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Ideophones and sound symbolism in Northern Amis (Austronesian)

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Abstract

This is a study of ideophones in Northern Amis, an East Formosan, Austronesian language of Taiwan. Ideophones depict sensory experiences, and they generally have the same phonological and phonotactic properties as other lexemes; however, some ideophones show consonant and vowel alternations denoting grades of intensity or pitch, and a number of ideophones denoting bad smells and tastes are characterized by specific sequences of phonemes. Crucially, beyond their purely depictive function, many ideophones are also used to describe sensory experiences, in which case, they are derived and inflected as verbs, modifiers and nouns; yet, their greater grammatical integration does not necessarily lead to the loss of their ideophonic properties. Rather, these two functions, depiction and description, are better seen as occurring on a continuum between two poles, as in Japanese (Dingemanse & Akita 2017). Only when the depictive function and the pairing of form and sensory depiction are lost do these lexemes become de-ideophonic, generally taking on non-sensorial semantics.

Keywords: Austronesian, ideophones, onomatopoeia, sound symbolism.

1. Introduction

Amis (ami) is one of the fourteen surviving Austronesian (also called Formosan) languages of Taiwan, spoken along the east coast. Northern Amis, one of the four main dialects, is spoken in the north-east around the city of Hualien. The other dialects

are Tavalong-Vataan, Central, and Southern Amis; they display significant differences in phonology, lexicon and morphosyntax (Tsuchida 1988), and according to native consultants, they are not immediately mutually intelligible.

Ideophones are an understudied topic in Formosan languages and in other Austronesian languages in general, leading Klamer (2001: 171) to write that Kambera (xbr; East Sumbanese, Indonesia) is "one of the few Austronesian languages with ideophones, or more accurately, with documented ideophones". The most recent research on this topic in Western Austronesian languages is Lee's (2017) on Seediq (trv; Formosan), and Rubino's (2001) on Ilocano (ilo; Philippines). In his pioneering study of Austronesian roots, Blust (1988, 2009: 357, 2022) identified around 23% of CVC roots as being "onomatopoetic"; many of these roots have reflexes in Northern Amis (see Table 5 in the Appendix).

1.1. A brief typological outlook on Amis

Some features of Amis, restricted to information central for the understanding of ideophones, are briefly presented. Amis is a verb/predicate initial language with a complex voice system. Most lexical roots are categorially neutral, and most lexical categories (nouns, verbs, modifiers, etc.) are identified once lexical roots have been derived and inflected as stems in a given syntactic environment (Bril 2017). Common nouns and action nouns (like *a call, a jump*, etc.) are flagged by the noun marker *u*. Verbs are derived by voice-affixes that are selected in accordance with the prominent thematic role of the nominative argument, i.e., Actor Voice (AV) *mi-* if the nominative argument is an Actor; Non-Actor Voice (NAV) *ma-* for stative verbs whose nominative argument is an Experiencer or the locus of a property; Undergoer Voice (UV) *ma-* if it is a patient, etc. For instance, the root √*cudad* occurs as a noun *u cudad* 'letter, book' and as a verb derived for AV *mi-cudad* 'study'; √*talem* occurs as a noun in *u talem* 'a blade', and as a stative verb derived as NAV in *ma-talem* 'sharp'. Amis has a symmetrical voice system and bipartite alignment, the details of which are spelled out in Bril (2022). Constructions with AV *mi-* and NAV *ma-* select the absolutive alignment with nominative *k-* and a core argument case-marked by oblique *t-*; UV constructions have ergative alignment, with a nominative *k-* Undergoer and a genitive agent marked by *n-*.

Ideophones in Amis DEPICT perceptions and occur in their base form followed by *sa* 'say' or *han* 'do so'. Some of them are also used to DESCRIBE perceptions, they are then derived and inflected as verbs, nouns, modifiers like other lexical roots, raising questions

as to whether they still count as ideophones; however, this grammatical integration does not necessarily lead to lost ideophonic properties, but is best seen as a continuum, the loss of ideophonic properties being concomitant with the complete loss of their basic depictive function.

1.2. A note on the glossing and translation of ideophones

Some ideophones are glossed with a translation when they have a dedicated meaning, like *kapkap* 'IDEO.grope (in the dark)' in example (7) or *pikpik* 'IDEO.flap (wings)' in (9). Ideophones whose specific meaning is context-dependent are glossed IDEO along with their contextual meaning given in the translation line; one such case is *telaq* which depicts the sound of rifle shots, clapping, firecrackers (see example (29)). A translation is also given when an ideophone has a slightly different meaning as a verb and as a noun, like *kela~kelaq* in (28), which depicts a clattering noise and also refers to a tipcart producing such noise, it is glossed as IDEO.tipcart.

The paper proceeds as follows; the characteristic features of Amis ideophones and the differences with onomatopoeia are discussed in Section 2; some aspects of ideophones and their connection to sound symbolism are the focus of section 3, this includes ideophones with a templatic sequence of phonemes depicting bad smells and tastes; Section 4 teases apart the depictive vs. descriptive usages of ideophones possibly leading to lost ideophonic features. Northern Amis ideophones are put in a typological perspective in Section 5, and in a Formosan perspective in Section 6; Section 7 concludes.

2. The characteristic features of Amis ideophones

Ideophones are an open lexical class and are "marked words that depict some sensory imagery" (Dingemanse 2011: 25). In Amis, these lexemes depict sounds and other perceptions. Amis speakers do not have a specific label for them; in the three existing dictionaries, which mostly bear on Central Amis (Fey 1986, Poinsot & Pourrias 1966, Rata 2013), some ideophones are listed and translated as 'having or making the sound of'. This study is based on a corpus of recorded oral productions,[1] completed by data collected with stimuli.[2]

[1] The corpus contains several hours of spontaneous oral productions (stories of various types and procedural texts), collected over approximately fourteen months of fieldwork in several villages in and around the city of Hualien.

[2] Some of McLean's (2021) auditory stimuli were used, they are found at https://osf.io/y9rk2/.

2.1. Phonological, phonotactic and prosodic features of Amis ideophones

Ideophones use the same phonemic inventory of vowels (/i, ə, a, u/) and consonants[3] as other lexemes and contain no unusual phonemes. Like other lexemes, ideophones may have expressive vowel lengthening on their last syllable; this type of prosodic augmentation expresses duration or intensity as in *ca::s* [tsa::s][4] 'sizzling sound', as well as emotional reactions or evaluation. Vowel lengthening also occurs on verbs, negative morphemes, quantifiers, adverbs, expressing degree and pragmatic emphasis or focus (Bril & Skopeteas 2021: 75-76).

Ideophones follow the same general phonotactic rules as other lexemes in Amis: there are no complex onsets, nor complex codas; yet, in fast speech, unstressed /ə/ may be dropped between a stop and an approximant consonant, resulting in restricted types of clusters, such as *t(e)ra~t(e)raq* [tratráʔʰ] 'sound of gun fire' (from *teraq* [təraʔʰ]), *k(e)loh* 'go thump'.[5] Vowel-initial and vowel-final words are not allowed, and consequently there are rule-inserted glottal stops in such positions, as in *ʔahteng* 'smell of feces, rotten meat', *kurukuruʔ* 'IDEO.tumble.down'. Word-internally, syllables can be open as in *keris* 'scratch' or closed as in *rasmas* 'drizzle'. Ideophones follow the same stress rule as other words, with stress occurring on the last syllable of fully inflected words (Bril 2016, Bril & Skopeteas 2021).

Like all lexical roots, ideophones in their base form can be monosyllabic CVC or disyllabic CV(C)CVC, and they can be reduplicated. When the base and the reduplicated forms co-exist, reduplication is then signaled, as with *kung* depicting a single hollow knocking sound (of a big bell) and *kung~kung* for repeated sounds. Ideophones that do not occur as simple bases are written as one word, for instance *pikpik* 'sound and movement of flapping wings', or *kurukuruʔ* depicting the VISUAL effect of tumbling or rolling down. Reduplication is very common, and occurs at the left edge of all lexical roots with various grammatical functions: e.g., reduplicated CVC(V)~ stems used as verbs like *tela~telaq* 'clap, crackle' have aspectual, semelfactive or durative meanings, and CVC(V)~ reduplication of nouns has plural, collective or exhaustive meanings. In yet other cases, reduplication may have an expressive use.

