Reciprocals in Kavalan and a Typological Comparison*

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In this paper we investigate the forms and functions of reciprocals in Kavalan, and along the lines of Lichtenberk (1985, 2000) and Bril (2005), we show that the affix sim-, as a primary device to construct reciprocals, is polyfunctional and polysemous as in Oceanic languages. Among the core meanings are reciprocal, chaining, collective, and distributive. These uses all share a common similarity: the same morphology is used to mark semantic features that denote a plurality relation among the context participants. This property is reflected on the syntax. That is, the sim-marked constructions all require a plural NP as their subject. Another syntactic property of the reciprocals is related to the transitivity of reciprocal construction. While several previous studies concerning reciprocals conclude that the derived reciprocal constructions are syntactically intransitive, a careful examination of Kavalan reciprocals reveals that sim- does not necessarily derive an intransitive construction. The affix sim- simply reduces the number of arguments; that is, it changes the valence of the predicates that it is attached to. Based on our comprehensive study of Kavalan reciprocals, we then assess relevant data and functions across (some) Formosan languages within a typological perspective. The issues of the connections between reciprocals and middles/reflexives, reciprocals and reduplication, and reciprocals and transitivity are addressed.

Key words: reciprocal, collective, chaining, distributive, reduced transitivity, Formosan, Kavalan, reduplication, reflexive, middle

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1. Introduction

The study of reciprocalization has maintained a central position in both generative and traditional grammar since its inception. Cross-linguistically there are two basic strategies for the expression of reciprocity. Some languages use an anaphoric noun or a pronoun while others use a verbal affix or a verbal predicate, as illustrated in (1-2).¹ ²

(1) Languages Which Use Nominal Expressions³
a. English
John and Tom hate each other.
b. Icelandic
Mennirnir telja aí strákarnir hati hvorn annan
the man believes that the boys hate each other
‘The man believes that the boys hate each other.’
c. Russian
Oni chasto vid’at drug druga
They often see.3PL one another
‘They often see each other.’

(2) Languages Which Use Verbal Expressions
a. Chicheŵa (Mchombo 1993:191)
Mbidzi ndi nkhandwe zi-ku-mény-an-a
10-zebras and 10-foxes 10SM-pres-hit-recip-FV
‘The zebras and the foxes are hitting each other.’
b. Halkomelem (Gerðts 2000:140)
?iʔ ha:qʷ- tôl’(-as) to sqʷəmqʷaméy
AUX smell:CONT-TR:REC(-3ERG) DET dogs
‘The dogs are smelling one another.’

¹ We define “verbal” here as markers whose morphology is associated with verbal predicates which could be an affix, a clitic, or a particle.
² Among verbal and nominal strategies, König & Kokutani (2006) draw a further distinction between a synthetic (verbal affix) strategy (Swahili) and a compound one (Mandarin), and a pronominal strategy (German) and a quantificational one (English). The discussion of reciprocals in this paper will not make such a four-way distinction.
³ The glosses of the data taken from other authors will stay as they are in the original sources. The following abbreviated glosses are used for Formosan data: Acc: accusative case; AF: agent focus; BF: benefactive focus; Cau: causative; EPl: exclusive plural; Fut: future; Gen: genitive case; IF: instrument focus; Incl: inclusive; Lnk: linker; Loc: locative case; M: Male; NAF: non-agent focus; Ncm: non-common noun marker; Neg: negation; Nom: nominative case; PF: patient focus; PfV: perfective; Pl: plural; Rec: reciprocal; Red: reduplication; Sg: singular.
c. Nêlêmwa (Bril 2005:49)
   ma pe-aramaa-i
   1DU.INCL pe-face-R
   ‘We are facing each other.’ (Lit. ‘We are mutually face to face.’)

The English *each other* in (1a) is, for instance, of the nominal type while the Chichewa -an- ‘each other’ in (2a) is of the verbal one. These two mechanisms for the expression of reciprocity are not mutually exclusive, however. It is quite common that natural languages might have both as is discussed in Haiman (1983), Geniušienė (1987), Kemmer (1993), Frajzyngier & Curl (2000), Nedjalkov & Guentchéva (forthcoming), and many others. For Formosan languages, this generalization holds true for reciprocals as evidenced by Kavalan in (3).

(3) a. nan-tina ci abas atu ci imuy
   Rec-mother Ncm Abas and Ncm Imuy
   ‘Abas and Imuy are mother and daughter.’

b. sim-pukun (ya) ci buya atu ci utay
   Rec-hit (Nom) Ncm Buya and Ncm Utay
   ‘Buya and Utay hit each other.’

The purpose of this paper is two-fold: (i) first and foremost, to produce a comprehensive study of Kavalan reciprocals centering around the issues of their polyfunctionality, plurality requirement, and transitivity; and then (ii) to draw on comparative data from some Formosan languages to examine the semantic diversification of these reciprocal markers within a broader typological perspective. The paper is organized as follows. Section 2 presents an introduction of the forms of Kavalan reciprocals. Section 3 investigates semantic diversification expressed by the reciprocal marker sim-. Section 4 shows the syntactic restriction of the sim-marked constructions. The transitivity of reciprocal construction is examined in §5. Based on the analysis of Kavalan in the previous sections, §6 presents a comparative study of Formosan languages from a typological perspective. Finally, §7 concludes our findings.

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4 The *nan*- type in Kavalan, however, is quite different from the nominal strategies (e.g. *each other* in English) as discussed in König & Kokutani (2006). *nan-* is prefixed exclusively to a nominal base expressing a so-called “converse” (Lichtenberk 2000:44) or “dyadic” relationship (Bril 2005:48). The nouns involved include kinship terms and terms such as ‘friend’ or ‘partner’. See §2 for discussion of *nan*.
2. Reciprocals in Kavalan

The most important grammatical devices for the expression of reciprocity in Kavalan are two prefixes: the verbal reciprocal affix sim- and the nominal reciprocal affix nan-. Among these two, sim- is used productively and can be affixed to any verbal predicate as long as the resulting form is semantically allowed. For example,

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5 Li (1996:70) is the earliest work that mentions the use of sim- as a reciprocal prefix in Kavalan. Here are the examples he provides:
   (i) sim-pukun ‘fight each other’
   (ii) sim-tayta ‘look at each other’
   (iii) sim-qira ‘scold each other’
   (iv) sim-qaRat ‘bite each other’
   (v) sim-supaR ‘know each other’

6 In this paper we shall leave aside the discussion of two other types of verbal reciprocals in Kavalan. For a limited set of predicates we find that in addition to sim- they can also be marked by the prefix ma-, which could function as a reciprocal, an inchoative or a middle voice and is analyzed as a “middle” marker in Huang & Sung (2006) along the lines of Kemmer (2003). As a reciprocal, examples of predicates prefixed with ma- include kawit ‘hold hands’, paRu ‘hug’, qatabung ‘meet’, and seles ‘change’ as shown in (i) and (ii). What they have in common is that reciprocity is more or less implied in the lexical semantics of these verbs.

   (i) a. ma-kawit ci abas atu ci buya  
      Rec-hold.hands Ncm Abas and Ncm Buya  
      ‘Abas and Buya held hands.’
   b. sim-kawit ci abas atu ci buya  
      Rec-hold.hands Ncm Abas and Ncm Buya  
      ‘Abas and Buya held hands.’

   (ii) a. ma-paRu qaniyau  
      Rec-hug 3Pl.Nom  
      ‘They hugged.’
   b. sim-paRu qaniyau  
      Rec-hug 3Pl.Nom  
      ‘They hugged.’

By contrasting examples (a) and (b) we can see that the marker ma- can interchange with sim- without altering the meaning of the clauses.

The other type of verbal reciprocal marker that would not be addressed here is the so-called “inherently” reciprocal predicates such as tatuqez ‘argue’ and mapud ‘fight’, which do not require additional reciprocal marking. They are exemplified below:

(iii) m-tatuqez qaniyau kinawsa  
      AF-argue 3Pl.Nom two.human  
      ‘They two argued.’

(iv) mapud kintulu sunis ‘nay  
      AF.fight three.human child that
Reciprocals in Kavalan and a Typological Comparison

(4) a. p<um>ukun (ya) ci buya ci abas-an  
<AF>hit (Nom) Ncm Buya Ncm Abas-Loc  
‘Buya hit Abas.’

b. sim-pukun (ya) ci buya atu ci utay  
Rec-hit (Nom) Ncm Buya and Ncm Utay  
‘Buya and Utay hit each other.’

(5) a. q<um>nut (ya) ci buya ci abas-an  
<AF>angry (Nom) Ncm Buya Ncm Abas-Loc  
‘Buya is mad at Abas.’

b. sim-qnut (ya) ci buya atu ci abas  
Rec-angry (Nom) Ncm Buya and Ncm Abas  
‘Buya and Abas are mad at each other.’

