

A Phonological Documentation of the Punan Language: A Preliminary Study

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Abstract

The Punans are one of several indigenous communities in Sarawak, Borneo, having settled in the Kemena river basin, in Bintulu and in Belaga, at the upper reaches of the Rejang river. The total population of the Punans, recorded by the Punan National Association (PNA 2019) was 4790 in 2019, a number that will likely decrease over the years and without recourse to elavation. The Punan language is categorized as threatened (Asmah Omar, 2017; Ethnologue, 2019), suggesting that the number of its speakers has rapidly declined over many years.

This paper presents a preliminary study on the phonological system of the Punan language, for the purpose of preserving the language. In this study, we adopt a descriptive approach, largely popularized by Bloomfield, and as such, we focus on the phonological features of the Punan language. In order to obtain Punan language data, we employed an open recording method, to video document informal speech and conversation. we revorded all language during face to face interactions with respondents. Ultimately, in this study, we determined that the Punan language contains 18 consonants, six vowels, four diphthongs and two triphthongs.

Keywords: *Punan, linguistics descriptive, phonology, language documentation*

Introduction

The Punan is a minority ethnic community, dispersed throughout parts of Sarawak, in Malaysia. As a community, the Punan once significantly depended on agriculture and hunting for their subsistence. However, over the past 40 years or so, the Punan community has gradually integrated with urban society, in Sarawak as well as in the capital Kuala Lumpur, yet have maintained a strong connection with their cultural and linguistic heritage.

At present, the Punan communities reside in regions where, owing to the emigration of younger generations, and the lack of attention on Punan heritage by both community insiders and outsiders, Punan populations have reached levels of endangerment and possibly extinction. Consequently, the The United Nations Educational, Scientific and Cultural Organization (UNESCO) has labeled the Punan language as threatened, after characterizing the language as having the following features; fewer than 10,000 speakers, not having increased in terms of speaker numbers for many years, being spoken only within the Punan community.

Yet, threatened languages have the potential to become salvageable, should the population of their communities increase, and should the communities attempt to sustain, revitalize, or expand the use of the languages through programs or, for example, media exposure and visibility through new technologies. Ethnic and minority communities in East Malaysia are aware of the need to maintain or even to revitalize their heritage languages, through such programs and activities (Asmah and Norazuna, 2020), and through their contact with other language communities. To gain insights into the endangered state of languages such as that of the East Malaysian Punan community, researchers would do well to look towards and to conduct fieldwork on areas such as contact between these communities and other surrounding communities.

Until the present time, most scholarly writings on the Punan have focused on its cultural and not its linguistic practices. As is the case with most Sarawakian indigenous languages, language resources on the Punan language are scarce, and a thorough or at least rudimentary description of the systems of Punan language has not been attempted. As such, no scholarly attempt has in part or in full documented the extensive language resources of the Punan communities, and hence, work such as lexical glossaries, wordlists, dictionaries, descriptions of grammar, and so forth does not exist. The Punan language is patently underdescribed, as it is under-resourced, not having received government, organizational, nor institutional support. In view of this lack of resources and support, we argue that the language is in dire need of documentation, in order to sustain or even revitalize its existence.¹

In the second part of this paper, we provide a historical background on the Punan communities in Sarawak, as we do their language. We also provide a critical review of past

research on the Punan communities, to clarify Punan cultural and linguistic contexts that require language documentation. In the third section of this paper, we present the methodical framework of the documentation and analysis. In the fourth and final section, we present preliminary data, which we have documented and which we then begin to analyze, though at a very early stage.

This paper thus seeks to describe an initial effort of salvaging the Punan language, within a larger process of documenting the Punan language. The paper contributes to the field of linguistic anthropology in that it adopts and presents methods that may, to an extent, uniquely address the needs for language documentation in the context of East Malaysia.

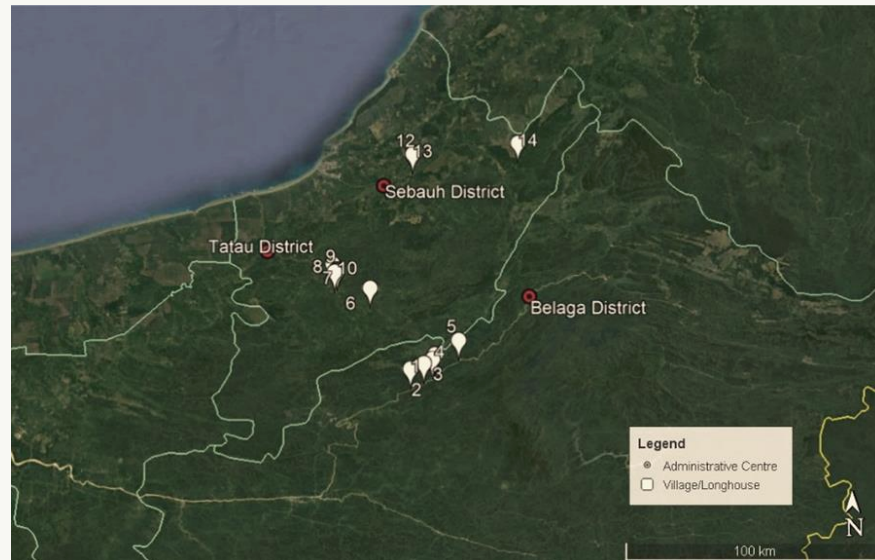
The Punan Communities and their Languages

