Chapter 5: Grammatical Tone

5.1. General Introduction

In the previous chapter, with the help of a production experiment, we explored the possible tonal contrasts in Chokri. The results revealed five contrastive tones- extra high, high, mid, low, and mid-rising. Despite this large tonal inventory, the tones exhibit clear acoustic distinctions, making them perceptually distinct for native speakers. The perception test further examined the way native speakers perceive these contrastive tones. Through perception tests, we observed that listeners can differentiate tones with just f0 fluctuations.

In this chapter, we shift focus to the grammatical functions of tone in Chokri. Scholars working on tonal languages often emphasize surface tonal rules and phonetic properties, with relatively little attention to the role of tone in grammatical encoding. Conversely, grammatical studies frequently neglect tone as a mechanism for expressing morphological and morphosyntactic functions. As a result, the grammatical role of tone remains underexplored (Konoshenko, 2017). Hyman (2011) highlights the broader potential of tone by stating that tonal phonology can do everything that segmental and metrical phonology can, but the opposite may not be possible. This observation calls for a more integrated approach, where both phonologists and grammarians consider the multifaceted role of tone in linguistic structure.

Tone, when employed exclusively for lexical contrast, lies at one end of the functional spectrum. At the other end, pitch is utilized to express grammatical meanings. Languages in East and Southeast Asia typically use tone to convey lexical distinctions rather than inflectional meanings. (Hyman, 2016; Konoshenko, 2017). Whereas tone encoding both lexical contrasts and grammatical functions, i.e., marking inflectional categories and derivational processes simultaneously, are observed in many African languages (Hyman, 2011).

Grammatical tone (*henceforth,* GT) refers to the use of pitch to encode grammatical information. As such, GT involves tonal modifications, such as tone addition, deletion, replacement, shifting, assimilation, or dissimilation, that are restricted to specific morphemes, constructions, or natural classes thereof and are not attributable to general tonal phonology (Lionnet et al., 2022). GT is most often manifested in inflected or derived word forms and in extended grammatical constructions. In these instances, tonal assignment follows morphosyntactic rules independent of the lexical tones associated with the individual morphemes. Importantly, grammatical tones are not always consistently mapped to specific

meanings and may exhibit variation in their tonal patterns. Palancar (2016) refers to such variable GTs as *morphological tone*, while reserving the term *morphosyntactic tone* for GTs that consistently map to a particular grammatical meaning.

5.2. Grammatical Tone Across Tonal Languages

There have been growing reports on tone languages from different areas where tone is used not only for lexical contrast but for marking inflectional categories and derivational processes as well. More than half of the reports on GT are from several African languages. From analytic languages of the Ijoid Languages (Rolle, 2017) to synthetic languages within Bantu (Grimm, 2024), the grammatical tone is found across tonal languages in Africa, regardless of their morphological typology.

The existing literature on GT spans numerous African language families, including Dogon (McPherson, 2014; McPherson and Heath, 2016), Mande (Vydrin, 2016), Gur (Hyman and Olawsky, 2004), Benue-Congo (Salffner, 2009), Ijoid (Harry, 2004; Harry and Hyman, 2014), Bantu (Odden and Bickmore, 2014; Marlo et al., 2015) and Nilotic (Bennet, 1974; Andersen, 1995; Trommer 2011). GT in South Mexican languages of the Oto-manguan phylum (Campbell, 2016; Dicario, 2016; Kim, 2016) are also well documented. While North America hosts a number of tone languages with simpler tone systems, the role of GT has been found in languages like Hidatsa (Park, 2012), and Cherokee (Uchihara, 2016). The majority of data considered for the typological studies of GT come from the tone languages of these areas.

A notable compilation of GT studies appears in *Tone and Inflection* (Palancar and Léonard, 2016). However, most contributions to this volume focus on African and Oto-Manguean languages, revealing a gap in the literature concerning South Asian tone languages. While grammatical tone appears to be rare among East and Southeast Asian Sino-Tibetan languages, the Tibeto-Burman branch contains at least a few tone languages (Kuki-Thadou and Tenyidie, for instance) with grammatical systems similar to those in Africa, including significant functional loads carried by tone. Relatively few studies have addressed grammatical tone in Southeast Asian tone languages. Jacques (2016), for example, provides a historical account of tonal alternations in verbal inflections in Khaling, a Kiranti language spoken in Nepal.

Kuki-Thadou, a Kuki-Chin Tibeto-Burman language with three lexical tones, exhibits grammatical tone in the form of tone-conditioned morphemes. The language has four pronominal proclitics whose tones vary (low or high-low) depending on the tone of the nominal or verbal root they attach to. When these proclitics appear before the past tense marker, they

bear a high tone instead. Tonal morphemes such as the *genitive high tone* (used in complex noun phrases) and the *subject high* tone are also observed (Hyman, 2007).

