PAN Reflex in Maya Language in West New Guinea: A Preliminary Study on Understanding The Concept of South Halmahera-West New Guniea

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ABSTRACT

This study aimed at uncovering reflexes of the Proto-Austronesian (PAN) in Maya language, spoken in Raja Ampat, West Papua province, and verifying the concepts that define South Halmahera-West Papua group proposed by Adriani and Kruyt (1914), Blust (1993), Ross (1994), and Kamholz (2014). To achieve these purposes, as many as 200 basic and 500 cultural lexicons of the Maya language were collected using the interview method, and the collection of PAN phonemes, which was reconstructed by Blust and Trussel (2015), was used. Data analysis used the top-down approach involving a comparative method and exclusively shared innovation technique, guided by the historical linguistic data analysis framework. The study showed that the phonemes of PAN have undergone regular and irregular retention and innovation. Examining PAN reflexes in the Maya language, the concepts of the South Halmahera-West Papua group, which are marked by the innovation of *p to /f/ and *e to /o/, was evidenced. Regular omission of the vowels in the final position appeared in *u and *a. The disappearance of the vowels in the middle position was observed in *u. However, there was no evidence of vowel omission in the beginning position. The innovation of *e and *a to /e/ in the final position was not evidenced. The concept, that says *a/_# innovates to: ya-, was not found, and the concept, which hypothesizes that *j innovates to /s/, lacked relevance because *j regularly innovates to /j/, /s/, and /h/. Likewise, the concept, that argues the merging of *k, *q, *h, *H to: /ø/, was not adequately supported. Regarding these findings, the concepts of the South Halmahera-West Papua group require a further formulation through undertaking intensive studies involving all members of the South Halmahera-West Papua group to reveal more sufficient evidence and comprehensive perspectives.

Keywords: Basic lexicons, cultural lexicons, Proto-Austronesia reflex, shared innovation, top-down approach

1. INTRODUCTION

This study derives from an interest in supporting the previous studies which redefined the concepts of the South Halmahera-West Papua group (HSPB) (Burhanuddin et al., 2019a; 2019b) about an attempt of grouping local languages across Indonesia. The concepts regarding HSPB are not yet clear as a consensus among Austronesian linguists has not been achieved. The membership of HSPB is rich encompassing 27 to 41 languages, including the Maya language spoken in a chain of Raja Ampat island, West Papua province (Badan Bahasa, 2008; Blust, 2013; and Lewis et al., 2016). Burhanuddin, et al. (2019a and 2019b) are concerned

with the reformulation of concepts of HSPB to bold the linguistic features of the group, involving some members that represent the group as the research object. These studies could be more comprehensive in explaining the characteristics of HSPB if they included all members of the groups as objects of the research. For this reason, the current research gives a significant contribution to address the limitations of the previous research and offers a more comprehensive perspective.

A series of intensive studies on a language is expected to offer a comprehensive view of the concepts of language group and verifies the postulates appointed by prominent Austronesian linguists. Some research studies

of several members of HSPB were conducted by Burhanuddin, et al. (2017a, 2019a, and 2019b). Burhanuddin (2019b) focused on the Taba language in South Halmahera, while the current research examined the Maya language in Raja Ampat, West Papua. Taba is a member of the South Halmahera subgroup, while the Maya language is a member of the Raja Ampat subgroup. A gradual investigation of different research objects from different sub-group (despite they come from a similar family) is expected to bring more adequate concepts of HSPB.

Based on Kamholz's (2014) study, HSPB comprises 7 subgroups, including South Halmahera-Raja Ampat, Tandia, Moor, Waropen, Warembori, Yoke, and Cenderawasih Bay. Among these, two are prominent (South Halmahera-Raja Ampat and Cenderawasih Bay). Whilst the former consists of 4 sub-group, namely South Halmahera, Ambel-Biga, Maya-Matbat, Fiawat, and As, the latter is made of 3 sub-groups, which are Biak, Yapen, and West-North Cenderawasih Bay. To reconstruct the concepts that define HSPB, the object of research should include the biggest sub-group as the main priority. Thus, this study selected the Maya language which is a member of the Maya-Matbat subgroup, the largest subgroup in HSPB.