As exemplified by (b) in (4) and (5), in opposition to constructions that do not have a reciprocal marker in (a), verbs with reciprocal marking have sim- occurring as prefix. The attachment of sim- induces a morphological change. The agent focus (AF) markers, such as <um> in (4a) and (5a), do not co-occur with sim- as shown in (4b) and (5b). The resulting reciprocal verb forms, however, behave as AF verbs, which take nominative case marked subjects.\( ^7 \) In addition, the prefixation of sim- alters the argument structure of a verb by decreasing the number of its arguments. Let us consider again (4) and (5). The verbs in (a), as without reciprocal marking, take two arguments, a subject and an object. By contrast, their reciprocal counterparts in (b) take only one argument, which is noticeably a plural one. This shows that the occurrence of the reciprocal marker results in reducing the transitivity of a clause. We shall discuss this issue in detail in §5.

Occasionally (and quite limitedly), another affix qa- as in (6) and (7) is found to co-occur with the reciprocal marker sim-.

(6) sim-qa-ipes qaniyau  
Rec-QA-dislike 3Pl.Nom  
‘They dislike each other.’

‘The three children fought.’

When sim- is prefixed to the examples in (iii) and (iv), sim-tatuqez ‘argue with each other’ and sim-papud ‘fight with each other’ are considered redundant and judged as undesirable according to our informants since these two verbs are already inherently reciprocal. For a discussion of these two other types of verbal reciprocal prefixes, see Shen (2005).

\( ^7 \) sim- can also occur in non-agent focus (NAF) clauses. This will be pursued in §5.
(7) sim-(qa)-sizengus ci abas atu ci buya
    Rec-(QA)-miss Ncm Abas and Ncm Buya
    ‘Abas and Buya miss each other.’

This qa- in Kavalan may correlate with Huang’s (2000) and Zeitoun & Huang’s (2000) observation that the ka- morpheme (or its phonological variations) across several Formosan languages, including Mantauran Rukai, Mayrinax Atayal, Pazeh, Southern Paiwan, etc, is used to mark the stativity of verbs. In these languages, the ka- form usually appears in causative, imperative, or irrealis constructions. In Kavalan, qa- occurs optionally in the reciprocal construction of some stative verbs. In the reciprocal form of non-stative verbs, such as sim-pukun ‘hit each other’, the occurrence of qa- is not allowed, i.e. *sim-qa-pukun.

In addition to the verbal reciprocal sim-, in Kavalan there is another kind of reciprocity relation realized morphologically on nouns and is exclusive to personal reciprocity such as kinship relation. It is expressed by the prefix nan-, which attaches to nouns like tina ‘mother’, kaput ‘friend’ or epaw ‘house’, as shown in the following examples.

(8) nan-tina ci abas atu ci imuy
    Rec-mother Ncm Abas and Ncm Imuy
    ‘Abas and Imuy are mother and daughter.’

(9) nan-kaput qaniyau
    Rec-friend 3Pl.Nom
    ‘They are friends.’

(10) nan-epaw9 ci buya atu ci ukis
    Rec-house Ncm Buya and Ncm Ukis
    ‘Buya and Ukis are husband and wife.’

Unlike the verbal marker sim-, nan- is relatively less productive and considerably restricted in its distribution. While sim- can be prefixed to almost every verbal predicate,  

8 The same form qa- in Kavalan is more often used as an immediate future marker (Chang 1997, 2000; Lee 1997) or as an epistemic modal (together with the other future marker =pa) expressing a certain degree of certainty. Examples are as follows:
   (i) …qa-wiya=ti=imi zin-na.
       Fut-leave=Pfv=1EPl.Nom say-3Sg.Gen
       ‘He says, “We are leaving already!”’ (NTU Corpus, Kavalan: frog_buya:99)
   (ii) qa-uzan=pa=ti tangi
        QA-rain=Fut=Pfv today
        ‘It will (certainly) rain today.’

9 Without the reciprocal marker nan-, ‘house’ is pronounced as lepaw.
as long as the predicate is interpreted as reasonably reciprocal, only a few nouns can be the host for nan-, and all of them express kinship or personal relationship. In addition, prefixed by nan-, the noun appears only in nominal predicate position, but not in an argument one.

3. Polyfunctions of sim-

Cross-linguistically it is not unusual for a reciprocal marker to serve more than one function. Lichtenberk (1985, 2000) and Bril (2005) examine reciprocals in a number of Oceanic languages and show that the same morphology is found to encode different situations, which include reciprocals, reflexives, chained actions, collectives, distributives, repetitives, depatientives, and others. Different researchers may have different explanations or analyses regarding such polysemies. Lichtenberk (2000), for instance, building on work by Kemmer (1993), suggests that the crucial factor is the notion of plurality of relationship to subsume reciprocal, collective, and chained actions, and “low degree of elaboration of situation” as a second factor to account for other attested functions including depatientive, kinship terms, and middle uses. In his study of Madurese reciprocals, Davies (2000) argues that “multiple events” are the crucial factor in analyzing the reciprocal saleng. For instance, in (11), there are two subevents: {Ali threw the stones at Hasan.} and {Hasan threw the stones at Ali.}. In (12) Bambang and Ita are eating at about the same time and most likely in the same location, but are not necessarily eating together. In other words, there exist two sub-events, {Bambang ate.} and {Ita ate.}.

(11) Madurese (Davies 2000:124)
Ali biq Hasan saleng tambuk bato
A and H  throw stone
‘Ali and Hasan threw the stones at each other.’

(12) Madurese (Davies 2000:131)
Bambang biq Ita saleng ngakan
B and I A V .eat
‘Bambang and Ita both ate.’

In the following, we shall focus on analyzing the functions and meanings of the verbal prefix sim- in Kavalan. Building on works by Lichtenberk (1985, 2000) and Bril (2005), we show that sim- in Kavalan patterns with Oceanic languages in that it is polyfunctional: the verbal prefix sim- expresses four related meanings, which include reciprocal, chaining, collective, and distributive. Syntactically and semantically, the similarity among them is that these meanings all require a plural subject.
3.1 As a reciprocal

The primary function of the marker \textit{sim}- in Kavalan is to mark a reciprocal interpretation. In a typical case of transitive predicates involving a plural subject of two, the core meaning of reciprocal is that one of the participants (agents) is doing the same action to the other member of the set at approximately the same time and in the same place. Such a situation can be depicted by the relation between argument \textit{A} and \textit{B} in Figure (1a), in which the arrows indicate the direction of actions. In cases where there are more than two participants, the reciprocal relation among the participants may have variations, as shown in Figure (1b)-(1e).

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure1.png}
\caption{Possible reciprocal relations}
\end{figure}

In Kavalan, the various possible reciprocal relations shown above are all encoded by \textit{sim}-. Consider example (13). The two participants \textit{Buya} and \textit{Abas} share a relation similar to the one depicted by Figure (1a). In this situation, \textit{Buya} is mad at \textit{Abas} and \textit{Abas} is mad at \textit{Buya}. Both participants will therefore have two semantic roles at the same time. That is, each of them is an experiencer and also a theme.

\begin{verbatim}
(13) sim-qnut ci buya ci abas
    Rec-angry Ncm Buya Ncm Abas
    ‘Buya and Abas are mad at each other.’
\end{verbatim}

In example (14) that involves more than two participants, there may be different interpretations of the relation, which may be that of Figure (1c), (1d) or (1e).

\begin{verbatim}
(14) sim-pukun kinsepat sunis ’nay
    Rec-hit four.human child that
    ‘The four children hit each other.’
\end{verbatim}
3.2 As a chaining

In some specific reciprocal constructions, the relation of the participants is in the form of a chain (c.f. Lichtenberk 1985, 2000). A chain could be open or closed. In an open chain, every participant is involved in two relations except for those at the ends. Assuming the condition in Figure 2, then the open chain shows that participant A and E are involved in only one relation, whereas all the other participants B, C, and D, are involved in two relations, one toward them, and the other toward the others.

\[ A \rightarrow B \rightarrow C \rightarrow D \rightarrow E \]

*The children followed one another.*

**Figure 2: Open chaining relation**

In a closed chain relation like the one in Figure 3, there is no end participant. All participants are involved in two relations, one toward them, and the other toward the others, just like the middle participants (B, C, D) in an open chain in Figure 2.

\[ A \leftrightarrow B \leftrightarrow C \leftrightarrow D \leftrightarrow E \]

*The children chased each other.*

**Figure 3: Closed chaining relation**

In Kavalan the reciprocal marker *sim-* also indicates actions done in a chain. For instance, in (15) the children may be in a multiple reciprocal relation in which the participants form pairs and each pair performs a reciprocal activity, as illustrated in Figure (1c). The children may otherwise perform the activity via an open chain, as depicted in Figure 2; or they may form a closed chain, in which one participant chased another participant while at the same time being chased by a third participant, as illustrated in Figure 3.

\[(15) \quad \text{sim-ta-tanuz sunis 'nay}^{10} \]

Rec-Red-chase child that
‘Those children kept chasing each other.’

