ASSIMILATION PATTERNS IN THE TIV LANGUAGE

Theophilus Aondona Tsafa & Christopher Erenje Department of Languages and Linguistics Rev. Fr Moses Orshio Adasu University, Makurdi

Abstract

This study presents a comprehensive analysis of assimilation processes in the Tiv language, employing generative phonology theory (Chomsky & Halle, 1968). Tiv, a Southern Bantoid language spoken by over 5.2 million speakers, exhibits systematic phonological processes that have received limited formal analysis. Through examination of naturally occurring speech data from the Gboko and Masev dialects, this research identifies three primary types of assimilation: progressive, regressive, and coalescent. Progressive assimilation predominantly involves /e/ influencing / a/, particularly in the Gboko dialect. Regressive assimilation, more prominent in the Masev dialect, demonstrates opposite directionality with /a/ influencing preceding /e/. Coalescent assimilation, widespread across general Tiv, involves vowel merger, particularly $/a/ + /u/ \rightarrow [\hat{o}\hat{o}]$ and $/e/ + /u/ \rightarrow [oo]$. Using formal rule notation, the study establishes systematic patterns governing these processes, contributing to Tiv phonology documentation and broader phonological theory. The findings have implications for language pedagogy, orthographic development, and comparative Niger-Congo linguistics.

Keywords: phonology, assimilation, generative phonology, Tiv language

Introduction

Human languages universally exhibit systematic sound patterns governing speech sound interaction in connected speech (Hayes, 2019; Odden, 2018). These phonological phenomena represent fundamental properties of language structure, reflecting a mix of articulatory constraints, perceptual requirements, and communicative efficiency (Gussenhoven & Jacobs, 2017). Among the most pervasive phenomena are assimilation processes, whereby speech sounds become more similar to adjacent sounds through systematic feature spreading (Bernhardt & Stemberger, 2020).

Assimilation processes occur across all known languages, with considerable variation in patterns, directionality, and conditioning environments (Odden, 2018). From nasal assimilation in English compounds such as "input" [jmput] to vowel harmony in Turkish and Hungarian, assimilation represents a universal tendency towards phonological optimisation (Hayes, 2019). These processes facilitate articulatory ease, enhance perceptual processing, and maintain linguistic economy by eliminating redundant phonological contrasts (Gussenhoven & Jacobs, 2017).

The study of assimilation has been central to phonological theory development, providing crucial insights into phonological representations, rule application, and underlying-surface relationships (Goldsmith, 2019). Within generative phonology, assimilation processes offer compelling evidence for the psychological reality of phonological rules and the systematic organisation of sound patterns (Chomsky & Halle, 1968).

African languages remain underrepresented in formal phonological analysis despite their diversity and theoretical significance. This gap is particularly pronounced for Niger-Congo languages, which encompass over 1,500 languages across sub-Saharan Africa (Lewis et al., 2016). Documenting these processes enriches universal phonological theory through exploration of typological patterns (Bernhardt & Stemberger, 2020).

The Tiv language, belonging to the Southern Bantoid group under the Benue-Congo branch of the Niger-Congo family, provides a compelling case for assimilation examination. Spoken by over 5.2 million speakers across Nigeria and Cameroon (Eberhard et al., 2023), Tiv exhibits complex phonological phenomena that have received insufficient systematic analysis (Teryila, 2021). The language presents three distinct assimilation types: progressive (where a sound influences a following sound), regressive (where a sound influences a preceding sound), and coalescent (where two adjacent sounds merge) (Mbah & Mbah, 2010).

This study analyses these patterns within the generative phonology framework established by Chomsky and Halle (1968), examining data from Gboko and Masev dialects, revealing systematic differences in assimilation directionality with significant implications for dialect identification and historical phonological development. The research addresses a critical gap in the formal analysis of Tiv phonology whilst contributing to broader theoretical understanding of assimilation processes in Niger-Congo languages.

Conceptual Review Phonology

Phonology represents the systematic study of sound patterns within languages, focusing on how speech sounds are organised to convey meaning. Hayes (2019) defines phonology as being "concerned with the way sounds are organised and used in languages to convey meaning" (p. 3), emphasising phonology's central role in connecting sound systems to broader grammatical and lexical organisation.