It is important to note that Austronesian linguists have formulated the concepts of the language group, or sub-group of Austronesian languages (including Indonesian) through observing the realization of the proto forms of Austronesian languages (PAN) in the expression of the modern languages. The realization patterns of the PAN involve retention and innovation which were observed to take place mainly in the aspects of phonology and lexicon. Therefore, the first purpose of this research is the identification of the realization of PAN in the phonological and lexical aspects of the Maya language with particular emphasis on retention and innovation. The realizations were further examined and then compared with the existing concepts of HSPB proposed by linguists. Using data from Maya language, this study directly verifies the linguists' concepts of HSPB.

Adriani & Kruyt (1914) identified four concepts: (1) the omission of the final vowels, (2) a frequent omission of the vowels in the middle position of the syllable that is started with a stressing (3) *si* as the plural pronoun of the third person is used as a marker of the plural noun, and (4) the use of a reverse genitive (the possessive sequence). Blust (1993) discovered 7 characteristics: (1) the omission of the vowel in the middle position (sinkop) between nasal and stop sounds, as in PMP: *mata* > HSPB: *mta* 'eye'; (2) the slide of PMP: *e > HSPB: *o

in the penultima syllable; (3) the replacement of PMP: *anak* > PMPTmr: *natu* 'child'; (4) the trimming of the glide in the diftong; (5) the voiced final nasal; (6) the omission of the first vowel; and (7) substitution of PMP: *qasu* 'smoke' > PMPTmr: *masu*. Ross (1994) revealed 9 characteristics, including (1) PMP: *p > PHSPB: *f; (2) PMP: *ə > PHPB: *o in the penultima position; (3) PMP: *a /_# > PHSPB: *ya-; (4) PMP: *t /-*i > PHSPB: *s; (5) PMP: *-J- and *s > PHSPB: *-s-; (6) PMP: *k, *q, *h, *H > PHSPB: *ø; (7) PMP: *d, *Z, *l, and *r > PHSPB: *l; (8) PMP: *n and *ɲ > PHSPB: *n; and (9) PMP: *ə and *a > PHSPB: *ə in the final syllable. Kamholz (2014) identified 7 features, (1) PMP: *ə > PHPB: *o in the penultima position; (2) PMP: *ə and *a > PHSP: *o; (3) PMP: *s and *J > PHSP: *s; (4) PMP: *q and *h > PHSP: *ø; (5) PMP: *-k- > PHSPB: *ø; (6) PMP: *n and *ɲ > PHSPB: *n; and (7) the omission of the vowel in the middle position. Looking at these hypotheses, we can find that there is only one agreement about the concept of HSPB, that is about the vowel sinkop. This indicates a significance for conducting further work to refine the concept of HSPB.

Burhanuddin et al. (2019b), as an outcome of their research in the first year, used data from Taba language to test Adriani and Kruyt's (1914) hypothesis. Burhanuddin et al. (2019a) further tried to prove the validity Adriani and Kruyt's (1914) hypothesis through including all languages in South Halmahera (including Buli, Maba, Sawai, Gane, Taba, and Gebe). The research indicates roughly similar findings with those in Burhanuddin (2019b). Another research by Burhanuddin, et al. (2019) examined the complexities of phonetic changes among South Halmahera languages, without an attempt to connect them with the purpose of identifying the concepts that define HSPB.

Burhanuddin (2017a) analysed the realization of Proto-Austronesia (PAN) in Buli language (one of the members of HSPB, South Halmahera subgroup). How reflexes in Buli language explain the characteristics of HSPB was not elaborated, nor were connected with the hypothesis proposed by Adriani and Kruyt (1914); Blust (1993); Ross (1994); and Kamholz (2014). Burhanuddin (2017b) did not intend to investigate the internal innovation that distinguishes Taba language from other languages of South Halmahera, such as Buli, Maba, Sawai, Gane, and Gebe. This study did not explain whether the internal innovations in Taba language can be correlated with the hypothesis proposed by Adriani and Kruyt (1914); Blust (1993); Ross (1994); and Kamholz (2014).

2. METHOD

This research methodologically employed the interview method to collect data. The field interviews with 3 native speakers of Maya language were conducted. The structured interview questions focused on 200 basic and 500 cultural lexicons. In addition to the interview, the observation method to collect PAN etymons constructed by Blust and Trussel (2015) was pursued to observe their realization in Maya language. Data were then analyzed using the top-down approach relying on the comparative method that used exclusively shared innovation technique, framed by the historical linguistic data analysis principles. The top-down approach examined the realization of the PAN from which Maya language originates through comparing the realization of the glossary in PAN etymon with the lexicon in Maya language. Comparison of etymon was subsequently followed by the analysis of change patterns which then were consulted with Blust's (1993) propositions about the concepts of HSPB.