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10 The reduplication of the verb here implies that this event happens more than once or that this is a habitual event. Reduplication alone does not express reciprocity in Kavalan. See §6.3 for discussion of this issue.
3.3 As a collective

Another situation in which the participants present themselves in a different relationship is the so-called collective. In a collective situation, the participants perform an act jointly and are thus identified as a whole, instead of as individuals. In English, for instance, a collective reading can be expressed by adding the adverb *together*.

(16) The boys left *together*.

In (16), the clause expresses a situation in which the boys left as a group at the same time, instead of one by one. In Oceanic languages, the same reciprocal morpheme can additionally mark a collective meaning, without any lexical item such as *together*. For example:

(17) Hoava (Davis 1997:283; cited in Lichtenberk 2000:36)

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Vari-paqahi-ni-a gami sa gugusu
PR-leave-AP-3SG PRO:1PL (EXCL) ART:SG village
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‘We left the village together.’

The affix *sim-* by itself in Kavalan also expresses collectivity. Consider the examples in (18)-(20). The subjects in the examples are perceived as a group performing an activity jointly or simultaneously. In (18), the likely scenario is that our dog got lost and we looked for it together. In (19), the agents *Abas* and *Buya* ganged up on and hit *Utay*. Example (20) expresses a situation in which the subjects, who are very likely to be a couple, went to some place and visited their offspring together.

(18) *sim-kilim aimi tu wasu*

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Rec-look.for 1EPI.Nom Acc dog
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‘We looked for the dog(s) (together).’

11 In Kavalan, there are other lexical items expressing the collective meaning ‘together’, *masulun/matapun*. The former is used for a more active action, the latter for a more stative action. For instance,

(i) *masulun sunis a yau k<m>ilim tu wasu-na*

together child Lnk that <AF>look.for Acc dog-3SG.Gen

‘Those children look for their dog together.’

(ii) *matapun qaniyau sa’may*

together 3Pl.Nom cook.rice

‘They cook together.’

12 Examples (18) to (20) also express distributivity. We shall discuss this in the next section.
Reciprocals in Kavalan and a Typological Comparison

(19) sim-pukun ci abas atu ci buya ci utay-an  
Rec-hit Ncm Abas and Ncm Buya Ncm Utay-Loc  
‘Abas and Buya (together) hit Utay.’

(20) sim-tayta aimi tu sunis-niq  
Rec-see 1EPl.Nom Acc child-1EPl.Gen  
‘We (together) met up with our child/children.’

The use of reciprocal markers to indicate a collective meaning is well-attested in many other languages of the world (Kemmer 1997, Gerdts 2000, Frajzyngier & Curl 2000, Nedjalkov & Guentchéva (forthcoming)). As discussed in §3.1, the participants in a typical reciprocal situation are perceived to perform a transitive action (towards each other) at approximately the same time and in the same place. Thus, the extended meaning of “collectivity” arises naturally with the reciprocal construction. When the reciprocal marker is used with an intransitive predicate as in (21), the resulting meaning is not reciprocity but rather collectivity.

(21) sim-uRing qaniyau  
Rec-cry 3Pl.Nom  
‘They cried (simultaneously).’ (Not: ‘They cried for each other.’)

In (21), the plural subject might be sharing a sad experience and therefore crying together. In this example sim- is marked on the intransitive verb, uRing ‘cry’, signaling a collective interpretation rather than a reciprocal one.

3.4 As a distributive

In some languages, reciprocal markers also express distributivity, in which the participants each perform the same action, but do it at a different time and/or place. As in collectives, participants in distributive situations perform the same act. But unlike for collectives, participants in distributive cases are perceived as individuals performing the act individually and possibly at a different time. Consider example (22) from Fijian. The circumfix vei- … -yaki indicates such a distributive situation.

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13 As Kemmer (1997) remarks, a grammaticization path of evolution from reciprocal to collective is a natural process found in many languages.
(22) Fijian (Milner 1972:113; cited in Lichtenberk 2000:39)

\[
\text{era sā mani vei-suka-}yaki\text{ ki na nodra koro}
\]

3PL ASP then PR-return/disperse-PR to ART their village

‘(When the ceremonial exchange was over) they then dispersed (and returned) to their villages.’

In Kavalan, the reciprocal prefix can also mark such a meaning of distributivity.\(^{14}\)

Consider examples (18)-(20), again from §3.3, here renumbered as (23)-(25):

(23) sim-kilim aymi tu wasu
Rec-look.for 1EPl.Nom Acc dog

‘We looked for the dog(s) (together).’ (collective)

‘We each looked for our own dog(s).’ (distributive)

(24) sim-pukun ci abas atu ci buya ci utay-an
Rec-hit Ncm Abas and Ncm Buya Ncm Utay-Loc

‘Abas and Buya (together) hit Utay.’ (collective)

‘Abas hit Utay and Buya also hit Utay.’ (distributive)

(25) sim-tayta aimi tu sunis-niq
Rec-see 1EPl.Nom Acc child-IEPl.Gen

‘We (together) met up with our child/children.’ (collective)

‘We (each) met up with our own child/children.’ (distributive)

In addition to a collective interpretation, as discussed in the previous section, example (23) may also describe a distributive situation in which each of us owns a dog, and when our dogs were lost, each of us respectively looked for our own. Similar to (23), both (24) and (25) have additional distributive meanings: (24) can also be used in a case where Abas hit Utay and Buya also hit Utay, but they did it at different times; and (25) can also be interpreted as two mothers meeting their own children separately.

More examples illustrate a similar use as shown in (26) and (27). Example (26) is interpreted as ‘Abas and Buya both stepped on Utay’s foot, but they did it at a different time’. And (27) means the members of the plural subject \textit{qaniyau} each gave \textit{Buya} liquor.

\(^{14}\) There is another lexical item \textit{tatutunguz} which can express distributivity. For example,

(i) tatutunguz ci utay atu ci abas m-tanan
each/separately Ncm Utay and Ncm Abas AF-return.home

‘Utay and Abas returned home separately.’

(ii) tatutunguz wasu ‘nay Raytunguz
each dog that AF.bark

‘Each of those dogs is barking.’
Both have a distributive reading.

(26) sim-tebeR ci abas atu ci buya tu zapan ni utay  
Rec-step Ncm Abas and Ncm Buya Obl foot Gen Utay  
‘Abas and Buya both stepped on Utay’s foot.’

(27) sim-bula-an na qaniyau tu Raq ci buya  
Rec-give-NAF Gen 3Pl Obl liquor Ncm Buya  
‘They all gave Buya liquor.’

To conclude this section, we have discussed so far various semantic interpretations of the verbal reciprocal sim-. We argue that besides being used in typical reciprocal constructions, sim- is also used to denote chaining, collective, and distributive. In the following section we shall turn to the issue of the licensing of the sim- marker.

4. The licensing of the sim-marked constructions

The verbal marker sim- is found to serve as a multi-functional morpheme in marking reciprocal, chaining, collective, and distributive meanings. The shared property that these interpretations all have is the plurality of the participants. This property is manifested by the plural-subject requirement of reciprocal constructions, which we argue to be a necessary licensing of these resulting constructions. Contrasting (a) and (b) in (28)-(30), sim-marked predicates only permit a reciprocal interpretation with plural subjects, yielding the ungrammaticality of (28a), (29a), and (30a).

(28)  
a. *sim-liatip (ya) ci abas  
Rec-take.care (Nom) Ncm Abas  
‘Abas takes care of each other.’
b. sim-liatip (ya) ci abas atu sunis-na  
Rec-take.care (Nom) Ncm Abas and child-3Sg.Gen  
‘Abas and her child take care of each other.’

(29)  
a. *sim-pukun (ya) ci buya  
Rec-hit (Nom) Ncm Buya  
‘Buya hit each other.’
b. sim-pukun (ya) ci buya atu ci utay  
Rec-hit (Nom) Ncm Buya and Ncm Utay  
‘Buya and Utay hit each other.’
(30) a. *sim-ta-tanuz (ya) ci utay
   Rec-Red-chase (Nom) Ncm Utay
   ‘Utay kept chasing each other.’
   b. sim-ta-tanuz (ya) sunis ’nay
      Rec-Red-chase (Nom) child that
      ‘Those children kept chasing each other.’

