

Aspiration and glottal/ejective marking in Dorsey's Omaha-Ponca materials.

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0. Introduction

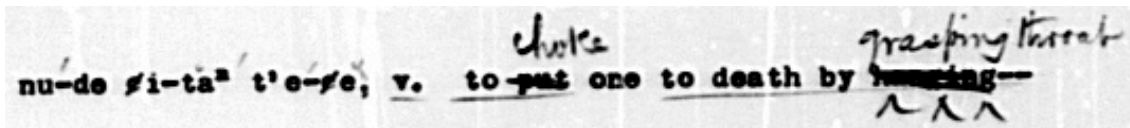
My topic today is the representation of aspirated, ejective and other consonants in James Owen Dorsey's Omaha-Ponca slip file. Dorsey's diacritic system is more complex than it looks at first glance, and easy to misinterpret. A correct interpretation of the diacritic marks is obviously important when using his materials, and it may also tell us something about the phonology of Omaha-Ponca, or at least Dorsey's understanding of it, though most of this talk will be more philological than really phonological.

To give very brief background: Omaha and Ponca are mutually intelligible dialects of a Siouan language historically spoken by the Omaha and Ponca tribes in northeastern Nebraska; Omaha speakers still reside in this area, but most Ponca speakers, now live in Oklahoma. J. O. Dorsey, a missionary linguist, lived and worked with both the Ponca and Omaha peoples from the 1870's through the early 1890's. Among other linguistic contributions, he collected a slip file containing some 17,000 Omaha-Ponca words. This immense resource forms the basis of the Omaha and Ponca Digital Dictionary Project (OPDD: Awakuni-Swetland and Rudin in progress); it was scanned and digitized in the first phase of the project, and can be viewed online, as can the dictionary:

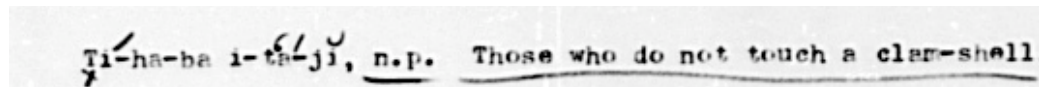
- <http://omahalanguage.unl.edu/images.php>
- http://libresources.unl.edu/projects/omaha_language/
- <http://omahaponca.unl.edu/>

In the process of entering data from this slip file into a dictionary database, we have encountered numerous questions about Dorsey's somewhat idiosyncratic spelling conventions, and we've wrestled with converting his representations into the orthographies currently in use by the two tribes. In this paper I'll be concerned especially with the diacritics shown in images (1a,b,c): ' , °, and x. Look at the letter "t" -- it occurs with a typed apostrophe (') in (1a), a handwritten open-quote mark (°) in (1a) and more clearly in (1b), a small x under the letter in (1c), as well as with no diacritic in two places in (1c).

1.a.



b.



c.

ta^h-wa^h-a-ta^h-ta^h, adv. from a camp or village.

These diacritics represent the different types of stops and fricatives found in the language.

I. The Consonants of Omaha-Ponca.

As shown in the chart in (2), Omaha-Ponca phonemically distinguishes three series of voiceless stops: glottal or ejective, aspirated, and unaspirated tense or geminate (in addition to an unaspirated lenis series, labelled “plain” in the chart, which is voiced except as the second element of a cluster with a voiceless fricative preceding: sp, ft, sk, xt, etc.). The aspirated, ejective, and geminate series could arguably be seen as phonological clusters: underlyingly stop + h, stop + glottal stop, and stop + stop. However, they are treated as single consonants by the modern spelling systems (and by most Siouan linguists), and I will treat them as such here too.

(2) The stop (and affricate) phonemes

<i>stops</i>	plain	glottal/ejective	aspirated	geminate/tense
<i>labial</i>	b ~ p	p̣	p ^h	pp
<i>alveolar</i>	d ~ t	ṭ	t ^h	tt
<i>velar</i>	g ~ k	ḳ	k ^h	kk
<i>palatal</i>	dʒ ~ tʃ	tʃ̣	tʃ ^h	ttʃ

In addition there are ejective fricatives (though not aspirated or geminate), in addition to plain voiced and voiceless series.

