Suprasegmental Elements In Kakawin

I Wayan Simpen[1], Ida Bagus Rai Putra[2], I Putu Permana Mahardika[3] and Risman Iye[4]
Address: Jl. Terompong No.24, Sumerta Kelod, Kec. Denpasar Team., Denpasar City, Bali
Author correspondence: wynsimpen60@gmail.com

ABSTRACT

Kakawin is a traditional literary work that belongs to the *sekar agung* category, which has characteristics and traits distinct from *sekar madya* and *sekar alit*. Kakawin is marked by the presence of *guru* and *laghu* in each of its meters. *Guru* and *laghu* are the guidelines that must be followed by anyone performing or reading a kakawin literary work. *Guru* refers to a word or syllable that undergoes a change during its performance. These changes can include elongation, a shift from low to high pitch or vice versa, or a change in emphasis from loud to soft or the opposite. In short, *guru* is always marked by a change in sound. On the other hand, *laghu* does not experience a change in sound during its performance. The sounds and their accompanying elements, such as *guru* and *laghu*, are studied using phonological theory. Research findings show that there are several forms of characters used to write kakawin as markers of *guru* and *laghu*.

Keywords: *guru laghu*, segmental elements, suprasegmental elements

Introduction

Language consists of three main elements: segmental, suprasegmental, and paralanguage. Segmental elements serve as the fundamental building blocks of language and are identified by combinations such as vowels alone, vowels with consonants, vowels with multiple consonants, or consonants paired with vowels. Each segment (or unit) is defined by the presence of a vowel, as vowels represent the highest point of sonority. Consequently, the number of segments in a word can be determined by counting its vowels. Unlike vowels, consonants cannot stand alone without vowels. Additionally, the number of consonants in a word does not directly indicate the number of segments, as a single segment can include one or multiple consonants. The arrangement of vowels and consonants within each segment is a distinctive characteristic of every language, often referred to as phonotactics.

Suprasegmental elements are attached to segmental elements. Stress, tempo, and pitch, as suprasegmental features, are evident in every segment. On the other hand, paralanguage is reflected in the speaker and the listener during the

[1] Faculty of Humanities, Udayana University, Denpasar, Indonesia, email: wyn_simpen@unud.ac.id
[2] Faculty of Humanities, Udayana University, Denpasar, Indonesia, email: rai_putra@unud.ac.id
[3] Faculty of Cultural Sciences, Universitas Gadjah Mada, Yogyakarta, Indonesia, email: permanamahardika@ugm.ac.id
[4] Faculty of Literature, Universitas Iqra Buru, Maluku, Indonesia, e-mail: rismaniyer@gmail.com

communication process. In oral communication, all three language elements are fully involved. This is, of course, different from written communication, where not all language elements can be engaged. To date, suprasegmental and paralanguage elements are very difficult to present or perceive in written form. In written language, suprasegmental elements are typically represented through various punctuation marks. However, these punctuation marks are insufficient to fully represent suprasegmental features. Referring to this brief explanation, suprasegmental elements are often utilized in literary works, such as poetry. Poetry, as a form of literary work, frequently employs suprasegmental features (such as stress, pitch variations, and duration) as a means to convey aesthetic values.

A form of poetry that makes significant use of suprasegmental features is kakawin. This literary genre belongs to Old Javanese literature, a term referring to the language and literary works that thrived in Java between the 9th and 15th centuries (Zoetmulder, 1984). As a type of poetry, kakawin adheres to specific conventions, including a set number of syllables per line and a metrical structure rooted in the principles of Sanskrit poetry, which incorporates long syllables (Guru) and short syllables (Laghu).

In recent years, studies on kakawin have largely focused on examining its philosophical values and religious teachings (Suminto & Kustiyanti, 2023; Geria, 2018) or its literary structure and analysis (Khanna & Saran, 1993; Meij, 2011; Wiyasa, 2021; Supomo, 2001; Creese, 1981a; 1981b; 1999; 2005; Yudistira, 2023; Schumacher, 1995). Among these, Schumacher (1995) is the only researcher to explore prosodic elements in kakawin. However, his analysis focused primarily on the Guru-Laghu system and did not address the suprasegmental aspects present in kakawin.