The plural-subject requirement also applies to inherent reciprocal predicates, as shown in (31) and (32). This indicates that the requirement is related to the semantic content of reciprocal verbs. Although these inherent reciprocal predicates do not need to be marked by sim- to express reciprocity, the reciprocal nature of these predicates also requires grammatically plural subjects.

(31) a. *m-tatuqez (ya) ci buya
      AF-argue (Nom) Ncm Buya
      ‘Buya argued.’
   b. m-tatuqez qaniyau kinawsa
      AF-argue 3Pl.Nom two.human
      ‘They two argued.’

(32) a. *mapud (ya) ci buya
      AF.fight (Nom) Ncm Buya
      ‘Buya fought.’
   b. mapud kintulu sunis ’nay
      AF.fight three.human child that
      ‘The three children fought.’

As we consider other situations marked by sim- (i.e. chaining, collective, and distributive), we find that they are all bound by the same requirement. Ungrammaticality of the sim-marked constructions without plural subjects argues for the licensing of semantic plurality in these situations. Consider (33)-(35).

(33) Chaining
    *sim-ta-tanuz ya ci abas
    Rec-Red-chase Nom Ncm Abas
    ‘Abas chased.’

(34) Collective
    *sim-pukun ya ci buya ci utay-an
    Rec-hit Nom Ncm Buya Ncm Utay-Loc
    ‘Buya hit Utay together.’
5. Transitivity in Reciprocal Constructions

In this section, we shall address the issue of transitivity in Kavalan reciprocals. While studies of reciprocal affixes in other languages often lead to the conclusion that the reciprocal affix is an intransitivizer, our findings show that this is not the case in Kavalan. We start this section by reviewing three studies on reciprocal affixes in other languages, and shall then argue that the reciprocal affix in Kavalan is not an intransitivizer but rather a valence-reduction device.\(^{15}\)

5.1 Transitivity of reciprocal constructions in other languages

Studies concerning reciprocals that are realized by affixes instead of nominal anaphors often lead to the conclusion that these reciprocal constructions are syntactically intransitive. For example, Gerds (2000) argues that in Halkomelem\(^{16}\) clauses involving the reciprocal suffix -tal, as in (36), are prototypically intransitive.

(36) Halkomelem (Gerds 2000:133)

čawatəl ‘help each other’
maləq*təl ‘mix with each other’
ličətəl ‘cut each other’

Gerds provides two pieces of evidence to support this argument. First, the agent of the reciprocal construction exhibits absolutive agreement, not ergative as in (37), which bears the same marking as the subject in an intransitive clause (38a) rather than a transitive one (38b)

\(^{15}\) We are in the same position as many other researchers in claiming that the reciprocal morpheme sim- in Kavalan is a derivational, valence-changing morpheme. The affix sim- is, however, not a “detransitiving” morpheme that derives intransitive verbs as often argued in the literature of verbal reciprocals.

\(^{16}\) Halkomelem is a Salishan language spoken in southwestern British Columbia, Canada.
(37) Halkomelem (Gerdzs 2000:140)

\[ \text{ʔiʔ ha:qʷə-təlÍ(*-əs) tə sqʷəmqʷəmə'y} \]
\[ \text{AUX smell:CONT-TR:REC(-3ERG) DET dogs} \]

‘The dogs are smelling one another.’

(38) Halkomelem (Gerdzs 2000:139)

a. \[ niʔ ʔimaš kʷθə swəyqeʔ \]
\[ AUX walk DET man \]

‘The man walked.’

b. \[ niʔ kʷəlaš-təs kʷθə swəyqeʔ kʷθə speʔəθ \]
\[ AUX shoot-TR-3ERG DET man DET bear \]

‘The man shot the bear.’

Second, forms derived from reciprocal suffixes can serve as bases for causative, as in (39), and causative can only be formed by intransitive bases in Halkomelem, as in (40).

(39) Halkomelem (Gerdzs 2000:141)

a. \[ haqʷətol \]

‘smell each other’

b. \[ haqʷətolstaʔw \]

‘make them smell each other’

(40) Halkomelem (Gerdzs 2000:140)

a. \[ niʔ can ʔimaš-staʔw t₀ swiwləs \]
\[ AUX I SUB walk-CS-TR:3OBJ DET boy \]

‘I made the boy walk.’

b. \[ *niʔ can qʷəl-ə-staʔw lo sleniʔ (?ə) \]
\[ AUX I SUB bake-TR-CS-TR:3OBJ DET woman OBL \]

kʷθə səplɪl

DET bread

‘I had the woman bake the bread.’

In his research on reciprocals in Chicheŵa, Mchombo (1993) also claims that the reciprocal affix in Chicheŵa changes the argument structure of the attached verb. The reciprocal affix, -an/-án, as exemplified in (41), is analyzed as a detransitivating morpheme that derives intransitive verbs.

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17 Mchombo treats the reciprocal morpheme in Bantu languages as a derivational, valence-changing morpheme.
Reciprocals in Kavalan and a Typological Comparison

(41) Chicheŵa (Mchombo 1993:191)
   a. Mbîdzi zi-ku-mény-á nkhandwe
      10-zebras 10SM-pres-hit 10-foxes
      ‘The zebras are hitting the foxes.’
   b. Mbîdzi ndi nkhandwe zi-ku-mény-an-a
      10-zebras and 10-foxes 10SM-pres-hit-recip-FV
      ‘The zebras and the foxes are hitting each other.’

Therefore, as shown in (42), when a reciprocal verb is used in a comparative construction, the unambiguous interpretation can only be {‘The hunters despise each other more than the fishermen despise each other.’}, not {‘The hunters despise each other more than they despise the fishermen.’}. The verb, suffixed with a reciprocal, is indeed an intransitive, taking only one argument. This sole argument takes only the subject function and cannot be interpreted as the object of a transitive in the reading of {‘The hunters despise each other more than they despise the fishermen.’}.

(42) Chicheŵa (Mchombo 1993:195)
   Alenje á-ma-nyoz-án-á kupósá asodzi
   2-hunters 2SM-hab-despise-recip-FV exceeding 2-fishermen
   ‘The hunters despise each other more than the fishermen.’

In another study on Nyulnyulan languages, McGregor (2000) also concludes that reciprocal clauses in Nyulnyulan languages are prototypically intransitive. The evidence comes from case marking of the sole argument in a reciprocal clause. The only argument is usually unmarked, i.e. it occurs in absolutive form. In such a case, this argument actually bears the same case marking as the subject of an intransitive clause, and therefore the reciprocal clause it occurs in is intrinsically intransitive. The following examples come from two of the Nyulnyulan languages.

(43) Warrwa (McGregor 2000:97)
   Kinya kujarra kanyjirr ngi-rr-wanji-ny-bili
   this two look 3:NOM-AUG-exchange-PST-DU
   ‘They two stared at one another.’

(44) Yawuru (McGregor 2000:96)
   Ngaw inga-rr-banji-nda
   kiss 3:NOM-AUG-exchange-NAF
   ‘They kissed one another.’

---

18 Nyulnyulan languages are spoken in Western Australia.
Now we turn to the reciprocal construction in Kavalan. At first sight, the reciprocal marker *sim-* seems to pattern with Halkomelem, Chichewa, Nyulnyulan, and many other languages in that the reciprocal morpheme derives an intransitive verb by absorbing one argument of the transitive verb. In a transitive AF clause, for example (45a), the verb *pukun* ‘hit’ originally takes two arguments, subject and object. Once the reciprocal marker *sim-* is prefixed as in (45b), the derived verb *sim-pukun* ‘hit each other’ takes only one argument (plural subject), indicating that *sim-* has changed the transitive verb ‘hit’ into an intransitive one.

\[(45)\]  
\[
a. \text{p<um>ukun ci buya ci abas-an} \\
\text{<AF>hit Ncm Buya Ncm Abas-Loc} \\
\text{‘Buya hit Abas.’} \\
b. \text{sim-pukun ci buya atu ci utay} \\
\text{Rec-hit Ncm Buya and Ncm Utay} \\
\text{‘Buya and Utay hit each other.’} \\]

In a transitive NAF clause, as in (46) and (47), verbs without marking of *sim-* appear in NAF form; however, once they are prefixed by *sim-*, they do not co-occur with the NAF. This seems to suggest that *sim-*marking is incompatible with NAF voice morphology, because the former is intransitive whereas the later is transitive.

\[(46)\]  
\[
a. \text{tayta-an-na ni buya ci abas} \\
\text{see-NAF-3Sg.Gen Gen Buya Ncm Abas} \\
\text{‘Buya saw Abas.’} \\
b. *\text{sim-tayta-an-na qaniyau} \\
\text{Rec-see-NAF-3Sg.Gen 3Pl.Nom} \\
\text{‘They saw each other.’} \\]

\[(47)\]  
\[
a. \text{Ratut-an-ku ci buya} \\
\text{scare-NAF-1Sg.Gen Ncm Buya} \\
\text{‘I scared Buya.’} \\
b. *\text{sim-Ratut-an-na qaniyau} \\
\text{Rec-scare-NAF-3Sg.Gen 3Pl.Nom} \\
\text{‘They scared each other.’} \\]

However, a careful examination reveals that reciprocal constructions are not necessarily intransitive. Our data show that the *sim-* marker does occur in transitive
Reciprocals in Kavalan and a Typological Comparison

NAF clauses with ditransitive predicates. Consider the examples in (48a)-(48d).

