

The Past Tense Suffix in Terms of Morpho-Phonology in Punjabi

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1 Introduction

This paper reports on the morphophonology in Punjabi. In concrete, this paper describes the suffix of verbs, mainly focusing on past tense verbs. Before discussing the main topic, I have to tell you about the basic morphological system of verbs in Punjabi. Punjabi has a very complicated morphology system of suffix. Let's look at some verbs in Punjabi.

- | | | | |
|-----|----|-------------|----------|
| (1) | a. | tuṛna | walk |
| | | tuṛja | walked |
| | | tuṛeja | walking |
| | | o tuṛda e | He walks |
| | b. | pundzṇa | wipe |
| | | pundzəja | wiped |
| | | pundzreja | wiping |
| | | o pundzda e | He wipes |

As you notice, the tenses are changed due to the suffix. However, it is difficult to recognize what the stem is and which part the suffix is. For example, as you see in (a) of (1), if the stem is /tuṛ/, the past tense suffix must be /ja/. As for (b) of (1), however, if the stem is /pundz/, assumed in the same way as (a) of (1), the past tense suffix must be /əja/. Here, we easily notice that there is some phonological change of the suffix or stem itself. So, my purpose in this paper is to clear the phonological change in the past tense verbs based on previous research by Bhatia (1993).

2 Terms

In this paper, I will use the term “stem” consistently, including the meaning of “root.” For example, let us think of a fictitious verb that has three forms; “bita”, “bina”, “bireya”. I will call “bi” as the stem, even if it is also the root.

3 Previous Research

The mainstream of this discussion is proposed by Shackle (1993) and Bhatia (1993). Shackle insists that there are eight kinds of the past tense suffix as below.

- | | | |
|-----|----|-------------------|
| (2) | a. | a |
| | b. | ja |
| | c. | tt ^h a |
| | d. | t ^h a |
| | e. | tta |
| | f. | ta |
| | g. | dda |
| | h. | da |

Shackle explains that there are eight morphemes to make the past tense verbs, including marked and unmarked inflection. Yet, it is not an economic system. It is difficult to assume that all the Punjabi native speakers acquire this variety of changes without any rules. On the other hand, Bhatia describes the past tense suffix as below.

- (3) a. The suffix itself is /a/.
b. /t/ is inserted when the stem is ended with a vowel.

This seems more economical and reasonable. However, her insistence is contradictory to the fact below.

- (4) a. gana “sing”
b. gaʒa “sang”
c. garej “singing”
d. ɔ ganda e “He sings”

Notice that the stem is assumed as /ga/, and the past tense suffix is /ja/. In this case, the stem is ended with a vowel, but /j/ is inserted, not /t/. So, she has not yet explained why /t/ is inserted or how other past tense verbs such as /gaʒa/ are generated assuming the suffix as /a/. Thus, in this paper, I will try to explain the past tense suffix in another way, comparing the idea that suffix is /a/, which Bhatia advocates.

4 Basic phonological rules

To examine the past tense suffix, I will show you some phonological rules insisted by Bhatia (1993) as below.

- (5) a. Vowel and consonant alternation occurs to avoid vowel sequence
Ex. gaa+aa=gaavaa
b. Degeminate occurs when the stem is followed by a vowel and zero suffixes
Ex. sutt+iaa=sutiaa
c. Dissimilation of retroflex occurs
Ex. jaaN+Naa=jaaNnaa
d. Schwa is deleted as syncope
Ex. sarak+aa=sarkaa
e. n or t is inserted to avoid the vowel sequence.
Ex. pii+aa=piitaa, jaa+daa=jaandaa

According to Bhatia, these are not as for only the past tense suffix, but it could be the clue to intrigue the morpho-phonological system of the past tense verbs. All we need to do before the discussion has finished here, so in the next section, we are going to see the data.

5 Method

I collected the verb sounds from my consultant, whose L1 is Punjabi and L2 is Urdu, and whose age is 30. I picked up 46 verbs randomly from the Swedish list. Then, he made the verbs in four tenses; present tense, past tense, present continuous tense, and third male singular form for me to recognize which part the stem is. I assumed the common part of all the four tenses as the stem and sorted the other part as the hypothetical suffix. The example is below.

