Cherokee Stop Consonants

Jong-mi Kim
(Kangwon National University)

This paper reports the phonological behavior of Cherokee stop consonants. The Cherokee language, which has not been well investigated in linguistic society, is an American Indian language, primarily spoken in Oklahoma and North Carolina. Presently, there remain fifteen thousand speakers of the Cherokee language (Walker 1975:189). No full-length published grammars of Cherokee had been available until the recent appearance of field works by William Cook and Duane H. King. The present paper is also a field study, working primarily with a native speaker-consultant. The consultant was Mrs. Virginia Carey, who is originally from Talequah, Oklahoma. The data were elicited for about 40 hours by asking in English for Cherokee equivalents.

Among various aspects of the language, this paper shall report the distribution of various stops in Cherokee words. In particular, we are concerned with the phonetic environments of tensed stops, aspirated stops, voiced plain stops and voiceless plain stops.

Being a remote language, the phonemic analysis of these segments has not yet been agreed. For instance, two current linguists, Cook (1978) and Walker (1975) and the native Cherokee spelling system all posit different phonemic systems. The purpose of the present paper is to provide

---

1 This essay is a revised version of my earlier work in ilchŏng chogyut’ae hwagap kinyŏm nonmunjip [Essays in honor of 60th birthday of Gyut’ae Cho], (1989), where appeared plenty of unfortunate misprints. I appreciate its publication committee for allowing me to re-publish this work in another journal. The data for this work were collected in the summer of 1983 at UCLA, when the writer was enrolled in the field method class by Prof. Pamela Munro.

2 Among these stops, Walker (1975:198) posits only voiced and voiceless distinction in Cherokee, and thus other series are considered their allophonic variations. On the other hand, Cook (1978) does not acknowledge the voiced and voiceless distinction in phonemic level. He writes three stops, /t/, /k/, /kw/ plus /h/ and /ʔ/. Compared to this, Cherokee native writing system distinguishes some voiced and voiceless consonants, but no aspirated or tensed ones.
suggestions for future phonemic analysis by reporting the phonetic environments of different varieties of stops. The writer happens to have a sensitive ear for stop variations, being a native speaker of the Korean language in which most of these are all different phonemes.

Throughout the transcription, I use the sound symbols [t'], [k'] for tensed stops; [th], [kh] for aspirated ones; [t], [k] for the voiceless plain consonants; and [d], [g] for the voiced plain consonants. Cherokee does not have bilabial stops. In addition, a vowel symbol /v/ is used for the schwa sound, which in Cherokee is always nasalized. This symbol may look odd, but is a standard representation of schwa in other Southeastern languages. This symbol is not ambiguous for Cherokee words in which there is no labio-dental sound.

Having established phonetic orthography, let us move on to examine the distribution of these consonants. Our first observation on their distribution is that only tensed stops may occur between [s] and a vowel. No exception is found in our data.

(1) Only tense stops occur in the environment of $s\_V$.

   a) oṣṭi:neľ  "husband"
   b) julis ṭi:na: "cat fish"
   c) skčoi  "bug"

This phenomenon is a phonologically natural one for the reasons that (i) aspirated stops are not expected in post-ś position, and that (ii) onsets are usually strengthened as opposed to codas. I will explain these in turn.

The first account is concerned with the non-aspiration in post-ś position. In (1), we do not find an aspirated stop after [s]. This does not seem to be a peculiar phenomenon which is found only in Cherokee. In English for example, stops are not aspirated after s either as in sky, spill, still, skill, etc. (cf. Ladefoged). We thus consider that the phenomenon is not a marked case.

