

Reduplication and Odor in some Formosan Languages

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I. Introduction

1. This paper is a morpho-semantic study on linguistic expressions for odors/smells in some Formosan languages, including Kavalan, Paiwan, Truku Seediq, and Thao, based on the author's first-hand data.
2. According to Blust's (1999) subgrouping, Kavalan and Thao as plains tribe languages belong to East Formosan and West Plain subgroup, respectively; whereas Truku Seediq is a dialect of the Seediq subgroup in the Atayalic languages (Li 1981); and Paiwan forms a subgroup itself.
3. Linguistic expressions for odors: [PREFIX-(REDUPLICATION) X]
X = a noun indicating the odorant source

Language	Kavalan	Paiwan	Truku Seediq	Thao
Prefix	su-	sa-	sə-	tu
REDU-Pattern	depends	full	partial	Ca

(Li and Tsuchida 2006, Lee 2009, Chang 2000, Blust 2003)

II. Olfaction in language

1. Languages generally lack consistent 'basic odor terms', as opposed to 'basic color terms' (Berlin and Kay 1969) which are assumed to exist in languages.
2. Experimental studies in psychology on odor recognition and identification suggest a poverty of linguistic representation for odor perception (e.g. Cain 1979, 1982, Engen 1987, Dubois and Rouby 2002).
3. Despite missing veridical labels, odors are described through the means of hedonistic judgments (pleasant vs. unpleasant), reference (iconic or indexical), and metaphors (Holz 2007): an Indo-European point of view.
4. A neuro-physiological reason for the linguistic poverty of the olfactory lexicon: The parts of the human brain responsible for processing olfactory stimuli are called the limbic system, which is functionally connected with organizing visceral body functions, processing emotional states and dynamics, as well as long term memory (e.g. Zucco 2007). The weak neural connections between the limbic system and the language processing areas (i.e. Broca's area and Wernicke's area) result in a lack of olfactory vocabulary for a language user to properly cope with identification of odorants (e.g. Zucco & Tressoldi 1989, Chernigovskaya & Arshavsky 2007, Holz 2007: 189).
5. There is also a tendency in language to have more words for disagreeable smells than pleasant ones. This asymmetry in olfactory terms is also reflected in the Formosan languages discussed in this paper.

III. Linguistic expressions for odors in four Formosan languages

- Reduplication is chosen as a common linguistic construction for describing odor.
- Languages vary in their lexicon regarding olfaction, yet a similar picture starts to emerge along with presentation of the data.

1. Kavalan

- (1) Phonologically-driven obligatory reduplication (Lee 2009)

- a. su-kum-kumzan quʔus-su.
SU-RED-sweet clothes-2SG.GEN

‘Your clothes smell of sweat.’

- b. mai pa-qaŋi-an-su βanaw rima-su, su-βau-βaut=ti=isu.
NEG CAU-good-NAF-2SG.GEN wash hand-2SG.GEN SU-RED-fish=ASP=2SG.NOM
‘As you didn’t wash your hands properly, you smell of fish.’

- c. su-su-sum na saku tazian.
SU-RED-urine GEN cat here
‘There’s a smell of cat’s urine here.’

(2) General olfactory terms

Kavalan has two general olfactory terms: *βaŋtu* ‘be stinky, stink or unpleasant smell’ and *βaŋsis* ‘be fragrant; fragrance or pleasant smell’. The two general terms *βaŋtu* and *βaŋsis* cannot be applied to the formation of *su*-reduplication, and the forms **su-βaŋ-βaŋtu* and **su-βaŋ-βaŋsis* are unattested. There is no lexicon simply meaning ‘odor’ or ‘inodorous’ in this language.

(3) Specific olfactory terms

- a. su-βaŋ-βaŋti saraŋ zau.
SU-RED-rotten food smell soup this
‘This soup has a rotten smell.’
- b. su-iŋ-iŋtuk ʔmay-su.
SU-RED-burned rice smell rice-2SG.GEN
‘Your rice has a burned smell.’
- c. ʔaŋtəs βaut zau, ŋiʔ=ti qa-βaŋtu.
Fish smell fish this, want=ASP FUT-stink
‘This fish smells quite strong; it’s going to be stinky.’
- d. A: ʔaŋtəs tazian. Su-nia-niana?
Fish smell here SU-RED-what
‘There is a fish smell here. What is it?’
B: Su-wa-wakaŋ.
SU-RED-crab
‘It’s the crabs.’
- e. su-sik-sikət razat a yau.
SU-RED-underarm smell person LIG this
‘This person has an underarm smell.’
- f. m-ruaq=ti mutun ʔnay.
AF-rotten=ASP mouse that
‘That mouse was rotten.’
- g. su-mru-mruaq=ti tawian.
SU-RED-rotten=ASP there
‘There’s a smell of rotten animal over there.’