[3] /ə/ is written <e>; /u/ has an allophone /o/ before velar /k/, epiglottal <q> /ʔ/ and pharyngeal fricative /h/; the glottal stop is written <ʔ>.

[4] Lengthening is marked by colons [::].

[5] In Central Amis, *kloh* depicts the sound of something falling or a sound made in the throat (Rata 2013).

2.2. The contrastive features of ideophones and onomatopeia

Ideophones and onomatopeia are open lexical classes depicting sensory experiences. There are however differences between them.

2.2.1 Onomatopeia

Onomatopeia in Amis are strictly SOUND depicting; they can be used holophrastically like *bling*[6] in (1), depicting the sound of breaking glass, or like *pang* and *pes* in (2).

(1) *ha! u tingalaway=aku! bling!*
INTJ NM glass.pot=NOM.1SG ONOM
'"ah! my glass pot!" "bling!"' (Frog story_Ciyaw.020)[7]

(2) *"pang pes!"*[8] *ma-paqtiw cira namaka puhung n-u ngabur!*
ONOM ONOM UV-eject NOM.3SG from horn GEN-NM deer
'"thump splash!" He was thrown off the deer's antlers!' (into the water)
(Frog story_Ciyaw.057)

Most onomatopeia are words of one or two syllables with the canonical syllabic CVC or CV(C)CVC structure; however, a few are less canonical and have a protracted vowel as in (3), or a protracted consonant, like *ssss* for a hissing sound. They also occur as direct speech acts followed by the quotative verb *sa* 'say' as in (3) and (4), where *tus* depicts the sound produced by a thrown object.[9]

(3) *Wuuu sa k-ira wacu.*
ONOM say NOM-DEIC dog
'"wooo" went the dog. (Frog story_Ciyaw.019)

[6] Its non-canonical syllabic structure CCVC is due to the loss of an unstressed */ə/*, *b(e)ling*.

[7] These are texts references under Toolbox.

[8] *Pes!* also depicts the sound of ritual wine-spraying with the mouth, performed by shamans to the gods. Ideophones and onomatopeia in relation to shamanistic practices require further investigation.

[9] The use of *sa* as an "ideophone forming construction" is briefly mentioned in Central Amis by Wu (2006: 148).

(4) *Tus sa=tu itini i ka~ka-butiq-an.*
ONOM say=PFV here LOC RDP~NFIN-sleep-NMZ
'It went "swish" here onto the bed.' (Tatakulaq atu Hungti.029)

Another distinctive criterion is the fact that onomatopeia are often repeated as prosodically distinct words of one or two syllables, like *tak tak tak* for the sound of rifles or machine-guns, or clattering sounds made by walking with clogs. Example (5) shows the repeated onomatopeia *pungpung*.

(5) *Pungpung pungpung pungpung sa=tu.*
ONOM say=PFV
"Pungpung pungpung pungpung" it went.' (Tatakulaq atu Hungti (2).0058)

Other cases of repeated onomatopoeia are: *ki ki ki* for the sound of some birds; *kir kir kir* for the sound of small frogs and some birds; *yi yi yi* for the sound of dogs squealing; *ciya ciya ciya* for the sound of cicadas; *sing sing sing sing* for the sound of bells; *kiya kiya kiya* for the sound of rain; *tita tita* for the sound of clocks, of horse steps, of rain;[10] *tata tata* for the sound of people speaking; *kulu kulu kulu*, which depicts the sound of something falling into water as in (6), and a gurgling water or belly sound.

(6) *Kulu kulu kulu sa-an a mu-lenek i tebun.*
ONOM say-LV LK AV-sink LOC well
'It went "glug, glug, glug" as it sank into the well.' (Tatakulaq atu Hungti.029)

2.2.2 Ideophones

Out of the 4800 lexemes collected in my dictionary of Northern Amis, about 110 of them (4.4%) are identified as ideophones based on the following features. They are lexemes characterized by a strictly canonical CVC or CV(C)CVC syllabic structure, in contrast with some onomatopoeia that allow protracted vowels as in (3) or protracted consonants. Besides, if they are reduplicated, ideophones make up one prosodic word. Unlike onomatopoeia, ideophones are not holophrastic, and crucially, unlike onomatopoeia, their semantics is not restricted to sounds, they may depict motions or gestures producing a sound. When depictive, ideophones are followed by *sa* 'say'

[10] Possibly a Chinese loan from 嘀嗒 (dídā) 'tick tock', 滴答 (dīdā) 'sound of clock'.

or *han* ‘do so’ as in (7a), while in their descriptive use, they can be derived as verbs, for instance as an activity AV *mi-* verb in (7b), and more infrequently as nouns. Ideophones denoting VISUAL or TACTILE sensations tend to be followed by the light verb *han* ‘do so’ as in (7a).

(7)

a. *Kapkap* *han* *n-ira.*
IDEO.grope do GEN-3SG
‘He groped (in the dark).’ (Arakakai.031, Ogawa)

b. *Mi-kapkap* *cira.*
AV-IDEO.grope NOM.3SG
‘He groped (in the dark).

In (8a) *hiwhiw* depicts a hissing or panting sound, while in (8b) it is derived into a stative *ma-* verb referring to a breathing condition and used descriptively.

(8)

a. *Hiwhiw* *sa* *k-u* *suni* *n-u* *pa-hanhan* *n-ira.*
IDEO say NOM-NM sound GEN-NM CAUS-breathe GEN-3SG
‘IDEO went the sound of her breathing.’

b. *Ma-hiwhiw* *cira.*
NAV-IDEO NOM.3SG
‘He has asthma.’

In (9a), *pikpik* ‘sound of flapping (wings)’ is used depictively, but in (9b) it is derived as an activity *mi-* verb describing a sound produced by a movement and used descriptively.

(9)

a. *Pikpik* *han* *k-u* *sakubad.*
IDEO.flap do NOM-NM wing
‘Flap flap went the wings.’

b. *Mi-pikpik* *t-u* *sakubad.*
NAV-IDEO.flap OBL-NM wing
‘(It) flaps its wings.’ (U Tawrayan a lutuk.057)

Not all ideophones can be used descriptively, and many are only depictive. Ideophones used descriptively are derived and inflected words that are more "grammatically integrated in the morphosyntactic structure of the utterance" (Dingemanse & Akita, 2017: 5-6). Akita (2017) and Dingemanse & Akita (2017) also point out the correlation between grammatical integration and the loss of ideophonic features. In Amis, however, this is a possible, but not necessary correlation. The criterion for assessing their retained ideophonic feature is the necessary pairing of form and sensory expression; only the loss of their depictive use with *sa* 'say' is evidence of de-ideophonization. This is developed in section 4.

2.2.3. Grey areas and continuum of usage between onomatopoeia and ideophones

To sum up, onomatopoeia are holophrastic, can be repeated as prosodically distinct words, while ideophones form a single prosodic word. However, there are a few such lexemes that are used as both onomatopoeia and ideophones. This is shown in (10a-b), the onomatopoeia *ʔaw ʔaw ʔaw* depicts the howl of dogs or human cries of pain, fear or distress, while in (10c), it is used as an ideophone, i.e., as one prosodic word with reduplicated CVC~CVC pattern, derived as an AV *mi-* verb with descriptive and expressive usage; they stand in contrast with non-ideophonic lexemes such as *ungar* 'yell, shout', *luwiq* 'yell, squeal', *libabuy* 'bark' which lack such sound-depicting effects.