The Punan population throughout Sarawak, as of 2019 was recorded at 4790, a number that will likely decrease steadily, according to the Punan National Association (PNA 2019). These Punan speech communities are mainly found in the fourteen villages, which we present in Table 1 (below).

Name of Longhouse	Village head	District
Punan Sama	Ladang Keluka	Belaga
Punan Biau	Kulleh Siluk	
Punan Ba' (Bah)	Brain Merieng	
Rumah Dari	Dari Jelawing	
Rumah Jelawing	Unknown	
Rumah Ado Bilong (Punan Kaku)	Ado Bilong	Tatau
Rumah Jayan Kanun	Jayan Kanun	
Rumah Kiah	Kiah	
Rumah Kitup	Kitup	
Rumah Arjey (Punan Mina)	Arjey Kenai	
Rumah Paren (Punan Meluyou)	Paren Bunyam	
Rumah Nyipa Tingang (Punan Pedan)	Nyipa Tingang Julin Hasan Kilah	Sebauh
Rumah Julin(PunanPedan)		
Rumah Hasan (Punan Jelalong)		

Table 1: List of Punan speech communities or villages in Sarawak, Malaysia

Map 1 below presents the three main geographical concentrations of the Punan settlements, as presented above in Table 1: Belaga, Tatau, and Sebauh: Belaga is located in the Kapit division while Sebauh and Tatau are located in the Bintulu division.



Map 1: The Punan settlements in Sarawak (Belaga, Tatau and Sebauh)

The Punan language remains solely a spoken language, and its speakers use the language only within the Punan community, where, until the present time, a Punan orthography has not emerged. In addition to the language spoken for daily general social interaction, Punan speakers also encode the language in two specific settings: celebratory and solemn. The celebratory code is called U'a, and functions to welcome guests during cultural festivities and ceremonies. U'a also appears in stories and during efforts to express one's intentions. In the Punan Kakus² language (Tatau), this encoded form is called 'sadang.' Punan communities also have specific vocabulary for conveying folklore, a vocabulary which they label as Ukiet. Death and funeral rites are recited in 'Setuo,' a ritual for communicating with the dead, recited for seven consecutive nights after the passing of the person, so as to assist the soul to navigate its way, while passing through 'Danum Keliman' (treacherous waters, rivers and seas) into 'Tulik' (heaven), the final destination of the soul.

Misinterpretation of Punan Identity

The label Punan Bah refers to the Punan community settled in longhouses, which also has the name Puna Bah, belonging to the community of the same name. However, Ling-Roth (1986) and Nicolaisen (1976, 1977, 1983) have documented the use of Punan Bah as a means to label Punan communities in various parts of Sarawak. Punans and Penans are often regarded as belonging to the same ethnolinguistic group. These Punan communities in Sarawak are often mistaken for a nomadic group i.e. Penan, Punan Aput and Punan Vuhang/Busang. However, culturally, and linguistically, the Punan differs significantly from these groups (Needham,

1954; Jayl, 1975; Rousseau, 1990). These errors partly emerge from the differences in labelling Punan ethnic groups in Sarawak and Kalimantan. In Kalimantan, Punan and Penan both refer to the same ethnic group. Yet, historical accounts of Punan Ba' people have never described these communities as nomads. Some researchers have hinted at Punan past nomadism (e.g. Nicolaisen, 1976; Rousseau, 1990), where, Nicolaisen (1976) suggests the Punans might have migrated to Kapuas, also known as Semukung, yet ironically concludes that no evidence exists to suggest a link between the Punans and the groups in Kapuas. Lewis (2009) has also grouped the Penan and the Punan Bah-Biau in the same category (the Rejang-Sajau language group), together with other Penan languages spoken in Kalimantan, Indonesia. However, locals and researchers working on Sarawak languages describe Punan and Penan as two very distinctive ethnolinguistic groups, and describe the Punan language as associated with the Kajang language group; Kejaman, Lahanan, and Sekapan (Clayre 1971, 1972a; Kroeger 1998). The linguistic groupings by Hudson (1978) however categorised Punan Ba' in the Rejang-Baram sub-group, which is separate from the Kajang languages (which have been placed within the Rejang-Bintulu subgroup).

