Reconstruction of Nias, Devayan, and Sigulai Languages

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Abstract: Nias (also Batu) and Simeulue Islands which are included in the Barrier Islands have a very unique diversity of languages. The languages on these islands, namely Nias, Devayan, and Sigulai languages, still maintain the Paleo-Hesperonesian languages. This uniqueness is seen in the vocabulary that has similarities and differences between them. Although there are differences and similarities, the three languages are assumed to be related as a family of Austronesian languages. In this connection, this paper aims to find a system of the three languages as proof of their kinship. The theory used is Comparative Historical Linguistics with a bottom-up approach. This is consistent with the method used, namely the comparative method, which compares the changes and correspondence of sounds between cognate sets descriptively and diachronically, as well as tracking inheritance between periods, namely the Proto Austronesian inheritance documents in Nias, Devayan, and Sigulai languages. From the analysis it was concluded that Vocal and consonant features in NS, DV, and SG are arranged in a correspondence set and produce 6 Nias-Devayan-Sigulai proto vocal systems, namely * i, * u, * e, * ə, * o, and * a and 19 consonant systems proto Nias-Devayan-Sigulai, i.e. * b, * p, * m, * w, * f, * t, * d, * s, *z, * n, * l, * r, * ɲ, * y, * k, * g, * x, * ŋ, and * h. The PNDS vowels and consonants are inherited linearly and innovatively in several sound correspondence devices.

Keywords: reconstruction, phoneme, Nias-Devayan-Sigulai languages

Introduction

Nias Island (also Batu Islands) and Simeulue Island which are included in the Barrier Islands have a very unique diversity of languages. The languages on these islands, namely Nias (NS), Devayan (DV) and Sigulai (SG) languages, still maintain Paleo-Hesper Indonesian languages (Nothofer 1986 and Brown, 2001). This uniqueness is seen in the vocabulary that has similarities and differences between them. Although there are differences and similarities, the three languages are assumed to be related as a family of Austronesian languages. So far they have similar lexicon resemblance that is not yet clearly regulated. As explained by Brown (2001) Nias is classified by Ethnologue (1992) as the Sundic language from North Sumatra which is a subgroup of the Malay-Polynesian group. Sundic is just a neutral geographical grouping for languages whose linguistic affiliation is unknown (Tryon 1995: 21). For example, the meaning of the word 'ash' appears as the words [*abu*] (DV and SG) and [*avu*] (NS); the meaning of the word 'moon' appears as [*bawa*] in all three languages. However, for the meaning of the word 'water' to appear as [*oek*] (DV) and [*idanə*] (SG and Nias), also the meaning of the word 'child' appears as [*anak*] (DV) and [*nono*] (SG), [*ono*] (NS). It seems that the Sigulai and Nias languages have something in common, but the meaning of the words 'burn' DV and SG both speak the words [manotoŋ] and NS [tunu]. In other word meanings, such as 'dog' appears as [*asu*] (DV and NS) and *[nahu]* (SG). Also, the meaning of the word 'night' appears as [*bəŋi]* (DV) and [*boŋi]* (NS), but appears as [*akhemi*] (SG). That is, the lingual facts of shared innovation are found in the languages being compared (cf. Pagel M, Quentin D Atkinson, Andrew Meade, 2007). These changes and similarities occur because of the characteristics of universality, language contact, or inheritance from the parent language (Klamer, 2002; Campbell, Lyle, and Poser, William J. 2008) which later in the course of time these languages

split up so that there are some that survive and also experienced innovation (Bynon, 1979; Hock, 1988; Mbete, 2002; Widayati 2016; Matasovic, 2010).

Kahler (1955 and 1963 in Brown 2001) explained that the Sigulai language spoken to the north of Simeulue was related to Nias, but not to Simeulue (Devayan) on the same island. Concerning some of the temporary examples above, Kahler's explanation still needs to be proven again. Even Nothofer (1986) claims that the Mentawai language is closely related to the Nias language through a list of words. However, there is no systematic comparison of the two languages. Furthermore, it is also mentioned that the Nias language shows lexical, morphological, and syntactical similarities with the Toba Batak and Karo Batak languages, but further analysis is still needed to assess how closely these languages are related.

So, the clarity of the relations of languages in the Barrier Islands does indeed need to be proven, especially in terms of historical relations through the evidence of language. Bellwood assumed that any opinion about prehistoric regions of Indonesia, including Malaysia, must have taken the language evidence seriously since 5,000 years ago, especially if it relates to the discussion of human expansion during this period (2000: 142). That is, people cannot solely base it on archeological data.

The languages in the Barrier Islands as languages derived from Proto-Austronesian (PAN) inherit PAN's genetic characteristics, especially in the form of cognate sets. Even though Austronesian derived languages that inherit Austronesian genetic traits are accepted as related languages which are hypothetically derived from the same parent, but genetically historically those languages have not yet been thoroughly examined in their historical relations.

Literature Review

Following the problem of this paper, the study was conducted based on theory in Comparative Historical Linguistics. Theoretically, related languages have the same shape and meaning characteristics in the form of a cognate set. The word set of relatives was hypothesized to originate from the same prototype and as the forerunner of those languages. The similarity of form and meaning is not due to loans and neither are they due to chance, but because they carry on the same default attributes (protolanguage). Also, in the cognate sets, the relative's family kept regular sound matches in each position. That order is referred to Neogrammarians as the Law of Sound. The famous sound law is Grimm's law and Verner's law. Grimm's Law is the sound law of the Indo-European language sounds, while the Verner law is the sound law of the Indo-German language sounds (Bynon, 1979; Jeffers and Lehiste, 1979; Hock, 1988).

