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Retention of Proto-Austronesian Vowels in the Karo Language: A Comparative Historical Linguistics Study

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Abstract

The purpose of this research is to analyze the inheritance of vowels in the Karo language or Bahasa Karo (hereafter, BK) from Proto-Austronesian (PAN), and BK words that show the retention or inheritance of certain vowels, such as /a/, /i/, /u/, and /ə/. The method involved comparing the phonological elements of BK with the equivalent elements in PAN by using the theory of comparative historical linguistics, including searching for inherited vowels in the penultimate and ultimate positions and observing the retention patterns that occur. The data were derived from 200 Swadesh words and three interviewers. Vocal retention occurs more frequently in the penultimate position than in the ultimate position. This shows how phonological positions affect vowel stability during language transition. These findings conclude that certain phonological components, particularly vowels, have a greater tendency to persist in specific environments. BK has preserved a significant portion of the original PAN vowel inventory, exhibiting less vowel reduction and merger compared to adjacent languages. The retention of vowels in BK indicates a phonological conservatism relative to the more dynamic vowel alterations observed in other Austronesian branches. This study also found a close relationship between PAN and BK in the inheritance of phonological elements of linear vocal of /a/, /i/, /u/, /e/, and

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one nonlinear vowel sound of /o/. Another important result is the transfer of the vowel /u/ from PAN to BK in the ultimate position shows a pattern of retention or direct inheritance.

Keywords: Comparative historical linguistics, Karo language, Proto-Austronesian language, vowel retention.

1. INTRODUCTION

Language is a dynamic entity that evolves, reflecting shifts in culture, geography, and social interaction. Every language originally comes from the same parent language or proto-language (Adelaar, 1992; Blust, 1993; Fox, 2004). The Proto-Austronesian parent language is the source of the Karo language, which is *Bahasa Karo*, hereafter abbreviated to BK. The Proto-Austronesian language (hereafter abbreviated to PAN) is the ancestral language of the languages widely spread across the Southeast Asian mainland and its surroundings. Eastern and Western Austronesia are the two main branches of Proto-Austronesia (Anayati et al., 2022; Blevins, 2007; van Der Hulst, 2010; Wardana et al., 2022). The Western Austronesian branch consists of most of the languages used in the Indonesian region. The Eastern Austronesian branch consists of Polynesian and Oceanic languages, which are widely spread throughout the Pacific archipelago.

The urgency of this research lies in the linguistic degradation or extinction of many languages, particularly indigenous or lesser-known ones like BK. Vowel retention research can help preserve some of the language's structure and distinctiveness by documenting significant phonological traits. Vowel retention studies can shed light on how phonology evolves throughout time (Blevins, 2006). Vowel shifts or modifications (such as vowel deletion or reduction) can have a big impact on pronunciation, grammar, and meaning in languages. A better understanding of the dynamics of language change may be obtained by examining how vowels are kept or lost in a particular language.

There are two major groups of Indonesian languages: Western Indonesian and Eastern Indonesian (Blust, 1993; Musgrave, 2008). The first group consists of various languages such as Minangkabau, Nias, Sundanese, Madurese, Javanese, Malay, Batak, Gayo, Acehese, and Minahasan. The second group consists of languages such as Irianese, Bacanese, and Ambonese. This classification demonstrates the extraordinary linguistic diversity in Indonesia, as evidenced by the country's long history of migration, cultural interaction, and social development. Retention or linear inheritance is the term used to describe elements that persist without undergoing change (Dardanila et al., 2024). In comparative historical linguistics, this phenomenon becomes one of the main focuses of research. In this discipline, linguists trace the relationships and evolution of languages through the analysis of phonetic similarities, word structures, and vocabulary between modern languages and proto-languages (Panjaitan & Dardanila, 2022). In BK, this retention can be seen in several words that are identical or very similar to PAN forms.

The number and type of phonemes differ between PAN and BK, indicating a significant phonological evolution process. One of the studies that suggested a change in the Austronesian language was conducted by Widayati and Lubis (2018), who determined that the vowel phoneme /ə/ was inherited linearly, while the vowels /a/, /i/, and /u/ underwent innovative inheritance. Specifically, /a/ evolved into /a/, /ə/, and /e/; /i/ transformed into /i/ and /a/; and /u/ developed into /u/, /o/, /i/, and /ə/. The vowels /u/, /a/, and /ə/ have merged into /ə/; /i/ and /u/ have merged into /a/; and /u/, /a/, and /ə/ have undergone both partial splits and mergers, resulting in /u/, /a/, and /ə/ in BK. Ritonga et al. (2020) examined the changes and inheritance of PAN vowel sounds in the Angkola and Simalungun languages. In Angkola, linear inheritance (retention) is observed in /a/ → /a/, /i/ → /i/, and /u/ → /u/, while innovative inheritance is seen in /a/ → /e/ and /ə/ → /o/. In Simalungun, linear inheritance is found in /a/ → /a/ and /i/ → /i/, with innovation occurring in /ə/ → /o/. Over time, some consonants and vowels in the proto-language have changed, been eliminated, or adapted to meet its speakers' linguistic and cultural needs.

Several previous studies have examined the kinship relationships among Austronesian languages. [Masrukhi \(2002\)](#), in his study on the phonological reflection of PAN in the Lubu language, found that most consonant phonemes in the Lubu language are derived from PAN, although some phonological changes were noted, such as /b/ becoming /w/, /r/ becoming /w/, and /c/ changing to /s/. While this research does not directly align with the current study, it is worth noting due to its focus on PAN sound changes, contributing to a broader understanding of phonological developments in this language family. Meanwhile, [Lynch \(2005\)](#), building on [Blevins' \(2007\)](#) discussion of final consonant loss in the Austronesian family, analyzed the retention and loss of Proto-Oceanic final consonants in three groups of Remote Oceanic languages: (i) the Loyalty Islands and northern New Caledonia, (ii) southern Vanuatu, and (iii) northwest Malakula. Unlike other Remote Oceanic languages, these three groups did not exhibit a complete or near-complete loss of final consonants, providing insight into regional patterns of phonological retention.

[Ermanto \(2017\)](#) sought to identify and evaluate the reflexes of PAN etyma in several modern Sumatran languages, including Acehnese, Batak Toba, Mandailing, Kerinci, Minangkabau, and Mentawai. The study found that these modern languages, as members of the Western Austronesian subgroup, retain elements of the Austronesian mother language, suggesting that they are derivatives of PAN. In the meantime, [Syahputra et al. \(2018\)](#) found that the vowel phonemes /i/, /u/, /ə/, and /a/ are inherited linearly as /i/, /u/, /ə/, and /a/ in three Austronesian languages. However, innovative changes were observed in the Singkil and Pakpak languages, where /i/ shifted to /e/ in initial, medial, and final positions. Additionally, /u/ transformed into /i/ in medial position (Jamee); /u/ also evolved into /o/ in Singkil, Jamee, and Pakpak, and into /ə/ in Singkil. Other vowel changes include /ə/ shifting to /ɛ/ in Jamee, and to /a/ in Jamee, Singkil, and Pakpak. In Batak Julu (BJ), /ə/ was reflected as /i/. [Rina and Mariati \(2018\)](#) further explored the linguistic relationship between Minangkabau Tapan and Sungai Penuh Kerinci, revealing a kinship level of 92.16%. Despite being separated by provincial boundaries, the two languages exhibit strong linguistic proximity. While this study shares the use of 200 Swadesh words and numerous supplementary terms, already transcribed into both the Minangkabau Tapan and Kerinci Sungai Penuh languages, it does not examine vowel retention, which is the primary focus of the present research. [Setiawan \(2022\)](#) contributed to historical comparative linguistics by proposing that phonemic kinship, cultural traditions, belief systems, and social structures of Austronesian-speaking communities can serve as a framework for resolving regional conflicts, particularly in West Nusa Tenggara (NTB) and Indonesia more broadly.