(10)

a. *"ʔaw ʔaw ʔaw"* *sa=tu* *k-u* *wacuʔ.*
ONOM say=PFV NOM-NM dog
'The dog went "aw aw".' (Mikungling tu wacu.027)

b. *"ʔaw ʔaw ʔaw"* *sa=tu* *ci* *Mayaw.*
ONOM say=PFV PM Mayaw
'"aw aw" Mayaw said' (sound of complaint) (U nu tumuk a kungku.185)

c. *Mi-ʔaw~ʔaw* *k-u* *wacu.*
AV-RDP~IDEO NOM-NM dog
'The dogs howled.' (Mikungling tu wacu.027)

A similar flexible use occurs with *teraq* which is an onomatopoeia followed by *sa* in (11a), and is used as an ideophone in (11b) with partial CVCV~CVCVC reduplication; it occurs

as an ideophone with a descriptive function in (11c) where it is derived as an AV *mi-* verb, together with the verbalizer *sa-*; (iii) finally, *teraq* is used as a noun in (11d).

(11)

a. *Teraq teraq teraq teraq tera::q sa k-u remes.*
ONOM ONOM:LENGT say NOM-NM blood
'drip drip drip drip dri::p went the blood.' (Pangangan.059)

b. *Tera~teraq sa k-u urad i sera.*
RDP~IDEO say NOM-NM rain LOC ground
'Splatter went the rain on the ground.'

c. *Mi-sa-tera~teraq k-iyan u nanum.*
AV-do-RDP~IDEO NOM-DEIC NM water
'The water was splattering.' (Age groups.052)

d. *Si cacay a teraq n-u nanum.*
EXS one LK IDEO.drop GEN-NM water
'There was one drop of water.'

Despite this flexible range of uses, *teraq* preserves its sensory and expressive properties even when used descriptively. This is precisely what distinguishes it from non-ideophonic lexemes such as *l(e)saq* 'leak, drip' or *tesiq* 'drop, drip', which denote a process without sound depicting usage and which may not be repeated like *t(e)raq* in (11a).

Table 1 summarizes these distinctions. Onomatopoeia in Column 1 are used holophrastically or as direct speech acts followed by the quotative verb *sa*. Ideophones in column 2 depict a sensory experience, and are followed by *sa* 'say', or *han* 'do so'. Column 3 contains ideophones that can be used both depictively and descriptively, the latter as more grammatically integrated words, i.e., as derived and inflected verbs or nouns like other lexical roots, and which retain their ideophonic properties. On the other hand, column 4 is the point where ideophones have faded or lost ideophonic properties, are even more grammatically integrated, for instance with modifying use. These also favor semantic extension towards non-sensory and more abstract meanings.

2.3 Ideophones with fossilized morphemes

A subset of ideophones contains fossilized formatives or infixes expressing intensity or more specific meaning.

1 ONOMATOPEIAS	2 IDEOPHONES	3 IDEOPHONES grammatically integrated	4 DE-IDEOPHONIC WORDS
are ONLY performed, or quoted by using *sa*	express sensory depiction, followed by light verbs *sa* or *han*	describe perception or a sensory event	are descriptive, with faded or lost ideophonic properties
holophrastic	NO derivation and MINOR grammatical integration	undergo derivation, grammatically integrated as nouns, verbs	highly grammatically integrated, derived and inflected as nouns, verbs, modifiers
prosodic foregrounding	prosodic foregrounding		
protracted sound, repetition, expressive lengthening	reduplication, (repetition), expressive lengthening	expressive lengthening	expressive lengthening
polysemy	restricted polysemy	restricted polysemy	semantic extension towards more abstract meanings

Table 1: Onomatopeia and ideophones.

2.3.1 Ideophones containing fossilized formatives

Some ideophones contain a formative occurring as an initial syllable before the root. For instance, *siw* depicts a hissing sound produced by the wind or by some fast motion, and *besiw* ≈ *bisiw*[11] with the formative *be-* ≈ *bi-* have a similar meaning and preserve the characteristic pairing of form and sensory depiction; they may appear in compounds like *ta bisiw* in (12).

(12) *Ta bisiw han a tangasa=tu i lumaq.*
go IDEO do COMP arrive=PFV LOC house
'They went whiz straight back home.' (Amis script.103)

[11] The symbol ≈ stands for alternate forms.

Another case is the fossilized formative *te-* ≈ *ti-* occurring on various ideophonic roots, for instance *kung* and *tekung*[12] 'banging sound', *bek* 'thud' and *tibek* 'pound (rice)', *paqpaq* 'slap, clap' and *tepaq* 'slap, swat, strike'; *mirmir* 'shiver, shake' and *temir* 'throb, beat, thump' (heart) as in (13). Importantly, words with these formatives have a broader meaning, associating SOUND, GESTURE, VISION and, in the case of *temir*, INNER BODILY perception.

(13)

a. *Mirmir sa k-u tireng.*
IDEO.shake say NOM-NM body
'Her body shivered.' (Tatakulaq atu Hungti.0101)

b. *Mi-sa-temi~temir k-u balucuq=aku.*
AV-do-RDP~IDEO.throb NOM-NM heart=GEN.1SG
'My heart is thumping.'

2.3.2 Infixed ideophones

Another subset of ideophones displays reflexes of PAn infixes *<al>, *<aR>, *<aN>, whose reflexes in Amis are *<al>* ~ *<ar>* and *<an>*.[13] In Amis, *<ar>* ~ *<al>* express intensity, pluractionality and semelfactive actions, they mostly occur on reduplicated ideophonic CVC~CVC roots like *t<ar>uktuk* 'beat, throb', from *tuktuk* 'sound of hitting, hammering, beating a drum', which can also be used as a noun as in (14).

(14) *U t<ar>uktuk n-u balucuq.*
NM <INFX>IDEO GEN-NM heart
'The pulse/throbbing of the heart.' (the knockknock of her heart)

In Puyuma (pyu; Formosan), a few similar forms are mentioned by Teng (2008: 36-37) as denoting the property of an object. In Saisiyat (xsy; Formosan), Zeitoun (2023)

[12] Reconstructed as PAn *tekuŋ$_2$ 'bang; sound of a thud' with a formative *te-* (Blust & Trussel, Austronesian comparative dictionary ongoing).

[13] Reid (1994: 330) hypothesizes the meaning of *<aR> to be distributive or plural. Li & Tsuchida (2009: 359) suggest that *<aN> might mean 'having the sound or quality of', as in Paiwan (pwn) and Puyuma (pyu; Formosan).

discusses fossilized infixed <al>, <ar> in onomatopoeic, sound denoting words. In Ilocano (Philippines), Rubino (2001: 310-311) mentions a similar <*an*> infix expressing intensity or the continuous aspect of an action, like *pirpir* 'flutter', *p<an>irpir* 'continual fluttering'; *pekpek* 'cram', *p<an>ekpek* 'resound' (of wood when hit). According to Rubino (2001: 314-315), the formerly productive infix <*ar*> occurs in "lexicalized items associated with the sound of the word" like *togtog* 'knock' and *t<ar>ogtog* 'repeated knocking'; *ng<ar>asngas* 'crunch'; *ng<ar>ebngeb* 'gnash one's teeth'; *ng<ar>etnget* 'gnaw', *b<ar>asabas* 'sound of heavy rain', *k<ar>apkap* 'grope in the dark'.

Northern Amis has around fifteen such infixed ideophonic forms, some of which are fossilized and no longer occur in their root form. Among them are *h<an>inghing* 'smell of toilets, of passing wind'; *k<ar>atkat* 'coarse, rough'; *k<al>aqkaq* 'rattling noise, speak like a machine gun' as in (15); *s<al>ucsuc* or *s<ar>ucsuc* 'fluent, fluid' which applies to liquids or figuratively to speech; *ng<al>iwngiw* 'mumble, grumble murmur' as in (16); *b<al>ambang* 'churning, chaotic movement' and its sound.

(15) *Kalaqkaq k-ira taw.*
IDEO NOM-DEIC person
'This person rattles like a machine gun.'

They are used with *sa* 'say' (16a), or derived as voice-affixed verbs as in (16b). Some of them may undergo metathesis, as in (16c). The non-ideophonic lexeme is *cihi* 'scold'.

