osage Dictionary* the vowels are described in terms of English, French, and German ([Quintero 2010:xv](#)). Most of the consonants are also the same; the voiceless, voiced, and pre-aspirated stops are identical as are the fricatives, nasals, and approximants.

The key differences are found in the glottalized and aspirated stop series. The *Dictionary* lists the glottal stop among the glottalized stops, albeit, the stop is listed within parentheses to indicate its tenuous status ([Quintero 2010:xviii](#)). For the aspirated series, the *Dictionary* drops the superscript [h] and instead uses sequences of stops and fricatives / pʃ, px tʃh, tx kʃ, kx /, labels the sounds as “(post)aspirated stops”, and drops the claim that these sounds never surface ([Quintero 2010:xviii](#)). Instead, Quintero writes “[w]hat presumably were originally the aspirated (or post-aspirated) stops *ph*, *th*, *kh* appear in Osage as *px*, *tx*, *kx* (before the back vowels *a* [a], *q* [ã], *o*, *o* [õ]) or *pš* [pʃ], *ch* [tʃh], *kš* [kʃ] (usually before other vowels)” ([Quintero 2010:xix](#); IPA is mine). Table 4 presents the Osage phonemes as described in Quintero’s *Osage Dictionary*.

3. Comparing the four descriptions

At a glance, the area of greatest agreement is the vowel system, and the area of greatest disagreement is the analysis of stop consonants, in particular, when it comes to glottalized and aspirated

Table 4: Osage phonemes in [Quintero \(2010\)](#)

VOWELS		IPA
	ORAL	/i e a o u/
	NASAL	/ĩ õ ã/
CONSONANTS		
	VOICELESS STOPS	/p t ts tf k/
	GLOTTALIZED STOPS	/p' ts' k' (?)/
	PRE-ASPIRATED STOPS	/hp ht hts htʃ hk/
	ASPIRATED STOPS	/pʃ px tsh tx kʃ kx/
	VOICED STOP	/b/
	FRICATIVES	/s z ʃ ʒ x ɣ h/
	NASALS	/m n/
	APPROXIMANTS	/ð ɹ l w/

stops. In this section, we will examine the vowels first and then look at each manner of articulation in turn.

3.1. Vowels /i e a o u ĩ õ ã/

All four sources agree list five oral vowels /i e a o u/ and include nasal vowels. The core differences are small: the number of nasal vowels, inclusion of vowel length, the exact quality of /u/ and /e/, and La Flesche’s exploded vowels.

For the nasal vowels, La Flesche only includes /ĩ õ/ while Wolff and Quintero include three /ĩ õ ã/. It may be that La Flesche conflated /õ/ and /ã/, and this suggestion is at least plausible given that Quintero describes considerable variation between /õ/ and /ã/.

Wolff and Quintero both explicitly discuss vowel length while La Flesche does not. Both Wolff and Quintero explicitly state that length is not straight-forward. Wolff (1952:65) states, “[v]owel length varies according to the style employed by the speaker and according to the consonantal environment.” Quintero (2004:37) adds to the idea that phonological context can cause vowel length to vary, stating, “[a]t other times, the otherwise indisputably long vowel seems to be short, or at least shorter, especially when the long vowel is not accented due to its new position in a word”. Quintero (2010:xvi) continues, “[a]lthough vowel length is certainly significant in Osage, it nonetheless can be tricky to perceive and is subject to a good deal of variation.” It seems that vowel length is important to Osage, but there is a great deal of variation, some due to phonological phenomena and some, perhaps, due to individual speakers or speech styles/registers.

When it comes to vowel quality, La Flesche (1932) and Quintero (2010) describe the vowels in terms of English and other languages (e.g. “e as in *prey*” in La Flesche (1932:2) and “English e in *pet*” in Quintero (2010:xv), while Wolff (1952) and Quintero (2004) use phonetic descriptions (e.g. “mid-front e [ɛ]” in Wolff (1952:65) and “mid front unrounded vowel” in Quintero (2004:36). This leads to variation in how to interpret a vowel like e; is it [eɪ] like *prey*? [ɛ] like *pet*? IPA or cardinal [e]? Does it vary between all three? A future acoustic analysis of archived recordings can help provide a more precise picture of /e/ and the vowel system in general.