[Smith \(2023a, 2023b\)](#) identified various phonologically motivated drifts in Malayo-Polynesian daughter languages, including vowel shifts, consonant gemination, and the deletion of the penultimate schwa in trisyllabic words. These sound changes are attributed to a broader phonological conspiracy aimed at increasing the moraic weight of sub-minimal words. Smith's work offers a phonological rationale for these changes and contributes to the reconstruction of PAN stress patterns. In addition, [Hamidova \(2023\)](#) investigated kinship relationships between several North American languages and a tribal language in Turkey, applying the same comparative-historical linguistic approach. However, the study does not involve PAN. Although it revealed phoneme reflections between the compared languages, the analysis did not emphasize phonological changes or vowel retention. Finally, there is [Goes \(2023\)](#), who conducted a historical comparison of a group of African languages and discovered significant kinship and phonological similarities between Cabinda, a local language in Angola, and Kikongo. Although the comparative historical approach was used, the study focused mainly on the degree of linguistic relationship rather than phonological changes or vowel retention.

Although significant research has been conducted on language kinship, most studies have focused on consonantal changes or general phonological innovations. Vowel retention, particularly in specific positions such as the penultimate and ultimate syllables, remains underexplored. Studies on languages like Lubu and Batak Toba, for example, do not provide a detailed analysis of the persistence of PAN vowels in their descendant languages. Therefore, this study aims to address the following research questions:

1. What is the pattern of vowel retention from Proto-Austronesian to the Karo language in penultimate and ultimate positions?
2. How do these retention patterns reflect phonological stability in the Karo language compared to other Austronesian languages?

This study fills a gap in Austronesian historical linguistics by focusing on vowel retention, an area often overshadowed by research on consonantal change and general phonological innovation. By analyzing vowel persistence in penultimate and ultimate syllables, it highlights a dimension of phonological stability rarely addressed in previous studies. The findings offer an understanding of the conservative nature of BK and contribute to a more detailed understanding of vowel inheritance in the Austronesian language family.

2. LITERATURE REVIEW

2.1 Proto-Austronesian (PAN) and Phonological Development

Proto-Austronesian or PAN, the ancestral language of many languages spoken across Southeast Asia, the Pacific, and Madagascar, is reconstructed as having 25 consonant phonemes. According to [Blust \(1993\)](#) and [Himmelman \(2005\)](#), these include [p], [b], [m], [w], [t], [C], [d], [n], [S], [l], [r], [R], [c], [z], [ɲ], [s], [N], [y], [D], [j], [k], [g], [ŋ], [q], and [h]. In addition, PAN is reconstructed with four vowel phonemes: /u/, /i/, /ə/, and /a/. This relatively simple vowel system forms a foundational structure that underwent significant developments in the descendant languages.

The Karo language or *Bahasa Karo* (BK), a member of the Austronesian family spoken in North Sumatra ([Rajagukguk et al., 2022](#)), reflects a phonological system that has evolved from its proto-language. It contains 17 consonant phonemes: [p], [t], [c], [k], [ʔ], [b], [d], [j], [g], [s], [h], [m], [n], [ŋ], [l], [r], and [w]. Compared to PAN, BK exhibits phonological reduction in the consonant inventory and vowel expansion, with five vowel phonemes: /a/, /i/, /u/, /e/, and /o/. This change illustrates both simplification and innovation in the language's phonological system. These developments suggest that BK has undergone both retention and innovation. While some phonemes have remained stable, others have shifted or merged, reflecting broader phonological trends common among Austronesian languages. Such changes may result from internal linguistic evolution, contact with neighboring languages, or socio-cultural influences shaping the speech community.

2.2 Phonological Characteristics of the Karo Language

One way to differentiate among Karonese dialects is through phoneme variation (e.g., Karo Gugung, Karo Gunung, and Karo Jahe-jahe). There are several vowel and consonant variants present in BK. A clear distinction exists between certain vowel and consonant sounds, for example, between the vowels /i/ and /ɪ/. These variations are distributed across the three dialect regions. Karo Standard, Karo Gugung, and Karo Jahe-jahe generally employ the vowel /i/, as seen in the pronunciation of specific lexical items, while Karo Gunung may use the vowel /ɪ/ in the same contexts. Conversely, for the word *lit*, Karo Standard, Karo Gugung, and Karo Gunung use the vowel /i/, whereas Karo Jahe-jahe substitutes it with /ɪ/ ([Gurusinga, 2020](#)).

These dialectal differences highlight the internal phonological diversity of BK. They suggest that vowel variation plays a key role in regional identity and mutual intelligibility ([Fox, & Jacewicz, 2011](#)). Such phonemic shifts may be the result of long-standing geographical separation, localized sound changes, or sociolinguistic factors such as language contact and speaker attitudes toward prestige or tradition.

2.3 Comparative Historical Linguistics

Comparative historical linguistics is a branch of linguistics that focuses on comparing languages to understand their evolution and changes over time (Boček, 2022; Millar & Trask, 2015). The main goal of these studies is to identify the relationships between different languages and reconstruct the proto-language that is the ancestor of these languages. Through comparative analysis, linguistics seeks to reconstruct early forms of languages that no longer exist, such as PAN, as well as analyze changes in sound systems (phonology) and word structure (morphology).

Employing the comparative historical method, one may reconstruct the proto-forms that presumably preceded the contemporary BK. This reconstruction is crucial in determining whether the vowels in question are conservative features, retained from an ancestral state, or later novelties resulting from linguistic interaction or internal processes. For example, if analogous vowel retention is observed in cognate languages, it reinforces the assertion that these characteristics are derived from a shared ancestor, an insight that might otherwise remain hidden without comparative investigation (Aikhenvald, 2006; Voyles, 1969).

2.4 Vowel Retention in PAN Languages

In historical linguistic studies, changes in a language's vowel system are generally categorized into two main processes: vowel shift and vowel retention. Vowel shift refers to changes in the quality or position of vowels during the evolution of a language (Torgersen & Kerswill, 2004). In contrast, vowel retention refers to the preservation of vowel sounds from proto-languages in their descendant languages, even when consonants or other phonological elements have changed (Chen, 2019; Toha, 2016). Retention signifies that specific phonological elements have survived from earlier stages of the language, making it a valuable clue in reconstructing proto-languages and tracing linguistic development.