(16)
a. *Ngaliwngiw sa k-u* *ʷina.*
IDEO say NOM-NM mother
'The mother mumbled to herself.' (Arikakay Dawa.025)
b. *Ngaliwngiw-an n-i ina k-iya wawa.*
IDEO-LV GEN-PN mother NOM-DEIC child
'The child was scolded by mother.'
c. *Ngaliwngiw* or *langiwngiw* 'mumble, murmur'.

Some infixed ideophones show semantic specialization, like *t<an>ektek* 'strong, steady, earnest', from *tektek* 'sound of hitting on wooden post'.

In some cases, the base form and the infixed form co-exist, for instance *beriw* that depicts the wind's sound and motion, is the infixed form of *biw* 'sound of wind' (infixed as *b<ar>iw*, with the unstressed vowel weakened to /ə/). *Biw* is only depictive, while *beriw* has both functions, (i) depictive, followed by *sa* 'say' in (17a), possibly reduplicated as in (17b), or (ii) descriptive, when derived as *mi-sa-beriw* 'to blow a breeze' itself derivable as the participial modifier *mi-sa-beriw-ay* of *bali* 'wind' in (17c).

(17)

a. *Beri::w*[14] *sa=tu* *k-u* *baliyus.*
IDEO:LENGT say=PFV NOM-NM typhoon
'The typhoon went whoosh.' (U surit nu Pangcah.189)

b. *B(e)ri~b(e)riw*[15] *sa* *k-u* *bali.*
RDP~IDEO say NOM-NM wind
'The wind went whizz whizz.'

c. *Saqpiq* *k-ina* *[mi-sa-b(e)ri~b(e)riw-ay* *a]* *bali.*
cool NOM-DEIC AV-do-RDP~IDEO-MODF LK wind
'This whiff of wind/breeze is cool.'

In all such cases, in their descriptive use, ideophones preserve their identifying pairing of form and sensory expression. Other cases of infixed ideophones are:

(18)

c<al>ascas or *ca<ar>ascas* 'loud noise of water fall', 'loud noise of voices' from *cas~cas* 'torrent, cascade' and *cas* 'sizzling sound' (which is conceptualized as a related sound);
k<al>ungkung 'loud sound' (of thunder, of demolishing, etc.) from *kung~kung* 'sound of knocking on (a door, drum)';
s<al>angsang 'loud noise of rain or water-fall', from *sang* 'pitter-patter, sound of rain';
t<ar>aktak 'sound of something falling one by one' from *taktak* 'sound of spilled, scattered object'.

[14] Vowel lengthening expresses emphasis.

[15] Pronounced [b(ə)rib(ə)ˈriw].

3. Ideophones with templatic features and sound symbolism

Since ideophones are symbolic representations of resemblances between linguistic form and sensory experiences, their iconicity is conventional, as is sound symbolism. Blust (1988: 57-58) pointed out "a high incidence of initial /k-/ or /g-/ in morphemes that refer to rubbing, scratching, scraping [..], and many initial /ŋ/ in words relating to the oral or nasal area". Northern Amis has a fair number of lexemes with initial voiceless plosives /k, t, p/ for hitting, scratching, scraping sounds, sounds of thunder or guns; it has lexemes with initial /h/ which denote breathing, snoring, while those with initial /s/ denote hissing sounds. However, since these phonemes occur in non-ideophonic lexemes and without any clearly skewed ratio, investigation of this type of sound symbolism is not pursued. On the other hand, there are ideophonic[16] sets identified by Blust (1988: 27, 38) as having a similar meaning and a specific syllabic template with consonant and vowel alternations denoting grades of intensity or pitch. Such Gestalt symbolism is inherent to ideophones since they depict a perceptual event, with reduplication used to express iterativity and "the vowel space to express grades of intensity between related forms" (Dingemanse 2012: 659, 663). Northern Amis has such sets of ideophones.

3.1. Ideophonic sets, sound symbolism and their semantic effects

A few ideophonic sets vary by their initial consonants. One such case is C_1*iw*, in which the initial consonant can be labial *biw*, sibilant *siw*, fricative *hiw*. All of them depict a sound generally produced by some fast whirling or spinning movement connected to air or wind, like *biw~biw* depicting the sound of wind gusts, *hiwhiw* depicting a hissing breathing sound, *riwriw* depicting a spinning movement and its sound (like a spintop).

Others, approximately 35 of them, display vowel alternations and/or voiced vs. voiceless consonant alternation. They mostly express grades of intensity and related shades of meanings, like *kuris* 'scratch, itch' and *k(e)ris* 'scratch, rub, rustle', which refer to an action and connected sound.

(19) *Sa-k(e)ris~k(e)ris* *k-u* *urad.*
do-RDP~IDEO NOM-NM rain
'The rain makes a drizzling sound.'

[16] Blust (1988) calls them "onomatopoeic".

3.1.1 The semantic effects of vocalic alternations in ideophones

In his discussion of patterns of vowel alternations in Proto-Austronesian roots, Blust (2009: 357) states that "/a/ denotes loud, raucous sound, /ə/ muffled or blunted sound, /i/ a high-pitched sound and /u/ a loud or deep sound".
In Amis by contrast, vowel alternations with high back vowel /u/ denote louder and deeper sounds, while those with high front /i/ and central /ə/ vowels denote higher pitch or sounds made by lighter objects. Among them are:

(20)
k(e)lung 'sound of slammed door' **vs**. *k(e)le~k(e)leng* 'clap of thunder' **vs**. *k(e)ling*[17] 'sound of bell, clock, phone';
kungkung 'sound of knocking' (on door, drum) **vs**. *kingking* 'ring, tinkle (like bells)';
pukpuk 'sound of husking (rice)' (in a container) **vs**. *pikpik* 'flapping sound' (of wings);
tuktuk 'sound of hitting' (door, wood, drum) **vs**. *tektek* 'sound of wooden post being hit' (into the ground) **vs**. *tiktik* 'sound of patting, tapping'.

Some associate sound and gestures like *tuhtuh* 'empty & dump' **vs**. *tihtih* 'shake off, brush off'.
Vowels /a/, /i/, /ə/ also alternate as in (21), where some of these ideophones associate GESTURES and VISUAL experience WITH or WITHOUT SOUND:

(21)
bahbah 'expel, throw away' **vs**. *bihbih* 'shake off, brush off';
cakcak 'hoe, dig and loosen the soil' **vs**. *cekcek* 'squeeze, peck, press' **vs**. *cikcik* 'chop, slice';
paqpaq 'slap, clap, pat' **vs**. *piqpiq* 'press, tread';
taptap 'hit with an adze, pickaxe, chisel' **vs.** *teptep* 'chopping sound, sound of boat engine';
tera~teraq 'pitter-patter, sound of rain, of water' **vs**. *teri~teriq* 'tapping sound' (lighter, as on a door).

[17] The first syllable is a fossilized formative, the second one is reconstructed as PAn *liŋ 'clear ringing sound' (Blust 1988: 121).

(22) *Araw* *teri∼teriq* *sa* *a* *tengil-an* *n-ira.*
suddenly RDP∼IDEO say COMP hear-LV GEN-3SG
'Suddenly, there was a knock knock that she heard.' (Chen 1969: 29)

3.1.2 The semantic effects of consonant gradation in ideophones

Consonant gradation is a prominent feature of ideophones in Austronesian languages. Blust (1988: 44) remarked that initial voiced stops "generally signal a louder or deeper sound in onomatopoetic roots than the homorganic voiceless stops" and that "voiced consonants signal larger sound-producing objects than their voiceless equivalents" (Blust 2009: 357). In contrast, voiceless stops in Northern Amis denote greater intensity.

- #C- voiced vs. voiceless consonant gradation associating gesture and sound:

pikpik 'flap (wings), flutter' **vs**. *bikbik* 'sway arms, shake';
pihpih 'fan' **vs**. *bihbih* 'shake off, brush off';
pekpek [pəkpək] 'pound, hammer' **vs**. *bek* [bək] 'thud'.

- Initial /k, t/ alternations:

kelaq 'creak, rattle, clatter' **vs**. *telaq* 'clap, crackle'.