3. FINDINGS AND DISCUSSION

Blust and Trussel's (2015) reconstruction of PAN phonemes was used to explain the realizations of PAN reflexes in Maya language. The analysis revealed the following findings:

PAN *p

PAN *p in the beginning position regularly changes not only to /p/ (data 1), but also to /f/ (data 2) in Maya language. Such changes are characterized by the split.

Gloss	PAN	Maya	
rays	*paRi	mnapaq	(1)
turtle	*pĕñuq	pin	
bitter gourd	*pariaq	napaq	
bat	*paniki	afuiq	
full	*penuq	fon	(2)
when	*pica	afisa	
how many	*pija	fisan	

Like PAN *p in the beginning position, PAN *p in the middle position also splits up to /p/ and /f/. However, changes to /p/ or /f/ may happen regularly if the data are enlarged.

Gloss	PAN	Maya	
silk cotton tree	*kapua	kapok	(3)
taste	*tepeŋ	côpôn	
thin	*tipis	nitif	

four   *Sepat   fat

Data indicates that, PAN *p in the final position changes to /f/ irregularly. This change can be observed in the etymon that presents the meaning of *atap* 'roof': PAN *tiyup changes to *(ma)uf* in Maya language.

PAN *t

PAN *t in all positions undergoes retention regularly in Maya language.

Gloss	PAN	Maya	
thin	*tipis	nitif	(5)
horn	*tanduk	tandoq	
three	*telu	tul	
lice	*kutu	ut	
necklace	*rantay	ranteq	
cucumber	*qatimun	(w)atimun	
sea	*lahut	ohot	
moss	*lumut	(lam)lumut	
four	*Sepat	fat	

PAN *t in the beginning position also changes to /c/ regularly. This finding indicates that PAN *t in the beginning position is splitted up.

Gloss	PAN	Maya	
to plant	*tanĕm	canam	(6)
to swallow	*tilen	colon	
to taste	*tepeŋ	côpôn	

PAN *t in the beginning position disappears irregularly, such as in PAN *tiyup 'to blow'' changes to *uf* in Maya language.

PAN *C and *c

PAN *C in the beginning and middle position changes to /t/ irregularly. Regular change of PAN *C in the middle position might be observed if more data are provided. Phonem /c/ are only found in the beginning position but the change to /c/ is irregular.

Gloss	PAN	Maya	
year	*CawiN	tahun	(7)
to die	*aCay	mat	
egg	*qiCeluR	tôlôq	
cry	*Caŋis	cine	(8)

PAN *c in the middle position irregularly changes to /s/, as such was observed in the lexicon that presents the meaning of *kapan* 'when': PAN *pica changes to: *afisa* in Maya language.

PAN *k

PAN *k in the beginning position undergoes irregular retention (data 9) and omission (data 10). Regular retention might be possible if a larger data is provided. In addition to that, it was found that *k changes to nasal sounds /n, ñ/. Such changes are irregular, such as exemplified in the lexicons that express the meaning of *keponakan* 'nephew' and *tanya* 'to ask' (data 11).

Gloss	PAN	Maya	
silk cotton tree	*kapua	kapok	(9)
to dig	*kalih	kaliq	
lice	*kutu	ut	
nephew	*kam-anak	namfanaq	(11)
to ask	*kuta(n, ñ)a	ñutun	

PAN *k

PAN *k in the final position changes to *q irregularly in Maya language.

Gloss	PAN	Maya	
nephew	*kam-anak	namfanaq	(12)
horn	*tanduk	tandoq	
bird	*manuk	miniiq	

*PAN *q*

PAN *q in the beginning position changes irregularly to /g/ (data 13) and often disappears (data 14). Regular change to /g/ might be possible if thick data are provided. Irregular change of PAN *q to /w/ in the beginning position was also found (data 15).

Gloss	PAN	Maya	
salt	*qasiRa	gasiq	(13)
sour	*qasin	gasiq	
egg	*qiCeluR	tôlôq	(14)
cucumber	*qatimun	watimun	(15)
shark	*qiSu	wôi	

Lexicon that presents the meaning of *hiu* 'shark' seems to change through the metathesis process, *qiSu > *qiu > *qio > *qoi (metatesis) > *woi > *wôi*.