In the case of the vowel u though, Quintero and Wolff both agree that the vowel is not

purely a back vowel. Wolff (1952) lists it as [u]~[ʉ], and Quintero (2004, 2010) describes it as varying from the central rounded vowel to a front version that sometimes is even unrounded and conflated with [i].

La Flesche's inclusion of *exploded vowels* appears to be a radical distinction from Wolff and Quintero, but if we assume that he perceived the glottalization of consonants as pertaining to the vowel rather than the preceding consonant, we might have an explanation for his description. A quick comparison of lexical items in La Flesche (1932) and Quintero (2010) suggests that this idea might hold water; for the word 'sour', La Flesche (1932:322) lists *ts'a-the* with an exploded 'a' and Quintero (2010:27) lists *sour* as [tsʔáaðe] (IPA mine) with a glottalized consonant.

In summary, we can conclude that Osage has five oral vowels, three nasal vowels, and vowel length, but we cannot be sure of the quality of the vowels, and we need to acknowledge variation in vowel length and variation between nasal /õ/ and /ã/.

3.2. Stops

While the various sources seem to agree the most about the vowel system, the opposite can be said for the various stop series (which, for Wolff and Quintero, also include the affricates); La Flesche (1932:2-3) lists 9 stops with a three-way contrast (voiceless, voiced, and medial), Wolff (1952:63) lists 6 stops including a two-way contrast of voiced and voiceless sounds but also notes several combinations of stops and fricatives that could increase the count of contrasts available, Quintero's *Grammar* (2004:17) lists 18 stops, and Quintero's *Dictionary* (2010:xviii) lists 21 stops (expanding the list of aspirated stops and tentatively including glottal stop). The following subsections examine each series of stop contrasts in order.

3.2.1. Voiceless stops /p t ts k/ (maybe /tʃ/)

When it comes to stops, one area of consistency among all four sources is that they agree on a series of plain, voiceless stops including /p, t, k/. Wolff and Quintero both include an alveolar affricate /ts/ as a single phoneme (Wolff 1952:63-64; Quintero 2004:??; Quintero 2010:??), but for La Flesche, this sound appears to have been encoded as a sequence of medial /t/ and /s/ as shown in his dictionary entry for drum *tsé-xe-ni* (La Flesche 1932:259; c.f. [ts]éyenii in Quintero's *Dictionary* 2010:24; IPA is mine). Wolff and Quintero both discuss the post-alveolar affricate /tʃ/ (La Flesche does not), but they differ about its phonemic status with Wolff not listing it among the phonemes of /ts/ (Wolff 1952:63) and Quintero discussing its distribution with /ts/ but still including it among the phonemes (Quintero 2004:17; Quintero 2010:xviii. Should we think of [tʃ] as a phoneme or an allophone? Quintero's rationale seems to be that the sound is attested in environments that /ts/ can appear in, so it must be included even though "[t]he affricates č [tʃ] and hč [htʃ] are quite rare" (Quintero 2004:34; IPA is mine).

3.2.2. Glottalized stops /p' ts' k'/ (maybe /ʔ/)

Arguably, all four sources recognize the set of sounds that Quintero (2004, 2010) labels as the glottalized series, /p' ts' k'/ (and arguably /ʔ/. The key difference is that La Flesche (1932) does not include a glottal stop or use the term *glottalized* in his descriptions; however, as mentioned in §3.1 above, combining his somewhat mysterious medial consonants with exploded vowels matches up

fairly well with the glottalized consonants in Quintero's work, so he seems to recognize this set of sounds as distinct from others, he just encoded them as a sequence of a consonant and an 'exploded' vowel instead of a single segment. Wolff's work, on the other hand, includes a glottal stop and discussion of how the consonants can combine indicating that, for him, he saw this series as a set of consonant combinations and not as single segments (Wolff 1952:63-65).

This leaves us with the question of whether or not to include the glottal stop /ʔ/ as a phoneme, and this requires two remarks. First, and most importantly, Quintero mentions that /ʔ/ can only "occasionally be directly detected" in a small set of verbs (Quintero 2004:35), and that when it occurs elsewhere its appearance is usually predictable (not phonemic) and "is best considered a phonetic device used occasionally at utterance level" (Quintero 2010:xvii). Second, one could argue that glottal stop, if it were to be included the way Wolff uses it (as a segment that combines with others to create the glottalized series), it should be included among the plain stops, and there should be no distinct series of phonemes.