Vowel retention is considered one of the most stable elements in the process of language change (Vaknin-Nusbaum & Miller, 2011), as vowels tend to evolve more slowly than consonants. This relative stability is attributed to their clearer acoustic properties, which make them more perceptible and easier for speakers to retain over time. In essence, vowel retention suggests that certain phonological components, particularly vowels, can persist across generations of language use, even amid significant shifts in consonant systems or morphological structures (Blust, 1993; Moran & Verkerk, 2018). For example, in some languages derived from PAN, the vowels /i/, /u/, and /a/ have remained relatively unchanged. The vowel /ə/ (schwa) is also retained in some descendant languages, although in others, it has shifted to vowels like /e/ (Himmelmann, 2005; Ross, 2015).

The phonetic environment plays a crucial role in shaping the structure and retention of vowels. Vowels rarely exist in isolation; they interact with surrounding sounds, adapting to the rhythm and dynamics of speech. For instance, an adjacent consonant may shift the position of a vowel, or stress may cause a vowel to lengthen, thereby increasing its perceptibility and prominence. Over time, these small phonetic adjustments can accumulate, leading to broader changes in pronunciation (Torgersen & Kerswill, 2004). As Glans (2002) notes, vowel retention or change is influenced by a complex interplay of phonetic, phonological, morphological, and social factors. Beyond internal linguistic processes, social dynamics, such as regional identity, social hierarchy, and cultural influence, also shape how vowels are produced and preserved across generations.

2.5 PAN Vowel System in Karo

BK comprises six vowels: /a/, /i/, /u/, /e/, /ə/, and /ɔ/ (Br Sembiring et al., 2024; Gurusinga, 2020). Notably, there are distinctions between the vowels /i/ and /ɪ/ across different dialects (Br Sembiring et al., 2024; Gurusinga, 2020). Three main dialectal regions, Karo Standard, Karo Gugung, and Karo Jahe-jahe, exhibit internal variations. Karo Standard, Karo Gugung, and Karo Jahe-jahe typically employ the vowel /i/, while Karo Gunung uses the vowel /ɪ/. For example, in

the articulation of the word *lit*, the first three dialects use /i/, whereas Karo Jahe-jahe uses /ɪ/. However, the occurrence of /i/ and /ɪ/ is somewhat inconsistent and not uniformly observed across all regions.

Additionally, there are vowel variations in the pronunciation of certain words across the dialects. For instance, Karo Standard, Karo Gugung, and Karo Jahe-jahe use the vowel /o/ in words such as *gadung* ‘sweet potato, yam, cassava’, *galuh* ‘banana’, *igung* ‘nose’, *indong* ‘mother, main, source, central, parent’, and *teruh* ‘down, under’, whereas Karo Gunung employs the vowel /ɔ/ for these same words. In general, the vowel /o/ found in Karo Gugung and Karo Jahe-jahe corresponds to /ɔ/ in Karo Gunung (Gurusinga, 2020).

Further analysis of the patterns of vowel retention and innovation in BK, taking into account both internal phonological processes and external sociolinguistic influences, can provide a more detailed understanding of the language’s phonological evolution. Such research contributes to a broader understanding of the mechanisms behind language change, particularly in historical and contact-driven contexts (Blevins, 2006; Dardanila et al., 2024). Studies like Fox (2004) offer theoretical frameworks for examining the relationship between inheritance, innovation, and language contact, which are highly relevant to the dynamics observed in BK.

3. METHODS

3.1 Research Design

This study employs the comparative historical linguistics framework proposed by Fox (2004), which facilitates the reconstruction of proto-forms and the identification of sound correspondences. Additionally, Ross’s (2015) theory of phonological stability and retention is utilized to analyze vowel retention mechanisms within specific phonological environments. This research also adopts the frameworks of Campbell (1999) and Campbell and Poser (2008), as they provide systematic and empirical approaches for tracing language stability over time. Their emphasis on reconstruction and phonetic correspondences ensures that conclusions are based on rigorous linguistic evidence rather than anecdotal impressions. This approach enables researchers to map vowel retention as a historical phenomenon to understand the development of the language and its phonological conservatism.

A naturalistic descriptive qualitative method was deemed suitable because it aligns with the objectives of historical comparative linguistic research by facilitating in-depth, contextual, and authentic analysis of language change and relationships. The method is also well-suited to addressing contextual and cultural factors, which are essential for understanding language contact, borrowing, and divergence (Heigham & Croker, 2009; Mohajan, 2018; Nassaji, 2015). It is specifically designed to obtain a deep and comprehensive understanding of vowel inheritance in the Karo language or *Bahasa Karo* (BK) from the Proto-Austronesian language (PAN), achieved through direct observation and detailed analysis of field data.

3.2 Data Source

This study used 200 basic vocabulary items adapted from Swadesh (2017), a well-established tool for examining historical relationships and lexical retention. These items were translated into BK and selected for their high likelihood of retention over time. Furthermore, two types of data sources were used: primary and secondary. The primary data consisted of interviews and phonetic analyses involving three native BK speakers, selected based on their fluency and familiarity with traditional speech patterns, their familiarity with the structural system of the language, and their knowledge of native linguistic traditions that reflect the authenticity of the BK variety. These informants provided information on vowel pronunciation, usage, and variation across different social contexts. Meanwhile, secondary data were drawn from relevant literature, including previous studies on BK, other Batak languages, and the Austronesian language family. These sources supported the analysis by providing historical and comparative context.

3.3 Data Collection

The data collection process involved three key stages. First, relevant linguistic sources were compiled, including word lists, dictionaries, and prior studies on BK, related Batak languages, and PAN reconstructions. Native speakers served as primary sources, with their pronunciation and usage providing direct evidence of vowel retention. Structured interviews and phonetic recordings were conducted to capture natural speech patterns rather than written conventions (Sharma, 2023; Taherdoost, 2021). Second, in-depth interviews were held with selected native BK speakers to gather detailed phonological data, particularly related to the vowel system. A structured yet flexible approach allowed for the extraction of rich, contextually grounded information (Weyant, 2022). Third, interview recordings were transcribed to convert oral data into analyzable written form. The transcription process carefully captured key features such as pronunciation, intonation, and vocal patterns to support accurate phonetic analysis. Finally, to ensure data validity and reliability, the study employed data triangulation by comparing information from both primary informants and secondary literature. This approach helped identify consistencies or discrepancies, enabling a critical evaluation of the data's coherence and credibility (Tay, 2024).

3.4 Data Analysis

The data analysis followed five systematic steps to produce scientifically grounded results: (1) Identification of PAN and BK Forms, (2) phonological segmentation, (3) vowel position examination, (4) retention observation, and (5) contextualization. For example, consider Data 4: /aku/ in PAN = /aku/ in BK, meaning 'I'. The result is described as follows: /u/ in PAN in final (ultimate) position (/u/ PAN__v#) corresponds directly to /u/ in BK in the same position (/u/ BK__v#). This indicates that the vowel /u/ was inherited without phonological change, suggesting the absence of innovation in this specific phonological environment.

The analytical steps for this example are:

1. Identification: The form and meaning of "I" are identical in PAN and BK.
2. Phonological segmentation: The word is segmented as follows — PAN: /a/ - /k/ - /u/; BK: /a/ - /k/ - /u/.
3. Vowel position examination: Focus is placed on the vowel /u/ in the final position to detect any phonological shifts.
4. Retention observation: The vowel /u/ is retained without modification, confirming phonological stability.
5. Contextualization: Similar data are compared to verify the consistency of vowel retention patterns.