PAN *q in the final position undergoes retention and disappears irregularly.

Gloss	PAN	Maya	
wee	*kemiq	namtamiq	(16)
to pee	*miqmiq	tami	
turtle	*pěñuq	pin	

*PAN *b*

PAN *b in the beginning and middle positions undergoes irregular retention, as exemplified below:

Gloss	PAN	Maya	
pig	*babuy	booq	(17)
mouse	*labaw	alubuq	

*PAN *d*

PAN *d in the beginning position in Maya language is retained but also changes to /l/ irregularly. PAN *d in the middle position is irregularly retained.

Gloss	PAN	Maya	
to listen	*deŋeR	mdônôq	(18)
two	*duSa	luuq	
horn	*tanduk	tandoq	(19)

*PAN *z and *j*

PAN *z in the beginning position change to /l/ irregularly (data 20). PAN *j in the beginning position is retained irregularly (data 21). PAN *z and PAN *j in the middle position also irregularly change to /s/ and /h/, respectively (data 22). PAN *g in the middle position is retained irregularly (data 23).

	Gloss	PAN	Maya	
*z	to walk	*zalan	lêlên	(20)
	far	*zauq	laq	
*j	to look after	*jagah	jaga	(21)
	how much	*pija	fisan	(22)
	name	*ŋajan	nahan	
*g	to look after	*jagah	jaga	(23)

*PAN *m*

PAN *m in all positions are regularly retained, but only that in the beginning position is retained irregularly (data 24). Retention of PAN *m in the final position happens regularly (data 26).

Gloss	PAN	Maya	
bird	*manuk	miniiq	(24)
moss	*lumut	(lam)lumut	(25)
house	*Rumah	wum	
five	*lima	lima	
to plant	*taněm	canam	(26)
six	*ěněm	ônôm	
to drink	*inum	ñinim	

PAN *n

PAN *n in the middle and final positions is retained regularly in Maya language.

Gloss	PAN	Maya	
to plant	*tanĕm	canam	(27)
six	*ĕnĕm	ônôm	
to drink	*inum	ñinim	
to walk	*Zalan	lêlên	(28)
cucumber	*qatimun	(w)atimun	
name	*ŋajan	nahan	
to swallow	*tilen	colon	

PAN *N and *ñ

PAN *N in the beginning position changes to /ñ/ irregularly (data 29), while PAN *N in the final position changes to /n/ irregularly (data 30). PAN *ñ in the beginning and middle positions (data 31) and (data 32), respectively, changes to /n/ irregularly. Regular change in the middle position might be observed if more data are provided.

	Gloss	PAN	Maya
*N	to see	*Neŋ	ñêm (29)
	year	*CawiN	taun
	(30)		
*ñ	coconut	*ñiuR	nuuq (31)
	turtle	*pĕñuq	pin (32)
	to ask	*kutaña	ñutun

PAN *ŋ

PAN *ŋ in the beginning position changes to /n/ irregularly (data 33) and might change regularly in the middle position if more data are provided (data 34). In the final position, PAN *ŋ can change irregularly to /n/ and /m/ (data 35).

Gloss	PAN	Maya	
name	*ŋajan	nahan	(33)
to cry	*Caŋis	cine	(34)
ear	*deŋeR	mdônôq	
to taste	*tepeŋ	côpôn	(35)
to see	*Neŋ	ñêm	

PAN *s

PAN *s in the beginning position is retained regularly (data 36), but if it is in the middle position, the change is irregular (data 37), while in the final position, it changes to /f/ (data 38) or is omitted (data 39). Both innovation and omission are irregular.

Gloss	PAN	Maya	
comb	*saRu	s(i,e)q	(36)
nine	*siwa	si	
wrong	*salaq	sal	
salt	*qasiRa	gasiq	(37)
thin	*tipis	nitif	(38)
to cry'	*Caŋis	cine	(39)

PAN *S and *h

PAN *S in the beginning and middle positions are removed irregularly. In the beginning position, it was found a lexicon that expresses the meaning of *empat* 'four', that is PAN: *Sepat > BMy: *fat*. In the middle position, it was found a lexicon that represents the meaning of *dua* 'two', that is PAN: *DuSa > BMy: *luuq*. PAN *h in the middle position was removed irregularly such as in PAN *lahut > BMy: olot 'sea', but removed regularly if it is in the final position, such as in PAN *jagah > BMy: jaga 'to look after'; PAN *Rumah 'rumah' > BMy: *wum* 'house'; serta PAN *kalih 'gali' > BMy: *kali* 'to dig'.