The famous Grimm's Law is the equivalent of *p, *t, *k in Indo-European languages which are preserved in Latin, Greek and even Sanskrit, but *p changes to /f/ in English. Verner's Law is a complement to Grimm's Law. The Protogerman *p, *t, and *k are maintained as /p/, /t/, /k/ in Low German (Plattdeutsch) in all positions and there are regular changes in High German (Hochdeutsh). In High Germany, there is a change in sound called the Second Consonant Shift. For Polynesian or Austronesian languages, Van der Tuuk (1876) and Otto Dempwolf (1934, 1928) found RGH and rdl Laws in the Polynesian or Austronesian Malay languages. Also, Dempwolf discovered the law of schwa, the middle vowel, which regularly turns into other vowels in Austronesian languages. Thus, the regular change of proto sounds in their derivative languages becomes the theoretical foundation and method in tracking the historical relations of Nias, Devayan, and Sigulai languages.

The relation of related languages in comparative studies, in principle, can be proven based on the inheritance element of the parent language or proto-language (cf. Berge, 2018). Proto

language is a theoretical idea that is redesigned (reconstructed) in a simple way to connect systems of related languages by utilizing some rules. The idea provides an understanding of the systematic relationship of languages that have historical significance (Bynon, 1979; Fernandez, 1996). It means that language is not a real form, but a form of the redesign, which is hypothesized to reduce the living language system at this level. Reconstruction is based on two hypotheses, namely genetic connectedness and regularity of correspondence between relatives' languages (Jeffers and Lehiste; 1979; Hock, 1988; Macmahon, 1997). The reconstruction shows the inheritance of proto (original) languages in their derivative languages which usually shows:

1) The similarity of the sound system (phonetic) and the arrangement of sound (phonemic).
2) Morphological similarity, namely similarity in the form of words and similarity in grammatical form, and
3) Syntactic similarity, namely the similarity of relations between words in a sentence (Keraf, 1996: 34).

The effort to discover the historical relations of Nias, Devayan, and Sigulai languages through reconstruction can also be done from the bottom up or top-down (cf. Blust, 1980; Crowley and Claire Bowery, 2010). Reconstruction from the bottom up relates to the compounding of the proto-language system of relatives' languages, while the top-down reconstruction utilizes the Austronesian proto-language system, both Dempwolf's findings and the findings of some other Austronesian experts. Also starting from the theoretical foundation and comparative methodology used by comparative historical linguists, the reconstruction of the languages of Nias, Devayan, and Sigulai were carried out.

Method

Data selection is performed using two groups of instruments, namely 200 Swadesh List Basic vocabularies and more than 1400 Hole List Words. Hole List in its implementation can be described as more flexible and creatively by the nature of the research environment to find crucial data in this study. The root word was chosen because the root word can describe the genetic relationship between related languages (Sagart, 2014). The selection of data was carried out in two different places namely Nias Island and Simeulue Island to capture data in Nias, Devayan, and Sigulai languages.

Data analysis was performed using the comparative historical method. This method is used to reconstruct the origin of kinship languages (Bloomfield, 1995: 318; Fernandez, 1996: 26; Hyman, Larry M and Florian Lionnet, 2012). With this method, the changes and correspondence of Nias, Devayan, and Sigulai languages are compared to descriptively and diachronically. Descriptive comparison is to find changes in the language of relatives that are still used today by the speakers (cf. Koch et.al, 2014). Diachronic comparison is to find traces of inheritance between periods, namely the Proto Austronesian inheritance files in Nias, Devayan, and Sigulai languages.

Reconstruction is done with the following steps: (1) The word set of relatives (cognate set) is compared by choosing the related form and ignoring the unrelated form, because the unrelated form, both the shape and meaning, is assumed to originate from different etymon. That is, glosses that are not taken into account are loan words, invented words (not basic words))(see also Mbete in Bawa & Wayan Pastika ed., 2002; Blust in Kaswanti Purwo & Collins ed. 1985; Nothofer (1975) in Effendi, 2013). (2) Form groups of adjustments that have

similarities in phonology. Sound adjustment devices are arranged in correspondence devices that have similarities in their phonology.

Results and Discussion

Every language will change. Some changes are regular and some are not. The languages of Nias, Devayan, and Sigulai are assumed to be derived from Proto Nias, Devayan, and Sigulai or abbreviated as PNDS before they finally parted. PNDS is a proto-language that derives the three languages is also assumed to be derived from Austronesian Proto (PAN). Languages data that can support the proof of kinship is much data that have sound correspondence devices. The proof will be done through sound reconstruction which will eventually identify proto lexicon. The following will explain the reconstruction of many vowels and consonants through a correspondence set.

The Systems of Vocal and Diphthong Phonemes of Proto Nias, Devayan and Sigulai (PNDS)

The systems of vocal and diphthong phoneme will be analyzed through a system of correspondence by comparing between related languages, as below:

Sound Correspondence / i-, -i-, -i /

The sound correspondence / i-, -i-, -i / appears regularly in the initial, medial and final positions as seen in the following lexicon.

Table 1. Sound Correspondence / i-, -i-, -i /

No.	Gloss	NS	DV	SG
1	spittle	ilo	cilol	ilo
2	nose	ixu	ihoŋ	ixu
3	five	lima	limo	lima
4	wind	naɲi	aŋin	naɲi
5	sing	ɲaɲi	ɲaɲi	ɲaɲi
6	rope	tali	tali	dali

Based on the above sound correspondence reconstructed that / i / appears regularly at all positions. From the device stated that PNDS / *i / lowered the correspondence device / i - i - i /.