Bernhardt and Stemberger (2020) expand this conceptualisation, describing phonology as "the study of the abstract sound system of a language, including the underlying representations of speech sounds and the rules that govern their distribution" (p. 227). This definition highlights the distinction between surface phonetic realisations and underlying phonological representations, which is fundamental in generative phonological theory.

Contemporary phonological theory recognises two primary levels of analysis: segmental phonology, which examines individual speech sounds and their patterns, and suprasegmental phonology, which addresses features extending beyond individual segments, including stress, tone, and intonation (Goldsmith, 2019). Hayes (2019) notes that phonology "provides a crucial link between the sound system of a language and its grammar and lexicon" (p. 5).

Phonological Processes

Phonological processes represent systematic modifications that speech sounds undergo in specific environments, serving to optimise articulatory efficiency and maintain phonological well-formedness. Gussenhoven and Jacobs (2017) characterise phonological processes as "systematic modifications of speech sounds that occur in predictable environments" (p. 89).

The functional motivation centres on linguistic economy and articulatory optimisation. Omachonu (2011) notes that sound modifications are "motivated by the need for a language to

maintain its euphony or rectify violations of well-formedness constraints" (p. 45). Major categories include assimilation, dissimilation, deletion, insertion, and metathesis, representing distinct optimisation strategies.

Assimilation

Assimilation represents a widespread phonological process involving the systematic modification of speech sounds to become more like adjacent sounds. Odden (2018) defines assimilation as "a phonological process in which a sound becomes more similar to a nearby sound" (p. 178). Gussenhoven and Jacobs (2017) characterise it as feature spreading between neighbouring segments.

Three primary directional patterns exist: progressive assimilation (where a sound influences a following sound), regressive assimilation (where a sound influences a preceding sound), and coalescent assimilation (where two sounds merge into a single segment bearing features from both inputs). Within generative phonology, assimilation processes provide evidence for the psychological reality of phonological features and rule-governed phonological computation.

Empirical Review

Various works on Tiv phonological processes exist, addressing different processes or examining assimilation from alternative perspectives. Teryila (2021) examined phonological processes in Tiv, identifying assimilation, insertion, nasalisation, and elision using generative theory. The findings revealed assimilation and nasalisation as common Tiv features but lacked in-depth assimilation analysis.

Awwal and Iorshagher (2022) analysed English and Tiv phonological processes using generative phonology, examining assimilation and elision with emphasis on communication mastery rather than systematic Tiv assimilation analysis. Aor et al. (2022) investigated palatalisation in Tiv phonology, focusing on palatal consonant rules and epenthesis, which is related to but does not directly address systematic assimilation patterns.

Sokpo et al. (2022) appraised phonological processes, focusing on nasalisation in Tiv and French using generative phonology, finding that vowels adjacent to nasal consonants undergo nasalisation. However, their focus on nasalisation limits direct applicability to assimilation processes. These studies highlight the need for systematic assimilation analysis in Tiv, which the present research addresses.

Theoretical Framework

This study's theoretical foundation rests on generative phonology principles, particularly as developed in Chomsky and Halle's (1968) seminal work. This framework provides systematic rule formalisation, explanatory adequacy for observed phenomena, and cross-linguistic comparison through universal principles. Generative phonology views assimilation as a feature-spreading phenomenon whereby phonological features extend to adjacent segments, accounting for both the systematic nature and functional motivation of these processes.

Statement of the Problem

The Tiv language displays intricate phonological processes that greatly influence its spoken form, yet these phenomena have not been thoroughly analysed within formal phonological theory. Although assimilation processes are observable in natural Tiv speech, the absence of a comprehensive rule-based analysis has constrained understanding of their structural organisation and functional purpose. This gap represents a notable oversight in documenting Niger-Congo phonological systems and limits the language's contribution to wider phonological theory.