If we consider it reasonable not to find any aspirated stops in (1), we now wonder then, why we find no plain stops, and all tensed stops in the environment. This may be explained in terms of the language general tendency that onsets are usually strengthened as opposed to codas. Linguists (e.g., Pulgram 1970) have often called this the principle of Maximal Onset and Minimal Coda (MOMC, henceforth). One interpretation of this principle is that audibility gets increased in an onset position and decreased in a coda position. Notice that the stops in the environment (1) are always onsets, because they are immediately followed by a vowel. Presumably onset stops here are tensed in order to increase their audibility.
Since we relate the phenomenon (1) with the MOMC principle, let us assure whether the prediction also holds for codas. The principle expects that tensed consonants would not occur in a coda position. In other words, if the environment (1) has no vowel at the end, then the stops in question may not be [+tense] any longer. This expectation is also proved correct, given the following observation on Cherokee.

(2) Only plain stops occur in the environment $s\underline{\#}$.

a) jiskw "bird"

b) jiisk'wv e:li:st'i ukhilv ihlkv? "There is a bird in the tree."

c) di:de:hyohvsk "teacher"

d) Nihi sk'ui dideyonhask\i:\i "Are you a teacher, too?"

e) svntotowas "(meaning misunderstood)"

f) sv:kt\i:a "apple"

These examples show the alternation between plain stops and tense stops depending on their syllabic status. The consonants are plain stops in a coda position as in [kw] of (2.a) and [k] of (2.c). But these stops are tensed in an onset position as in [k'w] of (2.b) and [k'] of (2.d). Not only velar stops, but also alveolar stops also seem to conform to this generalization, as we have an example (2.e) where a plain [t] occurs after [s] word-finally. Notice that the pre-pausal environment in (2) is always a coda position and never an onset position. Thus, following the MOMC principle, the stops in coda get minimized to result the surface phonetic realization of plain stops. Our data do not show any exception for this generalization in (2).

There seems to be another phenomenon which can be understood in terms of MOMC principle. Intervocalic obstruent clusters are always in the sequence of a plain consonant followed by either a tensed consonant or an aspirated one. Let us now name, for convenience, "strong stops" for tensed and aspirated stops.

(3) In VC1C2V context, C1 is plain and C2 is strong.

a) sv:kt\i:a "apple"

b) gost'i agwatk\i:a "Something hit me"

c) di:kt\i:h "eyes"

d) du:kt\i:hesana:l "eyebrows"

e) u:ga\i:na "It rained."
In these examples C1 is always a coda and C2 is always an onset, since these are in intervocalic position. Thus, all coda consonants are plain stops and all onsets are either aspirated or tensed. Since audibility increases for aspirated or tensed consonants, this phenomenon in (3) is considered to be the effect of the MOMC principle. We do not find any exception for the generalization in (3).

Although stops are all strong in C2 position of (3), these are no longer strong if C1 is sonorant. Such examples are relatively rare, but we still find no exception in our data.

(4) Stops are fully voiced in the context $C^{\text{+son}}V$.

\begin{itemize}
  \item [a)] athe:\ldo "plate"
  \item [b)] woend\dagvt'o watshi "watch"
\end{itemize}

In (4), the underlined [d]s are neither tensed nor aspirated. I explain the contrast between (3) and (4) in terms of the voicing effect by the preceding sonorant consonants in (4). Since these enable the following obstruents to be fully voiced, the obstruents in (4) already have great audibility. Hence, there is no need for them to undergo either a tensing rule or an aspiration rule.

If my argument here is valid in that voiced stops need not be tensed in an onset position, one might like to see whether the same argument holds true in a word initial position. This question is of interest, because a word initial consonant of a word pronounced in isolation is always an onset.

What we find word-initially are only voiced plain stops and aspirated strong stops. Thus, our expectation turns out to be correct in that only voiced stops and no tensed stops are found. Since voiced stops are already well audible, we do not expect there to be a strengthening rule to change these voiced stops into tensed ones.

(5) Tensed stops are not found word-initially.

\begin{itemize}
  \item [a)] khv\hi "racoon"
  \item [b)] gv:t'u "bread"
  \item [c)] kho\hi:g "today"
  \item [d)] kha\hw "coffee"
  \item [e)] thu\ya "bean"
  \item [f)] di\de:hyohvsk "teacher"
\end{itemize}
In these examples, the first consonants are always voiced or aspirated. Thus we may interpret this as another kind of maximal onset, since both voiced and tensed forms have great audibility.