Some ideophones denoting sounds of hitting, scraping and scratching also have final consonant /t/, /s/, /h/ alternations, in addition to vowel alternations, like *kutkut*, *kitkit* 'scrape, scratch', *kiskis* 'scrape, scratch', *kihkih* 'scrape'. Final consonant alternation expressing intensity involves the velar /k/, the epiglottal <q> /ʔ/, the pharyngeal fricative /h/, such as *tiktik* 'pat (to extract)', *tiqtiq* [tiʔtíʔʰ] 'strike against something (hard)', *tihtih* 'shake off (dust), brush off'. All such ideophones are followed by *sa* 'say' and express related meanings with intensity gradation.

3.2. Ideophones with specific templates and skewed frequency

Bad smell and taste words also evidence phonesthemic properties with paired form-and-meaning occurring with a skewed frequency (Bergen 2004: 293). These words have specific templates with sequences of phonemes occurring as their first syllable, C**aŋ**CVC for smells and C**ah**$_2$/**l**$_2$(e)CVC for tastes.
Amis speakers spontaneously identify and list them as forming a distinct set of expressive words for bad smells and tastes. This is in line with Bergen's remark (2004: 303-304)

that language users internalize recurrent form-meaning correlations, "such generalizations over individual tokens are based not on compositionality or productivity, but rather on the simple recurrence in the language of a form-meaning association".

Their restricted number, the fact that words with such semantics are in great majority (up to 80%) words with such template, and the fact that no other words share this pattern, with one or two exceptions, identify them as ideophones of a distinct type. The reason for this template could be the presence of a now unanalyzable semantic or ideophonic formative. However, there are differences between them, bad smell ideophones having depictive and descriptive functions, while taste words tend to lose their depictive function.

3.2.1 Smell ideophones

Many of the ideophones expressing stench and bad smells are reconstructed in PAn with the pattern *(C)**aŋ**(e)CV(C) (Blust 1988: 58-60). They have reflexes in several Formosan and in other western Austronesian languages.[18]

There are fifteen such words in Northern Amis, nine of them with initial glottal stop like *ʔangcep* 'smell of burnt (rice, food)', three of them with initial /b/. These words make up the great majority (75%) of smell words in my lexical database (see Table 2 below, and Table 6 in the Appendix). Only five other non-ideophonic words referring to smells do not follow this pattern, one of them is *ʔahteng* 'smell of faeces, of rotten meat', another is the generic word *sanek* 'odour, smell'.

ʔaŋCVC template	**baŋ**CVC template
ʔangcep 'smell of burnt (rice, food)'	
ʔangcuh 'smell of urine'	*bangruh* 'smell of rotten food'
ʔanglih 'smell of cut grass'	*banglih* 'bad smell of grass, tree'
ʔanglis 'smell of fish'	
ʔangliw 'smell or taste of rotting food'	
ʔangsit 'smell of animal or dirty person'	
ʔangsaw 'smell of fire smoke'	*bangsit* 'stench of urine'
ʔangtir 'smell of sweat or of women's periods'	
ʔangtul 'stinky'	

Table 2: Bad smell ideophones in Amis.

[18] In Puyuma (pyu), Paiwan (pwn) both Formosan, and in Philippine languages (Blust 1988: 60).

When depictive, smell ideophones are followed by *sa* 'say' (23a); when used descriptively, they behave like stative predicates, and can be derived as modifiers (23b). They are gradable, and may be derived as attenuative predicates with the reduplicated CVC∼root-*an* pattern (23c-d). When negated, they contradict or express disagreement with a previous statement.

(23)

a. *ʔangtul sa a sanek-an.*
stinky say COMP smell-LV
'It is stinky to smell!' (Kakunas.021)

b. *ʔangtul-ay a ka-kaʔen-en k-inian.*
stinky-MODF LK NFIN-eat-UV NOM-DEIC
'This is stinky food.' (U misamaraday.010)

c. *ʔang∼ʔangtul-an.*[19]
CVC.RDP∼stinky-AN
'It was a little smelly.'

d. *ʔang∼ʔangcep-an.*
CVC.RDP∼smell.burnt-AN
'It slightly smelt of (something) burnt.'

3.2.2 Taste words

Tastes words are an even smaller set of words (fewer than ten), with a C**ah**$_2$/**l**$_2$ (e)CVC template and /h/ or /l/ as C_2, like *ʔahbed* 'chewy', *ʔahcid* 'salty', *ʔalsuq* 'tasty', *ʔal(e)ngel* 'bitter', *ʔal(e)dah* 'spicy'. They make up 81% of all attested taste words, with only two other words having a different pattern, in addition to the generic verb *tanam* 'taste'. They are used to depict a personal experience, followed by *sa* as in (24a). They can be derived as inchoative verbs expressing a change of state as in (24b), and they can be negated to express disagreement, as in (24c).

(24)

a. *ʔahbed sa k-ina titi.*
chewy say NOM-DEIC meat
'This meat is chewy.'

[19]The suffix -AN in the attenuative CVC∼root-*an* construction is homophonous with LV -*an*.

b. *Mala-ʔahbed=tu k-ina titi, tada ma-tenes k-isu*
INCH-chewy=COS NOM-DEIC meat INTENS NAV-be.long NOM-2SG
a mi-cacak.
COMP AV-cook
'The meat has become chewy, you cooked it too long.'

c. *Caay ka-ʔahbed.*
NEG NFIN-chewy
'(They) are not chewy.' (Katacumuli.013)

Like bad smell words, they can be derived as modifiers as in (25a); they are gradable and derived as attenuative predicates (25b); they may also denote a caused change of state (25c-d).

(25)

a. *ʔaldah-ay a nanum.*
spicy-MODF LK water
'alcohol' (lit. spicy liquid/water)

b. *ʔal(e)~al(e)dah-an k-ina sinabel.*
CVC.RDP~spicy-AN NOM-DEIC dish
'This dish is a little spicy.'

c. *Pa-ka-ʔaldah cira t-u sinabel.*
CAUS-NFIN-spicy NOM.3SG OBL-NM dish
'(s)he made the dish spicy.'

d. *Pa-ʔahcid k-u cilaq t-u kabi.*
CAUS-salty NOM-DEIC salt OBL-NM soup
'The salt has made the soup (too) salty.' (Chen 1987: 260)

The taste word *ʔalsuq* 'tasty' (26a) also extends to music or songs as pleasant auditory experiences as in (26b).

(26)

a. *ʔalsuq-ay a ka-kaʔen-en.*
tasty-MODF LK NFIN-eat-UV
'(they are) delicacies (lit. it's tasty to be eaten).'

b. *ʔalsuq* *a* *tengil-an* *k-u* *radiw* *n-ira.*
pleasant COMP listen-LV NOM-NM song GEN-3SG
'Her song is beautiful to listen to.'

To summarize, the words for bad smells and tastes make up a very small subset of the lexicon with their own specific templates and highly skewed distribution that identify them as a distinct set of expressive words. However, taste words are mostly used descriptively and are more frequently de-ideophonized than smell words.

4. The depictive vs. descriptive use of ideophones

Amis is not unique in having descriptively used ideophones. Dingemanse (2017: 376-380), Dingemanse & Akita (2017: 6-7) and Akita (2017: 316) point out similar facts in various languages in Africa, Eurasia, Australia, North and South America. They point out an inverse correlation between expressiveness and grammatical integration, also observed cross-linguistically. Akita (2017: 317, 323) proposes the following scale of morphosyntactic integration of Japanese (jpn) ideophones:

acategorial < quotative-adverbial < bare-adverbial < verbal < nominal
NON-INTEGRATED INTEGRATED

In Amis, ideophones also evidence this inverse correlation. Even when derived, they retain a close semantic relation with sensory features, as shown by the fact that the same ideophone can often be used depictively or descriptively (columns 2 and 3 of Table 1).