This study aims to undertake a comprehensive analysis of assimilation processes in Tiv using the generative phonology framework to identify and describe progressive, regressive, and coalescent assimilation patterns in Tiv phonology and to formalise underlying phonological rules using generative notation, leading to an analysis of assimilation patterns within two Tiv dialectal variations (Gboko and Masev)

Methodology

This study employs a qualitative research design using theoretical linguistic analysis within the generative phonology framework. The research is theory-driven, applying Chomsky and Halle's (1968) generative phonological principles to analyse and explain assimilation patterns in Tiv. Data derived from multiple sources: elicited speech samples from native Tiv speakers representing different dialectal areas, published

materials, and naturally occurring speech data. The analysis focuses on Gboko and Masev dialect groups, which exhibit distinct assimilation patterns. Phonetic transcription follows International Phonetic Alphabet (IPA) conventions with particular attention to vowel quality and length distinctions. Phonological rules are formalised using standard generative notation with distinctive feature specification, moving beyond mere description to theoretical explanation of underlying phonological processes.

Data Presentation and Analysis Progressive Assimilation in Tiv

Progressive assimilation involves a sound influencing a following sound, characterised by left-to-right feature spreading. The data reveal systematic patterns, particularly vowel assimilation in connected speech.

Table 1: Progressive Assimilation Patterns

Underlyin g	Surface	Gloss	Target	Source	Explanation	Dialect
Vé á hìdè	Véé hìdè	They will return	/a/	/e/	/a/ changes to /e/	Gboko
					under /e/ influence	
À hídé á mí	À hídéé mi	He/sh e should return it	/a/	/e/	/a/ becomes /e/under the influence of the preceding /e/	Gboko
□ néngè á mí	néngéé mí	I have seen it	/a/	/e/	/a/ becomes /e/, influenced by the final /e/ in "nenge"	Gboko
De ye ijende a ve ga	De ye ijendee ve ga	Don't make friends	/a/	/e/	Final /e/ influences following /a/	Gboko
Néà soo yô	Nēē soo yô	If you wish	/a/	/e/	/a/ becomes /e/ due to preceding /e/	Gboko

Progressive assimilation patterns demonstrate systematic left-to-right feature spreading, particularly prominent in the Gboko dialect. The most frequent pattern involves /e/influencing /a/, resulting in /a/ \rightarrow /e/ at word boundaries with linking.

Rule 1: Progressive Vowel Assimilation

$$/a/\rightarrow/e///e/+$$

This rule captures the basic pattern whereby /a/ becomes / e/ when preceded by /e/ across word boundaries, reflecting vowel harmony driven by articulatory ease.

Regressive Assimilation in Tiv

Regressive assimilation involves a sound influencing a preceding sound with right-to-left feature spreading, particularly prominent in the Masev dialect.

Table 2: Regressive Assimilation Patterns

Underlyin g	Surfac e	Gloss	Target	Soure	Explanation	Dialect
Vé á hìdè	Váá hìdè	They will return	/e/	/a/	/e/ changes to /a/ due to following /a/	Masev
Ká séà	Ká sáà	When we	/e/	/a/	/e/ becomes /a/ under following /a/	Masev
M nenge a mi	M nengaa mi	I have seen it	/e/	/a/	Final /e/ assimilates to following /a/	Masev
De ye ijende a ve ga	De ye ijenda a ve ga	Don't make friends	/e/	/a/	Final /e/ assimilates to following /a/	Masev
Ka unô laa?	Kuu nô laa?	Who are those?	/a/	/u/	/a/ in "ka" becomes /u/ due to initial /u/ in "unô"	Masev

Regressive patterns demonstrate systematic right-to-left spreading in the Masev dialect. The predominant pattern involves $/e/\rightarrow/a/$ assimilation, representing the reverse of progressive patterns in Gboko.

Rule 2: Regressive Vowel Assimilation

$$/e/ \rightarrow /a// \underline{\qquad} + /a/$$
 $/a/ \rightarrow /u// \underline{\qquad} + /u/$
 $/a/ \rightarrow /i// \qquad + /i/$

These rules formalise the primary regressive patterns, creating vowel harmony across boundaries. The dialectal differences in directionality suggest that assimilation directionality may serve as a distinguishing feature between Tiv dialects.