More recent studies further clarify a number of these descriptions of cultural and language clusters. Grounded in phonological evidence, Smith (2017) presents that the Punan language seems to be a single language with several dialects, rather than a subgroup with several languages, and describes the Punan and Penan as each existing in a different sub-group. The language spoken by the Punan forms its own discrete linguistic subgroup, and seems to not be closely related to Penan, despite their similar names and the fact that both emerge historically from nomadism. All dialects of Punan are mutually intelligible, with some delayed intelligibility between Punan Bah and the Punan of Kalimantan (Smith 2017: 111). Similarly, Asmah and Norazuna (2020) note that there is confusion with the names Punan and Penan, and argue that any views suggesting that these two communities belong to the same group living a nomadic life in Central Borneo may not coincide with their ethnicity. Asmah and Norazuna's lexicostatistic study on the Punan and Penan has evidenced the fact that they each belong to a distinctly different subgroup; Baketan, Tatau, Lugat, Punan Ba', and Punan Busang belong to the *Proto-Punan subfamily as heterogeneous languages, whereas Sihan, Kejaman, Lahanan and Punan Silat form another subgroup (Proto-Kejaman), and hence the Proto-Kajang Group. A much earlier observation by Clayre (1972) also stipulated that the Siteng, a tribe from the upstream Mukah river speaks a language or dialect closely related to the Punan Ba' language. However, other research has not confirmed this claim.

Overview of Studies on the Punan Language and Related Contexts

Local and non-local researchers, such as Kroeger (1998), Ray (1913), Blust (1974), Hudson (1978), Wurm (1983), and Smith (2017), have conducted phonological analysis on Malay

dialects and indigenous languages in Sarawak, Sabah, and neighboring regions, such as in Brunei, Indonesia, Thailand and Singapore. Most of these indigenous language studies have focused on Iban, Bidayuh, Melanau, Kayan, Kenyah, Kelabit, Kedazan-Dusun, Lun Dayeh and so forth. Studies on the phonology of indigenous and tribal languages in Sarawak have been limited, yet we would like to now direct attention to these tribal languages. Asmah (2017) has conducted a sociolinguistic mapping of the Punan language, as one of several preliminary studies on the Punan language. Asmah divided the languages in Bintulu Sarawak into two subcategories: An indigenous language, including Tatau, Lugat, Punan Ba (Punan), Baketan, and so on; the original language of Austronesia, which exhibits a genetic relationship with the first subcategory. Here, Asmah argues that the first subcategory existed in Bintulu prior to the second subcategory. The study also discusses a cognitive relationship between the languages, as in the following table:

Languages	Baketan	Punan	Tatau	Lugat
Iban	20	13	18	20
Baketan		27	32	39
Punan			32	31
Tatau				41

Table 2: Percentage of cognate between Baketan, Punan, Tatau and Lugat languages.

Table 2 (above) indicates that these languages have a cognate relationship amongst themselves and also with the Iban language. The comparison evidences necessary data, such as that the Lugat and Tatau languages exhibit the highest cognate relationship at 41%. While the comparison of these two languages with the Punan language indicates the emergence of a relatively low cognate relationship, that is Punan-Tatau at 32% and Punan-Lugat at 31%, the historical relationship among these languages remains strong. Significant correlations appear in the comparison between Tatau and Lugat (41%), and between Baketan and Lugat (39%). The data in Table 2 also indicates that the cognate relationship between each respective language and Iban is low (below 20%). This low correlation strengthens the assertion that the Iban language did not originally develop (directly) through Bintulu geolinguistics. As such, the Iban language has a high probability of having arrived in the region at a time later than the indigenous languages of Bintulu. Asmah (2017) postulates the need for additional indigenous-language data in order to visualise the historical links between first and second language subcategories of the region, and hence, to analyse the separating of these languages from their parent language. This work, by Asmah, which partly aims to document endangered tribal languages, particularly in Sarawak, may preserve the vitality of minority languages, so that future generations may inherit the communities and their cultural lineages at large.

Asmah (2017) has also conducted significant work on the relationships between the Narom and Kenyah languages in Baram, Sarawak. Asmah notes that the Narom language is spoken in the lower part of Baram (Marudi) while the Kenyah language is spoken in the middle part of Baram (Tutoh). Asmah employs lexicostatic methods with a focus on phonological features, and draws on lexico-grammatical features, with a focus on morphological features, to describe that, like the Punan language, Narom and Kenyah are also spoken by the Orang Ulu minority community. By documenting a 100-word Swadesh list, which includes numbering terms, pronouns, locatives, directional words, time references, nouns, and common terms in everyday languages, Asmah finds that phonologically, the two languages have the same structural features, where most root words consist of two syllables. Furthermore, a morphological analysis indicates that both languages undergo processes of multiplication, nasalization, and accumulation. The comparison then exposes a 55% cognate relationship between Narom and Kenyah languages, indicating a relatively close kinship relationship between the two, yet both retain their own distinctive language features. Asmah concludes that these two languages have similarities, prior to their separation into two different languages. These phonological and morphological similarities further suggest that the two languages belong to the Austronesian language family.

