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Malagasy Reciprocals   July 2019
Recursive Morphology and Voice Harmony
Edward L. Keenan   Baholisoa Ralalaoherivony

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We present a typologically oriented study of reciprocals in Malagasy (W. Austronesian, Madagascar). Of particular interest: (1) Malagasy reciprocals are very productive and expressed exclusively in the verbal morphology; there are no reciprocal pronouns. (2) In distinction to Romance, Germanic and Slavic, reciprocals do not overlap with reflexives, expressed exclusively by pronominal arguments. (3) Reciprocals only overlap some with sociatives; there being a sociative prefix distinct from the reciprocal. (4) Reciprocals are formed (recursively) throughout the grammar, both lexicon and syntax.

Preliminaries

Like Philippine languages generally Malagasy syntax rides on its voice system. Verbs are derived by iteratively affixing roots (radicals) not themselves always words. Here are the four voices that appear dominantly in our examples: AV (*active voice*): m+pfx+root; TV (*theme voice*): a+root; PV (*passive voice*): root+Vna; and CV (*circumstantial voice*): AV+pfx+root+ana).

1 a. [manolotra (m.aN+tolotra) vary ny vahiny amin'ny lovia vaovao] [izy]$_{DP}$
       offers   pres.act.offer   rice det guest   prep'det dishes new   he/she
       He offers rice to the guests on the new dishes
          (We write the active prefix as *aN* – the *m* is present tense active voice only. Present tense in non-active voices is ∅. *n* = past tense and *h* = future, all voices. The common (level one) active prefixes are *aN-*, *i-*, *a-*).

   b. atolony (a+tolotra+ny) ny vahiny amin'ny lovia vaovao [ny vary]$_{DP}$
           TV+offer+3gen det guest prep'det dishes new   det rice
      The rice is offered by him to the guests on the new dishes

   c. tolorany (tolotra+ana+ny) vary amin'ny lovia   vaovao [ny vahiny]$_{DP}$
              offer+PV+3gen   rice prep'det dishes new   det guests
      The guests are offered rice by him on the new dishes

   d. anolorany (aN+tolotra+ana+ny) vary ny vahiny [ny lovia vaovao]$_{DP}$
                av+offer+CV+3gen   rice det guests det dishes new
      The new dishes are used by him to offer rice to the guests

This list incorporates several important asymmetries: (1) the active verbs form their imperatives by suffixing *-a* and shifting stress (phonemic) rightward. The three non-active verbs form their imperatives by suffixing *o* (= /u/), shifting stress right, unless the root contains an *o*, in which case it suffixes *y* (= /i/). (2) The first three voices, (2a,b,c), affix the root directly, but the choice of affix, while subject to some regularities, must be listed. The most usual PV ending is *-ina*, but in some cases, as here, *-ana*, (or even -*ena* or simply *-na*). We use *passive* for tv and pv collectively. Whether a root takes tv, pv or both) is not fully predictable. These forms exhibit several irregularities and are clearly lexical.

Circumstantial verb formation, built by suffixing *-ana* to any of the AV forms, is fully regular. All AV verbs feed circumstantial (cv) forms. It nominalizes by prefixing *f-* with complete productivity , preserving subcategorization and case marking of arguments. So it is more transparent than gerund formation in English. All non-AV forms present the Agent phrase as a (suffixal) possessor of the verb, whereas AV verbs present it clause finally in the nominative (*izy* 's/he', *-ny* 'his/her'). In all the Ss in (1)

only the clause final nominative DP can be relativized, host the interrogative particle *ve*, etc. All the verbs in (1) are atelic, and the final DP (the "subject") in all cases is nominative.

1. Basic Reciprocals

   Reciprocal IF (below) applies just to active P2s (two place predicates) φ formed by iteratively prefixing roots in the simplest cases, and forms a higher order one place active predicate IF(φ) taking a set as argument (DMP) interpreted crudely by: $[\![IF(φ)]\!](A) = [\![φ]\!](x)(y)$, all $x ≠ y ∈ A$, [**known to be inadequate** – Here we focus on the formation and distribution of IF(φ)].