Coalescent Assimilation in Tiv

Coalescent assimilation involves the merger of adjacent vowels into single segments bearing features from both original vowels. This process is widespread across different dialects of Tiv. The designation "General" applies where the assimilation process cuts across different dialects of Tiv, not just within Gboko and Masey dialects.

Table 3: Coalescent Assimilation Patterns

Underlying	Surface	Gloss	Source Vowels	Explanation	Dialect
Or môm a	Or môm a	No one	/a/ and		General
fa u ga	fôô ga	will	/u/	following /u/	
		know		merge into	
		you		[ôô]	
M ma un	M môôn	I drank	/a/ and	/a/ in "ma"	General
mngeren	mngerem	his/her	/u/	and /u/	
		water		merge into	
				[ôô]	
Me de u ga	Me dōō ga	I won't	/e/ and	/e/ and /u/	General
		pardon	/u/	form [ōō]	
		you			
Ka an nan	Ka an nan	Who	/e/ and	/e/ and /u/	General
fe u?	foo?	knows	/u/	merge into	
		you?		[00]	
Me ta u	Me tôô	I will hit	/a/ and	/a/ and /u/	General
iwen ne	iwen ne	you	/u/	merge into	
		with		[ôô]	
		stone			

The coalescent data reveal two primary patterns: $/a/ + /u/ \rightarrow [\hat{o}\hat{o}]$ and /e/ $+/u/ \rightarrow [oo]/[\bar{o}\bar{o}]$. These processes eliminate vowel sequences, creating smooth articulatory transitions.

Rule 3: Coalescent Assimilation

These rules describe vowel coalescence whereby adjacent vowels merge into single long vowels bearing features from both inputs.

Phonological Analysis

Tiv assimilation represents systematic feature-spreading phenomena operating under specific constraints. The three types demonstrate distinct mechanisms for achieving phonological harmony and articulatory efficiency. The relevant vowel system includes /a/, /e/, /o/, /u/ with distinctive features. Progressive assimilation involves [-high] and [-round] feature spreading from /e/ to /a/, whilst regressive assimilation involves [+low] spreading from /a/ to /e/. Coalescent assimilation involves complementary feature merger, creating intermediate qualities.

A rule hierarchy emerges: (1) coalescent assimilation at morpheme boundaries, (2) progressive assimilation in the Gboko dialect, and (3) regressive assimilation in the Masev dialect. This ordering suggests that coalescent assimilation may represent a more fundamental Tiv process.

Discussion of Findings

The findings reveal a systematic assimilation organisation that demonstrates both universal phonological principles and language-specific characteristics. The three distinct types provide compelling evidence for rule-governed processes in Tiv phonology.

Progressive assimilation's predominance in Gboko, characterised by systematic $/a/\rightarrow/e/$ following /e/, represents clear vowel harmony driven by articulatory ease. The pattern's consistency suggests systematisation within the Gboko dialect. Regressive assimilation in Masev, involving $/e/ \rightarrow /a/$ when followed by /a/, presents fascinating dialectal variation in directionality. This mirrors Gboko's progressive pattern, suggesting that the dialects have developed opposing vowel harmony strategies.

Coalescent assimilation across general Tiv transcends dialectal boundaries. The primary patterns— $/a/ + /u/ \rightarrow [\hat{0}\hat{0}]$ and $/e/ + /u/ \rightarrow [00]$ —demonstrate systematic feature combination creating intermediate qualities, aligning with Mbah and Mbah's (2010) description of contiguous sounds "agreeing to introduce another sound for rapid production" (p. 65).

All three types support generative phonological claims that surface patterns derive from underlying representations through formal rules. They serve to optimise articulatory efficiency while maintaining perceptual distinctiveness, contributing to the theoretical understanding of assimilation as a universal phonological process.

Contribution to Knowledge

This study makes several significant contributions to linguistic knowledge. Theoretically, it provides systematic documentation of assimilation patterns in an understudied Niger-Congo language, enriching our understanding of phonological processes in African languages. The identification of dialectal variation in assimilation directionality offers new insights into how phonological processes can serve as diagnostic features for dialect identification.