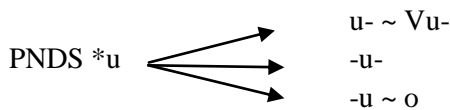### *Sound Correspondence / u-, –u-, -u /*

Sound correspondence / u -, - u-, -u / appears regularly and repeats in the initial, medial and final positions. At the initial position / u / sound is found irregularly in related words. In SG, the lexicon indicating the vowel / u- / is sometimes distinguished by addition, such as /a/. This is seen in the lexicon /*autu*/ 'louse'. But there are times when /u/ still appears as /u/ in the initial position, for example /uhaʔ/ 'navel'.

Table 2. Sound Correspondence */ u-, –u-, -u /*

No.	Gloss	NS	DV	SG
1	winnowing	Niru	-	nilu
2	new	Baru	baro	baru
3	far	Arəu	arao	adəu
4	kill	bunu	bunuh	bunu
5	leaf	bulu	buluŋ	bulu
6	heavy	abua	-	abua
7	louse	utu	utu	autu
8	live	auri	arep/urip	auli
9	navel	fusa	uhaʔ	uhaʔ

The extent of distribution of equipment / –u-, - u / becomes a conclusion that / * u / is chosen in the device /-u-, -u / as PNDS. However, in the final position in DV, there is no vocal /-u / as a correspondence device. So in the final position the correspondence device / -u, -o, -u / is arranged. This is also derived from PNDS / * u /.

The rules that can be derived are:

PNDS *u →
- u- ~ Vu-
- -u-
- -u ~ o

Sound Correspondence / a-, -a-. -a /

Regularly /a-/ appears in initial, medial and final positions. Consider the following table:

Table 3. Sound Correspondence */ a-, –a-, -a /*

No.	Gloss	NS	DV	SG
1	dog	asu	asu	asu/nahu
2	blunt	afuru	-	afulu
3	red	-	afala	afala
4	person	-	ata/ atta	nata
5	afraid	ata'u	ataot	ataot
6	hand	daŋa	-	daŋa
7	land	tanə	-	danə
8	die	mate	matay	mate
9	swim	laŋi	laŋoy	laŋi
10	flower	buŋa	buŋo	buŋa

From the above correspondence, it appears that there is a comparable sound that appears regularly in the three languages being compared. The wide distribution of vowels /a/ at all positions in the three languages concludes that the sound correspondence / a - a - a / is derived from PNDS * a. In the list of lexicon above it appears that PNDS / * a / appears regularly in initial and medial positions on NS, DV, and SG. However, in the final position the correspondence / -a, -o, -a / occurred. Sound / -o / found on DV.

Sound Correspondence / e-, - e -, - e /

Sound correspondence / e-, - e -, - e / appears regularly in initial, medial and final positions. Consider the following table.

Table 4. Sound Correspondence / *e-, –e-, eu* /

No.	Gloss	NS	DV	SG
1	wide	ebolo	-	ebolo
2	rain	deu	-	deu
3	tongue	lela	-	lela
4	foot	ahe	kae	gae
5	give	(ma)me'e	(maŋ)eba	(ma)fe'e
6	liver	ate	ate	ede

Although in DV data showing regular correspondence / e, e, e / in the medial position is minimal found in the lexicon that is one etymon, the sound /e/ appears quite a lot in other data in the medial position, such as, / *mareen* / 'good', and / *enen* / 'cloth'. Likewise /e/ in the initial position can be found in other lexicons in DV that are not the same etymon, for example / *enni* / 'dreams and / *enek* / 'grandfather '. That is, from the sound correspondence /e, e, e / can be reconstructed that PNDS is /* e /.

Sound Correspondence / o-, - o-, - o /

The sound correspondence / o, o, o / for NS, DV, and SG is described as follows:

Table 5. Sound Correspondence / *o-, –o-, o* /

No.	Gloss	NS	DV	SG
1	blood	do	dalah	do
2	child	ono	anak	nono
3	saliva	ilo	cilol	ilo
4	wide	ebolo	afəlale	ebolo
5	smoke	simbo	-	imbo
6	I	(ya)odo	deo	oto
7	afraid	ata'u	ataot	ataot
8	husband	doŋa	-	doŋan
9	egg	adulo	-	nadulo

In the table above, it appears that the correspondence of / o-, -o- / appears directly in the initial and medial positions, while in the initial position for the lexicon in the same etymon is not found. However, that does not mean that DV does not recognize the sound / o- / in the initial position. The sound / o- / in the initial position appears in other lexicons which are not asymmetrical as, / *oyok* / 'ears', /*odeŋ*/ 'white', and /*ofel*/ 'some'. This data identifies that DV recognizes /o-/ in the initial position. Sound correspondence devices / o-, -o-, -o / can be concluded from PNDS /*o /.
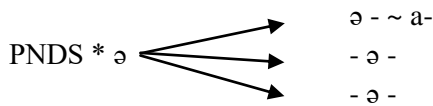
Sound Correspondence / ə-, - ə-, - ə /

The sound correspondence / ə-, - ə-, - ə / appears regularly in the medial and final positions, but does not appear in the initial position in the etymon lexicon, especially in DV. The sound /ə/ on DV experiences innovation into /a/. However, DV still recognizes the sound /ə/ in the initial position; this is found in a different lexicon that is not related, that is /*ədəŋ*/ 'pig'.