Dingemanse (2023: 9, preprint) mentions that in Ewe (ewe; Ameka 2001) and Basque (eus; Ibarretxe-Antuñano 2017), ideophones are multicategorial with predicative and attributive uses, while remaining mostly free of inflectional or derivational morphology.

4.1. The descriptive usage and grammatical integration of ideophones

In Amis, ideophones occur under their base or reduplicated form, followed by *sa* 'say' as in (27a) or by *han* 'do so' when used depictively, some of them can also be derived and inflected as verbs, nouns or modifiers, in which case they describe a sensory event in an expressive way. For instance, the ideophone in (27b) is derived as a sound

denoting verb in locative voice, a voice that is typically used for natural phenomena and weather events. Compare with the non-ideophonic lexeme *betiliq* 'thunder', also derived as a verb *betiliq-an* in (27c).

(27)

a. *Kele~keleng* *sa* *k-u* *betiliq.*
RDP~IDEO say NOM-NM thunder
'The thunder is rumbling.'

b. *Kele~keleng-an.*
RDP~IDEO-LV
'It's rumbling.'

c. *Betiliq-an* *anini.*
thunder-LV now
'It's thundering now.'

Ideophones derived as voice-affixed verbs describe a sensory event in an expressive way, possibly conveying a personal reaction to that event, a property lacking in non-ideophonic lexemes with similar meanings. Ideophones have a variable potential for derivation and inflection as verbs, modifiers and nouns. However, such grammatical integration does not necessarily correlate with lost ideophonic status, as long as they retain some expressive sensory features of their original depictive function. Though ideophones in descriptive use mostly occur in affirmative constructions, some of them may be negated. This is not specific to Amis, as various other languages allow ideophones to be negated, like Japanese or Hausa (hau; Dingemanse 2017: 364; 2023, preprint pp. 9-10).

For instance, the ideophone *kelaq* is depictive in (28a); it is derived and inflected as a sound denoting verb in the prohibitive mood in (28b), and in (28c) it is used as a noun referring to a 'wooden tipcart' producing that sound.

(28)

a. *Kelaq!* *sa.*
IDEO say
'It went "crack"!' (Cabay aku.00085)

b. *Aka* *pi-sa-kela~kelaq!*
PROH NFIN-do-RDP~IDEO
'Don't make clattering noise!' (don't clomp clomp with your clogs)
(Chen stories 1969: 26)

c. *U muli n-u kela~kelaq.*
NM wheel GEN-NM RDP~ IDEO.tipcart
'The wheels of the rattling tipcart.'

The ideophone *t(e)la~t(e)laq* depicts various related sounds, rifle shots, firecrackers as in (29a), clapping. In (29b), it is a derived verb in Actor Voice *mi-sa-t(e)lat(e)laq*; in (29c), it is derived as a verb in Locative Voice *tela~telaq-an*, and in (29d), it is a deverbal noun *ni-pi-tela~telaq* 'clapping'. On the other hand, non-ideophonic lexemes *bakuhac* 'explode', *kemiq* 'shoot' or *telik* 'explode like firecracker, glitter' have no depictive use.

(29)

a. *Tela~telaq sa k-u pangpawa.*
RDP~IDEO say NOM-NM ONOM.firecracker
'The firecrackers went crackle crackle.'

b. *Mi-sa-tela~telaq k-u pangpawa.*
AV-do-RDP~IDEO NOM-NM ONOM.firecracker
'The firecrackers are crackling.'

c. *Kapah k-u radiw n-ira,*
good NOM-NM song GEN-3SG
'Her song was nice,
*manay tela~telaq-**an** n-u alumunay.*
so RDP~IDEO-LV GEN-NM people
so people clapped (for her).'

d. *Ma-tiya u betiliq k-u **ni-**pi-tela~telaq*[20]
NAV-be.like NM thunder NOM-NM PFV.NMZ-NFIN-RDP~IDEO
n-u alumanay.
GEN-NM people
'The clapping of the people sounded like thunder.' (Age groups.197)

The grammatical integration of ideophones does not necessarily incur loss of their sensory features as shown by *kelaq* in (28), *t(e)la~t(e)laq* in (29) and by *tektek* in (30).

[20]AV *mi-t(e)la~t(e)laq* is nominalized by the perfective NMZ *ni-*, together with the non-finite *pi-* form.

In (30a), *tektek* depicts the sound of hitting on wooden posts, while in (30b), it is derived as a causative verb inflected for hortative mood and used descriptively.

(30)

a. *Tektek sa k-u suni n-iya kilang a mi-rangat.*
IDEO say NM-NM sound GEN-DEIC wood COMP AV-fence
'Tektek goes the sound of the wood as (he) makes a fence.'

b. *Pa-tektek-a k-ita a mi-rangat.*
CAUS-IDEO-HORT NOM-1PL.INCL COMP AV-fence
'Let's hit the sticks (into the ground) to make a fence.'

Bengbeng depicts a banging sound in (31a), while in (31b), it describes a sound caused by pelting stones. The corresponding non-ideophonic verb is *mi-alud* 'throw stones, lapidate'.

(31)

a. *Bengbeng sa k-u suni n-ira panan.*
IDEO say NOM-NM sound GEN-DEIC door
'Bangbang went the sound of the door.'

b. *Pa-bengbeng k-uhni t-u bek(e)loh.*
CAUS-IDEO NOM-3PL OBL-NM stone
'They banged (it) with stones.'

The ideophone *bek* depicts a dull sound or thud in (32a), while in (32b), it is marked by the conveyance voice affix *si-* indicating a change of location of the patient pivot and describes a sound caused by hurling a frog (the patient being unexpressed).

(32)

a. *Bek sa k-u bek(e)loh a ma-terak.*
IDEO say NOM-NM stone COMP NAV-fall
'The stone went thud when it fell.'

b. *Si-pa-bek han=tu itira i tebun.*
CV-CAUS-IDEO do.so=PFV there LOC well
''(It) was made to go thud there onto the well.' (Tatakulaq atu Hungti (2).0126)

Tekiq followed by *sa* in (33a) depicts striking, hitting sounds, while in (33b), it is derived as a noun marked as the nominative argument *k-u teki~tekiq* of the negative existential verb *awaay* and used descriptively. In (33c), it is a deverbal noun derived from the voice-affixed verb *mi-sa-teki~tekiq* 'make a clanking noise', which refers to noises made by human beings, and metaphorically to life.

(33)

a. *Tekiq sa i walu-^{w}-ay k-u tuki.*
IDEO say LOC eight-^{ep}-MODF NOM-NM clock
'Cling went the clock at 8.'

b. *Awaay k-u teki~tekiq n-ina niyaruq.*
NEG.EXS NOM-NM RDP~IDEO GEN-DEIC village
'There was no clank clank sound in the village.' (i.e., no sound of life)

c. *Awaay=tu a maka-tengil k-aku t-u*
NEG.EXS=PFV COMP ABILT-hear NOM-1SG OBL-NM
pi-sa-teki~tekiq n-ira.
NFIN-do-RDP~IDEO GEN-3SG
'I would no longer hear any clanking (sound) of his.' (i.e., he is deceased)
(Cabay aku.00167)

On the other hand, non-ideophonic verbs like *palu* 'strike with a stick' and *mukun* 'to hammer' only describe actions. Another difference is that instrument nouns can be derived from action verbs by the dedicated prefix *sa-*, like *sa-mukun* 'a hammer', while sound-depicting ideophones are not derived as sound producing instruments by *sa-*. Some occur under their base form, like *tibtib* 'vibrate, jew's harp'' (lit. vibrator); others are derived as locative nouns by *Ca~*root-*an* reduplication as shown in Table 3, like *ta-tuktuk-an* 'drum' (lit. place where to beat) or *ka-kingking-an* 'bell'.

This sample of ideophones shows that their expressive sensory features are retained even when used descriptively. The inverse correlation between expressiveness and grammatical integration of ideophones thus occurs as a continuum, rather than as bipolar features.