Smith (2017) compared and classified languages in Sabah, Sarawak, and Kalimantan, employing historical linguistic methods. In the process, Smith compared phonological features, to subsequently analyze language kinship. Despite its worth, the study presents inaccurate data. For example, Smith transcribes the term 'noisy' as [mao], rather than the correct [μαΩο], 'Three' is transcribed as [telu], rather than the correct [tolu] and 'chew' as [makuña?], rather than the correct [maku/a?]. This inaccuracy may have emanated from the fact that, at the time, Smith only interacted with one informant who is not from the Punan village area. Here, subsequent studies must draw on multiple sources, in order to increase the accuracy of documented Punan language data.

Descriptive Linguistic Theory

Madzhi Johari (1972) adopted Bloomfield's (1935) pioneering work in descriptive linguistics, to analyze phonology, ultimately producing work on Sarawak (Johari 1989). The latter is among the earliest studies on the Sarawak Malay dialect, and has become a reference for studies of other dialects, particularly in Sarawak. For example, Hassan (2016) employs the same approach to phonologically analyze the Malay dialect in Kabong (Sarawak).

Apart from the Sarawak Malay dialect phonology, studies through a descriptive linguistics approach have emerged on several indigenous languages. For example, Rahim (2006) comparatively studied the phonology and morphology of the Iban language, Kantuk and Mualang, a language spoken throughout West Kalimantan, which also appears to be the origin

of Iban speakers in Sarawak. Rahim's study investigates kinship between the languages, which were previously believed to constitute the same language group, that is, Ibanik. In addition, Rahim compares the Malay language group to Ibanik, to locate the relationship from a common source in antiquity, namely the Malay Proto Polynesian language family.

Chong (2015) also draws on descriptive linguistics to analyze Kumpang, a variant of the Ibanik language located in Sungai Ketungau, West Kalimantan. Researchers such as Chong and Rahim obtain data from the place of origin of the Iban people to strengthen its authenticity. Through a comparison between the Kumpang variant and other languages such as the Demam, Sebaru, Bugau, Tapos, and Iban, Chong describes contemporary Ibanic language and discusses the vowel, consonant, and diphthong systems. Chong's study also questions previous studies on the number of vowels found in Ibanik. His results of diphthong analysis find that the Ibanik language is rich in the diphthong /-ay/, and contains three variations of the consonant phoneme / ɣ / i.e. / r /, / ʁ /, and / h /. The study also finds that, at the lexical coda, the consonant /-s / appears as an allophone [-ç] or [-h], though this phenomenon is predicated on the respective Ibanic variant.

Abdul (1993) conducted a phonological study of the Sungai language using descriptive linguistics. Abdul articulated five cardinal vowels, consisting of i, a, ↔, o and u/, and o and u/, and 17 consonants, classified as plosives / β, δ, γ, π, τ, κ /, the fricative / σ /, the affricates / φ /, / λ /, the trill / ρ /, the nasal / μ, ν, N, / and the half-vowel / ω, ψ /. The study also discusses suprasegmental features, syllables, double phonemes and phoneme distribution of the Sungai language. Overall, Abdul Hamid's study exposes the fundamental aspects of the Sungai language, which must be identified prior to further linguistic work on the language.

Methodical Framework

Various approaches have emerged for analyzing Malay and indigenous language phonological data. These approaches vary according to the heritage and geography of the language, as well as on data gathered, such as the availability of a corpus. Here, one such feasible method is to determine a generative phonology. The method requires a systemic approach, while the researcher attends to aspects such as autosegmental and lexical phonology. While descriptive linguistic approaches commonly appear in the analysis of language in the absence of corpus data such as the Punan language, for my current work, we have opted to analyze the transformative phonology of the Punan language, largely owing to the existence of the corpus.

We documented data in the Punan Ba'community in Belaga, possibly the earliest settlement of the Punan community in Sarawak. For this, my travels to the village required approximately five hours from the nearest town, Bintulu. We selected the Punan Ba' village as the research site, to increase the authenticity of the language data we collected as Punan

Ba' language. Throughout my documentation, we worked with a Punan native speaker from the Punan village, who assisted me in the collection of the data from my several Punan informants also from the same Punan Ba' village. The informants were all older speakers who have resided in Punan Ba' for the whole of their lives, thus having expert knowledge of the histories and cultural heritages of the Punan people.