In recent years, several studies have also examined suprasegmental features. Kim (2025), for instance, shows that native speakers of Spanish are able to recognize lexical stress through pitch accent. Building on this, Bent et al. (2024) found that words become harder to understand when the speaker's accent differs markedly from the one listeners are familiar with. Differences in sound, particularly in consonants, make comprehension even more challenging. Bent and colleagues further point out that rhythm also shapes how listeners interpret spoken language. In a similar vein, Choi and Kang (2023) highlight the importance of suprasegmental aspects such as speech rate and intonation in second language learning. Taken together, these studies suggest that suprasegmental features play a central role in making spoken language intelligible. This insight is directly relevant to the present study, which explores how errors in chanting a kakawin can lead to mistranslation when the text is interpreted.

Considering the scarcity of research on suprasegmental features in kakawin, this study becomes highly relevant. Suprasegmental elements in kakawin are represented through Balinese script, and limited familiarity with this script among

kakawin performers often leads to recitation errors. This is especially problematic as kakawin strictly adheres to the rules of Guru and Laghu.

Literature Review

Script, segmental, and suprasegmental elements are key components of phonology, the branch of linguistics that studies sound systems. Script is tied to the symbol system used to represent speech sounds, including both vowels and consonants. Segmental elements refer to syllabic units that are characterized by the presence of vowels or a combination of vowels and consonants. Each syllable contains one vowel, but may include one or more consonants, which can be positioned before, after, or around the vowel. In contrast, suprasegmental elements are closely linked to segmental elements, as they involve sound changes within the syllable. Therefore, phonological theory is the foundational framework for this study.

Verhaar (1986) argues that language consists of several structures, starting with the smallest, sound, word forms, sentences, and meaning. Each unit has its own system and structure but is interconnected and mutually defining. Sound is studied in phonology, word forms in morphology, sentences in syntax, and meaning in semantics. The study of sound and phonemes is called phonetics and phonemics. Phonetics is the branch of phonology that studies how the organs of speech work to produce speech sounds in the field of articulatory phonetics; while auditory phonetics examines how the organs of speech function when receiving sounds, and acoustic phonetics studies sound as sound waves. On the other hand, phonemics studies sounds that distinguish meaning.

In general, the study of speech sounds is categorized into two main types: vowels and consonants. Vowel sounds are produced without any obstruction at the articulation point, whereas consonant sounds involve obstruction in the articulatory organs, which can range from friction to partial or complete blockage. When producing vowel sounds, only the lips and tongue are involved. In contrast, consonant sounds require a more complex arrangement of speech organs, which are categorized into articulators and articulation points. For instance, the tongue and lower lip act as articulators, while the upper lip, upper teeth, gums, palate, and throat serve as articulation points (Laderfoged, 1982; Ladefoged & Johnson, 2015; Schane, 1973).

The script as a marker of guru-laghu in kakawin will be analyzed based on phonological characteristics (vowels and consonants) as markers of syllables, along with the accompanying suprasegmental elements. Since Balinese is a syllabic language and each syllable is marked by a consonant (unlike most languages, where vowels mark syllables), the focus of the study will be on the script (which takes the form of consonants).

Materials And Methods

This study employs a qualitative approach with a descriptive nature. A qualitative research begins with assumptions and the use of theories that shape or influence the study of research problems related to the meanings attributed by individuals or social groups to a social issue (Creswell, 2018). In line with Creswell

(2018), Denzin & Lincoln (2017),explain that qualitative research seeks to examine phenomena based on the meanings given by society. Thus, this study can be classified as qualitative research, focusing on the linguistic phenomena present in *kakawin.*

The data for this study is collected using the simak method. In this research, the term simak refers to the use of written language. This method employs the basic technique of sadap (observation), supported by catat (note-taking) techniques. The observation of written language is carried out because the researcher is dealing with written language, not an ongoing conversation, but rather the written form found in kakawin. In practice, simak is implemented through sadap (Sudaryanto, 2015). In addition to note-taking, this research also utilizes the rekam (recording) technique, which is used to collect suprasegmental sounds that are produced during the chanting or reciting of kakawin.

Before proceeding to the data analysis stage, several important steps need to be taken, including classification. Data classification is carried out by categorizing data based on the recordings obtained from kakawin performers. The recordings are then transcribed using PRAAT to analyze the suprasegmental elements present in the audio recordings, as shown in the image below.