The analysis draws on both primary data, vowel pronunciations obtained from native speaker informants, and secondary sources, including relevant literature. Notably, the work of Bellwood et al. (1995) provides a comparative framework linking PAN to its descendant languages. To ensure accuracy and reduce potential bias, a triangulation method was employed by cross-verifying field data with findings in existing studies. This re-examination process enhances the validity and reliability of the findings (Creswell, 2003).

4. RESULTS

Table 1 shows that, out of the 200 lexical items compared, 23 exhibit linear inheritance (retention) from Proto-Austronesian (PAN) into the Karo language or *Bahasa Karo* (BK). These correspond to data points numbered 4, 6, 14, 20, 24, 28, 35, 37, 38, 41, 69, 89, 90, 99, 107, 113, 123, 130, 153, 173, 179, 186, and 195. The four vowels, /u/, /i/, /ə/, and /a/, originally present in PAN, are retained in these BK forms without phonological modification.

Table 1. Linear inheritance (retention) at the lexical level from PAN to BK.

No.	Meaning	PAN	BK
4	I	<i>aku</i>	<i>aku</i>
6	child	<i>ana?</i>	<i>ana?</i>
14	chicken	<i>manu?</i>	<i>manu?</i>
20	father	<i>bapa</i>	<i>bapa</i>
24	stone	<i>batu</i>	<i>batu</i>
28	seed	<i>bənih</i>	<i>bənih</i>
35	fruit	<i>buah</i>	<i>buah</i>
37	moon	<i>bulan</i>	<i>bulan</i>
38	flower	<i>buŋa</i>	<i>buŋa</i>
41	stem	<i>bataŋ</i>	<i>bataŋ</i>
69	salt	<i>sira(q)</i>	<i>sira</i>
89	sew	<i>jahit</i>	<i>jahit</i>
90	road	<i>dalan</i>	<i>dalan</i>
99	wood	<i>kayu</i>	<i>kayu</i>
107	skin	<i>kulit</i>	<i>kulit</i>
113	sky	<i>laŋit</i>	<i>laŋit</i>
123	five	<i>lima</i>	<i>lima</i>
130	eye	<i>mata</i>	<i>mata</i>
153	choose	<i>pilih</i>	<i>pilih</i>
173	year	<i>tahun</i>	<i>tahun</i>
179	pull	<i>tari?</i>	<i>tari?</i>
186	laugh	<i>tawa</i>	<i>tawa</i>
195	bone	<i>tulaŋ</i>	<i>tulaŋ</i>

PAN language contains four vowel sounds: /u/, /i/, /ə/, and /a/. Notably, PAN does not include the vowel sound /o/. The following sections discuss how these PAN vowel sounds have been carried over into BK.

4.1 Vowel Inheritance /u/ from Proto-Austronesian in the Karo Language

The transfer of the vowel /u/ from PAN to BK in the final (ultimate) position demonstrates a pattern of retention or direct inheritance. The data indicate that the vowel /u/ in the ultimate position in PAN remains unchanged in BK, suggesting that BK conserves certain phonological features from its parent language.

Table 2. Vowel inheritance /u/ from PAN in BK (/u/ PAN = /u/ BK)
/u/ in PAN (ultimate position: */u/ PAN_v#) = /u/ in BK (ultimate position: */u/ BK_v#)

Data no.	Retention */u/____v#	English translation	Analysis
Data 4	/aku/ in PAN = /aku/ in BK	I	The vowel /u/ in the ultimate position of PAN is directly inherited in BK without any phonological change. This indicates the absence of phonological innovation for this vowel in specific BK environments.
Data 24	/batu/ in PAN = /batu/ in BK	stone	In this example, the vowel /u/ in PAN remains unchanged in BK and functions as the core vowel in the final syllable, demonstrating phonemic stability.
Data 99	/kayu/ in PAN = /kayu/ in BK	wood	A similar retention occurs in the word for <i>kayu</i> , where the vowel /u/ in the ultimate position of PAN is inherited unchanged in BK.
Data 14	/manu?/ in PAN = /manu?/ in BK	chicken	In this case, the vowel /u/ in PAN is retained in the final syllable of the BK form without alteration. This shows direct inheritance and reinforces the stability of /u/ as a core vowel in this lexical item.
Data 173	/tahun/ in PAN = /tahun/ in BK	year	As with the previous examples, the vowel /u/ in PAN is retained in BK in both form and position. The meaning is preserved, and the vowel remains stable in the final syllable, further supporting the pattern of direct retention in the BK phonological system.

In all the data presented in Table 2, the phonological environment demonstrates that the vowel /u/ in the ultimate position of PAN is inherited unchanged in BK. This suggests that the final syllable is a phonologically stable environment where innovations are rare. It highlights the conservative nature of BK in preserving phonological elements from its parent language.

A similar pattern of retention is observed in the penultimate position. The data indicate that the vowel /u/ in the penultimate position in PAN is also inherited as /u/ in BK without change, reinforcing the conclusion that BK exhibits a high degree of phonological conservatism to its Austronesian heritage.

Table 3. /u/ in PAN penultimate position (/u/ PAN v) = /u/ in BK penultimate position (/u/ BK v).

Data no.	Retention */u/_v_	English translation	Analysis
Data 35	/buah/ in PAN = /buah/ in BK	fruit	The vowel /u/ in the penultimate position in the word <i>buah</i> is directly inherited in BK as /u/, with no phonological changes, indicating a clear pattern of direct inheritance.
Data 37	/bulan/ in PAN = /bulan/ in BK	moon	A similar retention is observed in the word <i>bulan</i> , where /u/ in the penultimate position remains unchanged in BK and continues to function as a core phonological element.
Data 38	/bunga/ in PAN = /bunga/ in BK	flower	In the word <i>bunga</i> , the vowel /u/ in the penultimate position is inherited as /u/ in BK without modification. This demonstrates the phoneme's stability across varying phonological environments.
Data 107	/kulit/ in PAN = /kulit/ in BK	skin	The vowel /u/ in the penultimate position of the word <i>kulit</i> is also directly inherited in BK as /u/, showing no evidence of phonological innovation and reflecting a pattern of linear inheritance.
Data 195	/tulang/ in PAN = /tulang/ in BK	bone	In the word <i>tulang</i> , the vowel /u/ in the penultimate position remains unchanged in BK, as in the other examples, with its phonological role preserved.

All evidence indicates that the vowel /u/ from PAN is directly inherited as /u/ in BK when in the penultimate position. This position appears to be phonologically stable in BK, supporting the consistent retention of the original vowel. The pattern suggests that BK is conservative in preserving phonological elements from its PAN ancestor.

4.2 Vowel Inheritance /i/ from PAN in the Karo Language

The available data show a clear pattern of direct retention in the inheritance of the vowel /i/ in the final (ultimate) position from PAN to BK. In BK, /i/ in the final position is preserved as /i/ without undergoing phonological changes. This reflects BK's tendency to conserve the phonological structure of its parent language, particularly in word-final environments.

Table 4. /i/ in the ultimate position: /i/ (PAN v#) = /i/ (BK v#).