The ethnographic approach for which we opted required an extended stay in a community. As researcher and ethnographer, we gradually attained entry into the community. As we are familiar with the context and the communities in the region, my approaching the community was not difficult, whereas outsiders would have experienced much greater difficulty and their attempts would have proven to be less facile, owing to their unfamiliarity with these communities. We worked with an interviewer who is bilingual and native in the Punan language, and as such, we employed the Punan Ba language throughout data collection, thus strongly facilitating the collection of primary data. The two main instruments we drew on in this study are the wordlist and a domain association method.

Wordlists

Whilst conducting fieldwork, the wordlists we designed and implemented were imperative to landscaping the lexical repertoires of the community. Although we developed and produced the wordlist in Malay, we conducted the interviews in the Punan language. We documented each interview through audio, and have thus collected several hours of recordings.

Rather than simply eliciting Punan words, we probed into the use of the words in various cultural contexts. For example, we asked respondents to associate the concept 'tree' with adjectives such as in the following, 'kayu ovou' (tall tree), 'kayu kivuk' (short tree) 'kayu ayok' (big tree), 'kayu isut' (small tree). In this way, an increasing repertoire of lexical items accumulated, which exceeded our collected set of vocabulary in the original wordlist. Here, the use of the wordlist alone was insufficient for obtaining additional data, as the words did not significantly encourage the inclusion or suggestion of new lexical items. Similarly, the original word list was in both English and Malay, and hence did not specifically relate to the contexts of the respondents. We also requested the respondents to alter the words to eliminate words that they deemed as unrelated to the culture and background of the Punan community.

In order to obtain a greater amount of data, during the collection process, we also integrated the technique of domain association. Through this elicitation method, we attempted to semantically link words in each of several particular respective domains (e.g., animals, plants, foods, houses and buildings, clothing, customs), where each domain was in some way semantically associated with others in the set. Asmah (2016) confirms the purposefulness of such a domain association method in her work on under-described languages in Borneo. For instance, human limbs may also relate to the limbs of animals.

Similarly, human feet can be associated with animal feet, such as paws, chicken feet, deer feet, and so on. As an example, in the Punan language, 'utuak' (head) collocates with 'utuak yu' (head of knife) and 'utuak salui' (front of boat, lit. head of boat).

Analysis

In the analysis, this current paper thus employs Bloomfield's analytical approach (Bloomfield 1933), that is, a lexico-phonemic analysis, which we combine with my ethnographic data collection. Bloomfield's approach to linguistic analysis includes the separation stage at the phonological level, which the research should attempt at its initial stages, in order to identify phonemes without reference to grammar. Here, the empirical approach is rudimentary, as, through this gathering of data, observation occurs without speculation or intuition, thus presenting language as objectively as possible.

Phonemic phonology is useful in analyzing data within descriptive linguistics, as it requires the identifying of phonemes, and the determining of sound patterns. In determining phonemes, two general methods can be employed by the analyst: the minimal pair method and the nearest minimal pair method. Through the minimal pair method, the analyst identifies the status of a segment as a phoneme. This phonemic status occurs in situations where two words differ in only one sound in the same range or position in each word. The sound can be considered a phoneme if the replacement of one sound or segment with another segment produces a difference in meaning. For example:

[τ _α λ _α μ] 'tray'	[δ _α λ _α μ] 'in'	(t->d)
Example 1 -		

[λ _α β _α] 'dividend'	— [ρ _α β _α] 'grope'	(l-r)
Example 2.		

Here, the segments / t / and / d / in Example 1, and also / l / and / r / in Example 2 are different phonemes. However, the nearest minimal pair method, which is frequently easier to apply during analysis, only requires the presence of the two closest minimum pairs in the same range.

[βακαρ]
‘burn’
[παγαρ]
‘fence’
Example 3. (b->p)

In Examples 3 and 4, the two words are distinguished by two pairs of sounds, [β]~[π] and [κ]~[γ]. The sound pair is distinguished by one distinctive feature, the shift from [β] and [κ] to [π] and [γ]. Such differences give meaning, where each segment can be seen as a phoneme.

In analysing the data, we repeatedly played the voice recordings of the informants to articulate the exact pronunciation, and to correctly transcribe the speech. During the transcript of the Punan language data, we focused on its phonetics and phonemics, with recourse to the International Phonetic Alphabet (IPA). Phonemic transcription must take into account the occurrence of segmental or suprasegmental phonemes. For example, for the word ‘*tutuk*,’ phonemic transcription does not take into account the difference between the first *t* and the second *t* as they both comprise the same letters / phonemes. The two instances of *t* only differ from in terms of their environment: That is, the first *t* occurs at the beginning of the word followed by the one vowel, and the second *t* occurs between the two vowels.