(48)  

Ditransitive AF

a. s<m>eles=iku tu qudus tu tawki  
   <AF>change-1Sg.Nom Obl clothes Obl seller  
   ‘I changed the clothes with the seller.’

Ditransitive NAF

b. seles-an-ku (ya) qudus ta-tawki-an  
   change-NAF-1Sg.Gen (Nom) clothes Loc-seller-Loc  
   ‘I changed the clothes with the seller.’

Ditransitive AF with sim-

c. sim-seles=imi tu qudus  
   Rec-change=1EPl.Nom Obl clothes  
   ‘We exchanged clothes.’

Ditransitive NAF with sim-

d. sim-seles-an na qaniyau ya qudus-na  
   Rec-change-NAF Gen 3Pl Nom clothes-3Sg.Gen  
   ‘They exchanged their clothes.’

In the non-reciprocal clauses as (48a) and (48b), seles ‘change’ takes three arguments, namely the agent who changed the clothes, the clothes being changed, and the person with whom the agent changed the clothes. In its reciprocal counterparts (48c) and (48d), the number of arguments is reduced from three to two. The remaining arguments are the clothes being exchanged qudus and a plural subject qaniyau ‘they’ or =imi ‘we’. Compare additional examples as follows:

(49)  

Ditransitive AF

a. m-liway=iku tu kelisiw ci buya-an  
   AF-lend/borrow-1Sg.Nom Obl money Ncm Buya-Loc  
   ‘I borrowed money from Buya.’

19 There are similar phenomena in Nêlêmwa:

(i) hla pe-pae balô a álô mahleena  
   3PL RECIP-throw ball AGT child these.DEICT  
   ‘The children throw the ball to one another.’ (Bril 2002:154)

(ii) hla pe-taxe hnoot ru agu  
   3PL RECIP-give richness AGT people  
   ‘The people give the richness to one another.’ (Bril 2002:154)
Ditransitive AF with sim-

b. sim-pa-liway tu kelisiw (ya) ci buya atu
    Rec-Cau-lend/borrow Obl money (Nom) Ncm Buya and
    ci abas
    Ncm Abas
   ‘Buya and Abas lent each other money.’

Ditransitive NAF with sim-
c. sim-liway-an-na ni buya atu ci abas
    Rec-lend/borrow-NAF-3Sg.Gen Gen Buya and Ncm Abas
    ya kelisiw
    Nom money
   ‘Buya and Abas lent each other the money.’

(50) Ditransitive NAF

a. bula-an ni buya ci utay tu usiq peRasku Raq
    give-NAF Gen Buya Ncm Utay Obl one bottle liquor
   ‘Buya gave Utay a bottle of liquor.’

Ditransitive AF with sim-

b. sim-bula tu Raq ya ci utay atu ci buya
    Rec-give Obl liquor Nom Ncm Utay and Ncm Buya
   ‘Utay and Buya gave each other liquor.’

Ditransitive NAF with sim-
c. sim-bula-an-na ni utay atu ci buya ya Raq
    Rec-give-NAF-3Sg.Gen Gen Utay and Ncm Buya Nom liquor
   ‘Utay and Buya gave each other liquor.’

(51) Ditransitive AF

a. s<\m>anu ci buya ci abas-an tu lanas ni utay
    <AF>tell Ncm Buya Ncm Abas-Loc Obl thing Gen Utay
   ‘Buya told Abas things about Utay.’

Ditransitive AF with sim-

b. sim-sanu ci abas atu ci buya tu lanas ni utay
    Rec-tell Ncm Abas and Ncm Buya Obl thing Gen Utay
   ‘Abas and Buya told each other things about Utay.’

Ditransitive NAF with sim-
c. sim-sanu-an-na ni abas atu ci buya ya
    Rec-tell-NAF-3Sg.Gen Gen Abas and Ncm Buya Nom
    lanas ni utay
    thing Gen Utay
   ‘Abas and Buya told each other things about Utay.’
In these examples, the number of arguments is reduced likewise from three to two after the reciprocal affix \textit{sim-} is added. Examples (48) to (51) above show that the \textit{sim-} marker can occur in NAF clauses with ditransitive predicates.

To sum up, we argue that it is not necessary that the verbal reciprocal marker \textit{sim-} in Kavalan should derive intransitive verbs; it depends on what kind of predicates \textit{sim-} attaches to. Our analysis shows that \textit{sim-} reduces the number of arguments subcategorized by its attaching verbs, and thus \textit{sim-} is a valence-reduction device, rather than an intransitivizer.

6. Formosan languages in crosslinguistic perspective

6.1 Reciprocals in other Formosan languages

To summarize our findings so far regarding Kavalan reciprocals:

(i) Kavalan distinguishes two types of reciprocalization as in a wide variety of languages in the world, one employing a nominal affixal strategy\textsuperscript{20} and the other a verbal one, in which the verbal reciprocal is relatively productive.

(ii) The verbal reciprocal prefix \textit{sim-} in Kavalan is shown to have other possible interpretations in addition to the core one as a reciprocal. Among the most frequent additional interpretations we find the chaining (to do V in a chain), the collective (to do V together) and the distributive (to do V individually at different times).

(iii) The verbal reciprocal prefix \textit{sim-} is a valence-reduction device, rather than an intransitivizer, quite contrary to the common analyses taken in the literature.

Taking the study of Kavalan as a starting point, we now look at the reciprocal construction in other Formosan languages, focusing mainly on six, including Tsou, Saisiyat, Kavalan, Amis, Budai Rukai, and Timur Paiwan. The two mechanisms, namely nominal and verbal, are distinguished across Formosan languages as shown in Table 1:

\textsuperscript{20} This is very different from the \textit{each other} type, though. See discussion in footnote 4.
Table 1: Expressions of two types of reciprocals across (Some) Formosan languages (shaded areas signals data from other sources)

<table>
<thead>
<tr>
<th>Languages</th>
<th>Type I: Nominal Affix</th>
<th>Type II: Verbal Affix</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kavalan</td>
<td>nan-</td>
<td>sim-</td>
<td></td>
</tr>
<tr>
<td>Saisiyat</td>
<td>saso-</td>
<td>Ca-, makak-\textsuperscript{21}</td>
<td></td>
</tr>
<tr>
<td>Tsou</td>
<td>na-/nat-</td>
<td>yupa-</td>
<td></td>
</tr>
<tr>
<td>Amis</td>
<td>mala-</td>
<td>mala-, ma-(C)a</td>
<td></td>
</tr>
<tr>
<td>Budai Rukai</td>
<td>-ma-</td>
<td>ma-Ca</td>
<td></td>
</tr>
<tr>
<td>Timur Paiwan</td>
<td>mare-</td>
<td>ma-(C)a-</td>
<td></td>
</tr>
<tr>
<td>Takbanuaz Bunun</td>
<td>NONE</td>
<td>mapa-</td>
<td>Hengsyung Jeng (pers. comm.)</td>
</tr>
<tr>
<td>gdaya Seediq</td>
<td>ms-/mt-</td>
<td>m-C-</td>
<td>Holmer (1996)\textsuperscript{22}</td>
</tr>
<tr>
<td>Nanwang Puyuma</td>
<td>mar-</td>
<td>ma-Ca\textsuperscript{23}, mar-pa</td>
<td>Zeitoun (2002)</td>
</tr>
</tbody>
</table>

\textsuperscript{21} See footnote 34 for discussion of the form makak-.

\textsuperscript{22} Holmer (1996:34) provides two examples of reciprocals in Seediq.

(i) a. ini pcebu di (imperative form)
\hspace{1cm} NEG shoot REC IMP PF PRT
\hspace{1cm} ‘They no longer fight.’

\hspace{1cm} (finite active form in the present tense)

b. wada mccebu dheya
\hspace{1cm} PRET shoot REC AF 3p.n.L
\hspace{1cm} ‘They fought.’