Once we consider that voiced stops are also qualified as a maximized onset, now the question arises about our previous generalization in (1). There we found only tense stops after a syllable initial ʂ. And the reasons were, i) aspirated series are not expected after a syllable initial ʂ; and ii) tensed consonants are expected to maximize the onset. Then, given our preposition about voiced stops as a maximal onset, we may expect the occurrence of voiced stops as well in this position. But our data do not show voiced stops in this position. We explain this in terms of voicing assimilation. Since ʂ is a voiceless sound, we do not find a full voiced sound after it.

Thus far, I provided five generalizations as to where the different varieties of stops occur. These generalizations do not face any counter examples. In the following discussions, I will provide data where I cannot provide clear-cut generalizations.

Since our previous observation has covered both word initial consonants and word final ones, let us now consider intervocalic non-clusters. Intervocalically three kinds of consonants occur: tensed, aspirated and voiced series. I attempt three considerations to account for the occurrence of various stops in this position. They are: (i) length of adjacent vowels, (ii) intonation patterns, and (iii) nasality of adjacent vowels. I will discuss these three possibilities in this order.

The first consideration is the length of adjacent vowels.

(6) Length of adjacent vowels do not seem to affect consonant alternation.

   a) diːdeː hyohvsk      "teacher"
   b) sudeːtiːaːt'a      "year"
   c) aːniːthaːl aːniːsk'ai "two men"
   d) aːguːsa            "Greek"
   e) ak'eehyuːdza        "girl"
   f) tsath'aːg          "chicken"
   g) aːdamobiːl          "automobile"
   h) gaːt'u             "bread"
   i) uːthan adzat       "big fish"

The three example sets in (6) represent the following three kinds of environments \( V:\_\_\_\_\_V'\), \( V\_\_\_V'\) and \( V:\_\_\_\_\_V'\). In all these environments, variants of the consonants appear. Therefore, I conclude that the vowel length seems to be irrelevant.

If the length of the adjacent vowels is irrelevant, then one may suspect another possibility to account for the variation in (6). It is the relevance to accentual patterns, since, for example, one
could think of a possibility that tense consonants occur in accented syllable. My conclusion for this after looking at the accentual pattern is a negative one.

(7) Accentual patterns do not give us any prediction about the occurrence of these consonants.

\[
\text{a) } \underline{\text{a} \text{g} \text{u} \text{a}} \text{a} \quad \text{'Greek'} \\
\text{b) } \underline{\text{a} \text{k} \text{e} \text{h} \text{a} \text{v} \text{a}} \quad \text{'woman'} \\
\text{c) } \underline{\text{a} \text{d} \text{s} \text{a} \text{t} \text{o} \text{h} \text{a} \text{e} \text{k}} \quad \text{'woman'} \\
\text{d) } \underline{\text{d} \text{s} \text{i} \text{s} \text{t} \text{a} \text{h} \text{a} \text{i} \text{g}} \quad \text{'chicken'} \\
\text{e) } \underline{\text{a} \text{d} \text{s} \text{i} \text{a} \text{t} \text{i}} \quad \text{"fish"} \\
\text{f) } \underline{\text{g} \text{a} \text{d} \text{s} \text{o} \text{t} \text{e}} \quad \text{"house"} \\
\text{g) } \underline{\text{d} \text{z} \text{i} \text{g} \text{o} \text{t} \text{e}} \quad \text{"I can see"} \\
\text{h) } \underline{\text{g} \text{a} \text{t} \text{a} \text{r} \text{a} \text{t} \text{e} \text{h} \text{e} \text{t} \text{e}} \quad \text{"I see me"}
\]

As in (7 a–e), all the three kinds of consonants occur in a rising accent pattern. I sometimes recorded more than one variety of consonants as in the data (7 f–h). Therefore, I conclude that accentual pattern is irrelevant.

