A Preliminary Analysis on the Perception of 'Pincers' Across the Austronesian Languages

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1 Introduction

The Philippines is an archipelagic country in Southeast Asia located in the western Pacific Ocean. The country is composed of at least 7, 641 islands (Junior, 2018), and grouped into 3 main islands named Luzon, Visayas, and Mindanao. The Philippines has a high index of linguistic diversity, possessing 186 indigenous languages; 182 of these are still alive, with 13 of it endangered, and 10 of it considered as moribund or dying (Eberhard, et. al, 2019).

Although the number of microgroups and where these Philippine languages truly belong is still debated upon researchers, Blust (1991) proposed 15 Philippine language microgroups: (1) The Bashiic microgroup composed of Itbayaten, Ivatan, and Yami; (2) The Cordilleran microgroup consisted of Agta, Atta, Arta, Alta, Balangaw, Bontok, Casiguran Dumagat, Gaddang, Ibanag, Ifugaw, Ilokano, Ilongot, Inibaloi, Isinay, Isneg, Itawis, Itneg, Kalinga, Kallahan, Kankanay, Pangasinan, Umirey Dumagat, and Yogad; (3) The Central Luzon microgroup which includes Kapampangan, Bolinao, Sambal and Botolan; (4) The Inati microgroup, which only has one language under, and is spoken by the Negritos in Panay; (5) The Kalamian Microgroup composed of Kalamian, Tagbanwa, and Agutaynon; (6) The Bilic Microgroup consisted of Bilaan, Tagabili or Tboli, Tiruray, Giangan Bagobo; (7) The South Mangyan Microgroup which includes Hanunóo and Buhid, and North Mangyan with Iraya, Alangan, and Tadyawan; (8) The Palawanic Microgroup with Palawano, Aborlan Tagbanwa, Batak and Molbog; (9) The Central Philippines microgoup which has Tagalog, Bikol, the Bisayan languages, Mamanwa, Mansaka, Mandaya, Kalagan, and Tagakaulu; (10) The Manobo microgroup composed of Binukid, Ilianen, Manobo, Western Bukidnon Manobo, Ata Manobo, Tigwa Manobo, Dibabawon Manobo, Cotabato Manobo, Sarangani Manobo, Bagobo, Tasaday, Kinamigin, and Kagayanen; (11) The Danaw Microgroup composed of Maranao, Iranon, and Maguindanao; (12) The Subanun Microgroup consisted of some languages spoken in the Zamboanga peninsula; (13) The Sangiric Microgroup which has five languages that are spoken in the Sangiri-Talaud islands in Indonesia. It is important to take note that not all Philippine languages are found in the Philippines, and not all languages found in the Philippines are considered Philippine languages; (14) The Minahasan Microgroup consisted of Tonsea, Tombulu, Tondano/Toulour, Tontemboan, Tonsawang, which are spoken in the northern peninsula of Sulawesi; And lastly (15) the Gorontalo-Mongondow microgoup which includes Ponosakan, Mongondow, Lolak, Atinggola-Bolango, Bintauna, Kaidipang, Suwawa, Gorontalo, and Buol, which are located in the central and western part of Sulawesi's northern peninsula.

The Philippine languages belong to the Austronesian language family, one of the most widespread language family in the world. It is composed of approximately 1200 languages spoken by 270 million individuals (Tryon, 2006). Speakers of Proto-Austronesian are purported to have migrated from Taiwan or Formosa southward. Languages descended from Proto-Austronesian are now spoken throughout Southeast Asian countries, the Pacific islands, and all the way in Madagascar (Bellwood, Fox, & Tryon, 2006). Figure 1 is an illustration of Blust's 1977 proposal of the Proto-Austronesian family tree.