And here are more data of my (L. Sung) own field notes:

(ii) ms-qedil
\hspace{1cm} Rec-wife
\hspace{1cm} ‘wife and husband’

(iii) mt-suwayi
\hspace{1cm} Rec-younger.brother/sister
\hspace{1cm} ‘brothers/sisters’

(iv) mt-laqi
\hspace{1cm} Rec-child
\hspace{1cm} ‘mother and son’, ‘father and son’

(v) ms-dadan
\hspace{1cm} Rec-relative
\hspace{1cm} ‘relatives (to each other)’

(vi) ms-bubu
\hspace{1cm} Rec-mother
\hspace{1cm} ‘mother and daughter’

\textsuperscript{23} In Nanwang Puyuma there exists another form: ma-CVCV. Both ma-Ca and ma-CVCV encode reciprocity; the CVCV reduplication in the latter expresses repetitivity in addition to reciprocity. See Teng (forthcoming) for such a distinction.
Prefixes to a nominal base across Formosan languages all mark personal reciprocity such as kinship relation as in Kavalan. Examples from Tsou, Saisiyat, Amis, Rukai, and Timur Paiwan are illustrated in (52).

(52) Nominal Affix
a. Tsou
   (i) na-vconga
       Rec-spouse
       ‘spouses’
   (ii) nat-’ohaesa
       Rec-younger.brother/sister
       ‘brothers/sisters’
   (iii) na-nghia
       Rec-friend
       ‘friends (to each other)’
   (iv) na-’vama
       Rec-father.and.son/daughter
       ‘father and son’, ‘father and daughter’
   (v) na-’ina
       Rec-mother
       ‘mother and daughter’

b. Saisiyat
   lasia saso-’aela
   3Pl.Nom SASO-enemy
   ‘They are enemies (to each other).’

c. Amis
   (i) mala-kaka-ay ci kacaw a ci ofad
       Rec-elder.sibling-AY Ncm Kacaw and Ncm Ofad
       ‘Kacaw and Ofad are brothers.’
   (ii) mala-ramud-ay ci kacaw a ci panay
       Rec-spouse-AY Ncm Kacaw and Ncm Panay
       ‘Panay and Kacaw are husband and wife.’

24 The following is an example:
   (i) mi-mza na-vconga ’o sayungu (ho a’o)
       Aux-1Pl.Nom Rec-spouse Nom Sayungu (and 1Sg.Nom)
       ‘Sayungu and I are husband and wife.’

25 The use of the prefix saso- is rather restricted in Saisiyat and it does not attach to any kinship noun.
(iii) **mala**-widang-ay ci kacaw a ci ofad
     Rec-friend-AY Ncm Kacaw and Ncm Ofad
     ‘Kacaw and Ofad are friends.’

d. Rukai
(i) **la-ma-taka**
     Pl-Rec-elder.brother/sister
     ‘brothers and sisters (to each other)’
(ii) **la-ma-lala**
     Pl-Rec-male.friend
     ‘friends (to each other)’

e. Paiwan

**mare**-cekel-anga tiamadu
     Rec-spouse-Pfv 3Pl.Nom
     ‘They are spouses.’

As for the verbal reciprocal marker, similar to **sim**- in Kavalan, its productivity and polyfunctionality are well-attested in the Formosan languages. Across Formosan languages, the most prominent and intuitive core function of the verbal reciprocal is to mark reciprocity. Chaining is also relatively common and next on the list of the various functions, while collective and distributive seem to be more peripheral. Examples are given in (53)-(56).

(53) As a Reciprocal
a. Tsou
     mo asng<em>es</em> **yupa**-mtoku to tpos<em>e</em> ’e pasuya ho mo’o<sup>26</sup>
     Aux often Rec-throw.AF Obl book Nom Pasuya and Mo’o
     ‘Pasuya and Mo’o often throw books at each other.’
b. Saisiyat
(i)  yako ki ’obay **ta**-tikot /**makak**-tikot
     1Sg.Nom with ‘Obay Ca-scare/makak-scare
     ‘I and ’Obay scared each other.’
(ii) lasia **pa**-panae’
     3P.Nom Ca-shoot
     (Yeh 2003:151)
     ‘They are shooting each other.’

<sup>26</sup> Note that the verb **mtoku** ‘throw.AF’ in Tsou is not a root stem and it carries the agent focus morphology in the reciprocal construction with **yupa**-. This is quite different from the case in Kavalan, in which the agent focus morpheme does not co-occur with the reciprocal marker **sim**-, as discussed in §2.
Reciprocals in Kavalan and a Typological Comparison

(iii) sa-saze:ez ...lasia roSa’
Ca-AF.stare 3Pl.Nom two
‘Both of them stared at each other.’ (NTU Corpus, Saisiyat: kathethel2:129-130)

c. Amis
(i) mala-metmet cangra tu kamay (Wu 2000:51)
Rec-shake 3Pl.Nom Acc hand
‘They shook hands.’
(ii) mala-palu’ cangra a ta-tusa
Rec-hit 3Pl.Nom Lnk CLF-two
‘They two hit each other.’

d. Rukai
kai zipulu si muni ma-La-Lumay
Nom Zipulu and Muni Rec-Ca-hit
‘Zipulu and Muni hit each other.’

e. Paiwan
ma-ta-tengeLay tiamadu
Rec-Ca-like 3Pl.Nom
‘They like each other.’

(54) As a Chain
a. Tsou
(i) mo yupa-to’ofehini si o’-oko
Aux Rec-AF.follow Nom Red-child
‘The children followed each other.’
(ii) mo yupa-puyo si o’-oko
Aux Rec-form.a.line Nom Red-child
‘The children formed a line.’
b. Saisiyat
lasia sa-sa-sowaw
3Pl.Nom Ca-Ca-chase
‘They chased after one another.’
c. Amis
ma-ta-toor cangra
Rec-Ca-chase 3Pl.Nom
‘They (a group of people) chased after each other.’
d. Rukai
ma-ka-kuri-kurisi kai la-vavalake kwasane
Rec-Ca-Red-chase Nom Pl-child just.now
‘Those children were chasing after one another just now.’
e. Paiwan
   *ma-la-laing* tiamadu  
   Rec-Ca-chase 3Pl.Nom  
   ‘They chased after each other.’

(55) As a Collective
   a. Tsou
      NONE (A separate lexical word *teohunga* ‘together’ has to be used to express collectivity.)
   b. Saisiyat
      o: kik pahraehrang *makak*-sikar  
      INT NEG AF.speak Rec-AF.shy  
      ‘They didn’t speak anything and (both) felt shy.’ (NTU Corpus, Saisiyat: kathethel2: 131)
   c. Amis
      *ma-ka-kilim* tu wacu cangra  
      Rec-Ca-look.for Obl dog 3Pl.Nom  
      ‘They (together) looked for their dog.’
   d. Rukai
      NONE (A separate lexical word *taeLe* ‘together’ has to be used to express collectivity.)
   e. Paiwan
      *ma-va-vai* tiamadu  
      Rec-Ca-leave 3Pl.Nom  
      ‘They left (in succession).’

(56) As a Distributive
   a. Tsou
      NONE (A separate lexical word *iyanan’ou* ‘each’ has to be used to express distributivity.)

---

27 There is another lexical item *meselang* ‘together, simultaneously’ in Paiwan which can express collectivity.

28 An activity done in succession is also considered as a collective action in Lichenberk (2000:37).

29 The following is an example:

   (i) *iyanan’ou* mofi to tpos ub ta paic *’e mo’o ho pasuya*  
      each.AF give.AF Obl book Obl Paic Nom Mo’o and Pasuya  
      ‘Mo’o and Pasuya each gave Paic a book.’
Reciprocals in Kavalan and a Typological Comparison

b. Saisiyat

laðia kapəɾəə (Zeitoun and Wu 2005:37)
3P.Nom all very fat
‘They are all very fat.’

c. Amis

mala-likel cangra a ta-tusa mi-pafuli’ i takuwanan
Rec-sharing 3Pl.Nom Lnk CLF-two AF-give Loc 1Sg.Loc
tu eecay a cuidad
Obl one Lnk book
‘They (each of them) gave me a book.’

d. Rukai

NONE (A separate lexical word tara ‘each’ has to be used to express distributivity)

e. Paiwan

ma-pa-pavai tiamadu tai muakakai tua sunat
Rec-Ca-give/send 3Pl.Nom Obl Muakakai Obl book
‘They each gave Muakakai a book.’

As the cross-Formosan data above show, reciprocal affixes invariably exhibit various possible interpretations in addition to reciprocity. While reciprocals are polysemous, different options are available and languages in question might choose among these. Reciprocals, for instance, in Kavalan, Amis, and Saisiyat express all four of these: reciprocal, chaining, collective, and distributive. The reciprocal affixes in Tsou and Rukai, on the other hand, denote only reciprocal and chaining, but neither collective nor distributive. A separate lexical word/phrase such as ‘each’ (e.g. iyanan’ou in Tsou), or ‘together’ (e.g. teohunga in Tsou) has to be used to express a collective or a distributive meaning.