Data no.	Retention */i/____v#	English translation	Analysis
Data 28	/bənih/ in PAN = /bənih/ in BK	seed	In the word <i>benih</i> , the vowel /i/ in the ultimate position is directly inherited as /i/ in BK without change, functioning as the final syllabic element with full retention.
Data 89	/jahit/ in PAN = /jahit/ in BK	sew	A similar pattern is observed <i>jahit</i> , where /i/ in PAN is retained as /i/ in BK, indicating linear inheritance without innovation.
Data 107	/kulit/ in PAN = /kulit/ in BK	skin	The vowel /i/ in the final position is inherited unchanged in BK, showing no phonological alterations.

Table 4 continued...

Data 113	/lanjɪtʔ/ in PAN = /lanjɪtʔ/ in BK	sky	In the word <i>langit</i> , the vowel /i/ in the ultimate position remains intact in BK, indicating that this position serves as a stable phonological environment.
Data 153	/pilih/ in PAN = /pilih/ in BK	choose	The vowel /i/ in the final position is retained without change, suggesting consistent vowel preservation in this context.
Data 179	/tariʔ/ in PAN = /tariʔ/ in BK	pull	In <i>tarik</i> , the vowel /i/ in the ultimate position is directly inherited as /i/ in BK, with no phonological modification.

All available evidence indicates that the vowel /i/ from PAN in the ultimate position is directly inherited as /i/ in BK. This suggests that the ultimate position constitutes a phonologically stable environment, allowing for the preservation of the vowel without modification. The stability may stem from the function of /i/ as a syllable-final element, which remains intact throughout the inheritance process. This pattern highlights BK's tendency to conserve the phonological elements of its parent language.

Furthermore, based on the data in Table 5, the vowel /i/ in the penultimate position is also inherited unchanged as /i/ in BK. This demonstrates a consistent pattern of phonological retention and reinforces the notion that the penultimate position is similarly stable and conducive to vowel preservation.

Table 5. /i/ in PAN in the penultimate position (/i/ PAN v) = /i/ in BK in the penultimate position (/i/ BK v).

Data no.	Retention */i/_v_	English translation	Analysis
Data 69	/sira/ in PAN = /sira/ in BK	salt	In <i>sira</i> , the vowel /i/ in the penultimate position in PAN is directly inherited as /i/ in BK without phonological change, indicating continuity between PAN and BK.
Data 123	/lima/ in PAN = /lima/ in BK	five	This inheritance pattern shows that the vowel /i/ in the penultimate position in PAN is retained in the same position in BK, a non-terminal position in the syllable structure..
Data 153	/pilih/ in PAN = /pilih/ in BK	choose	In <i>pilih</i> , the vowel /i/ in the penultimate position is directly inherited as /i/ in BK without change. This pattern demonstrates the conservative nature of BK in preserving vocalic elements from its parent language.

BK directly inherits the vowel /i/ from PAN in the penultimate position as /i/ without phonological change. This consistent retention indicates that the penultimate syllabic position supports phonological stability. The absence of change may be attributed to the penultimate position's role as a structural core in the word, which typically preserves original phonemic forms. The data suggest that BK tends to maintain the phonological features of its parent language, particularly in stable environments such as the penultimate position.

4.3 Vowel Inheritance /ə/ of PAN in Karo Language

Table 6 shows that the available data on the inheritance of the vowel /ə/ from PAN to BK is limited to its occurrence in the penultimate position, specifically in the word meaning 'seed'. In this context, the vowel /ə/ in PAN is directly inherited as /ə/ in BK without phonological change. This clear pattern of retention suggests that the penultimate position serves as a stable phonological environment. Conversely, the absence of data showing /ə/ in other positions, such as the ultimate, may indicate that in those environments, this vowel underwent phonological innovation or change.

Table 6. /ə/ PAN in the penultimate position (/ə/ PAN v) = /ə/ BK in the penultimate position (/ə/ BK v).

Data no.	Retention */ə/ _v_	English translation	Analysis
Data 28	/bənih/ in PAN = /bənih/ in BK	seed	The available data is limited to the penultimate position, specifically in the word <i>benih</i> , indicating that the vowel /ə/ from PAN is directly inherited as /ə/ in BK without phonological change.

4.4 Vowel Inheritance /a/ of PAN in Karo Language

A clear pattern of direct retention without phonological change is found in the inheritance of the vowel /a/ from PAN to BK in the ultimate position. The vowel /a/ in this position shows a high degree of stability, with twelve instances identified, more than any other vowel examined, including /u/, /i/, and /ə/.

Table 7. /a/ PAN in the ultimate position (/a/ PAN ___v#) = /a/ BK in the ultimate position (/a/ BK ___v#).

Data no.	Retention */a/ ___v#	English translation	Analysis
Data 6	/anaʔ/ in PAN = /anaʔ/ in BK	child	Data 6, 20, and 35 show that the vowel /a/ in the ultimate position is inherited without change.
Data 20	/bapa/ in PAN = /bapa/ in BK	father	
Data 35	/buah/ in PAN = /buah/ in BK	fruit	
Data 37	/bulan/ in PAN = /bulan/ in BK	moon	The vowel /a/ in the ultimate of /bulan/ appears to have been retained without change in BK.
Data 38	/buŋa/ in PAN = /buŋa/ in BK	flower	The vowel /a/ in PAN appears highly salient and is retained exactly in BK as /a/. This shows conservatism in the transmission of PAN lexicon to BK.
Data 41	/batan/ in PAN = /batan/ in BK	stem	This is a direct and unchanged reflex, showing that /a/ is retained faithfully in BK, even in the final closed syllable
Data 69	/sira/ in PAN = /sira/ in BK	salt	In <i>sira</i> , the vowel /i/ in the penultimate position in PAN is directly inherited as /i/ in BK without phonological change, indicating continuity between PAN and BK.
Data 90	/dalan/ in PAN = /dalan/ in BK	road	The vowel /a/ in <i>dalan</i> does not undergo phonological changes in words with vowel or consonant endings.
Data 123	/lima/ in PAN = /lima/ in BK	five	This inheritance pattern shows that the vowel /i/ in the penultimate position in PAN remains in the penultimate position, which is a non-terminal position in the syllable structure, just like the vowel /i/ in BK.
Data 130	/mata/ in PAN = /mata/ in BK	eye	The vowel /a/ in <i>mata</i> does not undergo phonological changes in words with vowel or consonant endings.
Data 186	/tawa/ in PAN = /tawa/ in BK	laugh	In <i>tawa</i> , the vowel /a/ is retained in the penultimate syllable, which does not change to /a/ in BK.
Data 190	/tulan/ in PAN = /tulan/ in BK	bone	The vowel /a/ in the ultimate is fully retained in BK as /a/. Despite being in a closed syllable (ending in a consonant), there is no raising, centralization, or reduction.

In Table 7, data from several lexical items show that the vowel /a/ from PAN is directly inherited as /a/ in BK without undergoing phonological changes. This retention pattern indicates a high degree of phonological conservatism in BK.

1. Ultimate position:

Data 6 (/anaʔ/ = /anaʔ/, 'child'), Data 20 (/bapa/ = /bapa/, 'father'), and Data 35 (/buah/ = /buah/, 'fruit') demonstrate that /a/ in the final syllable is preserved as /a/ in BK.

In Data 90 (/dalan/ = /dalan/, ‘road’) and Data 130, the vowel /a/ in the final syllable is also retained regardless of whether the word ends in a vowel or a consonant.