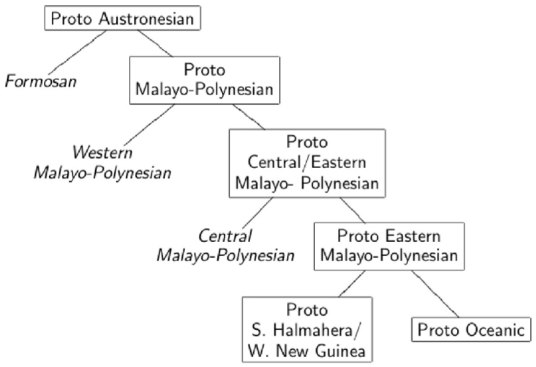

Figure 1. Blust's Proto-Austronesian Family Tree (Sanchez-Mazas, et. al, 2008)

This paper aims to reconstruct and trace the possible protoforms and perception of 'pincers' across the Austronesian languagefamily, by starting with the Philippine languages and then further comparing it to other Austronesian languages. This paper follows the procedure for reconstruction in Crowley (1997), which have as

their goal an estimation of what a protolanguage or set of protoforms might have been like. It is undoing the changes that have taken place in order to see what it used to be. To carry out linguistic reconstructions that will lead us to this, we then use the comparative method and compare several cognates that seem to have originated from the same form.

This study is limited to 30 Philippine languages ranging from the Bashiic Microgroup (Ibatan), Cordilleran Microgroup (Ilokano, Tuwali, Balangaw, Kankanaey, Pangasinan, Casiguran Dumagat), to the Central Luzon Microgroup (Bolinao, Sambal, Kapampangan), and the Greater Central Philippine Microgroup (Tagalog, S. Catanduanes Bikol, Miraya, Rinconada, Asi, Cebuano, Waray, Karay-a, Akeanon, Minasbate, Hiligaynon, Maranao, Iranon, Maguindanaon, Tagbanwa, Hanunoo, Kamayo, Tausug, W. Bukidnon Manobo, & Agusan Manobo). The terms for pincers across the elicited language data were then grouped into five sections. They were grouped according to cognates and their most probable protoforms. Elicited data was analyzed not only through proposing the possible sound changes that they underwent but also their frequency, distribution, and sense. These were then compared to 15 other Austronesian languages ranging from Formosan, Malayo-Polynesian, and the Oceanic subgroup.

Using the collected data which were done through interviews and survey of lexicographic texts; analyses of cognates, phonology, morphology, and possible semantic shifts were conducted to arrive at some preliminary observations and conclusions.

2 Protoforms for Pincers in the Philippine Languages

The Proto-philippine Phonemic Chart (Figure 2) for consonants, vowels and diphthongs was reconstructed by Consuelo Paz (1977), while Robert Blust (1991) also proposed one (Figure 3) in place of Charles' Proto-Philippine Consonants (1974), an inventory containing only 17 consonants, compared to Blust's that contains 20 (p.88). In this paper, Paz' Proto-Philippine vowels and Blust's Proto- Philippine consonants will be the basis on whether the proposed protoforms are reconstructible at the level of Proto- Philippine.

Proto-Philippine Phonemic Vowel Chart (Paz, 1977)

	Front	Central	Open
Close	i		u
Mid		ə	
Open		a	

Figure 2. Proto-Philippine Vowels

Proto-Philippine Consonants (Blust, 1991)

p	t			k	q
b	d	z	j	g	
m	n	ñ		ŋ	
	s				h
	l				
	r			R	
w		y			

Figure 3. Proto-Philippine Consonants

2.1 *PAn *sipit* For Table 1, lenition can be observed in Ibanag wherein the /p/ and /t/ of *sipit changed to /h/ and /ʔ/ respectively. Phonetic lenition or weakening of sounds is more likely than fortition or strengthening of sounds, due to the principle of economy, also known as ease of pronunciation. In addition to that, lenition doesn't only include weakening of sounds but also deletions such as aphaeresis--deletion of the initial segment, syncope─deletion of the medial segment, and apocope─deletion of the final segment of a word (Crowley, 1997, p.40). Epenthesis was also involved in some of the processes such as the insertion of a glottal stop for Cebuano and Ilokano, and insertion of /l/ in Casiguran Dumagat. Partial reduplication can also be observed in Ibatan (Babuyan)

with its root word 'sopit' which means to pinch (SIL, 2013).