3. The fricative phonemes

<i>fricatives</i>	voiced	voiceless	glottal/ejective
<i>alveolar</i>	z	s	ṣ
<i>palatal</i>	ʒ	ʃ	ʃ̣
<i>velar</i>	ʁ	x	x̣

How to represent all these types of consonants has been an issue ever since Dorsey began writing the language, and orthographical disagreements remain a problem for O-P language teachers and learners even today. Dorsey’s Omaha and Ponca materials contain idiosyncratic and sometimes inconsistent marking of these distinctions. In many cases his practice changed during the two decades he spent working on the language, so it’s something of a moving target. In the slip file the diacritics we saw earlier represent the stop and fricative series as follows:

- ' T' = glottal/ejective stop
- • = glottal stop
S• = glottal/ejective fricative
T• = aspirated stop (inconsistent)
- x T_x = geminate stop (inconsistent)
S_x = semi-voiced fricative allophone

(none) T = (in clusters) plain stop
T = (elsewhere) usually aspirated stop; can be geminate stop

In the rest of my talk I'll show examples of these diacritic usages from the slips and problems converting them to the modern orthography. If I have time at the end I'll talk about what Dorsey might have been thinking to come up with this odd system.

II. Aspirates: marked and unmarked

I'll begin with the aspirated stops, which is the series Dorsey marks the least consistently. Early on he appears not to have been aware of the distinction between the aspirated and geminate stop series, writing them both with a plain stop letter in his 1870's grammar manuscript. In later works, including the slip file he did mark the distinction, usually by using a special symbol of some kind for the geminate series. But he still sometimes failed to mark the distinction, and sometimes marked the aspirated stop. In the slip file, some aspirated stops are marked with the large handwritten open quote.

4. aspirated, marked with •: /wet^haⁿ/

✓ we-ta[•], n. of ta[•]; that by means of which something may be possessed. Syn., wiuketa[•]. See ita[•], iwi[•], waweci,

However, the aspirated /p^h, t^h, k^h, tʃ^h/ are most often represented by unadorned stop letters (p, t, k, tc). (5) is an example that is actually homophonous with the preceding one, though Dorsey writes it differently.

5. aspirated, no diacritic: /wet^haⁿ/

we-ta[•], 1st. dat. of ata[•]; to tread on their property accidentally;
to tread on it for them (not the owners) -- we'ata[•], weata[•], wiŋgata[•]i.

The same unmarked stop letters are used for the plain /p, t, k/ in clusters, which is fine, since in this environment there is no contrast with any other stop series.

6. plain stop in clusters, no diacritic: /ʃtaⁿʃtaⁿga/

ctaⁿʃctaⁿ-ga, freq. of ctaⁿga; soft or bunchy here and there.

Unfortunately, these unmarked stop letters ALSO quite often represent the geminate series, as in (7).

7. unmarked but NOT aspirated (geminate) /ttapuska/

ta-pu-ska, n. a teacher; a missionary. Used by the Omahas.

So plain letter p, t, k, tc not in clusters are ambiguous: they usually represent an aspirated stop but can also represent unaspirated (geminate) stop. In (8) we see both usages in a single lexeme:

8. unmarked --- one aspirated, one geminate /tta t^hedi/

ta-t^h-di (tato^x ědi), when about to — (>tait^hedi). Pi' tat^hedi, then
I was about to start hither (OPL: 155, 3; 163, 2;

In the OPDD database, data is entered exactly as written by Dorsey, but converted automatically to appear in the public dictionary view in the modern Omaha spelling system, what we call the Macy orthography. The orthography algorithm converts Dorsey's stop letters with no diacritic to aspirated (written with raised h in the Macy spelling). This produces correct results in most cases, but not always: the examples in (7) and (8), where a plain stop letter represents a geminate, come out incorrectly:

9. incorrect Macy orthography conversion:

In modern Omaha spelling used in the Macy school, aspirate = t^h; geminate = t

(7) JOD tapuska > Macy t^hap^huska instead of tapuska

(8) JOD tat^hedi > t^hat^hedi instead of tat^hedi

Unfortunately, it's necessary to check each item with speakers or against other sources to ascertain whether a given diacriticless stop is in fact aspirated, and then corrected one by one. Hand correction of the many cases which are actually unaspirated is time consuming and prone to error -- but we seem to be stuck with it.

<<could show what this hand correction looks like if anyone is interested>>

III. Ejectives: A tale of two apostrophes

Unlike aspirated stops, glottal/ejective consonants are marked very consistently in the slip file. However, all is not entirely straightforward here either. Dorsey uses two different diacritical marks for ejective consonants. Ejective stops are marked with the typewritten close-quote mark (or a small close-quote mark in handwritten examples): p', t', tc', k'.