- (6) a. “Lie” leʈna
b. “Lay” leʈəja
c. “Lying” leʈreja
d. “He lies” ɔ leʈda e

According to figure (x), /leʈ/ is assumed as the stem, and /əja/ is taken as the hypothetical suffix.

6 The collected data

There are five hypothetical suffixes. All of the collected data sorted as each hypothetical suffixes are below.

Table 1: The five hypothetical suffixes in Punjabi

suffix	Past tense verbs in Punjabi	suffix	Past tense verbs in Punjabi
ja	vag ja sof ja tur ja fu ja dor ja ka ja par ja sung ja vek ja ga ja vadz ja	əja	punk əja mar əja gir əja ter əja leʃ əja mur əja tar əja sun əja dʒaŋ əja dar əja par əja nakor əja mal əja pundz əja ban əja lik əja vadz əja puʃ əja ud əja dig əja surn əja dʒar əja
təja	ka təja (“reduced”) ka təja (“deleted”) ka təja (“bit”)		
ta	di ta pi ta gi ta si ta be ta kolo ta ka ta		
da	ka da	?	aja kita

Some past tense verbs such as /aja/ (“came”) and /kita/ (“did”) are changed drastically from other tenses so that I couldn’t recognize where the stem is. Although, most of the verbs are sorted as five hypothetical suffixes. Here, note that all the suffixes are ended with /a/, which is Bhatia assume as the true past tense suffix. Also, we notice that the hypothetical suffix of /teja/ /ta/ /da/ is attached only to the stem, which is ended with a vowel. On the other hand, /əja/ is attached only to a consonant. However, from this perspective of view, I am wondering how /ja/ can be explained, which is attached to both a consonant and a vowel. Also, we cannot intrigue the difference of characteristics among the /teja/, /ta/ and /da/ anymore. Thus, in the next section, we will examine each suffix from the new point of view comparing to Bhatia’s idea that /a/ is the past tense suffix.

7 Discussion

In this section, I will discuss each hypothetical suffixes which are mentioned in the previous section. I will discuss them by two stands; Bhatia’s insistent that /a/ is the suffix and another new standpoint that /ja/ is the suffix or underlying form of the suffix. Then, we will compare which is the better to explain the past tense suffix in Punjabi.

7.1 /ja/ First, I will think of the hypothetical suffix of /ja/ by Bhatia’s idea. If /a/ is the suffix, /ja/ need to be explained by /j/ insertion because /j/ must not be the part of the stem. However, we cannot explain why /j/ must

be inserted. According to Figure 6.1, all we can notice is that the stem is ended with various sounds. Even consonants and vowels are mixed up. Thus, it is difficult to explain /j/ insertion assuming that /a/ is the past tense suffix itself.

Then, let us assume that the /ja/ is the suffix itself. It is reasonable to postulate that /ja/ is the suffix because there is no reason to think that /j/ and /a/ is apart. Also, some other hypothetical suffixes such as /təja/ and /əja/ have /ja/. Thus, we can suspect that /ja/ could be something like the core of the past tense suffix. As so far, there is no strong motivation to decide that /ja/ is the suffix, but there are not any motivation to divide /ja/. So, for the time being, we postulate that /ja/ is the suffix, and let's intrigue whether it is reasonable or not with other hypothetical suffixed presented above. The new assumption which is established here is below.

(7) The suffix is /ja/.

7.2 /əja/ First, I will think of the hypothetical suffix of /a/ by Bhatia's idea. If /a/ is the suffix, /ja/ need to be explained by /j/ insertion and /ə/ insertion no matter which comes first. As /ja/, however, there is no explanation of why they are inserted. Also, even if we assume that /ə/ is the part of the stem by a certain phonological rule, basically, we cannot explain the /j/ insertion as I said before. Thus, it is difficult to assume that /a/ is the suffix to explain the past tense verbs with /əja/.