It can be observed that almost all the terms for pincers end with *-pit* (Tables 1 to 4), a proto-Austronesian root that means narrow; pressed together; squeezed together; hold together; or clutched (Blust & Trussel, 2013). This can also be observed in several proto-Austronesian (PAn) words which share almost the same meanings such as PAn *pitpit 'narrow', PAn *qepit 'pressed between', PAn *sapit 'pressed together', PAn *kapit 'fasten together', PAn *kepit 'pressed together', and even on Proto-Malayo Polynesian (PMP) ones such as PMP *gipit 'tight', PMP *hapit 'press together', PMP *ipit 'come near', and PMP *kampit 'to adhere to' (Blust & Trussel, 2013). On the other hand, the prefix *si-* is actually a proto-Austronesian instrumental prefix (Blust & Trussel, 2013). Thus, we can infer that the form *sipit means that pincers are seen as an instrument to squeeze or press things together. In addition to this, the Proto-Austronesian form *sipit is widely distributed all over the Philippines; ranging from Batanes, all the way to Sulu. (Figure 3).

Table 1. PAn *sipit in Philippine Languages

PAn *sipit - tongs, pincers, claw of a crab or lobster; to pinch or squeeze; press or clip together (Blust & Trussel, 2013)		*s i p i t
Tagalog	[ˈsiː.pit]	s i p i t
Bikol (S. Catanduanes)	[ˈsiː.pit]	s i p i t
Karay-a	[ˈsiː.pit]	s i p i t
Sambal	[ˈsiː.pit]	s i p i t
Kapampangan	[ˈsiː.pit]	s i p i t
PAngasinan	[ˈsiː.pit]	s i p i t
Bolinao	[ˈsiː.pit]	s i p i t
Asi	[ˈsiː.pit]	s i p i t
Hanunoo	[ˈsiː.pit]	s i p i t
Gaddang	[ˈsiː.pit]	s i p i t
Agusan Manobo	[siˈpit]	s i p i t
Western Bukidnon Manobo	[siˈpit]	s i p i t
Ibanag	[ˈsiː.hiʔ]	s i h i ʔ
Ivatan (Babuyan)	[sɔ.sɔ.pit]	s ɔ p i t
Cebuano	[sip.ˈʔit]	s i p ʔ i t
Casiguran, Dumagat	[ˈsəl.pet]	s ə l p e t

Figure 4. Distribution of PAn *sipit

2.2 *PMP *kipit and PMP *qipit* With respect to Kamayo and Hiligaynon in Table 2, consonant insertion of the bilabial nasal /m/ between /i/ and /p/ may have been influenced by the bilabial characteristic of the consonant /p/.

In Table 3, Tuwali and Balangaw's lenition of /q/ in *qipit to /ʔ/ for [ʔipit] and [ʔipet] is supported by Blust's (1991, p.89) version of Proto-Philippine consonants wherein "*q merged with zero in initial position in most

Philippine languages and became /ʔ/ elsewhere". Same goes for the change from /p/ to /f/ for T'Boli's [lufit], a reflex that sometimes occur in T'Boli yet has no predicative environment that induces it.

It should also be noted that there exists a proto-Austronesian prefix *ki- or *qi- which means to get, obtain, collect, or gather (Blust & Trussel, 2013). From this, we can hypothesize that PMP *kipit or PMP *qipit may have originated from a combination of prefixes PAn*ki- or PAn *qi- and the root word PAn *-pit which gives pincers the sense of being a body part of an animal that presses or squeezes together to obtain an object.

Table 2. PMP *kipit in Philippine Languages

PMP *kipit – narrow; pinch between tongs (Blust & Trussel, 2013)		*k i p i t
Kamayo	[kim.'pit]	k i m p i t
Hiligaynon	[ˈkim.pit]	k i m p i t

Table 3. PMP *qipit in Philippine Languages

PMP *qipit - pincer of crustaceans; press together, clip, pinch, squeeze (Blust & Trussel, 2013)		*q i p i t
Tuwali	[ˈʔiː.pit]	ʔ i p i t
Balangaw	[ˈʔiː.pet]	ʔ i p e t
T'Boli	[luˈfit]	l u f i t

Figure 5. Distribution of PMP *qipit and PMP *kipit

2.3 *PPh *panipit* Blust and Trussel have also proposed a proto-Philippine (PPh) form *panipit. It can be assumed that the combination of the Philippine instrumental case affix paŋ- which is also common with other Western Malayo Polynesian languages, with either PAn *sipit or PMP *qipit formed Rinconada's [pansipit], Ilokano's [paŋʔipit], Iranun's [panipit] and Maguindanaon's [pəŋəbɔt]. This may have lead Blust and Trussel to arrive with the proto-Philippine form, whose existence and validity is still an ongoing debate. As for [pəŋəbɔt], a post nasal fortition may have occurred to /p/ causing it to be a voiced stop /b/, possibly due to the vowel shift from /i/ to /ə/ and /ɔ/.