In Tenyidie, a Naga language of the Angami-Pochuri group, tone is employed to mark case distinctions, viz., first and third-person singular pronouns with the accusative case are realized with a low tone (Ezung, 2014). It is worth noting that Chokri also falls under the same branch and exhibits a complex tonal system similar to Tenyidie. In Anal, a Northwestern Kuki-Chin language with two lexical tones, both tonal and toneless suffixes follow morphosyntactic tone assignment rules (Ozerov, 2018)

5.3. Typological Classification of Grammatical Tone

In *Grammatical tone: Typology and theory*, Rolle (2018), proposes a phonological typology of grammatical tone based on the interaction among three primary components of GT. These include-

(i) GT *Trigger*: The morpheme or construction which licenses the tonological operation,
(ii) GT *Tune*: The tonal melody that co-varies with the trigger, and,
(iii) GT *Target*: The morpheme that undergoes the tonal operation.

Based on the dominance relations among these components, GT triggers are categorized as either dominant or non-dominant:

(I) Dominant GT: The grammatical tone assigned to the target replaces or deletes the tone of the trigger.

(II) Non-Dominant GT: The target does not override the tone of the trigger but concatenates with it.

These can be further classified as follows:

a. **Replacive-Dominant**: The target's underlying tone is automatically replaced with a grammatical tune (via floating tone, spreading from a sponsor, etc.).

b. **Subtractive-Dominant**: The underlying tone of the target is automatically deleted, without replacement by a grammatical tune.

c. **Recessive-Non-Dominant**: The grammatical tune fails to apply when the target already has tonal specification (typically in privative-culminative systems).

d. **Neutral-Non-Dominant**: There is no automatic replacement or deletion of the target's tone; instead, simple concatenation of tones occurs.

Rolle further identifies three principal modes by which grammatical tone encodes grammatical meaning:

(A) Independent Prosodic Exponence: Tone is the *sole* exponent of a grammatical category, with no accompanying segmental morpheme. Hyman (2016) refers to these as *tonal morphemes*.

(B) Auxiliary Prosodic Exponence: The grammatical category is realized through both a segmental morpheme and an accompanying tonal morpheme.

(C) Prosodic Exponence via Tonological Process: The grammatical tone is realized through a tonal process (e.g., assimilation, shifting), rather than as a distinct tonal morpheme.

5.4. Grammatical Functions of Tone in Chokri

The findings of the previous chapter established that Chokri utilizes pitch distinctions as a fundamental mechanism for lexical contrast, where variations in pitch can alter the meanings of otherwise segmentally identical words. Beyond its lexical role, tone in Chokri also plays a crucial role in encoding grammatical information. It functions within the morphological system in two main capacities:

1. **As an inflectional mechanism**, it marks grammatical categories such as person, tense, aspect, mood, and modality, and
2. **As a derivational tool**, it facilitates the formation of new words.

Konoshenko (2017) argues that lexical tones are unpredictable and do not follow systematic rules based on phonological or grammatical context. They are inherently part of a word's identity and remain invariant regardless of syntactic usage. In contrast, inflectional or grammatical tones are more predictable: they surface in specific morphological environments and consistently convey particular grammatical meanings.

5.4.1. Inflectional Function of Grammatical Tone

Konoshenko (2017) identifies two key criteria for inflectional tone: (a) it must be associated with a lexical stem, rather than a functional element or affix, and (b) it must convey grammatical function, rather than lexical meaning.

In Chokri, tone serves as an inflectional marker for various grammatical categories, particularly in verbal constructions. It is typically linked to the lexical stem and enables speakers to express nuanced grammatical meanings without the need for overt segmental morphology or syntactic restructuring.

5.4.1.1. Tone Marking Persons

Tone can mark distinctions between persons. The personal pronoun[8] [u] serves as a case in point. When pronounced with a high-tone **[ú],** it indicates the first-person plural whereas with a mid-tone **[ū],** it marks the third person singular.

For instance:

i. **ú-kɔ̄** **ū-kɔ̄** tʃə̋-lɛ̄
1-PL 3-PL call-DECL
'We called them'

ii. **ū-kɔ̄** **ú-kɔ̄** tʃə̋-lɛ̄
3-PL 1-PL call-DECL
'They called us'

iii. **ū-ʃə́** **ú-ʃə́** bītə̀-lɛ̄
3-dog 1-dog exactly-DECL
'His/her dog is exactly like our dog'

iv. **ú-ʃə́** **ū-ʃə́** bītə̀-lɛ̄
1-dog 3-dog exactly-DECL

[8] The personal pronoun /u/ functions as both the subjective and objective pronoun. The language does not distinguish between subject and object forms, unlike English, where pronouns such as he/him or they/them indicate different grammatical roles. Additionally, /u/ is gender-neutral, indicating both male and female without distinction.

'Our dog is exactly like his/her dog'

These examples (i – iv) illustrate how tonal variation in the pronoun [u] alone encodes person distinctions, where a-

high tone [ú] refers to the *first-person plural* (e.g., 'we,' 'us,' 'our'), and

low tone [ū] refers to the *third person singular* (e.g., 'he/she,' 'his/her').