From the point of view of linguistic typology and comparison, many studies on Austronesian languages have often touched on the question of which one could/should be considered as the basic function of the reciprocal markers among the numerous extended uses. While in some languages, e.g. the Formosan languages examined above or Standard Fijian (Schütz 1985; Milner 1972), the basic function of the reciprocal marker could be reciprocal, other languages might take either collective (e.g. in Futunan (Moyse-Faurie, forthcoming) and Boumaa Fijian (Dixon 1988)) or distributive (e.g. in Madurese and other Javanic languages (Davies 2000)) as the core.

Besides, the functions and semantics of the reciprocal affixes in New Caledonian

30 There is another lexical phrase ‘iska nonak ‘each’ in Saisiyat which can express distributivity.
31 There is another lexical item paytemek ‘each’ in Amis which can express distributivity.
languages and various other Oceanic languages including Mekeo (Western Oceanic, Papua New Guinea), To’aba’ita (Southeast Solomonic), Fijian (Central Pacific), Mwotlap (Remote Oceanic) and Futunan (Polynesian) (see Bril 2005:33, §2.7 and the many references cited in Lichtenberk 2000:49) have extended and diversified from reciprocity further into the so-called “middle” domain, including deagentive, depa-tientive, or spontaneous, etc. None of these middle extended polysemies, however, is found in the reciprocal construction of the Formosan languages examined above.

6.2 Reciprocals and reflexives

In addition to cases of reciprocal-middle polysemy discussed in §6.1, the connection between reciprocals and reflexives has also been widely addressed in the literature. It is well known that in many languages reciprocity and reflexivity are typically encoded by the same marker. To name a few, for instance, Somali and Nyulnyulan languages are such languages as shown in (57)-(58).

(57) Somali (Saeed 1999:78)
   a. Wày (waa + ay) is dishay.
      DECL + she REFL killed
      ‘She killed herself.’
   b. Wày (waa + ay) is arkeen.
      DECL + they REC saw
      ‘They saw each other/They saw themselves/She saw herself.’

(58) Warrwa (McGregor 2000:89-90)
   a. Ngayu nga-ma-ng-ka-nyji-ny
      I:MIN I:NOM-REF:E:NASAL-hit-REF-PST
      ‘I hit myself.’
   b. Yila ngi-rr-ma-wara-nyji-na
      dog 3:NOM-AUG-REF-follow-REF-PST
      ‘The dogs followed each other around.’

This reciprocal-reflexive polysemy is found in nearly all languages of the European continent (Germanic (other than English), Romance, Polish, Celtic, etc. (Geniušienė 1987; Kemmer 1993)), in Imbabura Quechua (Lichtenberk 1994), in Somali (Saeed 1999), in languages of the Nyulnyulan family (Dixon 1980:433; McGregor 2000:89), in Bininj Gun-wok, or Djapu (Evans 2003), in New Caledonian languages (Bril 2005:
The similarity between reciprocals and reflexives may hinge on the fact that in either case each participant is both initiator and endpoint (Kemmer 1993). Such a close link between reciprocals and reflexives, however, is not attested in Formosan languages. Regarding Formosan reflexives, Sung (2006) concludes that reflexives and reciprocals in Formosan have totally distinct forms, distributions and meanings. Not only their morphological forms are different as shown in Table 2, reflexives and reciprocals are each confined in their own semantic domain: reflexive markers do not express reciprocity while reciprocal markers do not denote reflexivity; reciprocal markers encode various functions including reciprocal, chaining, collective, and distributive, whereas reflexive markers function as reflexive, anticausative, or decomitative. None of their distributions and functions overlaps with each other. Obviously, reflexives and reciprocals in Formosan languages take two divergent paths of development, very unlike the one suggested in Geniušienė (1987) and Kemmer (1993), for a wide variety of languages.

### Table 2: Expressions of reflexives/reciprocals across (some) Formosan languages (adapted from Sung (2006))

<table>
<thead>
<tr>
<th>Type</th>
<th>Languages</th>
<th>Reflexives</th>
<th>Reciprocals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I</td>
<td>Kavalan</td>
<td>aizipna</td>
<td>nan-</td>
</tr>
<tr>
<td></td>
<td>Saisiyat</td>
<td>nonak</td>
<td>saso-</td>
</tr>
<tr>
<td></td>
<td>Tsou</td>
<td>iachi</td>
<td>na-/nat-</td>
</tr>
<tr>
<td></td>
<td>Amis</td>
<td>niyah</td>
<td>mala-</td>
</tr>
<tr>
<td></td>
<td>Seediq</td>
<td>nanak</td>
<td>ms-/mt-</td>
</tr>
<tr>
<td></td>
<td>Budai Rukai</td>
<td>NONE</td>
<td>ma-</td>
</tr>
<tr>
<td></td>
<td>Timur Paiwan</td>
<td>NONE</td>
<td>mare-</td>
</tr>
<tr>
<td>Type II</td>
<td>Kavalan</td>
<td>NONE</td>
<td>sim-</td>
</tr>
<tr>
<td></td>
<td>Saisiyat</td>
<td>nonak/ki’nonak</td>
<td>Ca-, makak-</td>
</tr>
<tr>
<td></td>
<td>Tsou</td>
<td>iachi (AF)/iachia (NAF)</td>
<td>yupa-</td>
</tr>
<tr>
<td></td>
<td>Amis</td>
<td>NONE</td>
<td>mala-, ma-(C)a</td>
</tr>
<tr>
<td></td>
<td>Seediq</td>
<td>nak</td>
<td>m-C-</td>
</tr>
<tr>
<td></td>
<td>Budai Rukai</td>
<td>ngi(-a), ngi(-a)-kakamani</td>
<td>ma-Ca</td>
</tr>
<tr>
<td></td>
<td>Timur Paiwan</td>
<td>ki-, kimad(j)u</td>
<td>ma-(C)a-</td>
</tr>
</tbody>
</table>

---

32 Whether the reciprocal function develops from the reflexive one or vice versa, different scholars reach different conclusions for different languages. While Kemmer (1993:100) considers the reciprocal category to be crosslinguistically a “minor prototype” and normally develops from the reflexive function, Bril (2005) and (Alpher et al. 2003) provide evidence in some New Caledonian and Australian languages to support a possible evolution from (middle-)reciprocal to (middle-)reflexive (i.e. notions of grooming or self-directed actions).
6.3 Reciprocals and Reduplications

Reciprocalization often combines with reduplication in various Austronesian languages (Bril 2005:58-68). The distribution of reduplication in Formosan languages, however, is rather complicated morphosemantically and is language specific, which is far beyond the scope of this paper. Here we limit our discussion of reduplication to its role in the construction of reciprocals in Formosan languages. While reduplication is used in non-reciprocal constructions in most Formosan languages, a general observation is that it alone often corresponds to meanings of intensity, iterativity, repetitivity, durativity, and plurality, the same as is attested in many Austronesian languages (Blust 1998; Bril 2005:58-61). The reduplication itself does extend and includes reciprocity without the co-occurrence of the reciprocal prefix, as exemplified in Saisiyat:

(53) (repeated)
   b. Saisiyat
   (i) yako ki ’obay ta-tikot/makak-tikot
       1Sg.Nom with ’Obay Ca-scare/makak-scare
       ‘I and ’Obay scared each other.’
   (ii) lasia pa-panae’
       3P.Nom Ca-shoot
       ‘They are shooting each other.’

33 For a more thorough examination of various reduplication patterns and its related meanings, see Yeh (2003) and Zeitoun & Wu (2005).
34 Yeh (2000:60) and Zeitoun (2001:131) both treat makak- as an AF reciprocal affix being attached specifically to stative verbs and its corresponding root form is pakak-. Yeh (2003:154) further suggests analyzing makak- as being composed of ma-, ka- (a Ca reduplication) and k, with the first two morphemes combined together denoting reciprocity and third indicating inchoativity. Yeh also mentions that the morpheme pa- alone can appear either in AF or NAF clauses to express reciprocity as exemplified below:
   (i) So ’oya’ ki ’yaba’ m-pa-’oe’oe’
       when mother and father AF-Recp-shout
       ‘When mother and father have a quarrel, do not let children hear it.’
   (ii) bato’ ki patonay So si-pa-tono’
       stone and steel when I/BF-Recp-bump
       risa m-wa:i’ ka hapoy
       then AF-come Acc fire
       ‘If stone and steel are brought to collide, fire comes about.’
(iii) sa-saze:ez ...lasia roSa’
Ca-AF.stare 3Pl.Nom two
‘Both of them stared at each other.’ (NTU Corpus, Saisiyat: kathethel2:129-130)

In some Formosan languages, reduplication may not be used in reciprocal constructions. As (4) and (5) have shown, for instance, the reciprocal prefix sim- in Kavalan does not combine with root/Ca reduplication to express reciprocity.