The fairly few and almost random distribution of these forms in the archipelago (Figure 6) may also be evidence that this may have been an innovation that only occurred quite recently.

Table 4. PPh *panipit in Philippine Languages

PPh *panipit - tongs, pincers, claw of a crab or lobster (Blust & Trussel, 2013)		*p a n ipit
Iranun	[paˈniː.pit]	p a n ipit
Maguindanaon	[pə.ŋə.bɔt]	p ə ŋ ə b ɔ t

Ilokano	[paŋ.ˈʔi:.pit]	p a ŋ ʔ i p i t
Rinconada	[ˌpan.si.ˈpit]	p a n s i p i t

Figure 6. Distribution of PPh *panipit

2.4 *PMP *kaRat* On the other hand, the proto-Malayo Polynesian (PMP) form *kaRat is distributed to languages belonging to the Central Philippines microgroup (Bikol, Miraya, Minasbate, Akeanon) and the Palawanic microgroup (Aborlan-Tagbanwa). However, Blust proposed that these languages (Table 5) can also be organized into only one group. According to Blust (1991), Tagalog, Bikol, the Bisayan complex, Palawanic languages (except Kalamian), South Mangyan (not North Mangyan), Mindanao languages (except South Mindanao), and Gorontalo-Mangondow languages can be considered as members of a single group called Greater Central Philippines (GCP). Blust proposed that speakers of Proto-GCP underwent a dramatic territorial expansion, likely from a homeland in northern Mindanao or southern Visayas. These are supported by evidence of (1) unexpectedly low level of linguistic diversity in southern Luzon, Visayas and northeast Mindanao; (2) Gorontalic languages of northern Sulawesi linked with languages of the central Philippines; and (3) presence of the "stereotyped g". In the proposed RGH Law, there was a division of the Philippine languages into four types; "l" , "r", "y" and "g" languages (Appendix 1), which was based on the phonemic reflex of *R on these languages. According to Conant (1911), unlike the "g" languages, which are mostly composed of Central Philippine languages, the "r", "l", and "y" languages show some irregularities with their characteristic consonant often interchanging with /g/ (Appendix 2). Conant then called this sporadic changes of *R > g as "stereotyped g". With this, we can then infer that the change of *R to /g/ for Table 5 is a product of expansion of GCP and the occurrence of the RGH law.

The form *kaRat, which means to bite, may also indicate for the languages in Table 5 that pincers are viewed as something that is used by crustaceans to bite people or animals, unlike with the previous analysis where pincers were something that is pressed together to hold or obtain objects.

Table 5. PMP *kaRat in Philippine Languages

PMP *kaRat – to bite (Blust & Trussel, 2013)		*k a R a t
Bikol (S. Catanduanes)	[ka.ˈgat]	k a g a t
Miraya	[ʔa.ˈgat]	ʔ a g a t
Minasbate	[ka.ˈgat]	k a g a t
Akeanon	[ka.ˈgat]	k a g a t
Tagbanwa (Aborlan)	[ka.ˈgat]	k a g a t

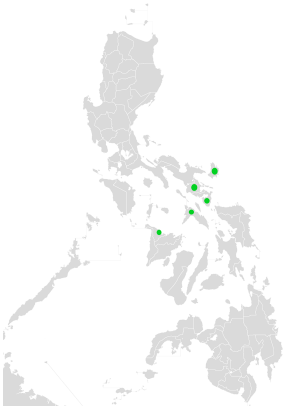

Figure 7. Distribution of PMP *kaRat

2.5 *PAn *kamay* Although 'hand' in Waray is 'kamot' or 'kamut'—which is from PAn *kamet meaning 'do with the hand'—the word for pincers in Waray is 'kamuy'. This most likely came from the proto-Austronesian form *kamay, which means hand (Blust & Trussel, 2013). From the elicited data, only the Waray language (Table 6) has a form that can be attributed to this protoform. Only a vowel shift on the second syllable was changed from the protoform. From /a/ the vowel shifted to /u/ and resulted to kamuy. In the event that other Philippine languages' word for pincers are found to be cognates with kamuy, we will have better evidence to claim that some might also view pincers as the hands of pincer-possessing animals.