Then, let us assume that /ja/ is the suffix as shown in (7). If the suffix is /ja/, we need to explain how /ə/ is represented, and we can think that it is the part of the stem. However, other tensed form delete /ə/ so that we can only see it in the past tense verbs. Thus, we count /ə/ as the part of the past tense suffix. I take the example below.

- (8)
- | | | |
|----|---------------|-------------|
| a. | /pundʒna/ | “wipe” |
| b. | /pundʒreja/ | “wiping” |
| c. | /ɔ pundʒda e/ | “He wipes.” |
| d. | /pundʒəja/ | “wiped” |

According to Bhatia (1993), she notices that syncope occurs in Punjabi as I said in d. in (8). If we regard this phonological phenomenon, whereas the common part of a.- d. in (8) is only /pundʒ/, we can predict that /ə/ deletion occurs before each suffix due to the syncope. Therefore, the underlying form of the stem is /pundʒə/, then only the stem of the past tense form remains this /ə/. To put it another word, the real suffix of the hypothetical suffix of /əja/ is /ja/ as same as (7) and /ə/ is the part of the stem. As you can see in Table 1, the fact that all the final words before /əja/ are consonants demonstrates that this assumption is valid. Thus, the new assumption to explain the past tense suffix is below.

- (9)
- | | |
|----|-------------------------------|
| a. | The suffix is /ja/. |
| b. | Syncope occurs to delete /ə/. |

7.3 /ta/ Bhatia explains this hypothetical suffix of /ta/ with /t/ insertion to avoid the vowel sequence. However, there is no reason to use /t/. So, it is difficult to explain the insertion, though the reason for insertion itself can be explained.

However, the assumption that /ja/ is the suffix as the previous section can explain this hypothetical suffix of /ta/ without insertion. To explain it, first, I postulate the phonological rule as below.

- (10) [j] → ø / [t] _ (/t+ja/* ,no palatalized /t/)

Example (10) shows that /j/ must be deleted after [t] sound because /t/ cannot be palatalized in Punjabi. Using these phonological rules, we can assume that the underlying form of the past tense suffix is /ja/, and [t] is the part of the stem. Then, [j] is deleted to avoid /t/ from palatalization. This assumption is compatible with the fact of /t/ deletion in other tenses. If this assumption is true, we have to find the fact that other tenses need to delete /t/. The example is below.

- (11)
- | | | | | |
|----|------------|-------------|------------|--------------|
| a. | /pina/ | “drink” | /pɪ+na/ | (/pɪt+na/*) |
| b. | /pɪrəja/ | “drinking” | /pɪ+rəja/ | (pɪt+rəja/*) |
| c. | /ɔ pɪda e/ | “He drinks” | /pɪ+da/ | (pɪt+da/*) |
| d. | /pɪta/ | “drunk” | /pɪt+(j)a/ | |

If we assume /t/ as the part of the stem, of course, other tenses need /t/ as the stem. However, we cannot see /t/ in other forms as a., b. and c. in (11). That is why we have taken /ta/ as hypothetical suffixes of past tense. So, I need

to think that /t/ is deleted in other tenses supporting my assumption. According to my data, no verbs whose stems are ended with /t/ is attached to /na/, /reja/ and /da/ as the example in (11). We also confirm it from Table 1. because in the verbs whose hypothetical suffix is /ja/, /əja/, /təja/ and /da/, there is no stem ended with /t/. (If the hypothetical stem was ended with /t/, /t/ must have appeared in other tenses before /na/, /reja/ and /da/.) Thus, note that also other tenses need to delete /t/ to be attached to /na/, /reja/ and /da/. So, we can assume another phonological rule here as below.

(12) [t] → ø / _ [na /reja /da]

What I should mention is that there is some possibility that [t] cannot be attached to the coronal consonants, especially for exact alveolar consonants because all [n], [r] and [d] are the coronal alveolar consonants. It is predictable to avoid having two identical elements next to each other due to Obligatory Contour Principle (OCP-coronal). However, there is no enough data to confirm that [t] cannot be attached to all the coronal or alveolar sounds in Punjabi. To sum up, we have assumed that /a/ is the surface suffix with two phonological rules as below.