Table 6. Sound Correspondence / ə-, - ə-, - ə /

No.	Gloss	NS	DV	SG
1	four	əfa	ampek	efa
2	three	təlu	təlufo	təlu
3	nice	səxi	-	əxi
4	sleep	mərə	-	mələk
5	wing	gəfi	-	gəfi
6	land	tanə	-	danə
7	wet	abasə	afasə	abaə
8	tooth	nifə	nifə	-

Thus it can be concluded that PNDS /*ə/ generate the variety of sound correspondence in the three derived languages, namely / ə- ~ a-, -ə-, -ə /. The principle that can be derived is

PNDS * ə
ə - ~ a-
- ə -
- ə -

Diphthong Correspondence / -e, - ay, - e /, /-i, - oy, - i /, and / -o, -aw, -aw/

The sound correspondence /-e, -ay, -e/ is similar to the reconstructed sound correspondence /e-e-e/ which has been reconstructed from PNDS /*e/. However, due to the appearance of this /e -ay-e / correspondence regularly, the sound /*e/ can no longer be used as a result of the reconstruction of the device. This is based on a reconstructive requirement that "if a sound has been selected as a result of the reconstruction of a sound device, the sound may no longer be selected as a result of the reconstruction of another sound device". Thus, the result of reconstruction /-e, - ay, -e/, is a PNDS diphthong /*ay/. Likewise, the voice correspondence devices /-i, - oy, - i /, and / -o, - aw, - aw / are also reconstructed from PNDS /*oy/ and /*aw/.

Consider the following table:

Table 7. Diphthong Correspondence / -e, - ay, - e /, /-i, - oy, - i /, and / -o, -aw, -aw/

No.	Gloss	NS	DV	SG
1	die	mate	matay	mate
2	swim	laɲi	laŋoy	laɲi
3	tiger	harimo	harimaw	harimaw

The rules that can be derived are:

PNDS * ay   >   - e ~ ay

PNDS * aw   >   - o ~ aw

PNDS * oy   >   - i ~ oy

Based on the above reconstruction, PNDS vocal and diphthong reconstruction patterns can be formulated in the following table:

Table 8. The Reconstruction Patterns of Vocal and Diphthong PNDS

No.	PNDS	Initial Position	Medial Position	Final Position
1	*i	i-	-i-	-i
2	*u	u- ~ Vu	-u-	-u ~ -o
3	*a	a-	-a-	-a ~ -o
4	*e	e-	-e-	-e
5	*o	o-	-o-	-o
6	* ə	ə- ~ a	-ə-	-ə
7	*ay	-	-	-e ~ ay
8	*oy	-	-	-i ~ oy
9	*aw	-	-	-o ~ aw

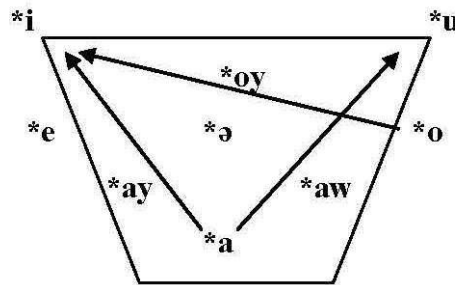The system of Vocal and Diphthong of PNDS are

Figure 1. The system of Vocal and Diphthong of PNDS

The PNDS Consonant System

The PNDS consonant system is explained as follows:

PNDS Bilabial Consonant System: Sound Correspondence /f-, p-,b-/,/-f-,-p-,-p-/, /-Ø,-p, -p/

This bilabial sound correspondence device is a linear and innovative correspondence. The /p/ sound only appears regularly in SG and DV but corresponds to /f / in NS. Note the following lexicon.

Table 8. Sound Correspondence / f-, p-, b- /, / -f-, -p-, -p- /, / -Ø, -p, -p /

No.	Gloss	NS	DV	SG
1	turn	futa	putar	butan
2	some	maefu	satape	atape
3	blow	motiu	maŋ(iop)	man(ipu)

From the list of lexicon, it appears that there are correspondences / f-, p-, b- / at the initial position in NS, DV, and SG. In the medial position there is the correspondence /-f-, -p-, -p- / and the final position is the correspondence of / -Ø, -p, -p /. In SG there is a metathesis process in the lexicon / *iup* → / *ipu* /. The varied correspondence was reconstructed with /*p/ as a PNDS phoneme. The rules are as follows.

PNDS * p

/f-, p-, b-/

/-f-, -p-, -p-/

/-Ø, -p, -p/
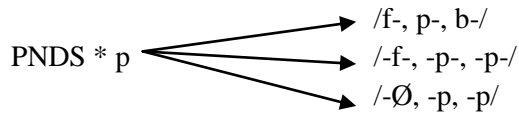
PNDS Bilabial Consonant System: Sound Correspondence / b-, - b - /

This / b-, - b - / sound correspondence device only appears in the initial and medial positions. In the final position does not appear. The absence of the sound / b / in this final position is common because usually, the sound of consonants with an open character does not appear and often fades in the final position of the Austronesian language. The sound device / b-, - b - / is reconstructed from PNDS * b. Observe the following table:

Table 9. Sound Correspondence / b, –b- /

No.	Gloss	NS	DV	SG
1	wet	abasə	afasə	abaə
2	swollen	abao	afalə	abao
3	rotten	obou	afuruk	obou
4	two	dombua/dua	dufo	domba
5	bad	-	buruk	buruk
6	moon	bawa	bawa	bawa
7	flower	buŋa/buno	buŋo	buŋa
8	new	baru	baro	baru