Distinguishing between Quintero's and Wolff's analyses is a theoretical question that, in principle, could be resolved with both phonetic and phonological evidence that, in the absence of L1 speakers, it may prove difficult to resolve the question. From the point of view of language teaching and revitalization though, it may be easier to treat these sounds as single units rather than a combination of abstract phonemes that comes with context-specific pronunciation rules.

3.2.3. Pre-Aspirated stops /hp ht hts htʃ hk/

The discussion of pre-aspirated stops is similar to that of the glottalized stops. La Flesche (1932) and Wolff (1952) do not include symbols for pre-aspirated sounds, but they do include an /h/ phoneme that can combine with other sounds to create the effect of a pre-aspirated series, and Wolff discusses this possibility explicitly noting that "only voiceless consonants form clusters", that h can be the first member of a CC cluster, and that "[i]n the sequence V + # + p, t, k the stops are pre-aspirated" (Wolff 1952:64-65).

Quintero on the other hand, includes the following pre-aspirated sounds explicitly in her list of phonemes: /hp ht hts htʃ hk/ and notes that they are often realized as geminate stops (Quintero 2004:29; Quintero 2010:xvix) and that /htʃ/ is extremely rare (Quintero 2004:37). Assuming that /hp ht hts htʃ hk/ are single segments allows for a simpler syllable structure, but that, alone, does not necessarily mean that they are single segments. Like with the glottalized consonants, the reasoning for whether to treat these sounds as a single unit or as a sequence of two segments may depend on our phonological theory as much as it does on the phonotactics of Osage. As a reviewer points out, future phonetic analyses of recordings of these segments may also aid in determining if they are 'true' pre-aspirates or not.

3.2.4. (Post-)aspirated stops /px tx kx/

Neither La Flesche nor Wolff mention post-aspirated stops explicitly, but Quintero does in both her *Grammar* and her *Dictionary*.

In her *Grammar*, Quintero (2004:31) provides a phonological and historical rationale for including post-aspirated stops by writing, "[a]ll Dhegiha languages except Osage have a set of post-aspirated stops...I assume here that Osage has underlying post-aspirated stop phonemes (ph,

th, kh), but that they never emerge on the surface.” At a glance, these sounds are purely abstract and, seemingly, not motivated synchronically or empirically.

Quintero’s *Dictionary*, however, provides a different analysis that allows her account to be linked more closely to that of Wolff, to actual pronunciations of Osage, and to historical accounts of Dhegiha languages. Instead of assuming that there are combinations of consonants, Quintero suggests that the sequences in which a stop is followed by a fricative, /pʃ, px, tsh, tx, kʃ, kx/, are the reflexes of Dhegiha post-aspirated stops; “[w]hat presumably were originally the aspirated (or post-aspirated) stops ph, th, kh appear in Osage as px, tx, kx (before back vowels) or pš [pʃ], ch [tsh], kš [kʃ] (usually before other vowels)” (Quintero 2010:xix; IPA is mine). To me, this suggests three phonemes with six allophones, but Quintero lists all six combinations in the phoneme chart (Quintero 2010:xvii).

This is also interesting because, if we allow Wolff’s *h* to take the place of Quintero’s *x* (admittedly a stretch, but not an excessive one), Wolff includes words that instantiate five of the six post-aspirated contrasts mentioned in Quintero’s *Dictionary*, the sequences *ph*, *pʃ*, *th*, *kʃ*, *kh* (*a-ópha* [a’ópha] ‘I believe,’ *pší-ta* [pʃíta] ‘I’ll come,’ *áthq* [’athã] ‘he kicked it,’ *kší* [kʃi] ‘he reached home,’ *áðikha ʒq* [aðikha ʒã] ‘he lay down’; Wolff 1952:65; IPA is mine). So, despite the smaller inventory of phonemes, Wolff’s system uses combinations to account for 5 of Quintero’s 6 post-aspirated phonemes.