In the data analysis stage, the *padan* method is used (see Sudaryanto, 2015). This *padan* method is supported by the advanced technique of *daya pilah,* which serves to differentiate lines of text by examining Balinese script as a marker of *guru-laghu* in *kakawin*. This is aligned with the results of transcribing the *kakawin* recitation recordings using PRAAT, which allows for the identification of suprasegmental sounds present in the kakawin.

Results And Discussion

Results

As mentioned earlier, kakawin has a meter based on the conventions of Sanskrit poetry. This is evident in several aspects, such as the fact that a stanza consists of four lines, and each line contains the same number of syllables, arranged according to the same metrical pattern. Referring to the syllable count pattern, there is a distinction between long and short syllables, determined by their position in the line and the corresponding rules; a syllable is considered long if it contains a long vowel (e.g., a̅, i̅, u̅, o̅; e, o, and ai). The final syllable of each line can be either long or short (anceps) (Zoetmulder, 1984). To clarify this concept, the following provides an explanation of the long-short syllable pattern in one of the meters called *Jagaddhita.*

– – –|∪ ∪ –|∪ – ∪|∪ ∪ –|∪ ∪ ∪|∪ ∪ ∪|– ∪ – |∪ ∪ = 23

The symbol " ∪ " indicates a syllable that is metrically categorized as short, while the symbol "–" represents a long syllable. Furthermore, the symbol " | " is used to separate each group of three syllables. Therefore, it can be stated that the nature of a vowel in the final syllable does not play a role, except for its quantity (Zoetmulder, 1984).

° s*°°] U Rÿ° mÉi° h y jñ° r&° s m r° m hë° ni° hø° l° £° ni° k*° p r* o° mu° k,
° lù° Lÿ° k)° mã £u Rÿ s) k(° t ji° ni° ek°]° ni° ° £° ri° p) j h&° r n Xÿ £á n,
ú(o xÂo n&° r tu° Mÿ tø° wI° j° ni r° ku xÒ° ni r° n g r n&° mu su;° g) s%,
° s o hø tÜÿ ° hu tø° t) xÒ s&° ri pu° k p)o k ni r° q° ni k° su°]É° em £Þ g >

sang śūrā mriha yajnya ring samara mahyun i hilanga nikang parāng muka,
līlā kembang urā sekar taji ni kéśa ning ari pejah ing raṇānggana,
ūrṇnā ning ratu māti wīja nira kuṇḍa nira naga

Translation:
A knight intends to perform his yajña in war with the aim of destroying all his enemies.
With joy, he scatters the taji flower garlands from his hair, for the enemies who fall in battle,
The precious jewels of kings who die are like the rice of his offerings, and the enemy's land is scorched by fire.
He always sacrifices, with the heads of enemies beheaded in his chariot, as a mark of his valor in battle.

(*Kakawin Bhāratayuddha*)

In suprasegmental analysis, features such as rhythm, stress, intonation, and duration provide a distinctive nuance in chanting a kakawin. The analysis of these suprasegmental features can be observed as follows:

1. Rhythm

Rhythm in *kakawin* relates to the alternation of high-low or long-short syllables, aimed at creating harmony during the chanting process. In addition to considering the rhythm based on pitch and duration, one must also account for the division of syllables, which should ideally be chanted before taking a breath pause (see Purnama, 2013). To clarify further, the following excerpt of a wirama stanza can be observed.

Silabel

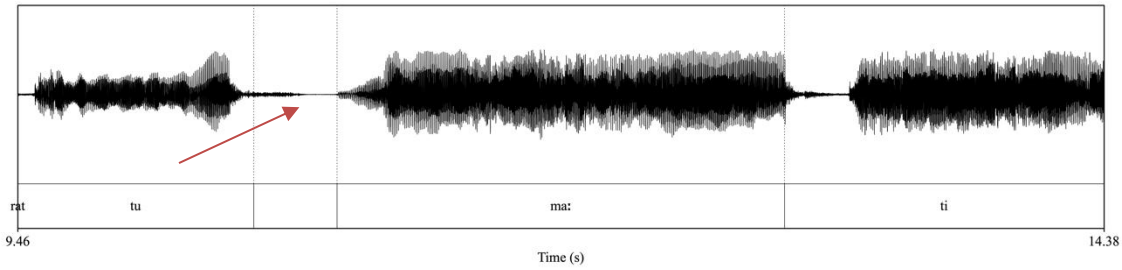
Bait III	ūr	ṇnā	ning	ra	tu	mā	ti	wī	ja	ni	ra
guru-laghu	–	–	–	ᴗ	ᴗ	–	ᴗ	–	ᴗ	ᴗ	ᴗ