From the above table it can be explained that there are two different sound correspondence, especially the sound device at the medial position, namely the sound device / b-, b-, b- / and / -b-, -f-, -b- /. The rules that can be derived are:

PNDS * b

b- , b-, b-
-b-, -f-, -b-
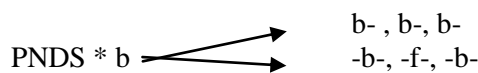
PNDS Bilabial Consonant System: Sound Correspondence / m-, -m-, -m /

This / m-, -m-, -m / consonant sound device appears regularly in all positions, initial, medial and final. This order makes it easy to reconstruct that sound correspondence / m-, -m-, -m / reconstructed through PNDS * m.

Consider the following table:

Table 10. Sound Correspondence / m-, –m-, -m /

No.	Gloss	NS	DV	SG
1	bird	manu	manok-manok	manu-manu
2	eat	mana/maŋa	maŋan	maŋa
3	eye	mata	mata	mata
4	two	dombua	-	domba
5	stand	-	umidək	umindo
6	black	aifə, aitə	mətəm	aife
7	right	kambələ/ gambələ/ gabələ	sabela	gambələ
8	drink	inu	inom	inu
9	one	ambua	-	amba
10	narrow	-	sampek	sampek

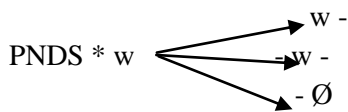*PNDS Bilabial Consonant System: Sound Correspondence / w-, -w -, - w /*

This set of correspondence regularly appears in the initial and medial positions. The final position tends to be a diphthong / -aw / sound. From the regularity of this sound reconstructed PNDS sound is /*w/.

Consider the lexicon list in the following table.

Table 11. Sound Correspondence / w-, –w-, -w /

No.	Gloss	NS	DV	SG
1	moon	bawa/bulan	bawa	bawa
2	snake	sawa	sawa	awa
3	eight	walu	-	walu
4	so	-	wede	-

Although the sound / w- / in the initial position is not found in the lexicon that is one etymon with DV, the consonant /w/ remains in DV. This is evidenced by the presence of other lexicons, although not one etymon, are found in DV. Thus the rules that can be derived are.

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                              w -
PNDS * w              -w -
                              - Ø
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PNDS Labiodental Consonant System: Sound Correspondence / f-, - f- /

The Sound correspondence / f-, - f- / appears regularly in initial and medial positions in NS and SG but does not appear in DV.

Table 12. Sound Correspondence / f-, –f- /

No.	Gloss	NS	DV	SG
1	bite	faəxi	-	fauŋok
2	navel	fusa	-	-
3	wing	gəfi	-	gefi
4	tooth	ifə/nifə	-	nife/nifo
5	four	əfa	ampek	əfa
6	sew	afu	-	afa
7	white	afusi	-	afui

It seems that DV does not use an etymon lexicon as NS and SG. DV uses another etymon in his speech.

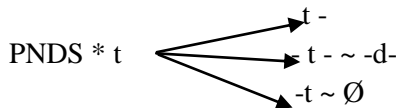*PNDS Alveolar Consonant System: Sound Correspondence / t-, -t-, -t /*

The correspondence of / t-, -t- / in the initial and medial positions appears regularly while in the final position only appears in DV and SG. Here it appears that NS still retains its open syllable characteristics. From the list of lexicons shown below, it is concluded that the

correspondence set reconstructed that the PNDS consonant was /*t/ with variations that emerged.

Table 13. Sound Correspondence */ t-, -t-, -t /*

No.	Gloss	NS	DV	SG
1	burn	tunu	tutuŋ	atutuŋ
2	not	teŋa	teen	teŋa
3	from	tanə	tenek, tek	-
4	stone	gara/batu	batu	batu
5	person	niha	ata	nata
6	turn	futa	putar	butan
7	afraid	ata'u	ataot	ataot
8	vomit	muta	umuttah	umuta
9	near	ahatə	-	atə
10	sharp	atarə	-	atalə

The rules can be derived as follows.

PNDS * t
- t -
- t - ~ -d-
- -t ~ Ø

PNDS Alveolar Consonant System: Sound Correspondence / d-, -d- /

The sound correspondence /d- and -d-/ only exists in initial and medial positions. In general, the final position does not exist in the languages on the small islands. If there is, it is because of the influence of other languages that have formed a new system for that language. This change was seen especially in Devayan and some Sigulai languages. However, it is very rarely found in the Nias language. Generally, the Nias language survives with its open syllable system. Consider the lexicon in the table below.

Table 14. Sound Correspondence / d-, -d- /

No.	Gloss	NS	DV	SG
1	blood	do	dalah	do
2	two	dombua/dua	dufo	domba
3	wife	dona/doŋa	lafe	doŋa
4	rain	deu,teu,moteu	olol	deu
5	stand	mozizio/masindo/adələ	umidək	umindo
6	heart	dədə	-	ə d ə
7	far	arəu	arao	adau/adeu
8	egg	adulo	-	nadulo

From the above table, it can be concluded that the initial position appears regularly in the three languages compared. However, in the final position there are variations, namely the correspondence / -d-, -r-, -d- /. However, due to sporadic emergence, it can be concluded that PNDS that can be reconstructed is * d. The principle that can be derived is

PNDS * d
- d -
- -d - ~ -r-
- Ø
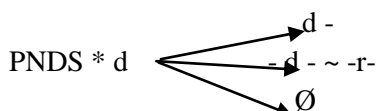
PNDS Alveolar Consonant System: Sound Correspondence / n-, -n-, -n /

Typically the languages on the small island, the absence of consonants in the final position are common, both voiced and voiceless consonants. This is also found on the sound correspondence device / - Ø, -n, -n /. This means that in NS there is no consonant / –n / in the final position. Observe the lexicon list in the following table.