(4) Human vs. nonhuman distinction

- a. su-tku-tkunu=ti, m-zizi=ti ya simi na sunis a zau.
SU-RED-urine=ASP, AF-wet=ASP NOM nappy GEN child LIG this
‘There is a smell of urine. This child’s nappy is wet.’
- b. su-siŋ-siŋat ya kun-su.
SU-RED-feces on clothes NOM skirt-2SG.GEN
‘Your skirt smells of feces.’

(5) Semantic shift in odor expressions

- a. su-ʔtu-ʔtut ni-umas-su tu siraw.
SU-RED-fart PERF-to salt-2SG.GEN OBL salted meat
‘Your salted meat smells bad.’
- b. su-tuq-tuqus siqaŋ a zau.

SU-RED-corner duvet LIG this.
'This duvet smells damp.'

- c. su-ra-razat aysu.
SU-RED-person 2SG.NOM
'You smell a lot (as haven't bathed for a long time).'

2. Paiwan¹

(1) Optional full reduplication

- a. sa-si?u-sun ri.
SA-smell-2SG.NOM PTL
'You smell. (with a soft tone)'
b. si?u 'smelly' > sa-si?u-si?u 'very smelly'
c. sa?um 'fragrant' > sa-[u]-?um 'very fragrant'

(2) General olfactory terms

Paiwan seems to have no lexicon meaning 'odor' or 'inodorous'. There are three general olfactory terms: *səqu* (L) 'stink, unpleasant smell, body odor', *sa-?u?um/sa-?um* 'pleasant smell, especially from plants or foods²', and *ηu?əηu?ə* (L) 'fragrance'³, which is the opposite of *səqu*.

(3) Specific olfactory terms

Specific olfactory terms include *qavə[ə]* (L) for the odor of rotten foods and animals (i.e. odor of putrefaction), *qaη[its]* (L) for the odor of burned foods, *pasak* (L)/*pasa* (K) for the underarm smell, *Λaηsənsə* (K) for the smell of urine, and *aηsənsə* (K) / *aηsə* (PL) for the smell of feces⁴

- a. qavə[ə] 'rotten foods or animals' > sa-qavə[ə]-və[ə] 'smell of rotten foods or animals. (L)
cf. qavə[ə]-və[ə] a ku?avau.
rotten LIG rat
'This rat is rotten.'

- b. s<m>əqu-akən ta sa-qaη~[iη~lits^h. (L)
<AF>smell-1SG.NOM OBL SA-RED~ burned smell
'I smelled burned foods.'

(4) 'Odor of X' => 'have quality of X, be similar to X'

- a. ts^hawts^haw 'pepole' > sa-ts^hawts^haw 'behave like a human (e.g. as a monkey does)'.
b. vatu 'dog' > sa-vatu-vatu 'smell like a dog; behave like a dog (a verbal abuse)'
c. kina 'mother' > sa-kina-kina 'behave like a mother'

(5) Same construction for 'taste'

- a. kuya 'bad, ugly' > sa-kuya-kuya 'taste very bad'

¹ Collected from four villages: Kavianan, Pa?adalan, Pucunug and La?auran, the Paiwan data in this paper are transcribed phonetically. Geographically from north to south is Pa?adalan, Kavianan, Pucunug, and La?auran. The expressions used in one village may not be used in another, thus the source is indicated after each data with the initials as K, PL, PC, and L for the villages, respectively.

² According to my informant from Pucunug village, this word also means 'smelly but edible animal body which has started rotten' when used in the context of 'hunted game', as shown in the following sentence:

Sa?u?um manua namatsiaq?
rotten or raw
'It's rotten or raw?'

³ Note that the non-reduplicated form **ηu?ə* is unattested.

⁴ In Pucunug village, this term does not denote the smell of feces, however. It means general foul, stinky, or rotten smell. The meaning 'smell of feces' is indicated by *sa-tsaqi-tsaqi* < *tsaqi* 'feces'.

- b. sa-ŋua? aits^hu
SA-good this
'This tastes good.'
- c. matu sa-ŋua-ŋua?
seem SA-RED-good
'This looks delicious.'