Bait III	Silabel											
	kuṇ	ḍa	ni	ra	na	ga	ra	ning	mu	suh	ge	seng
guru-laghu	–	ᴗ	ᴗ	ᴗ	ᴗ	ᴗ	ᴗ	–	ᴗ	–	ᴗ	u̲

The excerpt of the *wirama* stanza above demonstrates the guru-laghu convention for each syllable. When viewed according to the guru-laghu rules that indicate the length of the syllables, the basic rhythm in the excerpt is not too difficult, as only a few syllables shift from short to long. The guru-laghu convention also influences the chanter to regulate their breathing and continue the melody in the next syllable.

On the other hand, syllables that serve as guru often undergo improvisation to add aesthetic features. Additionally, during the chanting process, the chanter also performs syllable division. This division serves to regulate breathing and to continue the melody in the next syllable. At the same time, syllable division is often done by the chanter to clarify the words being pronounced, thereby minimizing ambiguity.

Figure 1. The Pause Made by the Chanter



In the image above, it can be observed that a pause is made by the chanter. The chanter takes a pause after the fifth syllable. This is done because the fifth syllable functions as the guru syllable, which requires a slightly longer breath during its pronunciation. Therefore, a breath is taken to continue chanting the next syllable.

2. *Stress*

Stress refers to the emphasis placed on a syllable within a word or on a word within a sentence. In a conversation, when a syllable is stressed, it will have greater breath energy compared to unstressed syllables. A stressed syllable is typically produced by pushing more air out of the lungs. At the same time, the application of stress causes increased activity in the larynx (Ladefoged & Johnson, 2015). Stressed syllables often have a longer vowel sound than unstressed syllables, although not all long vowels are stressed. Therefore, it can be difficult to define stress from a listener's perspective. To facilitate analysis, syllables that receive stress are marked with [+]. The analysis of stress can be observed as follows.

Bait I	*Sang*	*śūrā*		*mriha*		*yajnya*		*ring*
	saːŋ	suː	ʀəː	Mri	hə	yaːd	ɲə	riːŋ
Stress	+	-	-	+	-	+	+	-

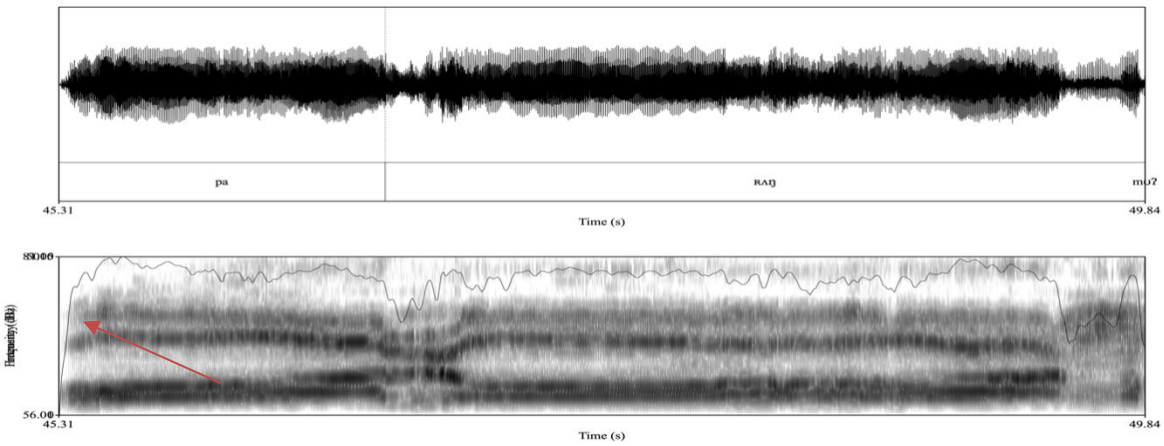
Bait I	samara			mahyun		i	hilanga		
	Sa	ma	rəː	maːh	hyʊːn	i	hi	la	ŋa
Stress	+	+	-	+	-	-	+	-	-