Table 6. PAn *kamay in Philippine Languages

PAn *kamay – hand (Blust & Trussel, 2013)		*k a m a y
Waray	[ka.muj]	k a m u j

Figure 8. Distribution of PAn *kamay

3 Perception of Pincers in the Austronesian Languages

With the previous preliminary analysis on the possible protoforms of pincers in the Philippine languages, showing not only the protoforms but also the different patterns of how the Philippine languages reflect the idea of pincers, the ideas behind the word for pincers were narrowed down to three categories: narrow, bite, and limbs. A separate category was also made for words that are more than likely to be loan words. All of these were based on the cognates of words from other languages, their morphology, and even their possible semantic shift.

3.1 *Narrow* The languages here are categorized as narrow to serve as the broader term that will encompass the narrowing of space between the pincers when grasping, squeezing, or pinching is done. It can be observed that the idea of narrowness is widely distributed from Formosa, to Malayo-Polynesia, and all the way to Oceania

(Figure 9), to which we can claim as the most common idea behind the word for pincers across the Austronesian languages. The semantic shift of narrow to pincers that came alongside its vowel deletion in the Buhutu language has been a topic of study. The Buhutu word for narrow is [kiu.kiu] (Blust, Gray, & Greenhill, 2008) while the word for pincers is [ki.ki]. Although an effort was made to reconstruct and find the protoform for [kiu.kiu], unfortunately nothing has been found yet.

As mentioned in Section 2.1, the use of the proto-Austronesian root word *-pit for pincers is widely distributed among the Philippine languages (Tables 1 through 4). These forms also exist in Malayo-Polynesian languages. With the protoform PAn *sipit for Malay and Javanese (Table 7), and PMP *kipit for Rejang (Table 8), it can be inferred that the perception of pincers as an instrument with a space in between that narrows down to grasp or pinch an object is reflected in these languages.

Table 7. PAn *sipit in Austronesian Languages

PAn *sipit - tongs, pincers, claw of a crab or lobster; to pinch or squeeze; press or clip together (Blust & Trussel, 2013)		* s i p i t
Malay	[ʻse.pit]	s e p i t
Javanese	[ʂu.piʈ]	s u p i t
	[dʒ̊ e.piʈ]	d ʒ e p i t

Table 8. PMP *kipit in Austronesian Languages

PMP *kipit – narrow; pinch between tongs (Blust & Trussel, 2013)		* k i p i t
Rejang	[ki.bɪɛt]	k i b ɪ ɛ t

Other evidence on the perception of pinching and grasping for pincers can be seen in Paiwan and Maori respectively. In Paiwan, the word for pincers is [ˈgə.cəl] which originated from the protoform PAn *geCel which means to pinch (Blust & Trussel, 2013). Meanwhile, [ku.ku] is the word for pincers in Maori and most probably originated from the proto-Oceanic form *kukup which means to grasp, clutch, or hold tightly (Blust & Trussel, 2013).

3.2 *Bite* In the Greater Central Philippine languages, specifically the ones in the Bicol area, the form PAn *kaRat which means to bite is the term that used to pertain to pincers (Table 5). However, this idea is not unique to these Philippine languages but also exists in other Austronesian languages, notably on the western end of the Pacific. Examples of this are the Tongan, Tahitian and Hawaiian languages.

Tongan and Tahitian both use the proto-Oceanic (POC) prefix *paka- which means to cause, or denotes likeness of a thing (Blust & Trussel, 2013), as a part of their morphology for their term for pincers. Tongan has [fa.ka.ˈu.ʔu] while Tahitian has [fa.ʔa.hɔ.hɔ.ni] where in [ˈu.ʔu] (Blust, Gray, & Greenhill, 2008) and [hɔ.hɔ.ni] (Wahlroos, 2002) both mean to bite.

Another example is the Hawaiian term [ni.ho] which is used for pincers and teeth (Blust, Gray, & Greenhill, 2008). This may be due to the sharp, rigged and teeth-like edges of pincers which is responsible for the animals who possess it having a tighter grip or bite of objects.

Meanwhile, in Kwamera the term for pincers [ka.nɨ.ʼpa.tiʔ] is a combination of POC *kani and POC *pati which means to eat and to snap off respectively. As hypothesized in section, this may mean that these languages perceive pincers as an instrument used by animals to bite, break, and eat their prey or even potential predators instead of simply grasping them.