3. Truku Seediq

(1) Optional partial reduplication of the first syllable

- a. rabuŋ 'mould' > sə-rə-rabung 'have a smell of mould'
- b. kaciŋ 'cattle' > sə-kə-kaciŋ 'have a smell of cattle'
- c. bəlbul 'banana' > sə-bə-bəlbul 'have a smell of bananas'
- d. layat 'Sambucus formosana Nakai' > sə-lə-layat 'have a smell of Sambucus formosana Nakai'
- e. sə-hə-huliŋ ka sapah nii.
SE-RED-dog NOM house this
'This house smells of dogs.'

(2) 'Neutral odor': *kənux* and general olfactory terms

The word meaning 'odor' or 'smell' in Truku Seediq is the noun *kənux*, while 'to smell (something)' is *k<m>nux* [kəmónux] or *sə-k<m>nux* [səkəmónux]. Although the noun *kənux* can be used neutrally as 'odor', it mostly connotes 'bad smell'. The prefix *sə-* serves as a verbalizer and derives the meaning of 'have a smell of X'. The meaning of 'fragrant, pleasant smell' is lexically composed as *suyang kənux* '(lit.) good smell'. There seems to be no lexicon for the meaning 'fragrant' in this language.

(3) Specific olfactory terms: very limited

(4) Phonological rules

Two phonological rules are observed: first, when the first consonant of the base begins with *s*, reduplication is avoided, as shown below. Secondly, for vowel-initial bases, the glottal stop functions as the default consonant for the onset of the reduplicant.

- a. Sə-sapal ka buwax nii.
SE-cockroach NOM rice this
'This rice has a smell of cockroaches.'
- b. Idaw 'cooked rice' > sə-ʔə-idaw 'smell of cooked rice.'

(5) Same construction for 'taste'

- a. dara 'blood' > sə-də-dara 'taste of blood, as still raw'
- b. sə-bəlus ka bəgu nii.
SE-bland nom soup this
'This soup tastes bland.'

4. Thao

(1) Obligatory Ca-reduplication (Blust 2003)

- a. ɸaɸuy 'pigs' > tu-ɸa-ɸaɸuy a ʃaðik 'smell related to pigs, pigs' feces, pigsties.'
- b. M-ihu a rima tu-ra-rusaw
2S.GEN LIG hand TU-RED-fish
'Your hands have a fish smell.'
- c. aʔa piʃ-tubu tu-ta-tubu
babyCAU-urine TU-RED-urine
'The baby peed and smelled of urine.'

- d. M-ihu a hulus tu-ʃa-ʃibun
2S.GEN LIG clothes TU-RED-sweat
'Your clothes smell of sweat.'
- e. Hiya wa θau ma-θuaw miku i-qiʔa sa qiʔa,
This lig person very want drink SA alcohol
θiθu wa buut tu-qa-qiʔa.
3S LIG body TU-RED-alcohol
'This person likes drinking very much and his body smells of alcohol.'
- (2) Same term for smell and taste
- a. ʃ<m>aðik yaku uka ʃaðik.
<AF>smell 1S.NOM NEG. odor
'I smelled nothing.'
- b. taðam-ik k<m>an uka ʃaðik.
try-1S.PF <AF>eat NEG. taste
'I tried to eat but tasted nothing.'
- (3) General olfactory terms
The neutral olfactory term *ʃaðik* mostly connotes negative odors when affixed. For example, *min-ʃaðik-in* means 'become odorous', and *ʃaðik-in* 'smelly odor, foul smell'.
- a. ʃaðik-in uan nuhu ya ma-kanʃuð.
Smell-PF PM⁵ 2S if fragrant
'(You) smell and see if it is fragrant.'
- b. M-ihu a p-in-in-tata wa paniaʔan ma-θuaw ma-kanʃuð.
2S.GEN LIG boiled food LIG dishes very fragrant
'Your cooking smells very nice.'
- c. Ihu ya pitʔia sa aʔu pia-kanʃuð a ma-qitan kan-in.
2S.NOM YA cook SA rice CAU-tasty LIG good food
'You cook rice and make it delicious; that's a good food.'
- (4) Specific olfactory terms
- a. m-ihu a ka-kurkur tu-ðə-ðanʃiʃ.
2S.GEN LIG armpit TU-RED-body odor
'Your armpit has a smell.'
- b. ita ʃa-na-nay minu a tu-ʃa-ʃaʃu
1P.INC. NOM get.here what LIG TU-RED-unknown foul smell
'We just got here, but what's the smell?'
- c. buna ma- ʔanʔuʃ-iðə, ma-qarman kan-in.
yam rotten-already bad food
'The yam is already rotten; it's bad food.'
- d. Ihu p-in-tata sa paniaʔan ʃkaθiwan, tu-qa-qantir.
2S cook SA dishes burned TU-Red-burned smell
'The food you cooked is burned. There's a burned smell.'
- (5) Usage of *tu-Ca-X a ʃaðik* and *X a ʃaðik*
- a. bukay itia ʃaðik, ma-θuaw ma-kanʃuð. (cf. Blust 2003: 904)
flower have smell, very fragrant
'Flowers have a smell, very fragrant.'
- b. Intua tu-ba-bukay a ʃaðik?
Where TU-Ca-flower LIG smell
'Where's the smell of flowers (from)?'