5.4.1.2. Tone Marking Aspects

Tone in Chokri also functions to distinguish aspectual categories, particularly the progressive and perfective aspects. These distinctions are realized through tonal modification and vowel lengthening[9] of the verbal root.

v.	í	lɛ̄sɪ́	**tʰɔ̋**-lɛ	
	1SG	paper/book	write-DECL	
	I wrote/write.			
vi.	ato	lɛ̄	vera-ní	**kɘ̄və̋**-lɛ̄
	PN	and	PN-DUAL	fight-DECL
	Ato and vera fight or fought.			
vii.	í	lɛ̄sɪ́	**tʰɔ̋ɔ́**[10]-lɛ̄	
	1SG	paper/book	write.PROG-DECL	
	I am writing.			
viii.	ato	lɛ̄	vera-ní	**kɘ̄və̋ə́**-lɛ̄
	PN	and	PN-DUAL	fight.PROG-DECL
	Ato and vera are fighting.			

[9] The doubled vowel indicates vowel lengthening to accommodate GT. Chokri does not phonemically distinguish between long vowel and short vowel.

[10] Different combination of tones observed in data are due to specific morphosyntactic operation. Chokri otherwise exhibit only one contour tone (lexical: mid-rising as shown in chapter 4) the other combinations of contour tones mark the GT.

ix. í lɛ̄sɪ́ **tʰɔ̋ɔ̋**-lɛ̄
1SG paper/book write.PFV-DECL
I have written.

x. ato lɛ̄ vera-ní **kɔ̄və̋ə̋**-lɛ̄
PN and PN-DUAL fight.PFV-DECL
Ato and vera have fought.

These examples demonstrate how the verb root **[tʰɔ̋]** (‘write’) and **[kɔ̄və̋]** (‘fight’) undergo **morphophonological modification** (in terms of tone and elongated vowel form) to convey distinctions among simple verbs (present/past), progressive aspect, and perfective aspect. In (v) and (vi), the simple (unmarked) verb root may denote either past or present actions, depending on context. In (vii) and (viii), the vowels [**ɔ**] and [**ə**] in the verb roots, [tʰɔ̋] (‘write’), and [kɔ̄və̋] (‘fight’), respectively, are lengthened, and a high tone is added to the new mora ([tʰɔ́ɔ́] and [kɔ̄və́ə́], respectively) indicating the progressive aspect (signaling an ongoing action). In (ix and x), the verbal root is again lengthened, but this time, an extra high tone is used, marking the perfective aspect. Notably, the progressive aspect is consistently marked by a high tone, while the perfective aspect is marked by an extra high tone, as shown below:

Chokri Verbs	**Progressive aspect**	**Perfective aspect**
[tʰɔ̋] (write)	[tʰɔ́ɔ́] (writing)	[tʰɔ̋ɔ̋] (written)
[prə́] (fly)	[prə́ə́] (flying)	[prə̋ə̋] (flown)
[prə̄] (jump)	[prə̄ə́] (jumping)	[prə̄ə̋] (jumped)
[tì] (eat)	[tìí] (eating)	[tìɪ̋] (eaten)
[mɛ̄tɔ̄] (suck)	[mɛ̄tɔ́ɔ́] (sucking)	[mɛ̄tɔ̄ɔ̋] (eaten)

Table 5.1*:* Grammatical roles of contrastive tones in Chokri verbs: the progressive aspect is realized with a high tone; the perfective aspect is realized with an extra high tone.

5.4.1.3. Tone Marking Mood and Modality

Mood and modality, which reflect the speaker's attitude toward the proposition or the intended function of the utterance, are also encoded tonally in Chokri.

xi. [b**á**-tɛ̄] 'sit'

xii. [b**áà**-tɛ̄] 'sit' (permissive or polite mood)

xiii. [b**áa̋**-tɛ̄] 'sit' (requesting/command)

xiv. [b**áàá**-tɛ̄] 'sit' (permissive/ directive mood)

These examples demonstrate how tone alone encodes grammatical information, such as mood and modality, while the segmental structure remains constant. Example (xi) represents the basic imperative form, marked by the imperative suffix **[-tɛ̄]**, conveying a neutral command to 'sit.' Example (xii) introduces a low tone on the elongated vowel, signalling permission or politeness, as in giving someone the option or invitation to sit, often with a deferential or formal tone. Example (xiii), with an extra high tone, expresses a more assertive request or command, stronger than the polite form. Example (xiv) leans toward a directive mood, with a slightly implied perfective aspect in this context. It is used when someone has completed another action (e.g., standing), and is now being prompted to sit as a completion or transition, while still being polite. In this way, tonal variation in Chokri reflects subtle shifts in speaker intent, politeness, and aspectual nuance, even in minimal forms.

5.4.2. Derivational Function of Grammatical Tone

In addition to marking grammatical categories, tone in Chokri also serves a derivational function. Through tonal modification, new lexical categories, especially nouns from verbs and adjectives, can be formed. These tonal changes preserve the meaning of the root but shift the grammatical category and semantic reference.