Subtle phonetic transcription, named as such as it takes into account the smallest features in the pronunciation of the informant, is only available in necessary parts. According to Asmah (2008a), in phonetic transcription, each sound is paired with its symbol regardless of the sound function, and does not take into account whether (or not) a sound implies a variation of another sound. For example, in Bahasa Punan Ba’, the word [τοπατ] which represents ‘we’ has two different [t] sounds. The first [t] sound emerges as an explosive sound (a plosive), while the second sound emerges as an implosive sound (a stop). Therefore, the phonetic transcription of the word would require the use of two symbols, the symbol [t] to refer to the first sound, and the symbol [τ] to refer to the second sound.

Data Analysis and Results

In this section, we will begin to describe the system and phonological structure of the Punan language, to ground my subsequent documentation of the language. As such, we categorize the description into several sections.

Puna Vowels

There are six vowels in the Punan language, namely [i], [e], [u], [o], [ə] and [a]. (Diagram 1).

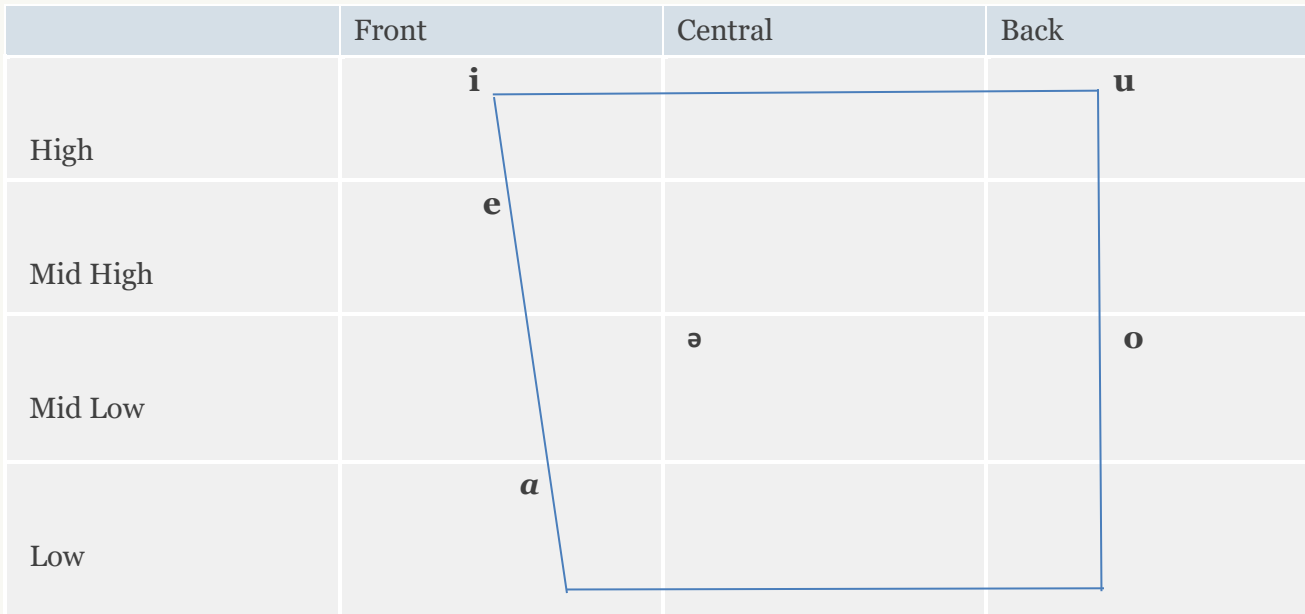


Diagram 1: Vowels Chart of the Punan Language

Nasalisation and Palatalisation

According to Robins (1968), all vowel sounds can be nasalised when the palate is lowered, and air partially flows through nostrils and mouth. In Punan, nasalisation occurs when a vowel follows the articulation of nasal consonants [m], [n], [N], [ɲ], and after a semi vowel such as [w] as indicated in Table 3.

Phonetic transcription	Phonemic transcription	Grapheme	Meaning
[oμαν]	/oman/	<oman>	‘father’
[ma)wõ]	/mawo/	<mawo>	‘noise’ ³
[N↔)λεNo]	/ngəlego/	<ngelengo>	‘hear’
[vα]	/na/	<na>	‘that’
[ɲα)μũΩo/]	/nyamuok/	<nyamuok>	‘mosquito’

Table 3: Vowel Nasalisation in the Punan Language

The palatalisation process occurs when the back of the tongue is raised towards the palate when uttering a sound, and the sound [ɲ] is subsequently produced. In the Punan language, palatalisation occurs when the vowel /i/ precedes the vowel /a/, as shown in Table 4.