Most ideophones are used as verbs and only about 10% are also used as nouns,[21] in contrast with all other lexical roots which do not show any such categorical restriction in Amis. Instances of ideophones used as nouns by zero derivation are *teki~tekiq* 'clanking sound' in (33b), *teraq* 'a drop' in example (11c), *badambang* 'stormy weather, a mess'. They sometimes depict the SOURCE of the sound, for instance, *ciwciw* 'peep peep' also means 'a chick, a duckling'.

IDEOPHONE	DERIVED IDEOPHONIC VERB (DESCRIPTIVE USE)	DERIVED NOUN by *Ca*~reduplication-*an*[22]
cikcik 'sound of chopping'	*mi-cikcik* 'slice, chop'	*ca-cikcik-an* 'chopping board'
tuktuk 'sound of hitting'	*mi-tuktuk* 'beat' *mi-sa-tuktuk* 'beat the drum'	*ta-tuktuk-an* 'drum'
kingking 'sound of ringing, clink, tinkle'	*mi-kingking* 'ring, make a tinkling sound'	*ka-kingking-an* 'bell'

Table 3: Some derivational processes of ideophones.

The word *cas*, which depicts a sizzling sound, followed by *sa* as in (34a), also appears under its reduplicated form *cas~cas* to depict the sound of splashing water or the source of that sound, a 'splattering waterfall' (34b); in (34c), it is derived as a verb 'splatter like a waterfall' and used descriptively.

(34)

a. *Ca::s* *sa=tu* *k-u* *dangah* *n-umita.*
IDEO.LENGT say=PFV NOM-NM pot GEN-1PL.INCL
'Sizzle goes the cooking-pot.' (Katacumuli.041)

b. *Ma-tengil=aku* *k-u* *suni* *n-u* *cas~cas.*
UV-hear=GEN.3SG NOM-NM sound GEN-NM RDP~IDEO.cascade
'I can hear the sound of the cascade.'

c. *Ma-sa-cas~cas* *k-ina* *nanum.*
NAV-do-RDP~IDEO NOM-NM water
'The water is splattering like a cascade.'

[21] Common nouns are marked by *u* (NM) and are inflected for case as *k-u* (nominative), *t-u* (oblique), *n-u* (genitive).

[22] *Ca*~root-*an* reduplication is formed by repeating the root's initial consonant followed by /a/.

4.2. The semantic extension of ideophones

Ideophones are often polysemous owing (i) to their vague semantics applying by analogy and with context-dependent meaning, or (ii) owing to their metaphorical extension to similar perceptual contexts within close semantic range.

Telaq depicts the sound of fire-crackers, rifle shots, applause and thunder claps. *Kelaq* depicts rattling, cracking or creaking sounds, extending to the sound of walking with wooden clogs and to a 'wooden tipcart' that makes a rattling sound. *Peri~periq* depicts sounds occurring in fast succession like 1) the sound of a machine-gun, 2) speaking like a machine-gun (35a), by extension 3) the sound of diarrhea, and of 4) a watery mud-slide as in (35b) where the ideophone functions as a modifier.

(35)

a. *Peri~periq han a suwal.*
RDP~IDEO do.so LK <UM>speak
'He spoke like a machine-gun.'

b. *U ma-peri~periq-ay a lutuk.*
NM NAV-RDP~IDEO-MODF LK mountain
'A mountain-mud-slide.'

Siw and *siw~siw* depict a swift motion with a hissing sound. In (36a-b), it is depictive, followed by *sa* 'say'; in (36b) it depicts an AUDITIVE and VISUAL event, namely the swift motion of a snake; it may also depict the VISUAL event of a shooting-star, only retaining the swift motion. In the last two occurrences, it is derived: as a verb *mi-siwasiw* (with epenthetic /a/) in (36c) with the meaning 'winnow, chaff'; into the even more abstract meaning 'select' (interestingly, English *winnow* has a similar semantic evolution 'sift in the wind' and 'select') in (36d). In both of these latter examples, it is used descriptively.

(36)

a. *Siw sa-an.*
IDEO say-LV
'It went whiz.' (U nipiketun ni Hayan.0059)

b. *Kalamkam siw~siw sa k-u quner haw.*
be.fast RDP~IDEO say NOM-NM snake DISC
'The snake was fast, it went whiz.' (U uner a kawas.047)

c. *Mi-siwasiw* *t-u* *tipus.*
AV-IDEO.winnow OBL-NM rice
'(they) winnow the rice.'

d. *Mi-siwasiw* *t-u* *kapah-ay* *atu* *raqcus-ay* *a* *demak.*
AV-IDEO.winnow OBL-NM good-MODF and bad-MODF LK action
'(they) select the good from the bad actions.' (U puduc nu pawli.024)

The ideophone *tibtib* 'pulse, vibrate' also refers to the 'jew's harp/vibrator', and owing to their similar shapes (namely, a VISUAL feature), it colexifies the 'shuttle' used in knitting fishing nets. Note that the non-ideophonic word for the 'jew's harp' is *datuk*.

The two following cases show the semantic extensions of ideophones towards more abstract meanings. *Tera~teraq* depicts the sound of flowing water, the splattering sound of rain or water (see also example (11)). It may also refer to an intense flow of tears in (37a), with vowel lengthening expresses intensity and emphasis.[23] In (37b), it is derived as a deverbal noun and its semantic range extends to a VISUAL experience (blood traces) rather than an auditory one; in this case it is used descriptively.

(37)

a. *Tera~tera::q* *sa* *k-u* *lusaq.*
RDP~IDEO:LENGT say NOM-NM tear
'His tears dropped and dro::pped.' (Pangangan.008, 10)

b. *Mi-dudu* *t-u* *ni-ka-teraq-an* *n-u* *remes.*
AV-follow OBL-NM PFV.NMZ-NFIN-IDEO-NMZ GEN-NM blood
'(they) followed the blood drippings.' (u patay ni Calaw Ilikic.048)
(Lit. (they) followed the blood that had dripped)

Thus, ideophones with faded or lost sensory depiction favor semantic extension towards more abstract meaning and descriptive use.

5. Northern Amis ideophones in a typological perspective

The most frequent ideophones in the corpus depict the sounds of water, wind, animals, human sounds related to bodily functions ('cough', 'breathe'), to speech or

[23] The character is afflicted by constant crying.

cries ('murmur', 'howl'); sounds related to motion and movement ('fall', 'clattering walk'), sounds produced by using tools, weapons ('cut', 'scrape', 'strike', etc.), artefacts and instruments. Some of them depict VISUAL perception associated with fast motion like *siw* referring to a shooting-star, or gestures such as rubbing, brushing off, with or without sound. Some depict MOVEMENTS like falling, tumbling down, shaking, flapping wings. Few of them denote tactile sensations, apart from *kapkap* 'grope' (in the dark). No ideophones depicting shape or texture have been encountered.

Dingemanse (2018: 9) states that cross-linguistically, ideophones generally evoke actions and properties rather than objects. This is generally true of Amis, though some of these ideophones may extend to the entities that produce the sound, or to animals named after their cries.

The semantic domains covered by ideophones in Northern Amis mirror Dingemanse's implicational hierarchy (2012), predicting that if languages have ideophones for semantic domains to the right side of the hierarchy, they must then have ideophones on the left. Sound and movement are predicted to be the most common.

(i) Dingemanse's implicational hierarchy (2012)

SOUND < MOVEMENT < FORM < TEXTURE < OTHER SENSORY PERCEPTIONS

In Amis sound-depicting and sound-&-movement depicting ideophones are the most numerous, followed by those associating movement-&-visual perception.

(ii) The semantic domains of ideophones in Northern Amis

SOUND < SOUND & MOVEMENT < MOVEMENT & VISUAL PERCEPTION < BAD SMELL

The semantic domains of Japonic ideophones are given in (iii) for comparison, since a fifty-year long Japanese occupation of Taiwan (1895-1945) has left a lasting linguistic impact on Formosan languages, with numerous loan words in present-day Amis.