PAN *l

In the beginning (data 40) and middle positions (data 41), PAN *l is retained regularly in Maya language.

Gloss	PAN	Maya	
five	*lima	lim	(40)
moss	*lumut	(lam)lumut	
sea	*lahut	olot	
mouse	*labaw	alubuq	
three	*telu	tul	(41)
wrong	*salaq	sal	
eight	*walu	kwal	
to dig	*kalih	kali	

PAN *r and *R

PAN *r in the beginning position undergoes retention irregularly, as exemplified in the lexicon that expresses the meaning of *kalung* 'necklace', PAN *rantay > BMy: *ranteq*. PAN *R in the beginning position is removed (data 42) or changed to /w/ (data 43), each appears irregularly. Changes of *R in the middle position are irregular (data 44). However, PAN *R in the final position consistently changes to /q/ regularly (data 45).

Gloss	PAN	Maya	
a hundred'	*Ratus	utunaga	(42)
house	*Rumah	wum	(43)

salt	*qasiRa	gasiq	(44)
comb	*saRu	s(i,e)q	
blood	*daRaq	liq	
coconut	*ñiuR	nuuq	(45)
to listen	*deŋeR	mdônôq	
egg	*qiCeluR	tôlôq	

PAN *w and *y

PAN *w in the beginning and middle position is retained irregularly (data 46 and 47, respectively) (regular retention might be observed in a larger set of data). Whereas, PAN *y in the middle position is discarded irregularly (data 48).

Gloss	PAN	Maya	
eight	*walu	kwal	(46)
water	*waSiR	wayaq	
nine	*siwa	siq	(47)
year	*CawiN	taun	
to blow	*tiyup	uf	(48)

PAN *a

PAN *a in the beginning position is retained irregularly (data 49) but is retained regularly if it is in the penultimate syllable (data 50). In the ultima syllable, in addition to regular retention (data 51), PAN *a also disappears irregularly (data 52) (it might be regular if data are sufficient). PAN *a disappears regularly in the final position (data 53) and is retained irregularly (data 54) (it might be regular if data are sufficient).

Gloss	PAN	Maya	
dead	*aCay	mat	(49)
to plant	*taněm	canam	(50)
name	*ŋajan	nahan	
year	*CawiN	taun	
nephew	*kam-anak	namfanaq	(51)
to look after	*jagah	jaga	
name	*ŋajan	nahan	
wrong	*salaq	sal	(52)
house	*Rumah	wum	
how much	*pija	fisan	(53)
when	*pica	afisa	

to ask	*kutana	ñutun	(54)
nine	*siwa	siq	
lima	*lima	lim	

PAN *e

PAN *e in the penultima syllable is omitted irregularly (but might be regular if the data is adequate) (data 55). In the position of the ultima syllable, PAN *e can change regularly to /o/ (data 56) and to /a/ (data 57) irregularly.

Gloss	PAN	Maya	
three	*telu	tul	(55)
four	*Sepat	fat	
six	*enem	ônôm	(56)
to listen	*deŋeR	mdônôq	
to swallow	*tilen	colon	
to plant	*tanem	canam	(57)

PAN *i

PAN *i in the beginning position is retained irregularly (data 58), while it is retained regularly in the penultima syllable (data 59). Beside of being retained, PAN *i in the penultima syllable is irregularly omitted (data 60).

Gloss	PAN	Maya	
to drink	*inum	ninim	(58)
cucumber	*qatimun	(w)atimun	(59)
when	*pica	afisa	
thin	*tipis	nitif	
to blow	*tiyup	uf	(60)
egg	*qiCeluR	tôlôq	

PAN *u

In the penultimate syllable (data 61) and ultima (data 62), PAN *u is retained regularly in Maya language. In the ultima syllable, besides being retained, PAN *u also changes into /o/ (data 63). Meanwhile, in the final position, this vowel disappears regularly (data 64).