3.4 *Limbs* This category is for the languages which perceive pincers as either hands or feet of the animal. In the Philippines, Waray has the term [ka.muj] for pincers which is from PAn *kamay meaning hands (Table 2.6).

However, despite its rare occurrence in the Philippine languages, the perception of pincers as limbs is not uncommon in Austronesia. First is Malagasy's term [ta.ᵑga.la] which is very much similar to Malagasy's term for hands which is [ta.na.na] (Blust, Gray, & Greenhill, 2008). They are also both very likely to originate from PMP *taŋan which means finger or toe (Blust & Trussel, 2013). Next is Fijian's [ʔi.ʻŋga.mu] which is also almost the same with Fijian's word for hands which is [li.ga.mu] (Blust, Gray, & Greenhill, 2008). We can also consider [ˈʔaŋ.gip] from Rangus with its protoform PWMP *aŋkup which means to scoop up with both hands or a double handful which really gives us the idea that these speakers perceive pincers as hands of the animal itself.
Tokelau's term [ˌva.ʔe.ˈhʷu.ʔa] for pincers is easily traceable from [va.ʔe] which is the language's term for foot and the proto-Austronesian form PAn *waqay meaning foot or lower limb.

3.5 *Loan Words* It is worth noting that although these categories of perceptions for pincers are present in the Austronesian languages, there are still several languages that either borrow the terms from English or do not have the term for pincers at all. For example, Chamoru and Mokilese's terms for pincers are [ʻpin.dzuʔ] and [pin.cis] respectively. This may be due to the strong influence of the American occupation in these islands after World War II (Carucci, Falgout, & Poyer, 2001).