Bait I	nikang		parāng		muka	
	niʔ	kʌːŋ	pa	ʀʌŋ	mʊʔ	kə
Stress	-	+	+	-	+	-

The tables above represent the application of stress to a fragment of the first stanza of the wirama Jagaddhita. For example, the syllable [pa] in the word {parāng}

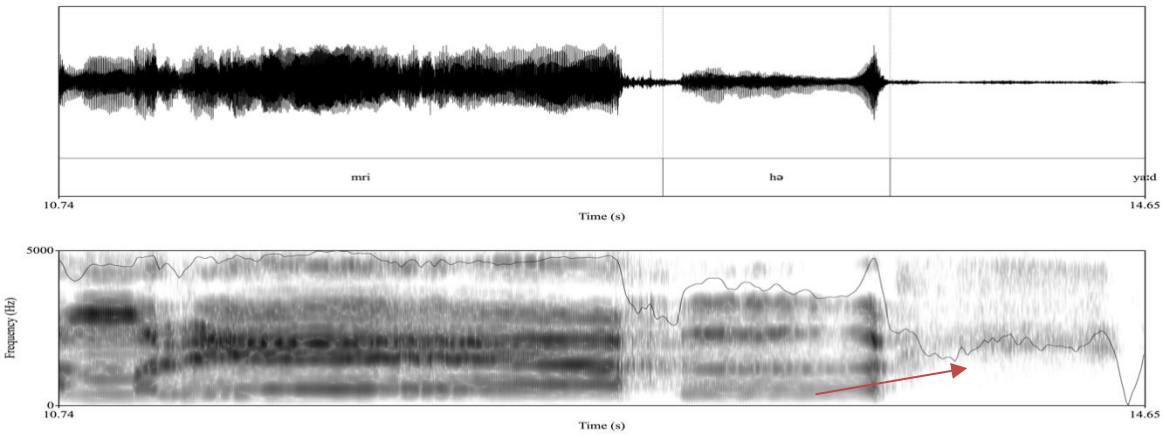
receives stress to connect to the following syllable. This stressing occurs because the syllable is positioned as laghu (short sound), while the next syllable is guru (long sound), thus requiring extra effort to continue the intonation

Figure 2. Application of Stress to the Syllable [pa]



Another example is the syllable [hə] in the word {mriha}, which experiences a reduction in stress. The stress placed on the previous syllable, [mri], which begins the word {mriha}, is necessary to provide a stable sound, aiming to maintain the pitch for the following syllable, [hə]. The reduction in stress is carried out to complete the pronunciation of the word {mriha}. This can be seen in the following image.

Image 3. Stress reduction on the syllable [hə]