(Repeated)
(4) a. p<um>ukun (ya) ci buya ci abas-an
<AF>hit (Nom) Ncm Buya Ncm Abas-Loc
‘Buya hit Abas.’
b. sim-pukun (ya) ci buya atu ci utay
Rec-hit (Nom) Ncm Buya and Ncm Utay
‘Buya and Utay hit each other.’
(5) a. q<um>nut (ya) ci buya ci abas-an
<AF>angry (Nom) Ncm Buya Ncm Abas-Loc
‘Buya is mad at Abas.’
b. sim-qnut (ya) ci buya atu ci abas
Rec-angry (Nom) Ncm Buya and Ncm Abas
‘Buya and Abas are mad at each other.’

When optionally combined with reduplication, it only implies that this event happens more than once (repetitively) or that this is a habitual event, as illustrated in (59). Reduplication alone does not express reciprocity or plurality in Kavalan.35

(59) sim-ta-tanuz sunis ’nay
Rec-Red-chase child that
‘Those children kept chasing each other.’

Neither does the reciprocal prefix yupa- in Tsou or mala- in Amis have to combine with root/Ca reduplication to yield reciprocity. Consider example (53a) and (53c).

35 Reciprocals in Takbanuaz Bunun behave similarly to those in Kavalan. Reduplication in Takbanuaz Bunun is used mainly to mark continuous aspect and does not co-occur with the reciprocal affix to express reciprocity. (Hengsyung Jeng (pers. comm.))
(53) (repeated)
a. Tsou
mo asngu yupa-mtoku to tposu ’e pasuya ho mo’o
Aux often Rec-throw.AF Obl book Nom Pasuya and Mo’o
‘Pasuya and Mo’o often throw books at each other.’

(53) (repeated)
c. Amis
(i) mala-metmet cangra tu kamay (Wu 2000:51)
Rec-shake 3Pl.Nom Acc hand
‘They shook hands.’
(ii) mala-palu’ cangra a ta-tusa
Rec-hit 3Pl.Nom Lnk CLF-two
‘They two hit each other.’

With the use of yupa- or mala- alone, it indicates that the action is done mutually by two people (or two parties), in accordance with the plural subject requirement. When combined optionally with reduplication, it denotes that the mutual action is done by many people (three or more) at the same time, as shown in (60) and (61).36

(60) Tsou
la c’u yupa-bo-bohngu ’e eanengesangsi ho
Hab already each.other-Red-know.AF Nom plains and
hmuskou cou
same-AF tribes
‘People from the plains and aboriginal tribes (who are similar to people from the plains) know one another already.’ (NTU Corpus, Tsou: Daily:91)

(61) Amis
mala-palu-palu’ cangra a ma-’emin
Rec-Red-hit 3Pl.NOM LNK AF-all
‘They (a group of people) hit one another’

On the contrary, in other Formosan languages such as Budai Rukai, Timur Paiwan, and Amis (the ma- form), reduplication is obligatory in reciprocalization. Consider the

36 More data regarding yupa- are given in Tung (1964:465-466):
(i) eupa-baito ‘to see each other’
(ii) eupa-bo-baito ‘to see one another’
(iii) eupa-elu ‘to meet each other’
(iv) eupa-ku-kuzo ‘hostile to one another’
following examples with Ca reduplication:

(53) (repeated)

d. Rukai
  kai zipulu si muni ma-La-Lumay
  Nom Zipulu and Muni Rec-Ca-hit
  ‘Zipulu and Muni hit each other.

e. Paiwan
  ma-ta-tengelay tiamadu
  Rec-Ca-like 3Pl.Nom
  ‘They like each other.

(55) (repeated)

c. Amis
  ma-ka-kilim tu wacu cangra
  Rec-Ca-look.for Obl dog 3Pl.Nom
  ‘They (together) looked for their dog.’

In Budai Rukai, there exists another reduplicative pattern: CVCV-form. Together with the reciprocal prefix, it indicates a group of people (three or more) does the action to one another, as shown in (62).

(62) Rukai
  kai la-ma-lala ma-Luma-Lumay
  Nom Pl-Rec-male.friend Rec-Red-hit
  ‘The boys (a group of boys) beat one another.

In addition, Ca reduplication can combine further with CVCV-reduplication as exemplified in Timur Paiwan (63), indicating that the action is happening at the moment of speech act.

(63) Paiwan
  ma-da-duku-dukuL tiamadu
  Rec-Ca-Red-hit 3Pl.Nom
  ‘They are hitting each other.’

To conclude, we have shown that Formosan languages display various degrees of productivity with regard to the combination of reduplication and reciprocal markers. In some languages, the functions and semantics of reduplication have extended further to mark reciprocity without the existence of a reciprocal morpheme. In other languages,
the reciprocal morpheme is still the most important grammatical device to express reciprocity, either with or without reduplication.

### 6.4 Reciprocals and transitivity

The last issue we are concerned with is whether the reciprocal construction in other Formosan languages also exhibits reduced transitivity, as we have found in Kavalan. The reciprocal morpheme appears upon initial examination to derive an AF intransitive by absorbing one argument of the transitive predicate. Compare (a) with (b) in (64)-(66):37

(64) Tsou
   a. mita eobako to pasuya ’e mo’o
      Aux hit.AF Obl pasuya Nom Mo’o
      ‘Mo’o hit Pasuya.’
   b. **eupa**-eobako ’e pasuya ho mo’o
      Rec-hit.AF Nom Pasuya and Mo’o
      ‘Mo’o and Pasuya hit each other.’

(65) Saisiyat
   a. ’obay s<om>ibae:aehe kanman ka rayhil
      ‘Obay <AF>borrow 1Sg.Loc Acc money
      ‘Obay borrowed money from me.’
   b. yako ki ’obay s-sibae:aehe ka rayhil
      1Sg.Nom with ’Obay Ca-borrow Acc money
      ‘I and ’Obay borrow money from each other.’

(66) Amis
   a. mi-palu’ ci ofad-an ci panay
      AF-hit Ncm Ofad-AN Ncm Panay
      ‘Panay hit Ofad.’
   b. mala-palu’ cangra a ta-tusa
      Rec-hit 3Pl.Nom Lnk CLF-two
      ‘They two hit each other.’

This is not true, however, with the fact that the reciprocal marker does appear in transitive NAF (non-agent focus) clauses with ditransitive predicates. Examples are given in (67)-(69):38

37 Since Rukai does not manifest the same focus system as in the other Formosan languages, we leave it out deliberately in the discussion here for the sake of simplification.
38 Reciprocal examples in Timur Paiwan differ from those in other Formosan languages. The
Reciprocals in Kavalan and a Typological Comparison

(67) Tsou
yupa-toku-neni ta pasuya ho mo’o ’e tposu
Rec-throw-BF Obl Pasuya and Mo’o Nom book
‘Pasuya and Mo’o threw books at each other.’

(68) Saisiyat
ka rayhil sa-sibae:aeh-en niya’om
Nom money Ca-borrow-PF 1Pl.Excl.Gen
‘We borrowed the money from each other.’

(69) Amis
mala-sa-pa-puliti-en nangra ku cudad
Rec-IF-Ca-throw-IF 3Pl.Gen Nom book
‘They threw the books at each other.’

The number of arguments in examples (67)-(69) is reduced from three to two once the reciprocal affix is attached. The resulting fact shown here confirms our analysis of Kavalan reciprocal in §5.2. We conclude that reciprocal morphemes in some Formosan languages are not necessary intransitivizers as commonly claimed in the literature; they simply reduce the number of arguments subcategorized by its attaching verbs. When compared with the Formosan data examined here, their reflexes seem to have undergone different types of evolution (Wolff 1973:74, Reid & Liao 2004, Keenan & Razafimamonjy 2004, and other references cited in Bril 2005:29-30, 59-60).

7. Conclusion

In this paper we have examined the reciprocal construction in Kavalan and made a typological comparison across some Formosan languages. Two types of reciprocals are distinguished: one is nominal and the other is verbal, both being prefixes. The verbal prefix is used as a primary device to form reciprocal constructions in Formosan languages. In addition, the verbal reciprocals across Formosan languages are polyfunctional and polysemous as they are in Oceanic languages. The same reciprocal morphology can express reciprocity, chained actions, collectivity, and distributivity; it does not include either middle or reflexive meaning. In addition to a semantic licensing condition of plurality imposed on the resulting constructions, the attachment of the verbal reciprocal prefix also induces a syntactic operation in that it reduces the number of participants subcategorized in the argument structure of a verb and thus results in a change in its valency, rather than deriving intransitivity.

prefix ma- is an intransitive agent focus morpheme; it does not appear in transitive NAF clauses.
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