1.1   The shape of IF is conditioned by the choice of AV prefix

2 a. manenjika (m+an+enjika)   an-dRabe Rakoto   *Rakoto is chasing Rabe*
                   pres+av+chase acc-Rabe Rakoto

  b. mifanenjika (m+rec+an+chase) Rabe sy Rakoto   *R&R are chasing each other*

3 a. Niarahaba (n+i+arahaba) azy   aho   *I greeted him*
     greeted   pst+av+greet 3acc 1s.nom

  b. Nifampiarahaba (n+ifamp+i+arahaba) isika   *We greeted each other*
                   pst+rec+av+greet   we.incl
  c. **Nifiarahaba isika   *We greeted each other*

∅-prefix verbs behave similarly: *m+∅+ino* 'believe', *mifampino* 'believe in each other'

Remark *amp-* is a causative prefix but in active *mi-* and *ma-* verbs it just supports *if-*. Historically *amp-* is likely *aN+f* = nominalizer, as in synchronic *aN+fo = ampo* (= /a.ᵐpu/'in heart'. And *ank-* below is likely *aN+h* = nominalizer. So historically *if* just prefixes to *aN*-active verbs. Analogously for *ank(a)* with *m.a*-prefix verbs): From *mahita* (*m+a+hita*) 'sees':

4. Mifankahita (m+ifank-ahita) Rabe sy Ranaivo   *Rabe and Ranaivo see each other*
                   pres+rec+see   Rabe and Ranaivo

2. P2s may be built from P3s+Argument, and P1s + "accessible" PPs:

5 a. m+aN+tolotra (manolotra) torohevitra an-dRabe Rasoa   *Rasoa offers advice to Rabe*
     pres+av+offer   advice   acc-Rabe Rasoa

  b. m+if+aN+tolotra (mifanolotra) torohevitra Rabe sy Rasoa   *R and R offer each other advice*
     pres+rec+av+offer   advice   Rabe and Rasoa

6 a. manoratra (m+aN+soratra) taratasy ho an-dRabe Rasoa   *Rasoa writes letters to Rabe*
     writes   pres+av+write letter   for/to-Rabe Rasoa

  b. mifanoratra (m+if+aN+soratra) taratasy Rabe sy Rasoa   *R&R write letters to e.o.*
     pres+rec+av+write   letters   Rabe and Rasoa

7 a. manao (m+aN+tao)   farafara ho an-dRasoa Rabe   *Rabe is making a bed for Rasoa*
     makes pres+av+make bed   for acc-Rasoa Rabe

b. mifanao (m+if+aN+tao) farafara Rabe sy Rasoa   *R and R are making beds for e.o.*

8 a. Mandainga (m+aN+lainga) amin-dRasoa Rabe   *Rabe lies to Rasoa*
              pres+av+lie   prep-Rasoa   Rabe

  b. Mifandainga (m+if+aN+lainga) Rabe sy   Rasoa   *Rabe and Rasoa lie to each other*
     Lie to e.o.   pres+rec+av+lie   Rabe and Rasoa

But we cannot reciprocalize out of existence a rich PP (though the idea is expressible):

9 a. Mipetraka (m+i+petraka) akaikin-dRabe Rasoa   *Rasoa is sitting near Rabe*
      pres+av+sit   near-Rabe.gen Rasoa

  b. *Mifampipetraka Rabe sy Rasoa   *Rabe and Rasoa are sitting near e.o.*

  c. Mipetraka   m+if+an+akaiky   Rabe sy Rasoa   *R & R are sitting near e.o.*
      Pres+av+sit pres+rec+av+near Rabe and Rasoa

Gen 1 Verbal affix reciprocals only bind one argument of a given verb to an antecedent.
     Pronominal reciprocals can do two: *We protected / saved e.o. from e.o.*

Corollary: Reciprocal -if- does not iterate

10. **Nififaneho isika   *We show each other to each other*
      Nifaneho sary isika   *We showed each other pictures*

Gen 2 (Malagasy) Theme, passive and circumstantial voice verbs do not reciprocalize
     (But, reciprocal verbs causativize, which then passivize, reciprocalize, then causativize...)