Table 15. Sound Correspondence / n-, -n-, -n /

No.	Gloss	NS	DV	SG
1	wind	naŋi	aŋin	naŋi
2	nose	nixu	-	nixu
3	child	ono	anak	nono
4	bird	manu	manok-manok	manu-manu
5	mother	ina	-	-
6	animal	-	binataŋ	binataŋ
7	turn	futa	putar	butan
8	play	famai	(be)maen	(be)maen

There are three sets of sound correspondence that can be identified from the results of the reconstruction of PNDS /*n/ namely /n-, n-, n-/, /-n-, -n-, -n-/, and /- Ø, -n, -n/. The rules that can be derived are:

PNDS * n
- n -
- -n -
- -Ø ~ -n
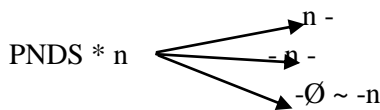
PNDS Alveolar Consonant System: Sound Correspondence / s-, -s-, s- /

The Sigulai language almost does not indicate the correspondence of /-s/ in the initial and medial positions. In SG /s-, -s-/ always appears as /Ø-, - Ø-/. Only in the lexicon of loans from the Malay language is the presence of /-s-/ in the medial position, namely /*isok*/ 'suction'. Consider the following lexicon list:

Table 16. Sound Correspondence / s-, -s-, s- /

No.	Gloss	NS	DV	SG
1	one	sara	sao	amba
2	smoke	sibo	-	imbo
3	wet	abasə	afasə	abasə
4	dog	asu	asu	nahu
5	salt	asio	asila	naiyo/naiya
6	delete	osi/laosi	sapu	hapus
7	suck	sisi'ə	isok	isok
8	shoulder	alisi	alifalaŋ	galifi

From the above explanation can be arranged correspondence devices as follows, namely /s-, s-, -Ø/, /-s-, -s-, -Ø-/, and /-Ø, -Ø, -s/. The sound correspondence device was reconstructed as PNDS /*s/ and the rules are:

PNDS *s
- s- ~ Ø-
- s -
- -Ø ~ -s
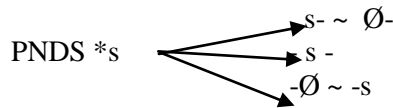
PNDS Alveolar Consonant System: Sound Correspondence / l-, -l-, -l /

The sound /-l/ in the final position is only found in DV. /-l/ in this position corresponds to /-Ø/. Observe the following table:

Table 17. Sound Correspondence / l-, -l-, -l /

No.	Gloss	NS	DV	SG
1	rope	tali	tali	dali
2	big	ebua	aləfo	eba
3	five	lima	limo	lima
4	leaf	bulu	buluŋ	bulu
5	swim	laɲi	laŋoy	laɲi
6	salt	asio	asila	naiyo/naiya
7	spittle	ilo	cilol	ilo

Correspondence devices that can be formed from the variations above are / l-, l-, l- /, /-l-, -l-, -l- /, and / -Ø, -l, - Ø /. The rule can be derived as:

PNDS * l
- /l-, l-, l-/
- /-l-, -l-, -l-/
- / -Ø, -l, - Ø   /
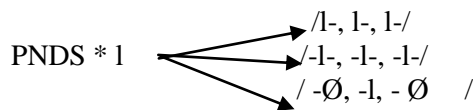
PNDS Alveolar Consonant System: Sound Correspondence /r-, -r-, -r/

Sound correspondence /r-, -r-, -r/ appears sporadically in all positions. This is evident from the following data.

Table 18. Sound Correspondence /r-, -r-, -r/

No.	Gloss	NS	DV	SG
1	new	baru	baro	baru
2	big	roŋo	loŋo	-
3	winnowing	niru	nilu	-
4	root	-	ollor	-
5	live	auri	arep/urip	auli

In NS /r/ it still exists both initial and medial position, but not final position. In DV /r/ in NS it corresponds to /l/ especially in the initial position. The correspondence that can be concluded is / r-, l-, Ø- /, / -r-, -l ~ -r-, -r- ~ -l- /, / - Ø, -r, - Ø /. The rule is

PNDS * r
- /r-,l-, Ø-/,
- /-r-, -l ~ -r-, -r- ~ -l-/,
- /-Ø, -r,- Ø/
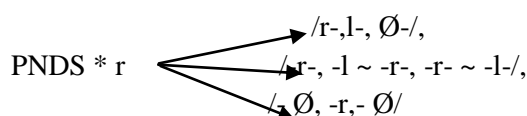
PNDS Palatal Consonant System:Sound Correspondence / c-, -c- /

Sound correspondence / c-, -c- / only appears at initial and medial positions in DV and SG but does not appear in NS. Consider the following table.