(13) a. The underlying form of the past tense suffix is /ja,/ and the surface form is /a/.
 b. [j] → ø / [t] _
 c. [t] → ø / _ [na /reja /da]

7.4 /da/ Next, we will focus on the hypothetical suffix of /da/. The explanation here will also be similar to the previous section about /ta/. First, let us explain it regarding Bhatia's idea. Bhatia does not mention /da/ in detail. Based on the idea of /ta/, /da/ occurs because of the /d/ insertion. However, again, we cannot explain the reason for picking up /d/ to insert between the suffix of /a/ and the stem. Thus, we cannot explain it more than that the insertion is happened to avoid the vowel sequence.

Then, I will explain /da/ regarding the idea that /ja/ is the underlying formed. Similar to /ta/, /ja/ is the underlying form and /d/ is the part of the stem. However, /j/ is deleted due to the phonological rule below.

(14) [j] → ø / [d] _ (/d+ja/* ,no palatalized /d/)

Example (14) shows that /j/ must be deleted after [d] sound because /d/ cannot be palatalized in Punjabi. Restricted by this phonological rule as similar to b. In (13), /j/ deletion occurs to avoid /d/ from palatalization. If this assumption is true, we have to find the reason that other tenses need to delete /d/ as you can see below.

(15)	a.	/kana/	“eat”	/ka+na/	(/kad+na/*)
	b.	/kareja/	“eating”	/ka+reja/	(/kad+reja/*)
	c.	/ɔ kanda e/	“He eats”	/ka+n+da/	(/kad+da/*)
	d.	/kada/	“ate”	/kad+(j)a/	

According to my data shown in (15), no verbs whose stems are ended with /d/ is attached to /na/, /reja/ and /da/. We also confirm it from Table 1 because in the verbs whose hypothetical suffix is /ja/, /əja/, /təja/ and /da/, there is no stem ended with /d/. Thus, we notice that also other tenses need to delete /d/ to be attached to /na/, /reja/ and /da/. Notice that c. in (15) shows that /d/ seems to be alternated by /n/. However, we cannot reach a conclusion about the third singular male form more than /d/ do not appear in that environment because this is not the scope of this paper, which is about the past tense verbs. So, temporarily, I suppose that /d/ is deleted to make the phonological rule easily, focusing on the past tense suffix. The phonological rule to be described above is below.

(16) [d] → ø / _ [na /reja /da]

As seen in illustrating of /ta/ in the previous section, we note that /n/, /r/ and /d/ is the coronal alveolar sounds in addition to /d/. Thus, we can predict that /d/ is deleted to avoid the sequences of the coronal alveolar sounds due to OCP. However, again, we cannot reach the conclusion that it happens to all the coronal or alveolar consonants in Punjabi due to the shortage of my data. In addition, we notice that both /t/ and /d/ are alveolar plosive consonants. To sum up, the fact is that /a/ is the suffix. The new assumption in this section is summarized as below.

(17) a. The underlying form of the past tense suffix is /ja,/ and the surface form is /a/.
 b. [j] → ø / [+alveolar /+plosive /+consonants] _
 c. [+alveolar /+plosive /+consonants] → ø / _ [na /reja /da]

7.5 /təja/ First, we easily notice that it is difficult to explain the hypothetical suffix of /təja/ from Bhatia's standpoint that /a/ is the past tense suffix. The number of the sound before /a/ is too many to think about insertion, and also, we confirmed before that /j/ insertion cannot be explained. Although Bhatia insists that /t/ is inserted to dissimilation of vowels, we cannot explain /əja/ with the insistence that /a/ is the past tense suffix as you have seen in the previous section.

I propose that /ja/ is the suffix and /tə/ is the part of the stem. We have already seen how appropriate /ja/ is suffix itself. In this time, again, dividing /tə/ and /ja/ brings a plausible explanation. If we suppose that /tə/ is the part of the stem, we need to find the reason that /tə/ is not seen in other tenses. Let us look at two verbs whose hypothetical past tense suffix is /təja/.