5.4.2.1. Tone Deriving Nouns from Verbs

xv. í n̥zi̋ **mə̄zə̄**-lɛ̄
1SG last night pee-DECL
I peed last night.

xvi. hīhī tɛ̄ʃə́ **mə̄zə̄**-lɛ̄
this dog pee-DECL
This is dog's pee.

xvii. ū ṇdɔ̄ **dʒə̄pɔ́**-lɛ̄
2SG yesterday speech-DECL
He gave a speech yesterday.

xviii. ātɔ̀ **dʒə̄pɔ̄** mɛ̄tsə̀-mɔ̀-lɛ̄
PN speech clear-NEG-DECL
Ato's speech is not clear.

xix. hāní **kə̄ʒɛ́**-lɛ̄
we fight-DECL
We fought.

xx. **kə̄ʒɛ̄** mɛ̄sə̋-hi-tɛ̄
fight entice-NEG-DECL
Do not entice fights.

In example (xv), the second vowel in the verb [mə̄zɔ̋ ('to pee') carries a mid-rising tone, indicating an action. However, the example shown in (xvi), i.e., its nominal counterpart [mə̄zɔ̄] ('pee'), is realized with a mid-tone, denoting the product or result of the action. A similar shift from high or extra high tone to mid tone can be observed in other verb-noun pairs like [dʒə̄pɔ́] → [dʒə̄pɔ̄] ('to speak' → 'speech'), and [kə̄ʒɛ́] → [kə̄ʒɛ̄] ('to fight' → 'fight' as a noun), respectively.

5.4.2.2. Tone Deriving Nouns from Adjectives

xxi. ātɔ̀ **tʃɛ̄jɔ̀**-tɛ́
PN married-DECL
Ato is married.

xxii. nɔ́ ātɔ̀ **tʃɛ̄jɔ̄**-lə̄ vɔ́-mɛ̄
2SG PN wedding-in go-QP?
Did you attend Ato's wedding?

xxiii. í **kə̄mə̄ʒɛ́**-rī-tɛ́
1SG burden-INT-DECL
I am very burdened.

xxiv. ú-**mə̄ʒɛ̄** hī ɾə̀-ɾī-tɛ́
1PL-suffering this tough-INT-DECL
Our suffering/burden is very big.

In example (xxi), the adjective [tʃɛ̄jɔ̀] (‘married’), marked with an L tone, describes Ato’s state (of marriage) in the sentence ‘Ato is married.’ However, in (xxii), the tonal adjustment (marked with a mid tone) of the same root [tʃɛ̄jɔ̄], yields a noun (‘wedding’), the event or entity derived from the adjectival state. Similarly, [mə̄ʒɛ̋] (‘burdened’) in (xxiii) carrying an EH tone, becomes [mə̄ʒɛ̄] (‘suffering/burden’) carrying a mid tone, shown in (xxiv), represents its nominal form.

These derivational shifts reflect tonal function, where a mid tone systematically replaces extra high, high, low, or rising tones to indicate nominalization. The derived nominal forms represent the entities or abstract ideas associated with the verbal or adjectival roots. This tonal reconfiguration ensures that the derived forms are semantically distinct yet morphologically related to their roots. The examples shown in Table 5.2 below illustrate that the derivational process is governed by a systematic tonal pattern, highlighting tone’s role as a productive morphological tool in Chokri.

Verbs	**Nouns**
[tàlɛ̄] ‘to loiter’	[tālɛ̄] ‘act of loitering’
[métɔ̋] ‘(fire)burning’	[mētɔ̄] ‘flame’
[mɛ̄pɾə́] ‘afraid’	[mɛ̄pɾə̄] ‘fear’
[lɛ̄kʰù] ‘scold’	[lɛ̄kʰū] ‘scolding’
[rələ̋] ‘rest’	[rələ̄] ‘act of rest’
[rəvə́] ‘travel’	[rəvə̄] ‘act of travelling’
[kə̄ɲə̋] ‘wrestle’	[kə̄ɲə̄] ‘wrestling’
[tʰɛ̄kə̋] ‘treat/look after’	[tʰɛ̄kə̄] ‘treatment’

Table 5.2*:* Tone deriving nominal forms from verbal forms

5.5. Discussion

5.5.1. Grammatical Tone Formation in Chokri: A Case of Grammaticalization

This framework accounts for how grammatical forms and constructions emerge, evolve, and adapt across languages, and identifies the mechanisms that shape their structural patterns. Grammaticalization refers to the process by which lexical items or constructions transition into grammatical elements. Heine and Kuteva (2002) argue that this transformation typically involves four core mechanisms explained below:

(i) Semantic bleaching: the loss of original lexical meaning,
(ii) Extension: the application of the form in new grammatical contexts,
(iii) Decategorialization: the loss of morphosyntactic features associated with less grammaticalized or lexical forms, and
(iv) Erosion: the reduction of the form's phonetic substance.

This universal phenomenon is primarily driven by factors such as frequency of use, communicative economy, and functional necessity. Over time, concrete lexical items or syntactic constructions may acquire more abstract grammatical roles, such as, verbs may become auxiliaries, nouns may evolve into case markers, and lexical tones may shift into grammatical tones. Konoshenko (2017) identifies two potential processes by which grammatical tones can emerge: (a) a grammatical or inflectional tone can arise from segmental morphemes originally containing both tonal and segmental components. When the segmental component is lost, the tone remains as a floating grammatical marker (also noted in Hyman, 2011); and (ii) through internal phonological reorganization, where tone, whether lexical or grammatical, arises independently from shifts in laryngeal articulation in the phonological system.