Even in closed syllables (e.g., /bulan/, /dalan/), there is no evidence of vowel raising, centralization, or reduction, confirming that /a/ is a stable, faithfully inherited vowel.

2. Penultimate position:

Data 186 (/tawa/ = /tawa/, ‘laugh’) shows that the vowel /a/ in the penultimate syllable is retained unchanged as /a/ in BK, indicating that this position also supports phonological stability.

The inheritance of the vowel /a/ appears more frequently than that of other vowels; /u/ occurs in 5 instances, and /i/ in 6, highlighting the phonological importance of /a/ in the core vocabulary of BK. This suggests that the ultimate position serves as a stable phonological environment that supports the preservation of the original PAN vowel form.

Table 8. /a/ in PAN in the penultimate position (/a/ PAN V) = /a/ in BK in the penultimate position (/a/ BK V).

Data no.	Retention */a/ __v__	English translation	Analysis
Data 4	/aku/ in PAN = /aku/ in BK	I	In <i>aku</i> , the vowel /a/ in the penultimate position in PAN is directly retained as /a/ in BK, without phonological changes.
Data 6	/anaʔ/ in PAN = /anaʔ/ in BK	child	In <i>anak</i> , the vowel /a/ in the penultimate position is also inherited as /a/ in BK. This shows consistency in retaining the vowel in that position.
Data 14	/manuʔ/ in PAN = /manuʔ/ in BK	chicken	In <i>manuk</i> , the same pattern is followed, where /a/ in the penultimate position is retained unchanged as /a/ in BK.
Data 20	/bapa/ in PAN = /bapa/ in BK	father	In <i>bapa</i> , the vowel /a/ in the penultimate position is also retained as /a/ in BK.
Data 24	/batu/ in PAN = /batu/ in BK	stone	In <i>batu</i> , a similar vowel retention is observed, with the vowel /a/ in the penultimate position remaining as /a/ in BK.
Data 41	/batan/ in PAN = /batan/ in BK	stem	In <i>batang</i> , /a/ in the penultimate position is retained as /a/ in BK.
Data 89	/jahit/ in PAN = /jahit/ in BK	sew	In <i>jahit</i> , the vowel /a/ is retained as /a/ in the penultimate position in BK.
Data 90	/dalan/ in PAN = /dalan/ in BK	road	<i>Dalan</i> shows the same pattern, with the vowel /a/ in the penultimate position retained as /a/ in BK.
Data 99	/kayu/ in PAN = /kayu/ in BK	wood	In <i>kayu</i> , the vowel /a/ in the penultimate position is retained as /a/ in BK without change.
Data 113	/lanjit/ in PAN = /lanjit/ in BK	sky	In <i>langit</i> , it also shows that the vowel /a/ in the penultimate position is retained as /a/ in BK.
Data 130	/mata/ in PAN = /mata/ in BK	eye	In <i>mata</i> , /a/ in the penultimate position is directly inherited as /a/ in BK.
Data 173	/tahun/ in PAN = /tahun/ in BK	year	The vowel /a/ in the penultimate syllable is retained as /a/ in the word <i>tahun</i> .
Data 179	/tariʔ/ in PAN = /tariʔ/ in BK	pull	<i>Tarik</i> shows that the vowel /a/ in the penultimate syllable remains /a/ in BK.
Data 186	/tawa/ in PAN = /tawa/ in BK	laugh	<i>Tawa</i> retains the vowel /a/ in the penultimate syllable, which does not change to /a/ in BK.

Based on the available data, it can be concluded that the vowel /a/ in the penultimate position of PAN is consistently inherited as /a/ in BK without undergoing phonological change. This consistent retention highlights the stability of the penultimate position as a phonological environment in which PAN elements remain unaffected in BK. Compared to other vowels that may exhibit phonological innovations or changes, the vowel /a/ demonstrates a higher degree of preservation. This suggests that /a/ in the penultimate position plays a particularly stable role in the process of phonological inheritance from PAN to BK.

5. DISCUSSION

The findings of this study underscore the high degree of phonological conservatism in the Karo language or *Bahasa Karo* (BK) through the linear inheritance of PAN vowels, particularly in the penultimate and ultimate positions. This aligns with the theoretical framework presented by Fox (2004) and Ross (2015), who emphasized the role of phonological environments in determining retention. The inheritance of vowels such as /u/, /i/, /a/, and /ə/ in unaltered forms reinforces Ross's (2015) view that certain vowel positions, especially those serving as syllabic nuclei, are more resistant to innovation. The consistent retention of vowels like /u/ and /i/ in both penultimate and ultimate positions, as observed in data such as *aku*, *manuk*, *kulit*, and *tarik*, mirrors the phonological patterns highlighted in earlier comparative studies (e.g., Blust, 1993; Widayati & Lubis, 2018), where vowels tend to resist change more strongly than consonants.

These results are especially significant when viewed in contrast to findings from other Austronesian languages, such as Angkola and Simalungun, where partial vowel mergers and innovations are more common (Ritonga et al., 2020). Unlike in those languages, BK retains a more pristine reflection of PAN vowels, indicating less influence from external linguistic pressure or internal restructuring. The conservative nature of BK aligns with the observations made by Adelaar (1992) and Masrukhi (2002), who noted that some Austronesian languages exhibit strong retention of core phonemes due to limited external contact or stable sociolinguistic environments. Furthermore, the findings reinforce the value of using basic Swadesh vocabulary, as emphasized by Swadesh (2017), to detect deeply rooted lexical and phonological features that remain unchanged across time and geographical boundaries.

The vowel /a/ emerged as the most frequently retained vowel, showing consistent inheritance in both final and penultimate positions. This supports the broader theoretical claim by Labov (2001) and Glans (2002) that vowels occupying stressed or central syllabic positions are more likely to persist during language evolution. This pattern is further evidenced in the high frequency of /a/ in culturally essential vocabulary such as *bapa*, *mata*, and *bulan*, reinforcing the hypothesis by Campbell (2013) that core vocabulary items tied to daily life and familial relationships exhibit higher retention rates. Additionally, this pattern of vowel retention complements the work of Panjaitan and Dardanila (2022) who observed similar conservative features in the Nias language, another Western Austronesian descendant. These consistent retention outcomes imply that BK, as part of the Western Austronesian branch, has largely preserved its proto-phonological identity.

Lastly, the results provide important implications for comparative historical linguistics. As noted by Millar and Trask (2015) and Boček (2022), the comparative method relies heavily on identifying stable phonological correspondences. BK's high degree of vowel retention strengthens its position as a key reference point in reconstructing PAN phonology. The data contribute to the understanding of language kinship, divergence, and resilience by showing how certain linguistic features can survive across generations with minimal alteration. The limited innovation in BK, particularly in contrast to neighboring languages like Singkil and Pakpak (Syahputra et al., 2018), suggests a unique linguistic conservatism that can aid in refining the Austronesian family tree. Thus, this study not only affirms the inheritance pathways of PAN vowels in BK but also enhances the broader discourse on the dynamics of phonological retention and change in the Austronesian language family.