(iii) The semantic domains of ideophones in Japonic languages (McLean 2021: 528)

SOUND <MOVEMENT <SHAPE <TACTITION <INNER PERCEPTIONS <SMELL <COLOUR <TASTE

In contrast with Japonic ideophones where shape and tactile ideophones stand in the middle of the hierarchy, these are non-existent in Amis. Inner perceptions are also very infrequent in Northern Amis, with the possible exception of *pirpir* 'heart-beat'

and *mirmir* 'shiver, shake', with their voiceless oral and voiced nasal consonant alternation. In Japanese, smell and taste are the lowest on the scale; in Northern Amis, bad smells and taste words are defined by specific templates and amount respectively to 15% and 9% of all identified ideophones; however, taste words tend to be de-ideophonized. Further investigation shows that Amis ideophones are most generally not borrowed, with only two traceable loan words, *tera~teraq* 'sound of rain, of flowing liquid' possibly from Japanese *tara tara* 'trickle', and *kurukuru?* 'IDEO.tumble.down' possibly from Japanese *kuru kuru* 'sound of something rotating or spinning round'. This supports Blust's (2013: 565) remark that ideophones and onomatopoeia are rarely borrowed in Austronesian languages.

6. Ideophones in other Formosan languages

Blust (1988; 2013: 565) argued that in Austronesian languages, many ideophones show regular sound correspondences, like other lexemes. Many of the ideophones in Amis are reflexes of Blust's reconstructed onomatopoetic PAn roots (see Table 5 in the Appendix); other Austronesian languages, among them Ilocano (Philippines), also have cognates identifiable by regular sound correspondences. Among Formosan languages,[24] a few ideophones are common to Northern Amis, Seediq and Kavalan (ckv; Lee 2017) as shown in Table 4.

NORTHERN AMIS	SEEDIQ	KAVALAN
ʔuhʔuh 'sound of coughing, cough'	*quh* 'sound of coughing'	
tuktuk 'sound of knocking, beating a drum'	*-tuk* as a submorpheme of *tatuk* 'knock' (Lee 2017: 206)	*tuktuk* 'knocking sound'
rasmas 'drizzle' (visual)	*ras* 'sound of 'flowing water'	
telaq 'sound of rifle shots'	*tlelak* 'sound of a machine gun'	
kela~kelaq 'rattling, cracking, creaking sound; sound of a creaking tipcart'	*kerak* 'sound of an old car being driven'	

Table 4: Ideophones common to Northern Amis, Seediq and Kavalan (Formosan)

[24] This relies on available published research and needs more investigation.

The ideophones *ʔakʔak* in Northern Amis and *ak-ak-ak* in Siraya (fos) depict the cry of ravens and extend to the bird; however, in Siraya, the ideophone is also derived as a verb in (38) extending to mocking, cackling sounds produced by human beings.

(38) Siraya (Formosan; Adelaar 2011: 259)
Ni-mau-ak-ak-ak ma-tawa tĭ̈ni-ä̈n.
PAST-AS-cackle-cackle AV-laugh 3sg-LOC
'They laughed at him with scorn.' (ix24) (AS = anticipating sequence)

The question of how ideophonic roots are transmitted is commented on by Blust (2009: 357):

> "If submorphemic sound-meaning correlations are distributed over a number of genetically related languages in non-cognate morphemes, one must ask how such patterns can be transmitted independently of the forms that exemplify them. There are two logical possibilities: 1) they are transmitted in sets of morphemes which contain a recurrent submorphemic sound-meaning correlation that is then extended to neologisms, or 2) the abstract pattern itself is internalised."

Much work remains to be done before satisfactory answers can be brought to bear on this question.

7. Conclusion

Ideophones are a small subset of the Northern Amis vocabulary (around 4.4% of my 4800 lexical database). They are commonly followed by *sa* 'say' or by *han* 'do so' and are used to depict sensations (auditory, motion, visual, smells, tastes, etc.) and to convey liveliness and personal reaction. Many ideophones can be used depictively as well as descriptively, in the latter case, they tend to be more grammatically integrated words, i.e., as derived and inflected verbs, more marginally as nouns, yet they retain their original expressive sensory properties.

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Abbreviations

1 = 1st person
2 = 2nd person
3 = 3rd person
AV = actor voice
CA~ = C*a*~reduplication
CAUS = causative
COMP = complementiser
COS = change of state
CV = conveyance voice
DEIC = deictic marker
EP = epenthetic
EXCL = exclusive
EXS = existential
FUT = future
GEN = genitive
HORT = hortative
IDEO = ideophone
IMP = imperative
INCH = inchoative
INCL = inclusive
INFX = infix
INTENS = intensive
LENGT = lengthening
LK = linker
LOC = locative
LV = locative voice
MODF = modifier
NAV = non-actor voice
NEG = negation
NFIN = non-finite
NOM = nominative
NM = noun marker
NMZ = nominalizer
OBL = oblique
ONOM = onomatopoeia
PFV = perfective
PM = person marker
POSS = possessive
PREP = preposition
PROH = prohibitive
PSA = preferred syntactic argument
RDP = reduplication

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Appendix

Table 5 lists some ideophones in Northern Amis, similar words in a few other Formosan languages, with their PAn cognates.

NORTHERN AMIS	other FORMOSAN LANGUAGES	PAn (Blust 1988)
'ak'ak 'to/a crow, raven'	Puyuma *'ak'ak* '(a) crow' Siraya *ak-ak-ak* '(a) crow'	*kak 'cackle' (1988: 101)
bek 'thud'		*bek 'pound, thud' (1988: 27, 38)
bengbeng 'bang'		*beng 'dull resounding sound'
bikbik 'flutter' *pikpik* 'flap wings'	Puyuma *bikbik* 'shake off' (Teng 2008: 36)	 *pik 'click' *pikpik 'sound of patting, tapping'
kapkap 'grope'		*kapkap 'feel in the dark, grope' (1988: 103)
k(e)ris 'scratch'		*ris 'scratch a line' (1988: 147)
kingking 'ring, tinkle'		*kiŋ, *kiŋkiŋ$_1$ 'ringing sound' (1988: 41)
kung 'sound of a big bell' *kungkung* 'knock with hollow thump', 'beat a drum'	Seediq *kung* 'sound of a door being knocked'	 *kungkung 'deep resounding sound', 'a slit-gong, a hollowed tree trunk used to send messages'
kiskis 'scrape, scratch' *kihkih* 'scrape, scratch'		*kis 'scratch' PMP *kihkih (Blust 2013: 643)
kutkut 'scrape, scratch'		*kutkut$_2$, kudkud 'scrape with metal' (Blust & Trussel)
pekpek 'pound, hammer'		*pek 'clap, slap, thump' *pekpek 'beat, hit'
pukpuk 'beat & husk rice' (in a wooden tank)		*puk 'clap, slap, thump' (1988: 38) *pukpuk 'hammer, pound, beat' (Blust & Trussel)
ritrit 'cut, reap' (grain)		*riC 'sound of ripping' (1988: 80)
tekiq 'clank'		*tekiq 'sound of rock hitting'
tektek 'hit a post in the ground'		*Tek 'light knocking sound' (1988: 81)

NORTHERN AMIS	other FORMOSAN LANGUAGES	PAn (Blust 1988)
tiktik 'pat, tap'	Puyuma *tiktik* 'hammer at' (Teng 2008: 36)	*Tik 'crack, click, tick, tock' (1988: 27, 38)
tuktuk 'sound of hitting'	Kavalan *tuktuk* 'knocking sound' Seediq *-tuk*	*-tuk 'knock, pound, beat' *tuktuk 'hit with a hammer'

Table 5: Ideophones and their PAn cognates.

C**aŋ**CVC roots (North Amis)	PAn *(C)**aŋ**(e)CV(C) (Blust 1988: 60)	**baŋ**CVC roots (North Amis)	PAn *baŋCVC (Blust 1988: 60)
ʔanglis 'smell of fish'	*qaŋeRiS ; *qaŋ(e)seR 'stink as of urine' *qaŋeSit 'stink of a skunk; smell of some plants'	*baŋsit* 'stench of urine'	*baŋ(e)sit 'stench'

Table 6: Smell ideophones in Amis and their PAn cognates.