In Chokri, grammatical tone formation aligns with the first principle proposed by Konoshenko (2017) and also attested by Hyman (2011) which suggests that segment deletion leaves behind a floating tone that concatenates with the preceding lexical item, typically a verb root. The examples below illustrate how segmental morphemes marking grammatical functions (e.g., aspect, mood) are deleted, with the tone persisting and attaching to the stem:

Examples (xxv)–(xxviii) illustrate the overt presence of functional morphemes (without segment deletion): The deleted segments are marked in bold.

xxv. í tsālɛ̄ thī́-**vá**-lɛ̄

1SG song do-**PROG**-DECL
I am singing.

xxvi. í tsālɛ̄ thǐ-**vɛ̋**-lɛ̄
1SG song do-**PFV**-DECL
I have sung.

xxvii. nɔ́ tsālɛ̄ thǐ-**jì**-tɛ̄
2SG song do-**PERM**-IMP
you sing.

xxviii. nɔ́ tsālɛ̄ thǐ-**vǎ**-tɛ̄
2SG song do-**REQ**-IMP
you sing.

By contrast, examples (xxix) – (xxxii) reflect segment deletion, where the **tone persists** as a grammatical marker.

xxix. í tsālɛ̄ thǐ́ǐ-lɛ̄
1SG song do.**PROG**-DECL
I am singing.

xxx. í tsālɛ̄ thǐ́ǐ-lɛ̄
1SG song do.**PFV**-DECL
I have sung.

xxxi. nɔ́ tsālɛ̄ thǐ́ì-tɛ̄
2SG song do.**REQ**-IMP
You sing.

xxxii. nɔ́ tsālɛ̄ thǐ́ǐ -tɛ̄
2SG song do.**REQ**-IMP
You sing.

Progressive Aspect with and without Deletion:

a. With overt morpheme:

a. í tsālɛ̄ thĭ-**vá**-lɛ̄
1SG song do-**PROG**-DECL
I am singing.

Here, the progressive aspect is marked by the suffix [-va], which carries a High tone. In this case, the morpheme **[-va]** is present, explicitly marking the progressive aspect.

b. With deletion and tonal retainment:

b. í tsālɛ̄ thĭ**í**-lɛ̄
1SG song do.**PROG**-DECL
I am singing.

We can observe that the suffix [-va] is deleted, and the high tone is retained as a floating tone, realized on the verb stem, where the vowel is also elongated to accommodate the additional high tone.

So far, we have discussed the deletion of segments and the emergence of GT through deletion. However, this process of deletion or tonal grammaticalization is not arbitrary; it rather follows systematic constraints. For instance, Chokri differentiates between perfective and perfect aspects, each marked by distinct structural elements and functions.

5.5.1.1. Perfective vs. Perfect Aspect in Chokri

The perfective aspect, marked by [-**vɛ̋**], indicates event completion without any implication of resultant state. In contrast, the perfect aspect, expressed by [-**tɛ́**], conveys not only completion but also a resultant state with present relevance. Unlike the perfective aspect, which requires no additional morpheme, the perfect aspect in Chokri mandates the presence of a resultative marker [-**jì**] before the perfect marker [-**tɛ́**]. Thus, the resultative marker [-ji] functions as a completive element, explicitly reinforcing that the event has not only concluded but has led to a specific outcome or state. This is structurally represented below-

Examples:

xxxiii. í t^{h}ɔ̋ tsɔ̄-vɛ̋
1SG write complete-PFV
I have written it completely (perfective; simply indicating completion of the act).

xxxiv. í tʰɔ̃̋ tsɔ̄-jì-tɛ́
1SG write complete-RES-PRF
I have completed writing (perfect; emphasizing resultant state).

In perfective construction [Verb + vɛ̋], the perfective marker [-vɛ̋] may be deleted, and its tone concatenates to the verb. However, in perfect aspect constructions (Verb +jì+tɛ́), the resultative marker [jì] is deleted, while the perfect aspect marker [tɛ́] is retained. This raises two critical questions:

1. Why is the resultative marker [jì] deleted instead of the perfect marker [tɛ́], and
2. Why can't both the resultative marker and perfect aspect marker be deleted, given that both are functional elements?

5.5.1.2. Three Hypotheses for Grammatical Tone Formation

1. ***Structural Adjacency Hypothesis:*** Drawing on the framework of adjacency-conditioned[11] proposed by Lamontagne and Travis (1986), we propose that morpheme deletion in Chokri targets the morpheme most adjacent to the syntactic head, whether lexical or functional. In morphologically complex verbs, the first morpheme in the functional sequence is eligible for optional deletion in speech.
2. ***Moraic Constraint Hypothesis****:* Chokri syllables accommodate a maximum of two moras. In the perfect aspect construction, the verb ([tì], for example) already hosts two moraic units (lexical root + resultative function). Since the verbal root (syllable) has reached its maximum moraic limit, it cannot host another floating tone, which, in turn, prevents the deletion of the perfect aspect marker [tɛ́].