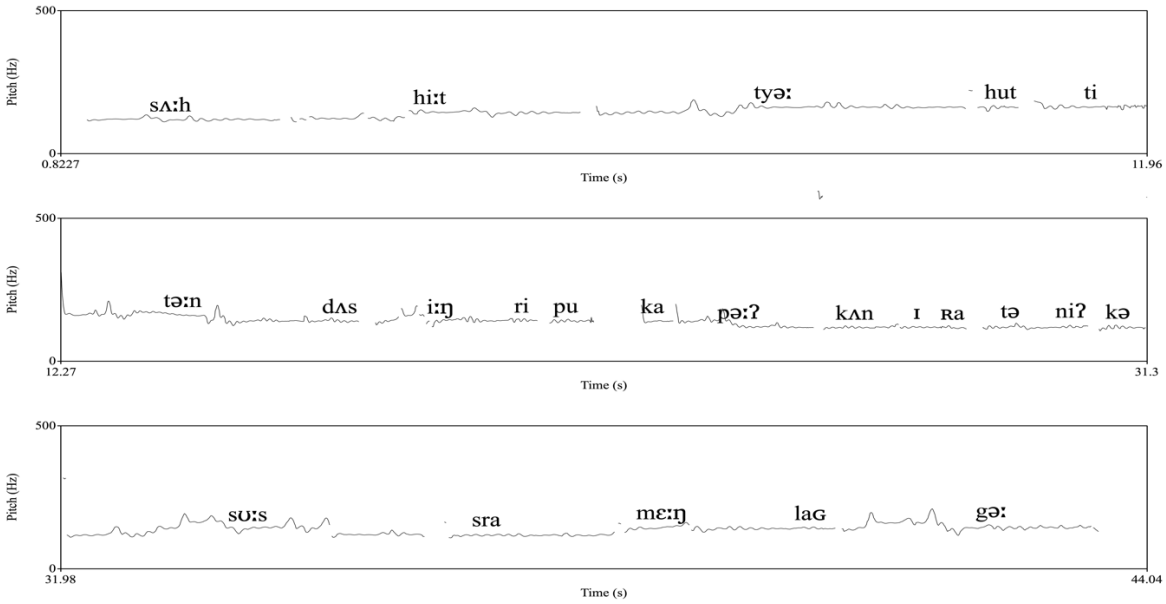


3. Intonation

Intonation and pitch are two types of pitch variations used by speakers to shape their speech. Specifically, intonation adds further discourse meaning to speech, independent of the words' literal meaning, while pitch encodes morphemes(Gussenhoven, 2004). Additionally, Zsiga (2020) suggests that intonation

provides many areas of discussion, such as changes in pitch, loudness, and tempo in delivering information. Referring to this brief explanation, this study focuses on the rise and fall of pitch within a syllable. Each syllable has a distinct intonation. In *kakawin*, intonation plays an important role in determining the pitch, whether it begins with a low or high sound. An example of intonation analysis can be observed as follows:

Figure 4. Intonation in *Wirama Jagaddhita* Line IV



Referring to the intonation image of the excerpt from the *Wirama Jagaddhita* stanza above, it can be observed that the intonation in this meter tends to be flat, making it relatively easy to sing. For example, the syllables that begin the *Wirama Jagaddhita* excerpt, namely [sʌ:h], [hi:t], [tyə:], [hut], and [ti], all have relatively flat intonation, although the syllable [tyə:] shows some improvisation intended to add aesthetic elements. The following syllable, [tə:n], also experiences improvisation. This occurs because, according to the Guru-Laghu convention, this syllable is considered a *guru* syllable. On the other hand, the syllable [dʌs] does not undergo improvisation, as it functions as a *laghu*. The vocalist then hardens the sound again with the syllable [i:ŋ], which is classified as *guru*, and continues the melody through the syllables [ri] and [pu] before taking a pause for breath. Based on this, if the vocalist does not pause, it could lead to potential errors in interpreting the meaning of the two words (bdk. Ladefoged & Johnson, 2015).

4. Duration

Duration can be described as the amount of time required to sing a syllable. At the same time, duration is used to determine whether there is shortening or

lengthening of sound in the pronunciation or singing of a syllable. In line with this, Crystal (2008) states that duration is a term in phonetic studies that refers to the length of time in the articulation of a sound or syllable. The difference between time duration and the lengthening or shortening of sounds is measured in time units, such as milliseconds (msec).

This section specifically discusses the duration required by each syllable. Therefore, an analysis of the duration used by each syllable in the performance of the meter is presented, processed using PRAAT with time units in seconds.

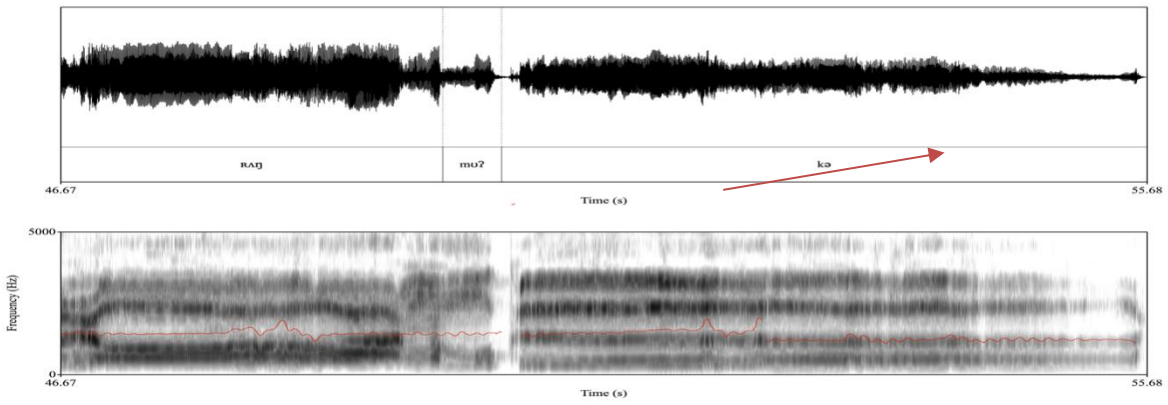
Bait I	*Sang*	*śūrā*		*mriha*		*Yajnya*		*ring*
	saːŋ	suː	ʀəː	mri	hə	yaːd	ɲə	riːŋ
Durasi	3.572	3.104	4.030	2.174	0.818	5.345	1.599	3.209