11 a.   Enjehin-dRakoto (enjika+ina+Rakoto) Rabe   *Rabe was chased by Rakoto*
                        chase+pass+Rakoto Rabe
   b. *Ifenjehin-dRakoto sy Rabe   *Rabe and Rakoto are being e.o. chased*

2. Reflexives, Sociatives, and Reciprocals

12 a. Manaja (m+an+haja) azy_i $Rabe_j$ *Rabe respects him* $(i \neq j)$
   b. Manaja tena Rabe   *Rabe respects himself*
   c. Mifanaja Rabe sy Rakoto   *Rabe and Rakoto respect each other*

13 a. miaraka (m+i+araka)   izahay   *We are together*
            pres+av+follow we.excl
   b. miasa (m+i+asa)   izy   ireo   *They are working*
          pres+av+work 3nom dem.pl
   c. miara-miasa (m+i+ara(ka)-m+i+asa)   izahay   *We work together*
              pres+av+follow-pres-av-work we.excl

   d. mpiara-miasa (mp+i+ara(ka)-miasa izahay   *We are co-workers*
               er+av+follow-pres+av+work we.excl

The prefixal status of *miara-* is shown by the fact that throughout the language compounding w+w′ triggers the loss of final *-ka*, *-tra*, and *-na* on w, mutating an initial continuant of w′ to the corresponding non-continuant: *manapaka+hevitra* 'decide: lit cut+thought' = *manapa-kevitra*. But with *miaraka*+verb, usually an initial consonant on w′ just copies that on *miaraka*. So we have *hiara-hiasa*, *hiara-hihira* 'will jointly work, sing, etc. rather than *hiara-kiasa*, *hiara-kihira*, etc.

3. Lexical Diversity: Chaining and Inanimates

14 a. mifandimby (m+if+ aN+dimby)   ny taona   *The years follow upon one another*
                      pres+rec+av+successor det year

   b. Ohatra ny zaza mifanarakaraka   izahay   *We quarrel all the time* (like older and
        Like   det child pres.rec.(follow)^2 we.excl.   younger siblings)

   c. mifanapatapaka (m+if+an+tapaka^2) eto ireto   roa tsipika ireto   *These two lines intersect here*
                      pres+rec+av+cut   here dem.pl two line   dem.pl

notation w^2 is the reduplication of w. It involves dropping weak endings *-ka*, *-na*, *-tra* and some consonant mutation: *tapaka*^{2} = *tapatapaka*; the (non-reciprocal) av form is *manapatapaka*. Reduplication is widely used, applies to roots (and some *aN*+root) and so feeds IF(in distinction to Chicewa). Reduplicating after reciprocalization in (14b) we get, incorrectly, **mifanapakapaka*.

4. Some (classically) Lexical Properties of Reciprocals

4.1 Affixless Reciprocals
     Malagasy presents some "bare" reciprocal lexical verbs, reminiscent of English *fight*, *argue*, *kiss*. Most if not all of these also take reciprocal morphology, so they are cases where the reciprocal and non-reciprocal verb have the same meaning.