6. CONCLUSION

This study shows that the process of vowel inheritance from Proto-Austronesian (PAN) into the Karo language or *Bahasa Karo* (BK) is very phonologically conservative, especially in terms of the language's ability to maintain certain phonological elements in specific positions within the word structure. The vowels in two important positions within words, namely the penultimate and ultimate positions, are directly inherited into BK without experiencing significant phonological changes. The data analysis results show that vowels such as /a/, /i/, and /u/, which

historically appeared in the penultimate position in PAN words, remain directly inherited into BK. The results indicate a fairly stable phonological continuity between the parent language, PAN, and one of its descendant languages, BK. This stability suggests that BK has a high tendency to maintain the integrity of phonological elements in certain positions, especially in the penultimate position.

These results provide us with important insights into how phonological conservatism changes in various word positions in language inheritance. This study shows that the penultimate position in word structure not only has a more stable phonological tendency but also serves as a kind of “conservation zone” for phonological elements originating from the parent language. Although it continues to show phonological continuity, the ultimate position seems to be more easily changeable. Greater variation in the ultimate position may indicate greater linguistic flexibility, allowing speakers to adapt to certain linguistic or social conditions they encounter.

The limitation of this study revolves around the fact that BK has multiple dialects, and vowel retention might differ across regions, making it difficult to generalize findings. The suggestions for the upcoming results are to examine which vowels, such as those in word-initial, middle, or final positions, are most frequently preserved and in what linguistic contexts, and also to investigate vowel retention tendencies in Batak languages that are similar. Therefore, this research not only contributes to the study of phonology in the past, particularly concerning the inheritance of phonological elements from PAN to BK, but also provides a broader understanding of the mechanisms and elements that influence phonological stability and change in the overall language inheritance process.

REFERENCES

- Adelaar, K. A. (1992). *Proto Malayic: The reconstruction of its phonology and parts of its lexicon and morphology*. The Australian National University.
- Aikhenvald, A. Y. (2006). Areal diffusion, genetic inheritance and problems of subgrouping: A north Arawak case study. In A. Y. Aikhenvald & R. M. W. Dixon (Eds.), *Areal diffusion and genetic inheritance: Problems in comparative linguistics* (pp. 167-194). Oxford University Press.
- Anayati, W., Wardana, M. K., Mayasari, M., & Purwarno, P. (2022). Lexicostatistics of Malay and Malagasy languages: Comparative historical linguistic study. *English Review: Journal of English Education*, 10(3), 875-882. <https://doi.org/10.25134/erjee.v10i3.6690>
- Bellwood, P., Fox, J. J., & Tryon, D. (Eds.). (1995). *The Austronesians: Historical and comparative perspectives*. ANU E Press.
- Blevins, J. (2006). A theoretical synopsis of evolutionary phonology. *Theoretical Linguistics*, 32(2), 117-166. <https://doi.org/10.1515/TL.2006.009>
- Blevins, J. (2007). A long lost sister of Proto-Austronesian? Proto-Ongan, mother of Jarawa and Onge of the Andaman Islands. *Oceanic Linguistics*, 46(1), 154-198. <https://doi.org/10.1353/ol.2007.0015>
- Blust, R. (1993). [Review of the book *Proto Oceanic and the Austronesian languages of Western Melanesia*, by M. D. Ross]. *Language*, 69(1), 186-192. <https://doi.org/10.2307/416431>
- Boček, V. (2022). George Y. Shevelov's contribution to Slavic historical-comparative linguistics with a focus on language contact: Remarks on “A Prehistory of Slavic”. *Studia z Filologii Polskiej i Słowiańskiej*, 57, 2776. <https://doi.org/10.11649/SFPS.2776>
- Br Sembiring, F. E. D. R., Syarfina, T., & Azzahra, S. (2024). Comparison of the vowel formant measurements in Karo and Simalungun language. *JADEs: Journal of Academia in English Education*, 5(1), 105-118. <https://doi.org/10.32505/jades.v5i1.8745>
- Campbell, L. (1999). *Historical linguistics: An introduction*. MIT Press.
- Campbell, L. (2013). *Historical linguistics: An introduction* (3rd ed.). MIT Press.
- Campbell, L., & Poser, W. J. (2008). *Language classification: History and method*. Cambridge University Press.
- Chen, T. (2019). Joint contributions of multilevel linguistic knowledge to character meaning

- retention in L2 Chinese. *Journal of Psycholinguistic Research*, 48, 129-143. <https://doi.org/10.1007/s10936-018-9594-3>
- Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches* (2nd ed.). Sage Publications.
- Dardanila, D., Widayati, D., Gustianingsih, G., & Harahap, N. H. (2024). Inheritance of consonant phonemes from Proto-Austronesian into Acehese: A comparative historical linguistics study. *Indonesian Journal of Applied Linguistics*, 14(2), 441-450. <https://doi.org/10.17509/ijal.v14i2.74906>
- Ermanto, E. (2017). The traces of Proto-Languages of Austronesia in some modern languages in Sumatra. *Humanus*, 16(2), 177-189. <https://doi.org/10.24036/humanus.v16i2.8052>
- Fox, J. J. (2004, August 19-20). *Current developments in comparative Austronesian studies* [Paper presentation]. Symposium Austronesia Pascasarjana Linguistik dan Kajian Budaya, Universitas Udayana, Bali, Indonesia. <http://hdl.handle.net/1885/43158>
- Fox, R. A., & Jacewicz, E. (2011). Perceptual sensitivity to dialectal and generational variations in vowels. *Proceedings, Annual Conference of the International Speech Communication Association* (INTERSPEECH 2011), pp. 2921-2924. Curran Associates, Inc.
- Glans, M. (2002). *Vowel change in Australian English—A sociolinguistic perspective* [Unpublished doctoral dissertation]. Aarhus University.
- Goes, H. (2023). A historical-comparative approach to the Kikongo language cluster, with a special focus on Cabinda. *Afrika Focus*, 36(2), 309-323. <https://doi.org/10.1163/2031356X-20230210>
- Gurusinga, S. B. (2020). Phonological dialect differences of Karonese language in Medan, North Sumatra. *Jurnal CULTURE (Culture, Language, and Literature Review)*, 7(2), 263-275.
- Hamidova, M. (2023). About the comparative-historical and comparative-typological analysis of the language of some North American tribes with the Altaic (Turkic) languages. *Linguistic Researches*, 3, 27-31. <https://doi.org/10.59849/2664-5432.2023.3.27>
- Heigham, J., & Croker, R. A. (Eds.). (2009). *Qualitative research in applied linguistics: A practical introduction*. Palgrave Macmillan.
- Himmelman, N. P. (2005). The Austronesian languages of Asia and Madagascar: Typological characteristics. In K. A. Adelaar & N. P. Himmelman (Eds.), *The Austronesian languages of Asia and Madagascar* (pp. 110-181). Routledge.
- Labov, W. (2001). *Principles of linguistic change, Volume 2: Social factors*. Wiley-Blackwell.
- Lynch, J. (2005). Final consonants in remote Oceanic. *Oceanic Linguistics*, 44(1), 90-112. <https://doi.org/10.1353/ol.2005.0021>
- Masrukhi, M. (2002). Refleksi fonologis protobahasa Austronesia (PAN) pada bahasa Lubu (BL) [Phonological reflection of Proto-Austronesian language (PAN) in Lubu language]. *Humaniora*, 14(1), 86-93. <https://journal.ugm.ac.id/jurnal-humaniora/article/view/749>
- Millar, R. M., & Trask, L. (2015). *Trask's historical linguistics* (3rd ed.). Routledge. <https://doi.org/10.4324/9781315728056>
- Mohajan, H. K. (2018). Qualitative research methodology in social sciences and related subjects. *Journal of Economic Development, Environment and People*, 7(1), 23-48. <https://doi.org/10.26458/jedep.v7i1.571>
- Moran, S., & Verkerk, A. (2018). Differential rates of change in consonant and vowel systems. In C. Cuskley, M. Flaherty, H. Little, L. McCrohon, A. Ravignani, & T. Verhoef (Eds.), *Proceedings of the 12th International Conference (EVO LANGXII)* (pp. 322-325). Cognitive Linguistics ICLA. <https://doi.org/10.12775/3991-1.077>
- Musgrave, S. (2008). Typology and geography in eastern Indonesia. *Selected Papers from the 2007 Conference of the Australian Linguistic Society* (pp. 1-27). Australian Linguistic Society. <https://www.als.asn.au/proceedings/als2007/musgrave.pdf>
- Nassaji, H. (2015). Qualitative and descriptive research: Data type versus data analysis. *Language Teaching Research*, 19(2), 129-132. <https://doi.org/10.1177/1362168815572747>
- Panjaitan, A. T., & Dardanila. (2022). Vocal sound inheritance from the proto language to Nias language. *Talenta Conference Series: Local Wisdom, Social, and Arts (LWSA)*, 5(3), 163-169. <https://talentaconfseries.usu.ac.id/lwsa/article/view/1409>