However, this second hypothesis is challenged by data observed in Section 5.4.1.3 on Mood and Modality. Consider the following example-

[11] The concept of adjacency plays a crucial role in morphosyntactic processes across languages, particularly in the realization of case, agreement, and deletion phenomena. Lamontagne and Travis (1986) argue that adjacency conditions govern syntactic dependencies, restricting certain operations such as deletion to elements that are immediately next to each other. This adjacency conditioning has been observed in instances, such as case and complementizer assignment in Japanese, where accusative case and complementizer marking is optional when it adjacent to the verb but obligatory otherwise.

xxxv.	bá-jì-tá-tɛ̄	→	báàá-tɛ̄
	sit-RES-PERM-IMP		sit+RES+PERM-IMP
	sit		sit

Here, [bá] hosts three tones, viz., *lexical + resultative + permissive*, undermining the *Moraic Constraint Hypothesis*. This operation suggests that deletion is not based on phonological limits., which leads to the formation of the third hypothesis:

3. ***Functional Representation Hypothesis***: Chokri sentence construction requires at least one overt marker from the functional domain. If all functional morphemes are deleted, the sentence becomes structurally deficient, resulting in ungrammaticality. Deletion is constrained not by phonological limits but by the need to preserve a minimal functional representation in the clause. Consider the following examples-

xxxvi. í lɔ̄vá tì-**vá**
1SG food eat-PROG
I am eating food

xxxvii. í lɔ̄vá tì**í** *
1SG food eat.PROG
I am eating food
(This is an ungrammatical construction since there is no overt functional marker compensating for the deleted morpheme [-vá].)

xxxviii. í lɔ̄vá tìí-lɛ̄
1SG food eat.PROG-DECL
I am eating food
(This is a grammatical construction; the declarative marker [lɛ̄] compensates for the missing aspect marker, maintaining the functional representation of the sentence).

In (xxxvi), the progressive aspect marker [-vá] is present, ensuring that the sentence is structurally well-formed and unambiguous in meaning. However, in (xxxvii), the aspect marker [-vá] has been deleted, but no other functional marker compensates for its absence. As a result, the sentence becomes ungrammatical. This ungrammaticality arises because the clause lacks any overt aspectual or tense-related marker, making it structurally incomplete. The deletion of [-vá] is only possible if another functional element takes its place. In (xxxviii), grammaticality

is restored when the declarative marker [-lɛ̄] is inserted. These examples provide strong empirical support for the *Functional Representation Hypothesis* proposed herein, which governs that the deletion operation in Chokri is constrained by the requirement that at least one overt functional marker must be present within a given grammatical domain to maintain structural coherence. Deletion in Chokri thus targets the lowest or most adjacent morpheme first. At the same time, grammatical markers can be deleted if, and only if, a higher functional marker is overtly present.

5.5.1.3. Grammaticalization Processes in Chokri

Following the framework proposed by Heine and Kuteva (2002), we argue that the process of grammatical tone formation in Chokri exemplifies the following three processes: (A) **extension**, (B) **decategorialization**, and (C) **erosion**, while **semantic bleaching** plays a minimal role due to the grammatical nature of the source morphemes.

1. **Extension:**

Derivational Tone: The tonal transformation extends the functional capacity of a lexical item. For instance, allowing a verb like [mɔ̄zɔ́] 'pee' to be nominalized as [**mɔ̄zɔ̄**] 'pee (n.),' thus serving new syntactic roles. This transformation demonstrates a functional broadening where the tone allows the verb root to serve in contexts beyond its original verbal domain.

2. **Decategorialization**

Inflectional operation: The replacement of functional morphemes by tones represents a significant abstraction. The tones are no longer tied to specific morphosyntactic properties of lexical items (e.g., being suffixes or prefixes attached to roots). Instead, they operate purely as grammatical markers. This reflects a high degree of decategorialization, as the tones function in a purely abstract grammatical domain, detached from the original lexical or phonological constraints of the morphemes.

Derivational operation: When a verb becomes a noun, it is stripped of verbal properties, such as the ability to inflect for tense or aspect. The resulting noun is decategorialized in the sense that it no longer carries the morphosyntactic markers that define verbs but operates solely within the noun category. The tonal contrasts, in this case, function as a grammatical tool, facilitating the transition while remaining disconnected from the verb's original lexical attributes

3. Erosion:

The deletion of the functional morphemes themselves reflects process of erosion, where the phonological substance of the morpheme is lost. What remains is the floating tone, which becomes the sole indicator of the grammatical function, demonstrating a structural reduction, but the grammatical function is preserved and reanalysed through tone.

In the process of morpheme deletion, unlike lexical items that lose their concrete meaning during grammaticalization, the source morphemes in Chokri are already devoid of significant semantic content. Therefore, semantic bleaching is less relevant in this context, as the grammatical tones inherit purely functional roles without a semantic shift. The emergence of grammatical tone in Chokri exemplifies a structured and principled case of grammaticalization that is guided by **extension**, **decategorialization**, and **erosion**, and regulated by adjacency and functional requirements rather than phonological constraints alone. This process highlights the innovative strategies employed by Chokri speakers for encoding grammatical meaning in the absence of overt morphemes.