Gloss	PAN	Maya	
lice	*kutu	ut	(61)
to ask	*kutana	ñutun	
two	*duSa	luuq	
house	*Rumah	wum	

moss	*lumut	(lam)lumut	(62)
cucumber	*qatimun	(w)atimun	
to blow	*tiyup	uf	
head	*ñiuR	nuuq	
horn'	*tanduk	tandoq	(63)
egg	*qiCeluR	tôlôq	
sea	*lahut	olot	
lice	*kutu	ut	(64)
three	*telu	tul	
eight	*walu	kwal	
shark	*qiSu	wôi	

<p align="center">*PAN *-ay, *-aw, *uy, and *iw*</p>

PAN *-ay irregularly disappears in Maya language, as exemplified in PAN *aCay *mati* 'dead' which changes to *mat* in Maya language. In addition, PAN *-ay can change to /e/, as evidenced in PAN *rantay to be *ranteq*. PAN *-aw becomes /u/ and /ê/ in Maya language but these changes are irregular, as they are found in PAN *labaw *tikus* 'mouse' that changes to *alubuq*, and PAN *laŋaw which changes to *lalêq*.

PAN *-uy becomes /o/ irregularly, found in the lexical that expresses the meaning of *babi* 'pig' (PAN *babuy changes to *booq* in Maya). PAN *-iw disappears irregularly, found in the form that represents the meaning *kayu* 'wood' (PAN *kaSiw changes to be *gaq* in Maya).

Towards the new concepts that define HSPB

Examining the PAN reflexes in Maya language and their association with the concepts of HSPB proposed by Adriani and Kruyt (1914), a number of observations can be proposed. With regards to the concepts about the omission of the final vowels, in Maya language, the omission takes place only on vowel *a and *u. Omission of these vowels happens regularly. Nevertheless, the vowel /a/ in the final position is not only regularly disappeared, but also is retained irregularly. Regarding the concept of the omission of the middle vowel in the syllable preceded by a stress which is only happens in phoneme *u, in Maya language the omission takes place only in phonem *u in the penultima and ultima syllables. The omissions take place regularly despite the vowel *a has been omitted in these positions, the omission is irregularly because the vowel * an in these positions is retained regularly.

Blust (1993) conceptualizes that HSPB has shifted from PMP: *e > HSPB: *o in the position of the penultima syllable. In the Maya language, the phoneme *e disappears irregularly, but it changes to /o/ regularly in the ultima syllable. In the Maya language, it was not found the omission of the vowel in the beginning position, contradicting Blust's (1993) claim. Neither was it found in the Maya language the concept of the presence of nasal sounds in the final position.

Ross's (1994) concepts, which are considered still relevant, were that of the regular changes of *p to /f/ (besides being retained) and change of *e to /o/. The concepts regarding the change of *n and *ŋ to /n/ were also observed in Maya language. However, the regularity of change of *ŋ to /n/ in particular circumstance does not happen regularly (e.g. in the final position). The concept of PAN *e and *a changes to /e/ in the final position is not evidenced in Maya language, because *a is retained, while *e can change to /o/ and /a/ through irregular processes. This finding indicates that this concept is not relevant in Maya language. So is the concept of *a/_# that changes to: ya-, was not found, whereas *j is splited up regularly to /j/, /s/, and /h/ (thus, the concept of *j changes to /s/ becomes less relevant). The change of *k to /ø/ in Maya language is irregular, while *q regularly disappears in the final position. Thus, the concept of *k, *q, *h, *H > PHSPB: *ø is not entirely correct.

The first concept argued by Kamholz (2014) is not unlike those proposed by Adriani and Kruyt (1914), Blust (1993), and Ross (1994), while the second concept is roughly the same of Ross's (1994). Similarly, the concept of *q and *h which are turned to /ø/, and the omission of vowels in the middle position are still relevant with that in Maya Language. Regarding the concepts of the disappearance of *-k- and the merging of *n and *ŋ to /n/, these concepts lack relevance in Maya language.

4. CONCLUSION

Some phonemes of PAN undergo regular and irregular retention and innovation in Maya language. A PAN phoneme can change regularly and irregularly. For example, *p in the beginning position is retained, but also changes to /f/, while in the final position, the change was observed to be irregular. Another PAN phoneme can only change irregularly, such as *c, *b, *d, and so on. Associating with the concepts of HSPB group by linguists, some of these concepts are found to be relevant with Maya language, some others are not. With regards to these findings, it is legitimate for the reformulation of the concepts regarding HSPB group. Reformulation can be done through undertaking intensive studies on all

members of HSPB directly from their ecological settings to obtain more comprehensive perspectives and knowledge.

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