3.2.5. Voiced stop /b/

It is clear that Osage has a voiced bilabial sound, but it is not clear that /b/ should hold phonemic status. All four sources include a voiced bilabial stop, and both Wolff and Quintero point out that *b* appears with *ɹ* (Quintero 2004:23; Quintero 2010:xviii; Wolff 1952:64). In addition, Quintero points out that many, though not all, instances of *br* can be derived phonologically from the combination of *wa* + *ð* (Quintero 2004:23; Quintero 2010:xviii), and this suggests that a phonological analysis of Osage that lacks /b/ as a phoneme is possible.

3.3. Fricatives /ð s z ʃ ʒ x ɣ h/

The fricatives, again, present a somewhat complex picture; all four sources include seven fricatives, but they disagree on which fricatives to include. La Flesche (1932:2-3) is the only source to include the voiceless dental fricative /θ/, while Quintero (2004:17-19; 2010:xviii) is the only one to include the voiced velar fricative /ɣ/. Quintero is also unique in listing the voiced dental fricative as an approximant rather than a fricative. Though not stated explicitly, her reasons are phonological; /ð/ alternates with both the palatal approximant [j] and the rhotic [ɹ] and it has a historical connection to the nasal /n/ and the lateral approximant /l/ (Quintero 2004:19-21). For his part, Wolff includes /ð/ with the fricatives and does not include /ɣ/. If we take a more standard view of /ð/ as a fricative, it would appear that there are eight fricatives in Osage, /ð s z ʃ ʒ x ɣ h/.

3.4. Nasals /m n/

The nasal series is another place where the four sources are largely in agreement; all four list both /m/ and /n/ (La Flesche 1932:2-3; Wolff 1952:63; Quintero 2004:17; Quintero 2010:xviii). The outlier is that La Flesche lists /hn/ stating only “the sound of the initial letter is expelled from

the nostrils and is scarcely heard” (La Flesche 1932:3), but as stated in §2.1, it is not clear that La Flesche intended *hn* as a single segment.

3.5. Approximants /ɪ l w/

Quintero (2004) notes that there is a historical connection between /ð, n, l, ɪ/, and she includes /ð/ with the approximants for phonological reasons (mentioned in §3.3,). If we set /ð/ aside, there are three approximants mentioned in the four sources, /ɪ l w/.

La Flesche (1932:2-3) includes only /w/. Wolff (1952:63) lists only /w/ and /l/ as approximants and includes /ɪ/ as part of a digraph /bɪ/. Quintero (2004:17; 2010:xviii) lists /ð ɪ l w/.

4. Conclusion and growing edge

This paper provides a comparison of four sources descriptions of the Osage phoneme inventory, and it suggests that there is much agreement about the vowels, but that there is little agreement on the stops or the basic syllable structure of Osage.

Recent work has clearly benefited from the work that preceded it, and Quintero’s *Grammar* is particularly noteworthy for the detailed prose descriptions and numerous examples that illustrate each sound. The careful and complete descriptions make Quintero’s (2004,2010) work both easier to follow and more complete than the other sources. Although no two sources (even Quintero’s *Grammar* and her *Dictionary*) agree entirely with each other, the image that emerges is that, despite clear initial differences, many of the contrasts that Quintero notes are present in at least some form in the earlier works of Wolff and La Flesche. Where Quintero was willing to expand the list of phonemes while maintaining a simplified syllable structure, Wolff and La Flesche allowed glottal stop and *h* to combine with other consonants and, in that way, account for several of Quintero’s additional phonemes. The lack of consensus with respect to consonants, particularly the pre- and post-aspirated stop series, makes that a logical candidate for future research.

While the phonological analysis of the phoneme inventory may still be up for debate, when it comes to language revitalization work, a more concrete phonetic view which includes a greater number of phonemes but fewer abstract rules of allophony (akin to Quintero’s analysis) might lend itself better to teaching, and it would certainly match up better with the existing resources such as Quintero’s *Dictionary* and *Grammar*.

This paper is the first step in a larger project. The next step will link recordings in the Carolyn Quintero Collection held at the Sam Noble Museum of Natural History’s Native American Languages Collection to the sounds described above. This will allow for more precise, acoustic descriptions of the sounds (using acoustic tools such as Praat), and the hope is that, in the absence of L1 speakers, we will be able to provide an enriched, accessible, and helpful resource to linguists and language learners who are interested in the sounds of Osage. Given how many languages are losing their last L1 speakers, this larger project has the potential to serve as a model for future phonetic work on languages that have at least limited archived recordings but which lack L1 speakers.

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