⁵ Politeness marker, following Blust (2003).

IV. Similarities and discrepancies on odor categories

1. General olfactory terms

The lexicon denoting ‘general foul smell’ is the basic olfactory term in these languages, implying that whenever we feel consciously having to smell something, the trigger tends to be a foul odor. This is also reflected by the specific olfactory terms in these languages which will be discussed below. Moreover, not every language has a lexicon for ‘pleasant odor’. In these languages with such a lexicon, it has no morphological connection with the verb ‘to smell’.

	KAVALAN	PAIWAN	TRUKU SEEDIQ	THAO
neutral olfactory term ‘to smell’	X siŋtu	X s-m-i-qu	kənux k<m>ənux	ʃaðik ʃ<m>aðik
‘foul smell (gen)’	βaŋtu	si-qu	sə-kənux	ʃaðk-in
‘pleasant smell (gen)’	βaŋsis	sa-lum	X	ma-kanʃuð

2. Specific olfactory terms

In respond to what Dubois and Rouby (2002: 49) state that ‘in contrast to the situation with colors, odors have no specific names, at least not in English or in French’, in Kavalan, Paiwan, and Thao several names for specific odors are found, which are categorized as a kind of foul odors.

a. Kavalan

Type of odor	olfactory term
smell related to fish, or marine creatures	ʃaŋtəs
smell of rotten cooked food, dishes, soup, etc.	βaŋti
an underarm smell	siβət
smell of burned rice	iŋtuβ

b. Paiwan (Kavianan)

Type of odor	olfactory term
smell of rotten foods and animals, of putrefaction	qavə[əŋ
smell of burned foods	qan[its
an underarm smell, or animal body odor, e.g. goat	pasak
smell of urine	ʎaŋsənsət
smell of feces	aŋsənsə]

c. Truku Seediq

Type of odor	olfactory term
an underarm smell	qlawaŋ
smell of urine	bəgus

d. Thao

Type of odor	olfactory term
body odor, especially referring to the underarm	-ðanʃiʃ
unknown unpleasant smell, as from factories	-ʃaʃu
smell of something rotten, e.g. yam, fart	-φanʔuʃ
smell of burned food, e.g. rice	-qantir

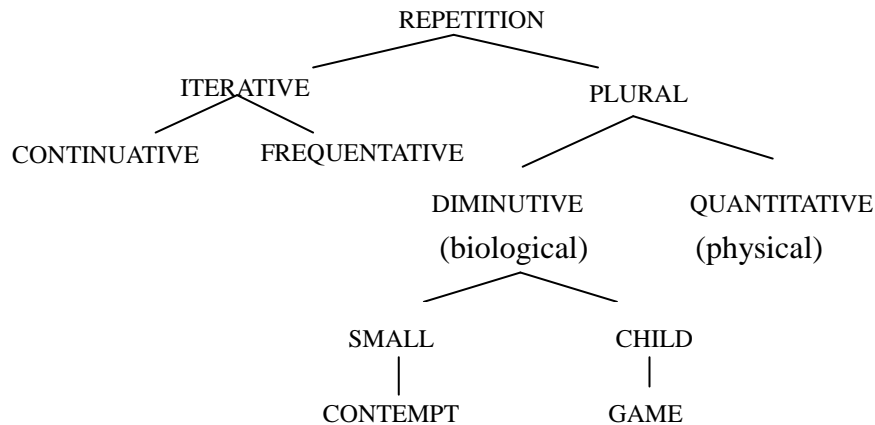
The four tables above also show that the number of olfactory terms which provide veridical labels for odors is a language-specific property. Howes (2002: 75) points out that ‘there is no one-to-one correspondence between the complexity of a given culture’s technology and the number of terms in its taste or smell vocabulary’. This view contradicts Berlin and Kay’s (1969: 101) evolutionary claim on color terms, who consider that ‘color lexicons with few terms tend to occur in association with relatively simple cultures and simple technologies.’