Bait I		samara		mahyun		i		hilanga	
	Sa	ma	rəː	maːh	hyʊːn	i	hi	la	ŋa
Durasi	1.605	0.612	1.186	4.369	2.125	0.903	0.385	0.883	0.900

Bait I	nikang		parāng		Muka	
	niʔ	kʌːŋ	pa	ʀʌŋ	mʊʔ	kə
Durasi	0.590	4.918	1.359	3.166	0.487	5.352

The table above shows the time or duration required to sing each syllable. Based on the data presented, it can be observed that there is both lengthening and shortening when the syllables are sung. In line with this, a syllable that functions as a *laghu* (short syllable) is never sung for more than 3 seconds, whereas a syllable that functions as a *guru* (long syllable) can last up to 5 seconds. The lengthening of a syllable during singing is related to intonation, which requires rising and falling pitches on the syllable. Therefore, a longer duration is needed to achieve this.

Figure 5. Lengthening of the Syllable



For example, in the syllable [kə], there is a lengthening of the intonation due to its position as a *guru* syllable. The intonation in this syllable starts with a flat tone, then gradually rises, and after reaching the peak, it continues with a gradual decline. In addition to being a *guru* syllable, [kə] is also the final syllable, so it must be concluded with a longer duration.

. **Discussion**

Based on the analysis conducted, the *guru-laghu* convention in literary works can be considered as an essential element. Therefore, when someone is to read or recite a *kakawin*, they are required to master its *guru-laghu* convention. *Guru* and *laghu* are always used as guidelines, both in the recitation and in the composition of *kakawin*. The composition of *guru-laghu* in each form of *kakawin* follows a fixed pattern and must not be violated. For this reason, *guru-laghu* is often referred to as the "law" of *kakawin* (cf. Medera, 1997). Furthermore, Medera (1997) added that the sounds included in the *guru* category are long vowel sounds, those using the 'closed syllable r' (ôôô), all *tengenan* (closed syllables), and certain sounds like *wisarjja* e, ai, o, au; the remaining sounds are categorized as *laghu*. Any vowel sound that comes before two or more consonants (commonly known as a cluster) is considered *guru* (for example, before *kr*, *kw*, *ky*) and is called *yogapara*. These forms are more easily observed using the Balinese script.

In addition to the *guru-laghu* rules, there are also specific sounds in certain characters that have a neutral position. This means that if these sounds occupy the *guru* position, they can be read as *guru*, but if they are in the *laghu* position, they should be read as *laghu*. The sounds referred to are *a*, *u*, *o*, *e*, and *i*. Regarding the sound *r* (ra repa), it does not include the cluster in the *guru* position. For example, in the word *purakrtta*, the syllable *ra* in the word *krtta* is not considered *guru*, because *r* (ra repa) before *kr* in Old Javanese orthography is not considered a consonant but a semi-vowel (*mandaswara*). Therefore, *kr* is not categorized as a cluster, and according to convention, *ra* in this word is not considered or recited as *guru* (cf. Medera, 1997). In line with Medera's explanation, Suarka (2009, 2012) added that *guru-laghu* as the basis of the meter in *kakawin* is not solely based on the length of vowels but also on the number of syllables in each line.

Referring to the brief explanation above, it can be concluded that Balinese script plays an important role in reciting *kakawin*. Therefore, the following presents the markers of *guru* in Balinese script.