The final possibility I consider to account for the variation in intervocalic stops is the nasality of the adjacent vowels. One may think of the possibility that adjacent nasal quality influences the phonetic alternation. For instance, an aspirated stop may become tensed when adjacent to nasalized vowels or consonants.

The best examples for this purpose would be the sequence of \(+nas\) \(-cont\) \(+nas\). \([-son]\).

Unfortunately, however, I do not have any such examples, partially because of my unreliable perception on nasalized vowels.
Then the second compromise for this purpose is to look at the variation of stops in the position ___V#. This position is of interest because all the vowels are nasalized word-finally in Cherokee (Cook 1978). Thus all word-final vowels provide the nasalized environment for the preceding consonants.

(8) Various consonants occur in the position ___V#

a) gadzo:de  "house"

b) adziat’i  "fish"

c) ga:t’a:gothi  gat’akhethi  "I see me"

In (8 a&c) I heard these in more than one way. Since all the kinds of stops occur in this environment, one may suspect that nasal quality of an adjacent segment is irrelevant to the intervocalic stops. Thus, in the discussions so far, I had no way of explaining the intervocalic variation of stops.

My final consideration is the possibility of the free variation of stops in this position. I argue for this possibility in the lights of the two facts. The first argument is concerned with the judgment of the native speaker. Mrs. Carey once pronounced the following sentence:

(9) Eli:wu u inat’aga  "She can do it".

When I repeated the sentence with [d] instead of the underlined [t’], Mrs. Carey accepted it. On the other hand, when I repeated it with [th] instead, she refused it. My interpretation of this fact is that Mrs. Carey does not differentiate [d] and [t’] in this position. i.e., For her, [d] & [t’] may well be free variation. The second argument for the free variation is concerned with my inconsistent transcription in (7 f-h) and (8 a&c). The inconsistency in the transcription suggests that the stops in this position may well be free-variation. Let us now summarize the variations of Cherokee stops. The various stops show phonetic alternation in certain environments: after [s], phrase finally, phrase initially, and within intervocalic clusters. However, as for the nature of intervocalic single stops, we suggest that these may be free-variations.
Since the data that I have elicited are rather limited, I am not in a position to make extensive claims about the validity of what I have proposed here. But, it is my hope that what I have presented here is sufficiently interesting to induce colleagues to explore further on Cherokee where there is still so much to be learned.

**Bibliography**


---

**Cherokee 어의 파열음의 분포도**

김 종 미

본고에서는 미국 인디언족의 언어 중 Cherokee 어에 나타나는 파열음의 분포도를 조사 분석한다. Cherokee 는 아직 연구된 바가 적은 언어로서 기존 관계자료가 희귀하므로, 자료수집의 방법은 필자가 직접 본토인과 대면하여 40 여 시간 동안 문답형식을 통해서 채취한 결과를 현장에서 일차 필기하고, 녹음기를 통하여 이차 확인하였다.

조사한 결과, 어운환경에 따라 파열음의 분포를 예측할 수 있는 경우는, [s]음뒤, 단어끝, 단어초 그리고 모음사이의 겹자음이었다. 즉 [s]와 모음사이의 파열음은 반드시 경음이고, 어말 [s]뒤의 것은 반드시 평음이며, 모음과 모음사이의 겹자음은 반드시 선명음을 후경음의 형태로 인접하게 되고, 유성음 사이의 자음은 역시 유성음이다. 또한, 단어초에는 경음이 부재한다.

이러한 분포도는 다른 언어에서도 그 유사성을 발견할 수 있으며, Pulgram 이 주장한 최대초성 최소종성 (Maximal Onset, Minimal Coda) 원칙에도 부합되는 등, 몇몇 언어 일반적인 가설을 뒷받침한다.