5.5.2. Interaction of Lexical Tone and Grammatical Tone

As discussed in the previous section, morpheme deletion in spoken Chokri (speech) triggers a floating tone, which attaches to the preceding lexical item. Crucially, when this floating GT attaches to a verbal root, it does not combine with the lexical tone within a single Tone-Bearing Unit (TBU) to form a contour tone. Instead, a noble TBU is formed in the form of a mora due to the process of vowel lengthening. This ensures adherence to Chokri's tonal structure, which allows each mora to host only one tone. By disallowing multiple tones within a single mora, the language ensures a clear separation between lexical and grammatical tones, allowing both to remain phonologically distinct and functionally independent. This structural principle enables grammatical tone to maintain its role even after the deletion of certain morphemes.

However, the fact that GT triggers vowel lengthening to add a TBU raises a key question: **when grammatical tones require the insertion of a mora, how do speakers determine its placement**, particularly in bisyllabic or polysyllabic words? Specifically, which syllable or vowel in a multisyllabic word does the floating GT prompt to lengthen, and where does the GT attach within the lexical word? For instance, in the case of monosyllabic words, the lengthening process is straightforward, as there is only one vowel to host the added mora. However, in bisyllabic or polysyllabic words, hosting multiple vowels, the decision becomes less obvious.

In such instances, **Chokri systematically lengthens the final vowel of the multisyllabic word** to accommodate the GT.

xxxix. monosyllabic

a. [pɾə́] '*fly*' (lexical word)
b. [pɾə́ə́] *'flying'*
c. [pɾə́ə̋] *'flew'*

xl. bisyllabic

a. [mɛ̄jə̀] *'lick'* (lexical word)
b. [mɛ̄jə̀ə́] *'licking'*
c. [mɛ̄jə̀ə̋] *'licked'*

d. [tʃə̀tə̄] *'kneel'* (lexical word)
e. [tʃə̀tə̄ə́] *'kneeling'*
f. [tʃə̀tə̄ə̋] *'kneeled'*

5.5.3. Distinguishing Grammatical Tone from Lexical Tone

As noted earlier, Chokri vowels are not contrastively long or short (length distinction is not phonemic) in their underlying forms. However, vowel lengthening occurs as a phonological strategy in response to tonal requirements. This is tied to the fact that the TBU in Chokri is the mora, a unit of syllable weight. A vowel, thus, can be monomoraic or bimoraic, depending on the syllable's weight. A bimoraic vowel, for example, can accommodate more than one tone, with each mora hosting a distinct tonal feature. This characteristic significantly influences how tones are distributed and realized, allowing both lexical and grammatical tones to coexist on a single vowel in a predictable manner.

When a single vowel must accommodate both a lexical and a grammatical tone, it undergoes **vowel lengthening to become bimoraic**, allowing each mora to host a single tone:

(1) The **first mora** carries the **lexical tone**, which contributes to the word's inherent meaning.
(2) The **second mora** hosts the **grammatical tone**, which encodes morphosyntactic functions like tense, aspect, or mood.

This process ensures that both tones are realized without phonological conflict. A visual representation (Figure 5.1) illustrates this mechanism, highlighting the systematic placement of tones.

Such strategies are **cross-linguistically common**. Languages like Thai (Gandour, 1977) and several African tone languages (Ward, 1944) also use vowel lengthening to accommodate tonal complexity. Yip (2002) notes that word-final syllables are often preferred for contour tone realization, which aligns with Chokri's final vowel lengthening strategy.

Vowel lengthening in Chokri serves three specific purposes- (i) *Preservation of Meaning:* it prevents tonal overlap that could obscure lexical meaning; (ii) *Moraic Alignment*: it ensures each tone occupies its own mora. A single mora can only host one tone. By lengthening the vowel, the language creates the necessary space (an additional mora) to accommodate both tones. And (iii) *Lexical-Grammatical Distinction*: The system ensures that the lexical meaning of a word is preserved (via the lexical tone) while also expressing grammatical information (via the application of grammatical tone).

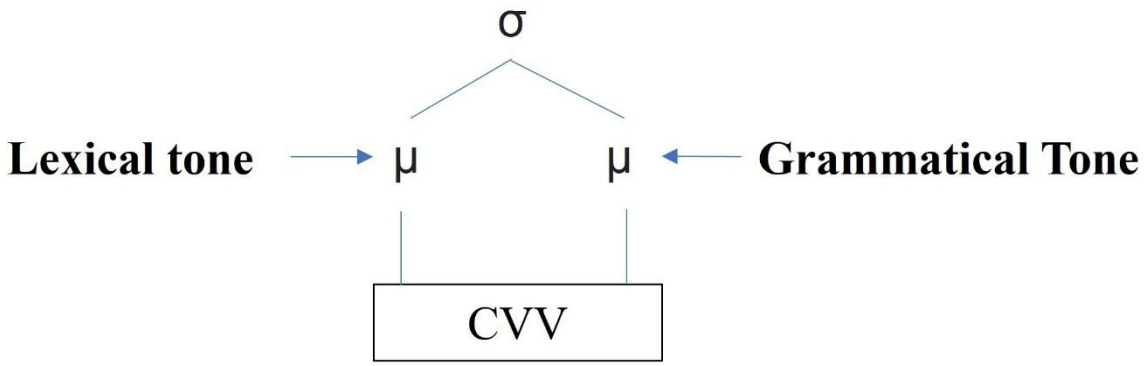

Figure 5.1: Representation of Chokri bimoraic syllable with lexical and grammatical tone.