Table 19. Sound Correspondence / c-, –c- /

No.	Gloss	NS	DV	SG
1	story	-	curito	cerito
2	jealous	-	cemburu	cemburu
3	branch	-	sabaŋ	cabaŋ
4	smallpox	-	cacar	cacar

It seems that all the lexicons that are distributed in the initials and medial positions in DV and SG are loan words from the Malay language which is an Austronesian language family. Therefore, the PNDS for the above correspondence must borrow the original language proto phoneme, which is *c.

PNDS Palatal Consonant System Sound Correspondence /-Ø-, -j-, -j-/

This sound correspondence is unique because it can hardly be found the cognate data that corresponds. Generally, it is from the loanword. In its rules, the loanword must be ruled out in the analysis of correspondence devices. Consider the following list.

Table 20. Sound Correspondence /-Ø-, -j-, -j-/

No.	Gloss	NS	DV	SG
1	window	zandela	jandela	jendela
2	amulet	hazima	ajimat	jimat
3	kidney	bua	ginjal	ginjal
4	green	owuge'e	ijo	hijau

Only in the medial position /-j-/ can be observed in the Austronesian language and that is in the Devayan and Sigulai languages in the form of the lexicon /*ijo* and *hijau* /. This means that the device that can be arranged is /-Ø-, -j-, -j-/. This correspondence was reconstructed with /* j/ which is a loan proto phoneme.

PNDS Palatal Consonant System:/z/

The phonemes /z/ only appears in NS and has no correspondence with DV and SG, for example,

Table 21. Palatal Consonant /z/

No.	Gloss	NS	DV	SG
1	worm	gelewazi	lahaləŋ/galuŋ	laxələŋ
2	stand	mozizio/masindo/adələ	umidək	umindo
3	rope	bəbə/zinali/tali	tali	dali
4	stick	si'o/zi'o	tuŋkek/ tuŋke?	duŋkek/daŋkok

The *z phoneme is one of the problematic PAN phonemes, which must still be reconstructed, even though it produces an unequal phonological system (Adelaar, 1995).

PNDS Palatal Consonant System: Sound Correspondence /y-, -y-/

The / y-, -y- / sound correspondence regularly appears in initial and medial positions in NS and SG, but sporadically appears in DV. The final position is /-y/ closer if it is explained in the diphthong correspondence. Consider the following table:

Table 22. Sound Correspondence / *y-, –y-* /

No.	Gloss	NS	DV	SG
1	many	ogoya/oya	afəl	ogoya
2	you	ya'ugə	ede 'o	yegə
3	eagle	moyo	mayaŋ	moyo

Correspondence devices that can be arranged are / y-, y- / and / -y-, -y-, -y- /. They inherited from /*y/

PNDS Palatal Consonant System: Sound Correspondence /ɲ-, -ɲ-/

Sound correspondence /ɲ-, -ɲ-/ only appears in one related data and is available in all positions in the three languages being compared. It concludes that they inherited from * ɲ

Table 23. Sound Correspondence /ɲ-, -ɲ-/

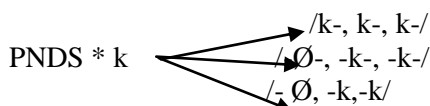| No.	Gloss	NS	DV	SG
1	sing	ɲaɲi	ɲaɲi	ɲaɲi

PNDS Velar Consonant System: Sound Correspondence / k-,-k-,-k /

Sound correspondence /k-, -k-, -k/ appears sporadically in all positions. This is evident from the following data.

Table 24. Sound Correspondence / *k-, –k-, -k* /

No.	Gloss	NS	DV	SG
1	rich	kayo	kayo	kayo
2	piss	kiə	kiə	mexie
3	because	-	karano	karano
4	dirty	-	kotor	kotor
5	puzzle	-	takok-takok	betao-tao
6	rub	laduku	gosok	gosok
7	frog	-	bəlak	belak
8	sister-in-law	-	kakak	kakak

In NS, /k/ only appears in the initial position in the word one etymon. Even so /k/ remains found in the medial position in the different lexicons. In DV and SG the sound k/ is found in the initial, medial, and final positions. In NS there is no sound /k/ in the final position. This is a syllable system in NS that they have not closed syllable. The correspondence that can be derived is / k-, k-, k- /, / -Ø-, -k-, -k- /, and / - Ø, -k, -k /. The rule is
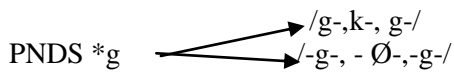
PNDS * k
/k-, k-, k-/
/Ø-, -k-, -k-/
/- Ø, -k,-k/

PNDS Velar Consonant System: Sound Correspondence /g-, -g- /

Sound correspondence /g-, -g-/ appears sporadically in initial and medial positions, especially in NS and SG. In DV /g/ it appears as /k/ in the initial position and is not found in the medial position for the same etymon. This is evident from the following data.

Table 25. Sound Correspondence / *g-, –g-* /

No.	Gloss	NS	DV	SG
1	shoulder	galisi	-	galifi
2	fire	galitə	-	-
3	buffalo	gərəbao	kebau	gebao
4	urine	giə	kiə	gie
5	many	ogoya	-	ogoya

The correspondence that can be concluded is /g-, k-, g-/, / -g-, -Ø-, -g-/. The rule is

PNDS *g → /g-,k-, g-/
/-g-, - Ø-,-g-/

PNDS Velar Consonant System: Sound Correspondence / x-, Ø -, x- /

Sound correspondences /x-, Ø -, x-/ appear sporadically in the initial position on NS, DV, and SG. In the medial position there is the correspondence /-x-, -h-, -x/. This is evident from the following data.