(18)	a.	/kata/	“reduce”	/kat+a/ (/katə+na/*)
		/kaɽreja/	“reducing”	/kaɽ+reja/ (/katə+reja/*)
		/katanda/	“reduces”	/katan+da/(katə+da/*)
		/katəja/	“reduced”	/katə+ja/
	b.	/kat/	“delete”	/kat/ (/katə+na/*)
		/kaɽreja/	“deleting”	/kaɽ+reja/ (/katə+reja/*)
		/kaɽada/	“deletes”	/kaɽa+da/ (/katə+da/*)
		/katəja/	“deleted”	/katə+ja/

As you can see in (18), all other tenses do not allow both /ə/ and /t/ to appear just before the suffixes such as /na/, /reja/ and /da/. All the other tense suffixes need deletion, insertion, or alternation. For example, /t/ is substituted by retroflex /ɽ/ in both a. and b. of (18). I explain this phenomenon by the phonological rules, which we already established in b. in (9) and c in (13). According to b. in (9), /ə/ is deleted due to the syncope. Thus, when we think of other tenses except for the past tense, we can explain that /ə/ of /tə/ is deleted because all the other tense suffix is started with consonants, which make the environment of syncope. For example, in a. of (18), if /ka+tə/ attached to /reja/, syncope occurs as /katə+reja/. Thus, it turns /kat+reja/ by /ə/ deletion. After the phonological rule proposed in b. of Figure (9). is applied, the other one is applied. We can find that after the underlying form turned to be /kat+reja/, /t/ is alternated, or other sounds are inserted to avoid the sequence of coronal or alveolar consonants. c. in (13). shows that the deletion occurs to avoid it, but in this case, alternation or insertion occurs. However, the purpose of both is to avoid the coronal or alveolar sequence due to OCP. For example, as for a. in (18), because of the /ə/ deletion, /kat+reja/ appears as I said before. Then, to avoid /t+r/, /t/ is substituted by retroflex /ɽ/ to make /kaɽreja/. That is why /t/ and /ə/ cannot be appeared in other tenses, even if these are part of the stem. This explanation makes my insistence that only /ja/ is the suffix, and /tə/ is the part of the stem. Thus, the new assumption established in this section is below.

- (19)
- a. /ja/ is the past tense suffix.
 - b. Schwa is deleted due to syncope.
 - c. The sequence of coronal or alveolar consonants triggers the deletion, alternation and insertion to make the surface form of the stem.

7.6 Summary As you notice, if we count /ja/ as the past tense suffix or the underlying suffix, the two phonological rules of Punjabi explain all the hypothetical suffix, which is mentioned in b. and c. in (19). First, /ə/ is deleted due to syncope, which is mentioned by Bhatia (1993). Second, the sequence of the coronal or alveolar consonants is not allowed due to OCP. These rules are applied to producing all the past tense verbs. Thus, it can be said that there are two past tense suffixes; /ja/ and /a/. However, the underlying form of /a/ is also /ja/. Compared to Bhatia's idea that /a/ itself is the underlying suffix, we have reached the conclusion that explains ALL the past tense suffixes more reasonable following the human capability of language acquisition. However, in this paper, all I could find is only five hypothetical suffixes, although Shackle insists that there are eight hypothetical suffixes in (2). Most of the basic rules we have assumed seem to be able to be applied to other suffixes, which we have not yet mentioned. That is because the difference is only described by narrow transcription such as aspiration or geminates. However, this phonetic point is the limitation of this paper.

8 Conclusion

In this paper, we have reached the conclusion that there are only two surface forms and one underlying form of the past tense suffix. This conclusion provides the crucial point for the reason why Shackle found eight past tense suffixes, which seems to be apparently contradictory to the language acquisition. Also, this conclusion can

rewrite Bhatia's explanation for her assumption that /a/ is the past tense suffix in Punjabi, based on the phonological rules which she found. However, this paper has not described the other tense or aspect of verbs such as present tense, present continuous tense and third singular male form. These must be related to the overall picture of the verbs in Punjabi, in terms of the morph-phonology. Thus, future research is necessary to study it.

9 References

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