15 a. mipaka (m+i+paka) / mikaona (m+i+kaona) ireo hazofisaka ireo
              pres+av+touch   pres+av+join these boards   these
       These boards touch / are joined

   b. mifampipaka (m+ifamp+i+paka) / m+ifamp+i+kaona ireo hazofisaka ireo
       These boards touch / are joined to each other

16 a. Akaiky ny tranoko ny azy   *His house is near mine*
        near det house.my det his

   b. mifanakaiky (m+if+ an+akiky) ny trononay   *Our houses are near each other*

17. Mifanasaka / misasaka (< sasaka 'half') ny ankizilahy sy ny ankizivavy ao am-pianaranay
       The boys and the girls in our class each number half

Similar are: *manatrika / mifanatrika* 'attend to, help'; *tandrify / mifanandrify* 'be opposite'

4.2 Allomorphs and Selection of IF vary with lexical properties of verbs
     The alternative to treating *if* as a lexical prefix is to derive the set taking reciprocal P1 *mifanenjika* syntactically from a binary relation denoting P2 + a reciprocal pronoun *if*: [*manenjika +*

if]. But ordinary pronouns do not vary in form with active voice morphology: *ma̱nenjika azy izy* lit: chases him he; *mi̱kapoka azy izy* 'beats him he'; *ma̱hita azy izy* 'sees him he'. So the attested allomorphy is unexpected on the *if* = pronoun view, natural on the *if* = affix view. Dually pronouns do vary for person and number in Malagasy. E.g. the accusative plurals are: *anay* (us.excl), *antsika* (us.incl), *anareo* (you.pl), and *azy* (*ireo*) (3 (dem.pl)). But *if* marks neither person nor number.

Regarding selection, IF selects active verbs and yields active verbs as values, as shown by their imperative forms.

18 a. M.an.enjika azy izy 'chases.act him he'   b. Mifanenjika izy ireo '
   pres.av.chase him he   pres.rec.act.chase 3nom dem.pl

19 a. Manao (m.an.tao) farafara ho azy Rabe   *Rabe is making beds for him/them*
           pres.av.do bed   for 3acc Rabe
   b. Manaova (m.an.taov.a) farafara ho azy!   *Make beds for him/them*!
              pres.av.do.imp

20 a. Mifanao (m.if.an.tao) farafara Rabe sy Rajaona   *R and R are making beds for e.o.*
           pres.rec.av.do
   b. Mifanaova (m.if.an.taov.a) farafara!   *Make beds for each other!*
              pres.rec.av.do.imp

21 a. ataon-dRabe ho an-dRasoa ny farafara   *The bed is being made by Rabe for Rasoa*

   b. ataovy (a.taov.y) ho azy ny farafara   *Be made (by you) the bed for her*
           tv.do.imp for her det bed

   c. **ifataon-Rabe sy Rasoa ny farafara   *The bed is being made for e.o. by R & R*

NB: The translations of non-active Ss in English are awkward, but they remind the reader that the verbs are in a different morphology than the "active" one. They are fully natural in Malagasy. Note that in distinction to English all the four non-active voice verbs have imperative forms – indeed they are what you use in practice. The active is more like a hortative. □

4.3 Some reciprocal verbs lack a non-reciprocal source

22 a. Mifanaritarika (m+if+an+tarika[2]) any an-tsena any ny tovolahy
                      pres+rec+av+lead there loc-market there det young.man
        The young men walk around the market a bit helter-skelter

   b. *manarika, *mifanarika. So the apparent sources for the reciprocal in (22a) do not exist.

23 a. Nifanena (n.if.an.tsena) t.any an-tsena Rabe sy Ravelo   *R and R met e.o. at the market*
              pst.rec.av.meet pst.there loc-marked R and R

   b. *manena 'meet'; *mitsena* = m.i.tsena 'meet'.

As indicated here, many roots take both *man-* and *mi-* active prefixes, but many also take just *man-* and many also take just *mi-*. Again lexical unpredictability.