10. a. typed

t' i^a ze, wrinkled, L.

b.

tc' e' ce (= t' e' ce'), used by old women and children, to kill

c. handwritten: (p' u^a caⁿ 'steaming')

p' u - caⁿ,

Rather confusingly, the larger handwritten open quote ⁶, the same mark used for aspiration with stops, is used to indicate glottalized/ejective fricatives s⁶/c⁶/x⁶. (c=[ʃ]).

11. a. c⁶ = /ʃ/

✓ i^a - ca' ge h^a, v. to reach old age - i^a ca' ge ci, i^a ca' ge pi.

b. s⁶ = /s'/ (compare t' = /t'/ with different diacritic)

✓ t' u^a sa, adj. hump-backed, L. much bent, more than is implied by bagije. Said of very aged persons.

c. q⁶ = /x'/

q⁶ i^a - q⁶ i^a sa, adj. inelastic,

d. handwritten: (compare to 10c)

q⁶ i^a - q⁶ i^a - ca,

This same symbol (the larger handwritten open quote) represents glottal stop initially or between vowels; (12b) shows that glottal stop is shown with the same mark as aspirated t.

12. a.

' a - be, n⁶ a leaf; leaves.
See ja^a abe,

b.

' u - a^a t^a , to afford the enemy cause for seeking revenge (by killing one or more of their people) -- u^a sa^a t^a u^a a^a t^a. U^a t^a a^a gi-

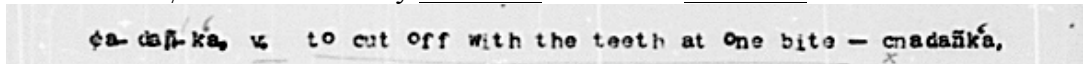
Unfortunately during initial data entry in our dictionary project the distinction between the two apostrophe-like diacritics, ʼ and ˈ, was not recognized. We assumed both marks represented glottal stop or ejective consonant; just handwritten and typed versions of the same symbol. Both were entered as an apostrophe (') in the OPDD database, and convert to Macy orthography glottal consonants. So once again we find ourselves needing to hand correct a fair number of entries: for lexemes with ʼ following a stop, the Macy form is incorrectly generated as “glottal” pʼ, tʼ etc. and has to be changed by hand to the correct aspirated p^h, t^h etc. Examples are shown in (13).

13. Incorrect Macy orthography conversion:

In modern Omaha spelling used in the Macy school, aspirate = t^h; ejective = tʼ

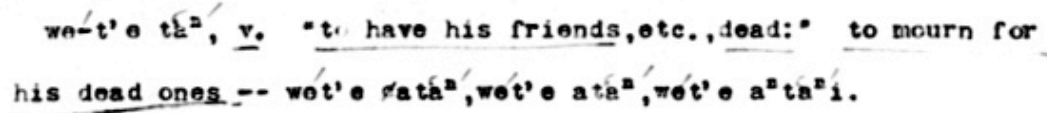
a. aspirate entered as ejective:

JOD ʒadañkʼa > Macy thadoⁿkʼa instead of thadoⁿk^ha



b. ejective and aspirated not distinguished:

JOD wetʼe tʼaⁿ > Macy wetʼe tʼaⁿ instead of wetʼe t^haⁿ

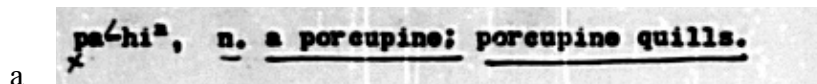


It's really too bad that we didn't notice the two diacritics in time to enter them with different symbols in the database. This problem COULD (and should) be corrected by going back and reentering the incorrect data, and re-programming the conversion algorithm. But this is not likely to happen soon; it would require a new grant and lots of time, so once again we find ourselves hand-correcting.

IV. Geminates and “sonant-surds”

Having briefly discussed aspiration and ejective marking, let's now look at the third stop series, the geminates. This is an area in which Dorsey's practice varied considerably during his career. In his early works, such as his grammar manuscript dating to the 1870s, he simply did not distinguish the geminates from the aspirated stops and plain voiceless stop in clusters, writing all of them with plain t, k, p. His later published works, such as the monumental text collection *The ʒegiha Language* (1890), used upside-down letters for the unaspirated series, or sometimes a dot underneath. In the slip file (which is the basis for the OPDD) unaspirated tense stops are often marked with a small x below the letter, probably a way of making the under-dot more visible.