Figure 5.1 shows that lexical tone consistently occupies the first mora, while the grammatical tone is realized on the second, preserving their structural and functional roles.

5.5.4. Typology of Grammatical Tone in Chokri

Following Rolle's (2018) classification, Chokri GT exhibits both Independent prosodic exponence as well as tonological processes to encode grammatical functions.

5.5.4.1. Grammatical Tone Through Tonological Processes

According to Rolle's (2018) typology, the grammatical tone system in Chokri operates through interactions among three core components, viz., the *trigger*, *tune*, and *target*.

Trigger: The grammatical morpheme, such as progressive [-vá] or perfective [-vɛ́], serves as the trigger.

Tune: The floating tone associated with the deleted morpheme (e.g., high tone for [-vá] and extra-high tone for [-vɛ́]) represents the GT tune.

Target: The verbal root that receives the grammatical tone, with vowel lengthening to accommodate the tone.

Based on the grammatical operations observed in this study, we argue that Chokri GT can be classified as *Non-Dominant Grammatical Tone*, specifically the *Neutral-Non-Dominant GT* (Rolle, 2018), where the tones do not compete but coexist. In this type, the floating grammatical tone concatenates with the lexical tone without replacing or deleting it. For instance, when a progressive or perfective aspect marker is deleted in Chokri, its floating tone remains and attaches to the final vowel of the verbal root without altering its lexical tone. Instead, a new mora is created through vowel lengthening to accommodate the (floating) GT and preserve the lexical tone

5.5.4.2. Exponence of Grammatical Tone in Chokri

GT in Chokri can also be realized through *Independent Prosodic Exponence*, where tone alone serves as the grammatical exponent, with no accompanying morpheme. This is evident in derivational processes (explained in section 5.4.2), where tone shifts change the word's grammatical category (e.g., verb → noun). Similarly, we also observed that the person distinctions are marked solely by tonal variations (e.g., H = 1st person, M = 3rd person) in the inflectional processes (explained in section 5.3.1.1). This aligns with Hyman's (2016) concept of tonal morphemes and Rolle's (2018) model of *Independent Prosodic Exponence***,** where grammatical meaning is encoded directly through tone, independent of segmental phonology. For example:

- High tone (H): First person
- Mid tone (M): Third person

Unlike grammatical tones triggered by the deletion of morphemes (e.g., progressive or perfective markers in Chokri), the tones in this system are lexically specified and directly associated with their grammatical roles. They function as standalone markers, eliminating the need for accompanying segments to signal person or temporal distinctions. These tones function as *Replacive-Dominant GTs,* replacing any existing tone of the TBU they attach to.

Unlike floating tones resulting from segment deletion, these tones are lexically specified and directly tied to grammatical meaning.

5.6. Conclusion

This chapter explored the phenomenon of GT in Chokri, demonstrating that it emerges both from morpheme deletion and independent tonal assignment, playing a central role in Chokri's morphosyntactic system. When a functional morpheme is deleted, its tone does not disappear; instead, it remains as a floating tone that attaches to the verbal root. This floating tone resurfaces with the functional meaning originally carried by the deleted morpheme, ensuring that the grammatical information remains encoded in the structure. Importantly, when GT attaches to the verb, it does not alter the existing lexical tone but rather concatenates with it, preserving the tonal integrity of the hosting word.

The deletion process in Chokri follows strict linguistic constraints, particularly it follows the adjacency conditioning principle, where only the morpheme immediately adjacent to the verb can be deleted. Additionally, syntactic structure dictates deletion patterns, prioritizing the lowest functional element first. However, the syntactic structure in Chokri ensures that at least one overt functional marker remains, maintaining grammatical well-formedness. This is evident in cases where the declarative marker is required to compensate for a deleted aspectual marker.

Moreover, GT in Chokri is not limited to inflection. It also has derivational functions, transforming verbs and adjectives into nouns, further emphasizing its active role in Chokri's grammar. This phenomenon is highly systematic, displaying remarkable regularity across speakers of different varieties and age groups, confirming that this mechanism is not restricted to particular contexts but rather a consistent and inimitable feature of this language. Thus, Chokri GT demonstrates that it is not merely a byproduct of deletion but a key grammatical strategy, enabling the language to encode rich morphosyntactic information through tone alone, whether through floating tones from deletion or as independent tonal morphemes. Chokri, thus, exemplifies how tone can operate at the heart of grammar, beyond phonological or lexical boundaries.

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