Phonetic transcription	Phonemic transcription	Grapheme	Meaning
[βυ]ιθακ]	/ βυ]ιθακ /	<bunyiak>	‘white’
[λυμ]ιθακ]	/ λυμ]ιθακ /	<lumiak>	‘easy’
[e]ʔθǎκ]	/e]ʔθǎκ /	<enyiak>	‘fat’

Table 4: Vowel palatalisation in the Punan language

Distribution of Vowels in Words

All vowel phonemes /i/, /e/, /a/, /u/ and /o/ occur in all positions in words, with the exception of the schwa /ə/ which only occurs in the middle. Table 5 (below) provides examples of the distribution of vowels in these various positions.

Vowel	Beginning of word	Middle of word	End of word
/i/	[iei] “who”	[ejin] “meat”	[boki] “tail”
/e/	[e]ʔθǎκ] “fat”	[πεφνυ)] “fat”	[]ιπε] “tooth” □
/a/	[awũ] “dog”	[usan] “ραιν”	[ba] “rice”
/u/	[υρυΩδN] “nose”	[αμδτ] “Root”	[batu] “stone”
/o/	[ota] “breast”	[τανο)] “land” or “soil”	[μα)το] “eye”
/ə/	-	[β↔τυρυφ] “σλεεπ”	

Table 5: Distribution of Vowels in the Punan Language

Elongated Vowels

Another phonological feature of Punan are elongated vowels in single syllable words (Table 6). Although the elongated vowel is a regular feature, nevertheless it is not phonemically significant i.e., it does not significantly allow for contrast in the meanings of words. In the Punan language, only the vowel /a/ is elongated. Therefore, the elongated sound phonemic transcription is represented by the symbol [:], to refer to a different syllable, as in Table 5.

Phonetic transcription	Phonemic transcription	Grapheme	Meaning
[τα:αv]	[τα:αv]	<taan>	lasting
[μα:αv]	[μα:αv]	<maan>	expensive or difficult
[]α:αv]	[]α:αv]	<nyaan>	have
[δα:αv]	[δα:αv]	<daan>	tree branch

Table 6: Elongated vowels in Punan language

Diphthongs and Triphthongs

Asmah and Sandai (2012) discuss the production of glides when producing diphthong sounds. Similarly, triphthongs combine three vowel sounds in one syllable, accompanied by a shifting articulation. According to Smith (2017), of the most interesting features of Punan is the Proto-Malayo-Polynesian reflex * -ay and * -aw. Other Austronesian languages commonly alter this diphthong sound by combining the sounds * e and * o or * i and * u. However, in the Punan language, the sounds * ay> ey [ɪeɪ] and * aw> ow [uou] produce triphthongs. In both cases, we can determine that the initial segment is a gliding high vowel, the middle segment is the nucleus, and the last segment more or less becomes the same as the initial segment. The Punan language contains Four diphthongs – /aj/, /oj/, /aw/, and /uj/, and two triphthongs – [iej] and [uow]. We give examples of the occurrences of these in words below in Table 7:

Phonetic transcription	Phonemic transcription	Grapheme transcription	Meaning
[ʊvα@j]	/unaj/	<unai>	when
[κυλoɔj]	/kuloj/	<kuloi>	stupid
[σαλɔj]	/saluj/	<salui>	boat
[τυκαw]	/tukaw/	<tukau>	front part of boat
[ɪeɔ]	/iej/	<iey>	who
[basuΩou]	/basuΩow/	<basuou>	fish

Table 7: Diphthongs and triphthongs in the Punan language

Consonants in the Punan Language

The Punan language contains a total number of 18 consonants. Table 8 (below) presents the consonant phonemes of the Punan language; /p/, /d/ and /g/ are voiced plossives whilst /p/, /t/ and /k/ are voiceless plossives. The Punan language also has two fricatives, /v/ (voiced) and /s/ (voiceless), where nasals, affricates, trills, laterals and glides are all voiced.

Manner		Place of articulation						
		Bilabial	Labiodental	Alveolar	Post-Alveolar	Palatal	Velar	Glottal
Stop	Voiceless	π [πα/ο] 'thigh'		τ [ταδZυ] 'needle'			κ [κ↔λοπι] 'young'	/ [labu/]
	voiced	β [βα] 'rice'		δ [δανυ)μ] 'water'			γ [πιγαν] 'plate'	'pumpki n'
Affricate	Voiceless voiced				δZ [δZια] 'good'			

Nasal		μ [μα]to 'eye'	ν [νι]πα/] 'under'	ʃ [ʃι]πE 'teeth'	N[Nα]ρο] 'name'			
Fricative	Voiceless voiced		ϕ [αϕο] 'wound'	σ [σα]λυι 'boat'				
Trill					ρ [υρυ] 'grass'			
Lateral					λ [lovuk] 'house'			
Glide		ω [wat] 'veins'				j [φυ] 'knife'		

Table 8: Consonants chart in the Punan language

The Distribution of Consonants

Table 8 presents the distribution of consonants in the Punan language in various positions, that is, at the onset, middle, and coda positions of words. The consonants /p/, /t/, /d/, /m/, /n/, ///, /w/ dan /j/ exist at all positions. The consonant /b/ only exists at the onset of the word, whilst the consonants /r/ and /v/ occur in the middle position of the word. The consonants /d/, /g/, /s/, /l/ and /ʃ/, as well as the glottal stop /ʔ/, all occur at the onset and the middle of a word.