14.



b. *t'-bu-hu ta-pe, n. the largest prominence on the spine, near the nape*

However, as we've already seen, Dorsey is not 100% consistent in using this under-x diacritic; in some words geminate stops are written without the x, transcribed in the OPDD as aspirated, and need hand-correction of the Macy form.

To show just one more example of this, (15) has two unaspirated t's, one marked and one not, so the first one transcribes incorrectly and requires hand-correction.

15. /ttaiáttá/ -- Macy transcription t^haiáta instead of taiáta

ta-i-a-ta, adv. of tai; a', or near the back of the head.

The same small x is written under s and c to indicate what Dorsey calls the “sonant-surds”, semi-voiced allophones of the fricatives when preceding /n/. Voiced and voiceless fricatives do not contrast in this environment; a fricative before /n/ can be more or less voiced but usually neither fully voiced nor fully voiceless.

16.

gna^hgna-ha, freq. of gna: smooth in many places; slippery

In modern usage the tense or geminate stops are written with a single unmarked stop letter in the “Macy” alphabet, and with a doubled stop letter in UNL materials, as well as in the works of John Koontz and some other Siouan/Dhegiha linguists. The “sonant-surd” fricatives are written as either s or z, sh or zh. In the OPDD version of the Macy alphabet we've chosen to represent them with the voiced letter (z or zh) to encourage a closer-to-accurate pronunciation by language learners.

17.a. Macy tébi'a UNL ttébi'a

te^hbi-a, n. a frog.

b. Macy zni other modern zni or sni

zni, cold, cool.

V. Implications for phonology??

Beyond practical problems for the OPDD, the marking of aspiration, glottalization, and gemination raises questions of how Dorsey heard and thought about these sounds. These in turn raise questions of the sounds' proper phonetic analysis, and how they function in the language. Issues that might eventually be illuminated (though I won't have time to go into them today) include whether the various stop series are best analyzed as complex

segments or as clusters, whether “glottalized” fricatives and “ejective” stops actually involve the same or similar articulatory gestures, and whether the tense stops are truly geminate or not.

I’ll just make a couple of quick remarks today, about what Dorsey’s reasoning may have been.

First, the use of the same diacritic, the under-x, to mark geminate stops and semi-voiced fricative allophones is probably due to Dorsey’s mis-hearing the geminate stops as partially voiced. The geminate stops AND “sonant-surd” fricatives are marked with the same convention in all Dorsey’s works, and he describes them identically in the front matter of *The Cegiha Language* (where they are spelled with an upside-down letter... I don’t attempt to reproduce that here):

18. k_x “a medial k (between k and g). Modified initially; not synthetic”
 s_x “a medial s (between s and z). Not synthetic; modified initially”

I’m not sure what “modified” and “synthetic” mean, but it’s apparent Dorsey heard the geminates’ lack of aspiration as related to voicing. His tendency to mark the (unaspirated) geminate stop series and NOT mark the aspirated one is probably because the geminate is the one that does not sound like English, and his very sporadic overt marking of aspiration is because aspirated stops tend to sound like unremarkable English sounds. I haven’t looked carefully, but I suspect he is especially prone to missing aspiration on stressed syllables and hearing it more in unstressed positions where it is not expected in English.)

Second, Dorsey’s use of the same mark, the large open quote, for overt aspiration of stops and glottalization of fricatives may indicate that he considered aspiration and glottalization to be somehow the same -- but not necessarily. Perhaps in both cases it was just an easy way of marking a sound that didn’t have an obvious correspondent in European writing system, and it didn’t bother him that it didn’t mark the same phonetic feature in the two cases. The diacritics are used this way only in the slipfile, not in Dorsey’s other works. In his 1870’s grammar ejective fricatives as well as ejective stops are written with a small apostrophe, and he clearly defines them both as “explosive”. No open quote mark is used at all.

19. t' “is an explosive t”
 s' “is an explosive s”

In the 1890 text collection *The Cegiha Language*, he does use an open-quote mark, but only for what he calls “exploded” vowels. He does not include any ejective fricatives or glottal stop in the “List of Sounds”, instead treating the glottal element in all contexts except ejective stop as part of the following vowel:

20. ‘ă an initially exploded ă, as in *wēs ‘ă*, a snake.

The slip file has no pronunciation guide or list of sounds; it's possible he still thought of glottal stop and ejective fricatives as involving an "exploded" vowel. Aspiration is not overtly marked in any of Dorsey's materials except the slip file, as far as I am aware. Clearly his thinking on aspiration and glottal features of consonants was in flux throughout his career; some of the inconsistencies of the slip file are surely due to its having been assembled over a period of some years.

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