Methodologically, the application of generative phonology to Tiv demonstrates the framework's effectiveness for analysing African language phenomena. The formal rule notation provides a foundation for comparative analysis with other Niger-Congo languages and contributes to the development of phonological theory.

Practically, the findings have implications for Tiv language pedagogy, suggesting that awareness of assimilation patterns could improve language teaching and learning. The research also has relevance for orthographic development, as understanding phonological processes is crucial for developing effective writing systems.

Limitations

This study acknowledges several limitations. The analysis is restricted to two dialects (Gboko and Masev), and a broader

dialectal survey might reveal additional patterns or variations. The data collection relied primarily on elicited speech, and natural conversation analysis might yield different insights. Additionally, the study focuses on vowel assimilation, and future research should examine consonant assimilation processes in Tiv.

Conclusion

This study has provided a comprehensive analysis of Tiv assimilation processes using generative phonology principles. The research identified three distinct types of assimilation operating under systematic principles:

- 1. Progressive assimilation in the Gboko dialect involving $/e/\rightarrow/a/$ feature spreading
- 2. Regressive assimilation in the Masev dialect involving $/a/ \rightarrow /e/$ feature spreading
- 3. Coalescent assimilation across general Tiv involving systematic vowel merger

These patterns demonstrate that Tiv assimilation follows predictable rules that are formalisable within generative theory. The dialectal variation in directionality represents a significant finding, suggesting that phonological processes may serve as diagnostic features for dialect classification.

The study contributes to broader understanding of assimilation as a universal process whilst documenting specific patterns in an under-studied African language. The formal analysis provides a foundation for future comparative work and theoretical development, highlighting the importance of systematic phonological documentation for languages with limited previous analysis.

Future research should expand the dialectal scope, examine consonant assimilation processes, and investigate the historical development of these patterns. Such work would further enhance our understanding of Tiv phonology and its contribution to Niger-Congo linguistic theory.

References

Aor, T., Iorember, M., & Tsevenda, M. (2022). Palatalisation in the Tiv phonology. *International Journal of Language, Linguistics, Literature and Culture, 1*(1), 1–10.

Awwal, A., & Iorshagher, F. T. (2022). A comparative analysis of

- phonological processes in English and Tiv language. *Ebonyi Journal of Language and Literary Studies*, *5*(1–2), 1–12.
- Bernhardt, B., & Stemberger, J. (2020). Phonological development and disorders. In J. Berko Gleason & N. B. Ratner (Eds.), *The development of language* (pp. 227–262). Pearson.
- Chomsky, N., & Halle, M. (1968). *The sound pattern of English.* Harper and Row.
- Eberhard, D. M., Simons, G. F., & Fennig, C. D. (Eds.). (2023). Ethnologue: Languages of the world (26th ed.). SIL International.
- Goldsmith, J. (2019). *Autosegmental and metrical phonology* (2nd ed.). Wiley-Blackwell.
- Gussenhoven, C., & Jacobs, H. (2017). *Understanding phonology* (4th ed.). Routledge.
- Hayes, B. (2019). *Introductory phonology* (2nd ed.). Wiley-Blackwell.
- Lewis, M. P., Simons, G. F., & Fennig, C. D. (Eds.). (2016). *Ethnologue: Languages of the world* (19th ed.). SIL International.
- Mbah, B., & Mbah, E. (2010). Coalescent assimilation in Igbo: An autosegmental analysis. *Journal of the Linguistic Association of Nigeria*, 24(1), 64–82.
- Odden, D. (2018). *Introducing phonology* (3rd ed.). Cambridge University Press.
- Omachonu, G. (2011). *Nsukka texts in general linguistics*. Rossen Publishers.
- Sokpo, R., Ode, G., Ate, M., & Yio, E. (2022). An appraisal of phonological processes: Nasalisation as a feature of Tiv and French phonological feature. *Eyenkor: Journal of Arts, Management and Social Sciences*, 1(2), 245–255.
- Teryila, A. (2021). Application of phonological processes in Tiv [Undergraduate project, Benue State University].