V. Semantic association of reduplication for odor expressions

1. Proposal

The reason why reduplication is employed as the means for expressing odors is due to its semantic association with both PLURAL and ITERATIVE. Having a smell is a continuing process, and it is mentally perceptible that there should be enough entities in order to produce the persistent smell.

2. The semantic network for the meanings of reduplication (Lee 2007: 231)



(1) Linguistic expressions for odors in these languages can be extended to indicate the meaning of LIKENESS. LIKENESS is subsumed under the notion of FACSIMILE and GAME. In the semantic network shown above, GAME is a notion semantically and pragmatically developed from CHILD. The notion of CHILD is a sense proposed in Jurafsky's (1996) Structured Polysemy model for the semantics of the diminutive. Jurafsky (1996) considers the core concept of the diminutive as CHILD, which motivates SMALL. The notion of SMALL pragmatically generates CONTEMPT.

(2) This semantic extension is commonly found when the attached noun is [+human] or [+animate, -human]. The latter is often used as a verbal abuse, especially when the nouns refer to domestic animals such as pigs and dogs.

(3) Truku Seediq

sə-rə-rudan=su bi.
SE-RED-old people=2SG.NOM very
'You act very mature (i.e. like a senior).'

(4) Paiwan (Lee 2007:252)

- a. vavajan 'female' >sa-vavaja-vajan 'act like a woman, sissy'
- b. uqaʔaj 'male' >sa-uqaʔa-qaʔaj 'behave like a man, very handsome'

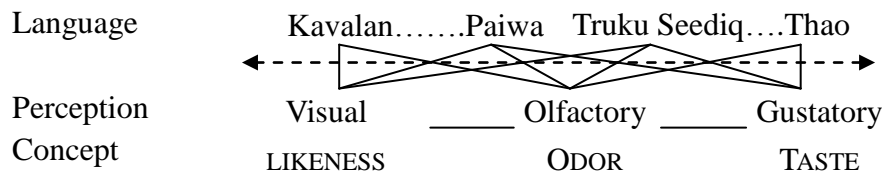
3. Linguistic synesthesia

(1) The polysemous status of the prefix denoting 'to have an odor of X' and 'to behave like an X' can be viewed as a phenomenon of linguistic synesthesia, which, as defined by Holz (2007: 193), is 'the co-occurrence of interdependent lexemes originally stemming from different sensory modalities', illustrated as describing one sense modality by using words that usually describe another. Some examples in English include *warm color* (tactile + visual) or *sweet smell* (gustatory+ olfactory).

(2) Linguistic synesthesia on different linguistic levels (Holz 2007: 195)

Linguistic level	Syntactic construction
Lexical	Immediate synaesthetic expressions
Morpho-syntactical	Patterns of lexical recurrence
Textual	Semantic clustering

(3) Synaesthetic perceptions in the four languages



Acknowledgements

1. This paper is part of the research project (97-2410-H-259-075) funded by National Science Council, Taiwan.
2. The data presented in this paper are collected from September 2008 to June 2009. I am grateful for the help from the following informants:
 - (1) Kavalan:
 - Aßas Utay (born in 1933, Female, Patkuñan village—Hsin-she, Fengpin, Hualien)
 - Buya Batu (born in 1957, Male, Patkuñan village—Hsin-she, Fengpin, Hualien)
 - (2) Paiwan:
 - Vedalan (born in 1960, Female, Pañadalan village—Da-she, Santimen, Kaohsiung)
 - Aljiñ (born in 1947, Female, Kavianan village—Chia-ping, Taiwu, Pingtung)
 - Mulitan (born in 1984, Female, Pucunug village—Wen-leh, Laiyi, Pingtung)
 - Sakinu Tepiq (born in 1967, Male, Lañauran village—Hsin-siang-lan, Taimali, Taitung)
 - (3) Truku Seediq:
 - Tusi Yudaw (born in 1955, Male, Tkijig village—Chung-teh, Hsiulin, Hualien)
 - Jiro Ubus (born in 1955, Male, Malipasi village—Wan-jung, Wan-jung, Hualien)
 - (4) Thao
 - Kilaß (born in 1923, Male, Ita-thao village—Ji-yueh-tsun, Yutse, Nantou)

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