Table 1.
Guru Markers in Balinese Script

Marker	Name	Marker	Name
ôôô ù	Ulu Sari	ôôô/	Adeg-adeg
ôôôU	Suku Ilut	ôôô° É	Guwung
° eôôô	Taleng	ôôô ê	Nanya
ôôô;	Bisah	ôôô Ù	Suku Kembung
ôôô(	Surang		

Words formed with the same cluster, known as dwita (compound characters), for example, the word *buda* in Balinese script " bu dÒ ". The syllable *bu* functions as guru, while the following syllable is considered laghu. Additionally, there are other markers, such as syllables that appear before tengenan (closed syllables), for example, the word *mangkana* " °°° m £Ð n ". In this example, the first syllable ma "°°° m" functions as guru, while the subsequent compound cluster is considered laghu because it contains tengenan " £ " (Medera, 1997; Suarka, 2009, 2012). In addition to the guru markers explained above, the following presents the laghu markers used in chanting kakawin, which are all danti and murdha characters that do not receive a sound marker (*pangangge*).

Table 2.
Danti Characters (adopted from Medera, 1997)

Danti Characters			
° h (ha)	° n (na)	° c (ca)	° r (ra)
° k (ka)	° d (da)	° t (ta)	° s (sa)
° w (wa)	° l (la)	° m (ma)	° g (ga)
° b (ba)	° £ (nga)	° p (pa)	° j (ja)
° y (ya)	°° Zÿ (nya)		

Table 3.
Murdha Characters (adopted from Medera, 1997)

Murdha Characters			
° x (Na Rambat)	ôôô°° È (Ca Laca)	° Ï (Ra Repa)	ôôô Ê (Guwung Repa)
° Œ (Dha Madu)	ôôô Ò (Gantungan Dha Madu)	° q (Ta Tawa)	° ` (Ta Latik)
°] (Sa Saga)	° [(Sa Sapa)	° ò (La Lenga)	° f (Gha Gora)
° v (Bha Kembang)	° | (Pha Kapal)		

In addition to understanding the markers of Balinese script as guru-laghu, as shown in the two tables above, it is also important to understand the writing system in Balinese script (pasang aksara Bali). Specifically, within the Balinese script writing system, there is a writing system known as *pasang pageh*. *Pasang pageh* can be said to be a writing system that is established and fixed. Words written using *pasang pageh* also need to be considered. However, in the writing of kakawin, deviations from the standard Balinese script writing system are often found, used specifically for the purpose of guru-laghu. These deviations can be observed as follows.

ú(o xÂo n&° r tu° **Mÿ tø**° wI° j° ni r° ku xÒ° ni r° **n g r** n&° mu su;° g) s%,
ūrṇnā ning ratu **māti** wīja nira kuṇḍa nira **nagara** ning musuh geseng,

Translation:

"The jewelry of the kings who have passed away, as the rice of their offering, is the enemy's country that has been burned to ashes."

The deviation was made by the author because of prioritizing the *guru-laghu* convention (Tinggen, 1993). Pada kata ***māti*** terdapat kesalahan dalam sistem *pasang pageh*-nya. The word *māti* should not be written with a long vowel [ā], If the author followed the *pasang pageh, the guru-laghu* convention would change from ∪ ∪ – to ∪ ∪ ∪ ; Additionally, the word **nagara** also contains an error in the *pasang pageh* system. According to the *pasang pageh* rule**, nagara** should have a long vowel in the first syllable, thus becoming **nāgara.** If the author had followed the *pasang pageh rule, the*

guru-laghu would change from ∪ ∪ ∪ to – ∪ ∪ . Therefore, if the author insists on using the *pasang pageh*, they would be violating the principles or laws inherent in the *kakawin.* In fact, before composing a *kakawin*, it is essential to establish the *guru-laghu* composition, as *guru-laghu* can be considered the foundation of *kakawin* composition.

Conclusion

Based on the explanation above, it can be concluded that the script, suprasegmental elements, and guru-laghu in kakawin are closely related. As markers of guru-laghu, Balinese script appears in a distinctive form. This is, of course, very different from other scripts, such as the Latin script. Therefore, to understand or study kakawin, it is necessary to study Balinese script. Without this, understanding the guru-laghu as the primary feature of kakawin cannot be achieved. In other words, learners will fail to understand kakawin.

Observations of kakawin reveal that certain characters are used as markers of guru, such as *tedong*, *ulu sari*, *suku ilut*, *taleng*, *cecek*, *adeg-adeg*, *guwung*, *nanya*, *bisah*, *surang*, and *suku kembung*. Additionally, there are other markers, such as syllables that begin words consisting of the same cluster, known as dwita.

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