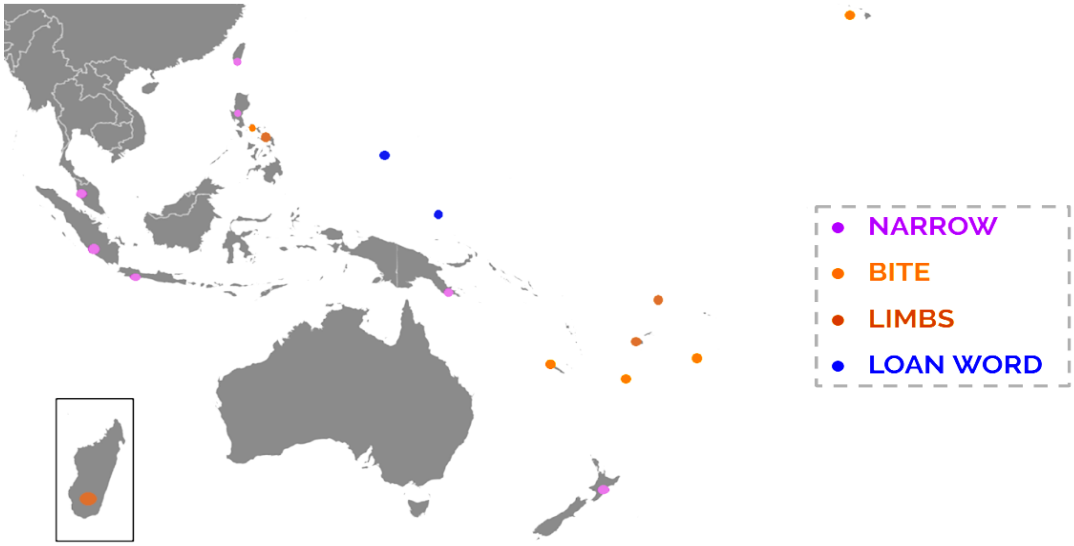

Figure 9. Perceptions of Pincers across Austronesian Languages

4 Conclusion

This paper has shown that the Austronesian perceptions of pincers are the same with the pattern that arose on the Philippine languages. This showed that the ideas behind the words for 'pincers' can be narrowed down to three categories: narrow, bite, and limbs. Evidence for 'narrow' category was shown through the wide distribution of Proto-Austronesian (PAn) *sipit, Proto-Malayo Polynesian (PMP) *kipit, and other terms across Formosan, Malayo-Polynesian, and Oceanic subgroups that are cognates with protoforms related to pinching and grasping. These terms are shown to be formed from roots such as PAn *-pit meaning narrowing of the space in between two objects (Blust & Trussel, 2013). 'Bite' category was shown by PMP *kaRat in the Philippine languages, [fa.ka.ˈu.ʔu] in Tongan, and [fa.ʔa.hɔ.hɔ.ni] in Tahitian which all mean to bite. In addition to this, [ni.ho] in Hawaiian means teeth, and [ka.niˑ.ʼpa.tiʔ] in Kwamera literally means to break and to eat. Last is the 'limbs' category, wherein Waray's [ka.muj], Malagasy's [ta.ᵑga.la], and Fijian's [ʔi.ʻŋga.mu] all originated from protoforms meaning hands. Rangus' [ˈʔaŋ.gip] also came from a protoform that has to do with using hands to scoop, while Tokelau's [ˌva.ʔe.ˈhʷu.ʔa] means foot or lower limbs. However, while these categories of perceptions for pincers are present in the Austronesian languages, there are still several languages that have either borrowed the English terms or do not have a term for pincers at all such as Chamoru's [ʻpin.dzuʔ] and Mokilese's [pin.cis], which has been attributed to post-war American influence

As a consequence of this paper, further studies could be made regarding not only the phonological and morphological changes within Philippine languages but also in Austronesian languages. The distribution of terms

with similar cognates and/or ideas behind pincers may also help existing and future studies in the patterns of migration of the Austronesian people. Existing studies on the terms for fauna in austronesian languages could also be expanded by utilizing the results of this paper. The results covered herein might facilitate studies that help create a better understanding on how Austronesians perceive their environment.

Appendices

Appendix 1. The R, G, L and Y Languages (Conant, 1911)

G languages	Initial	Medial	Final
Tag.	gamót 'root'	ugát 'vein'	íkog 'tail'
Bis.	gamút	ugát	íkog
Bkl.	gamót	ugát	íkog
Ibg.	gamú^{t}	ugá^{t}	(niúg 'cocoa-
Mgd.	gamut	ugat	ikug [nut')
Sulu	gamut	ugat	ikog
Bgb.	ramot	ugat	ikog
R languages			
Ilk.	ramút	urát	(bibír 'lip')
Tir.	(rohok 'rib')	urat	igor
L languages			
Pang.	lamót	ulát	ikól
Knk.	lamót	uwat	
Inb.	damót	ulat	ikól
Bon.	lamót	ŏăd, wăd, uăd	
Klm.	lamot	(darala 'girl')	(bibil 'lip')
Y languages			
Pamp.	yamút	uyát	íki
Batan	yamot	úyat	(itioi 'egg')
Sambal	(yábi 'night')	(búyas 'rice')	(tolói 'sleep')

Appendix 2. Reflexes of *R in Philippine and Neighboring Languages (Blust, 1991)

	Direct	Indirect	Loan Percent
1. Itbayaten	y (19)	g (3), l (1), zero (1)	12.5
2. Gaddang	g (17)	zero (2)	
3. Ilokano	r (11)	g (21)	
4. Bontoc	l (10)	g (10)	
5. Pangasinan	l (20)	g (12), r (1), y (1)	26.0
6. Sambal	y (20)	g (9)	31.0
7. Kapampangan	y (12)	g (20)	62.5
8. Tagalog	g (53)	y (5)	8.5
9. Bikol	g (83)	r (5), y (2)	5.5
10. Hanunóo	g (46)	y (10)	18.0
11. Kalamian Tagbanwa	l (20)	g (9), y (2)	29.0
12. Palawan Batak	g (24)	y (2)	6.5
13. Inati	d (13)	g (28)	68.0
14. Cebuano Visayan	g		
15. Molbog	g (6)	r (2), dz (1), h (1)	20.0
16. Mansaka	g (30)		
17. Western Bukidnon Manobo	g		
18. Maranao	g		
19. Sindangan Subanun	g (28)		
20. Tiruray	r (44)	g (36)	45.0
21. Samal	h (8)	g (6), zero (5), l (4)	26.0
22. Banggi	g (10)	r (8), zero (2)	40.0
23. Proto-Sangiric	R (86)	g (4), zero (1)	4.5
24. Proto-Minahasan	zero/h (30)	g (3), zero (1)	9.0
25. Bolaang Mongondow	g		
26. Gorontalo	h		

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