Table 26. Sound Correspondence / x-, Ø -, x- /

No.	Gloss	NS	DV	SG
1	at	xə	di	xa
2	in	baxa	ebahak	abaxa
3	nose	ixu/nixu	ihoŋ	nixu
4	dig	ma(xao)	(ma)haok	(ma)ŋoo
5	live	auri	arep/urip	auli

Reconstruction that can be identified is PNDS *x. This is under the criteria for breadth /x/ distribution. The rule is

PNDS * x → /x-, Ø -, x-/,
/-x-, -h-, -x-/

PNDS Velar Consonant System: Sound Correspondence /-ŋ-, -ŋ/

Sound correspondence /-ŋ-, -ŋ/ appears regularly in the medial and final positions on DV and SG, but in NS only appears in the medial position. Observe the following lexicon list.

Table 27. Sound Correspondence /-ŋ-, -ŋ/

No.	Gloss	NS	DV	SG
1	flower	buŋa/buno	buŋo	buŋa
2	big	roŋo	loŋo	-
3	eat	mana/maŋa	maŋan	maŋa
4	count	erai	etoŋ	etoŋ

The correspondence that can be concluded is /- ŋ -, - ŋ-, -ŋ-/, / -Ø, - ŋ, -ŋ /. The rule is

PNDS * ŋ → /- ŋ -,-ŋ-, -ŋ-/
→ Ø, - ŋ, -ŋ/
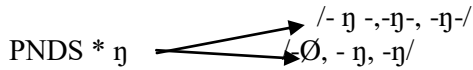
PNDS Glottal Consonant System: Sound Correspondence /h-, -h-, -h/

Sound correspondence /h-, -h-, -h/ appears sporadically in all positions. This is evident from the following data.

Table 28. Sound Correspondence /h-, -h-, -h/

No.	Gloss	NS	DV	SG
1	day	hari	balal	hari
2	kill	bunu	bunuh	(fa)bunu
3	ten	fulu	puluh	pulu
4	blood	do	dalah	do
5	pestle	halu	alau	alau
6	price	harago	harago	harago
7	tiger	harimo	harimau	harimau
8	foot	gahe	kae	gae

From the list above it appears that /h/ only appears at initial and medial positions in NS. However, in DV /h/ only appears in the initial and final positions but in SG only appears in the initial position. The variations of this correspondence are /h-, h-, h-/, /-h-, -Ø-, - Ø-/, and /-Ø, -h, -Ø /. Based on these variations it is concluded that PNDS /*h/ is reconstructed from linear and non-linear correspondence. The rules are formed as follows:

PNDS * h → /h-, h-, h-/
→ /-h-, -Ø-, - Ø -/
→ /-Ø, -h, -Ø/.
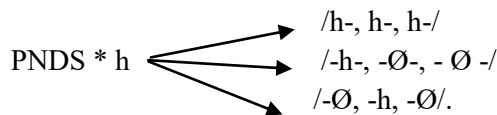
Based on the above reconstruction the PNDS consonant reconstruction pattern can be formulated in the following table:

Table 29. The Pattern of PNDS Consonant Reconstruction

No.	PNDS	Initial Position	Medial Position	Final Position
1	*p	p-	-p-	-p
2	*b	b-	-b- ~ f	-
3	*m	m-	-m-	-
4	*w	w-	-w- ~ -v-	-
5	*t	t-	-t-	-t
6	*d	d-	-d-	-
7	*n	n-	-n-	-n
8	*s	s-	-s-	-s
9	*z	z-	-	-
10	*l	l-	-l-	-l
11	*r	r- ~ l	-r-	-r
12	*ɲ	- ɲ	- ɲ-	-
13	*y	y-	-y-	-y

No.	PNDS	Initial Position	Medial Position	Final Position
14	*k	k-	-k-	-k
15	*g	g-	-g-	-
16	*ŋ	-	- ŋ-	- ŋ
17	*h	h-	-h-	-h
18	*f	f-	-f-	-
19	*x	x-	-x-	-

Consonants that appear in the final position are generally found in DV and some SG. This is because DV and SG are spoken on the same island and the people always interact. The influence between languages is very likely to occur to form a sound system that is different from the others.

Consonants that can be arranged are:

Teble 30. Consonant System of Proto NDS

Place of Articulation / Manner of Articulation	Bilabial	Labial dental	alveolar	Palatal	Velar	Glottal
Stop Explosive	*p *b		*t *d		*k *g	
Fricative		*f	*s *z		*x	*h
Nasal	*m		*n	*ɲ	* ŋ	
Lateral			*l			
Trill			*r			
Semivowel	*w			*y		

Conclusion

From the results of an analysis, it is concluded that the vowel sound and PAN consonants reduce various forms and different ways in their derivative languages, namely Nias, Sigulai, and Devayan. Although, Nias and Sigulai languages are spoken on two different islands, both of them still show a relatively close kinship than the Devayan language. That is, the consonant and vowel features of Austronesian can be proven in Nias and Sigulai languages. Vocal and consonant features in NS, DV, and SG are arranged in a correspondence set and produce 6 Nias-Devayan-Sigulai proto vocal systems, which are * i, * u, * e, * ə, * o, and * a and 19 consonant systems proto Nias-Devayan-Sigulai, i.e. *b, *p, *m, *w, *f, *t, *d, *s, *z, *n, *l, *r, *ɲ, *y, *k, *g, *x, *ŋ, and *h. The PNDS vowels and consonants are inherited linearly and innovatively in many sound correspondence devices.

Acknowledgments

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