Consonants	Beginning of word	Middle of word	End of word
/p/	[πα]λι 'hungry'	[οπυ]φ 'fire'	[mo]λαπ 'faint'
/b/	[bo]βακ 'mouth'	-	-
/t/	[τ<=>λ]υ 'egg'	[βEτ]ι 'feet/leg'	[o]ωατ 'many'
/d/	[δα]νυμ 'water'	[γα]δΩοN 'green'	-
/k/	[κο]μαν 'eat'	[βε]καφο 'walk'	[δα]κ 'blood'
/g/	[γυ]τυ 'lice'	[τυ]γΩοN 'mountain'	-
///	[δο]υυ 'leaf'	-	[πε]φνυ/ 'full'
/v/	-	[υ]βαν 'grey hair'	-
/s/	[σα]λακ 'wrong'	[υ]σαν 'rain'	-
/δZ/	[δZι]θακ 'nice/good'	[β<=>λ<=>δZι]θE/ 'cold'	-
/m/	[μυ]ΩιαN 'dry'	[αμ]υτ 'root'	[μE]Nυ)ρυΩομ 'black'
/n/	[νυ] 'what'	[κυ]νιθE/ 'yellow'	[βυ]λαν 'moon'
/ʃ/	[ʃ<=>λ<=>ρι]θαN 'fly'	[E]ʃιθακ 'fat'	-

/N/	[Nα)ρo] ‘name’	[λoNo] ‘hand’	[υωαN] ‘horn’
/l/	[λυωoΩ] ‘knee’	[Eλεφ] ‘male’	-
/r/	-	[βυρEφ] ‘belly’	-
/w/	[ωατʰ] ‘vein’	[oωατʰ] ‘many’	[λινυ)oΩ] ‘people/human’
/j/	[φυoΩ] ‘chicken’	[καφυ] ‘tree’	[μαρεφ] ‘see’

Table 9: Examples of the distribution of consonants in the Punan Language

Allophones of Consonants

We thus now briefly discuss allophones of consonants in the Punan language. The voiceless plosive consonant sound can appear as both a complementary and free allophone. The voiceless plosive consonants /t/ and /k/ sometimes appear as non plosive at the word coda position, indicated by the symbol [ʰ], as in [απυτʰ] and [E/ιακʰ]. These sounds usually appear as plosive at the word onset and middle positions. The phoneme /t/ contains three allophones, namely [t], [tʰ], and [tΩ], which are all complementary allophones. The [t] occurs at the word onset and middle positions, while at the word coda, the [tʰ] is voiceless. These phonemes are also palatalised when followed by the vowel [o] as in the word [κ↔λατΩoN]. The phoneme /k/ also has three allophones, [k], [kʰ], and [k̠]. The allophone [k] occurs at the word onset only. At the word coda, the phoneme /k/ is at times the non plosive [kʰ], as in [μαρακʰ], yet will sometimes experience glotalisation, as in [βυ/ια/].

Concluding Remarks

In comparison to other language groups in the region, the Punan Ba' phoneme system is relatively simple. The description of the basic phonological features of the Punan language in this paper has provided a glimpse of the phonology of the Punan language. More so, the very primary start to the documenting of the language, throughout this paper, grounds my intentions to develop a highly needed orthographic system for the Punan language. Consequently, this development will allow the Punan language to be further and correctly documented and formally learned by the future generations.

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Endnotes

- 1 Recent work by Norazuna Norahim gives a total of 51 indigenous languages of Sarawak. The figure is derived from lexicostatistic studies on Sarawak languages (Asmah and Norazuna, 2020) and literature on the subject.
- 2 The Punan Kaku currently reside in the Tatau basin, on the north coast of Sarawak.
- 3 In Smith's (2017), for instance, the word 'noise' is transcribed as [mao] instead of [mawo] and 'three' is transcribed as [telu] instead of [tolu]. This inaccuracy could have been avoided if the suitability of the informants is taken into account before embarking on data collection. Data in Smith's study (2017) was taken from only one informant and the informant was not even a resident of the Punan Ba village.