- Rajagukguk, R., Malems, T., & Ginting, M. (2022). Preserving linguistic diversity: Strategies for language preservation and cultural heritage safeguarding. *Jurnal Ilmu Pendidikan Dan Humaniora*, 11(3), 221-236. <https://doi.org/10.35335/jiph.v11i3.25>
- Rina, N., & Mariati, M. (2018). Hubungan kekerabatan bahasa Minangkabau Tapan dengan bahasa Kerinci Sungai Penuh [The genetic relationship between the Tapan Minangkabau language and the Kerinci Sungai Penuh language]. *Gramatika STKIP PGRI Sumatera Barat*, 4(1), 1-11. <https://doi.org/10.22202/jg.2018.v4i1.2327>
- Ritonga, S. R. L., Dardanila, & Gustianingsih. (2020). Pewarisan fonem vokal Protoaustronesia ke Bahasa Angkola dan Bahasa Simalungun [The inheritance of Proto-Austronesian vowel phonemes in Angkola and Simalungun languages]. *Talenta Conference Series: Local Wisdom, Social, and Arts (LWSA)*, 3(3), 7-12. <https://talentaconfseries.usu.ac.id/lwsa/article/view/903>
- Ross, M. (2015). Reconstructing Proto Austronesian verb classes. *Language and Linguistics*, 16(3), 279-345. <https://doi.org/10.1177/1606822X15569162>
- Setiawan, I. (2022). Language kinship as regional conflict resolution in West Nusa Tenggara: Comparative historical linguistic study. *REiLA: Journal of Research and Innovation in Language*, 4(1), 82-100. <https://doi.org/10.31849/reila.v4i1.9579>
- Sharma, Y. (2023). Data collection in research: Concept, process and methods. *International Journal of Creative Research Thoughts (IJCRT)*, 11(10), 27-33. <https://www.ijcrt.org/papers/IJCRT2310231.pdf>
- Smith, A. D. (2023a). Constraint reranking in diachronic OT: Binary-feet and word-minimum phenomena in Austronesian. *Journal of East Asian Linguistics*, 32, 341-372. <https://doi.org/10.1007/s10831-023-09261-x>
- Smith, A. D. (2023b). Reconstructing non-contrastive stress in Austronesian and the role of the mora in stress shift, gemination and vowel shift. *Diachronica*, 40(1), 111-152. <https://doi.org/10.1075/dia.20032.smi>
- Swadesh, M. (2017). *The origin and diversification of language* (1st ed.). Routledge. <https://doi.org/10.4324/9781315133621>
- Syahputra, B., Widayati, D., & Dardanila. (2018). The reflection of vowel phoneme of Proto Austronesian (PAN) in Singkil, Jamee, and Pakpak languages. *IOSR Journal of Humanities and Social Science (IOSR-JHSS)*, 5(23), 38-45. <https://www.iosrjournals.org/iosr-jhss/papers/Vol.%2023%20Issue5/Version-6/D2305063845.pdf>
- Taherdoost, H. (2021). Data collection methods and tools for research: A step-by-step guide to choose data collection technique for academic and business research projects. *International Journal of Academic Research in Management*, 10(1), 10-38. <https://hal.science/hal-03741847>
- Tay, D. (2024). Data analytics and programming for linguistics students: A SWOT and survey study. *Journal of Statistics and Data Science Education*, 32(3), 303-314. <https://doi.org/10.1080/26939169.2023.2276441>
- Toha, M. (2016). Retensi dan inovasi fonologis protobilingualisme Melayik dalam bahasa Melayu Tamiang [Phonological retention and innovation of Melayik protobilingualism in Tamiang Malay]. *Ranah: Jurnal Kajian Bahasa*, 5(1), 90-100. <https://doi.org/10.26499/rnh.v5i1.40>
- Torgersen, E., & Kerswill, P. (2004). Internal and external motivation in phonetic change: Dialect levelling outcomes for an English vowel shift. *Journal of Sociolinguistics*, 8(1), 23-53. <https://doi.org/10.1111/j.1467-9841.2004.00250.x>
- Vaknin-Nusbaum, V., & Miller, P. (2011). The importance of vowel diacritics for the temporary retention of high and low frequency Hebrew words of varying syllabic length. *Memory and Cognition*, 39(3), 516-526. <https://doi.org/10.3758/s13421-010-0026-3>
- van der Hulst, H., Goedemans, R., & van Zanten, E. (2010). *A survey of word accentual patterns in the languages of the world*. De Gruyter Mouton. <https://doi.org/10.1515/9783110198966>
- Voyles, J. B. (1969). [Review of the book *The comparative method in historical linguistics*, by A. Meillet (G. B. Ford Jr., Trans.)]. *The Modern Language Journal*, 53(6), 446-447. <https://doi.org/10.2307/323287>
- Wardana, M. K., Widayati, D., Taib, R., & Iqbal, M. (2022). Lexicostatistics of Malay, Tagalog

- and Ilocano languages: A comparisonal historical linguistic study. *Journal Education and Development*, 10(3), 475-479. <https://journal.ipts.ac.id/index.php/ED/article/view/4259>
- Weyant, E. (2022). [Review of the book *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.), by J. W. Creswell & J. D. Creswell]. *Journal of Electronic Resources in Medical Libraries*, 19(1-2), 1-2. <https://doi.org/10.1080/15424065.2022.2046231>
- Widayati, D., & Lubis, R. (2018). The inherited Proto-Austronesian vowel phonemes in Karo language. *International Journal of Academic Research and Development*, 3(4), 5-7. <https://allstudiesjournal.com/archives/2018/vol3/issue4/3-3-205>