4.4 Reciprocal verbs which differ in meaning from their non-reciprocal source

24 a. mifampitaritarika any an-tsena any ny tovolahy 'same meaning as (22a)'

   b. mitarika / mitaritarika an-dRanaivo any an-tsena Rabe
      Rabe leads/guides Ranaivo in the market

So in (24a) the root *tarika* 'lead' accepts the av *mi* prefix, optionally reduplicates, but both uses mean 'lead, guide' not 'enter pele-mele'. So if we thought to interpret the meaning of (24a) using (24 c) below we would not get the right meaning (interpreting *if as* EACH OTHER):

   c. [P1mitaritarika [if]] [Ranaivo sy Rabe]
       *R & R lead each other in the market   ✓*They moved around pele-mele in the market*

25 a. mifanisa (m.if.an.isa)   ny ankizivavy sy   ny ankizilahy ao am-pianara.nay
             pres.rec.av.count det girls   and det boys   there at-class.our
      There are the same number of boys as girls in our class

   b. manisa ny mpianatra tonga ny mpampianatra   *The teacher counts the students (who) arrive*

So *manisa* means to count, its reciprocal *mifanisa* does not mean "Each counts the other(s)"

26 a. M.i.dera azy aho   b. M.ifamp.i.dera   hery ny candidats
       praise   him 1s.nom   demonstrate (their) force the candidates

27 a. Kopahy   ny vovoka   manototra ny akanjo.nao   *Flap off the dust which covers your clothes*
        Brush.off det dust (rel) <u>covers</u>   det clothes.your

   b. Mifanototra hiditra ao am-pianarana ny ankizy *The children want to enter class simultaneously*

So reciprocal *mifanototra* conjures images of children crowding each other to get into class, whereas non-reciprocal *manototra* (*m.an.tototra*) means to fill in, cover. A more striking case, beyond the scope of this article is the interrogative verb *maninona?* 'What (are you) doing?' and its "reciprocal" *Mifaninona?* 'What kin relation are you?'

4.5 Agent Nominalizations apply to reciprocal verbs: mp+Vav

28 a. Mianatra 'studies' ⇒ mpianatra 'student'
      Mampianatra 'cause to study' ⇒ mpampianatra 'teacher'
      Mifanampy 'help e.o.' ⇒ mpifanampy 'people who are helping e.o.'
      Mifankahalala 'detest e.o.' ⇒ mpifankahalala 'people who detest e.o.'
      Mifankatia 'love e.o.' ⇒ mpifankatia 'lovers'

NB: Nominalization (here and later) preserves verbal subcategorization:

29 a. ny mpampianatra ahy "my teacher" lit: the teacher me, (*ahy* is accusative))
    b. ny mpampianatro = 'the teacher-my' (the teacher I "possess" e.g. hired)

Two properties of reciprocals used in the literature to justify that they are P2s+a pronoun:

4.6 Object comparison readings

(30a) has an object comparison reading, (30b.2), reasonable if the transitive verb has an independent direct object:

30 a. John and Mary like each other more than Bill and Susan
    b.1 J & M like e.o more than they like Bill and Susan (Subject Comparison)
    b.2 J & M like e.o. more than Bill and Susan like them (Object Comparison)

But in Malagasy we find only the subject comparison reading, reasonable if the reciprocal P1 does not consist syntactically of a P2 + object pronoun:

31 a. Mifankatia (m.ifank.tia) kokoa Rabe sy Rasoa   noho   Ranaivo sy Ravao
                    pres.rec.like more Rabe and Rasoa than/against Ranaivo and Ravao
    Rabe and Rasoa like e.o more than Ranaivo and Ravao like e.o   (Subject Comparison)
     **Rabe and Rasoa like e.o. more than they like Ranaivo and Ravao*   (Object Comparison)

4.7 Event quantifiers

Ss like (32a) are not felt as ambiguous as between (32b) and (32c). A speaker of (32a) might simply not have considered the distinct situation types expressed by (32b,c). So the adverbial modification adds new information.

32 a. Nifandaka (n.if.an.daka)   intelo Rabe sy Rakoto   *Rabe and Rakoto kicked e.o. three times*
                  pst.rec.av.kick 3 times R and R

    b. Nifandaka intelo <u>nisesy</u> Rabe and Rakoto   *They kicked each other three times <u>in a row</u>*
    c. Nifandaka intelo <u>avy</u> Rabe and Rakoto   *They kicked each other three times <u>each</u>*

4.8 Quantified antecedents

Worth noting that reciprocal P1s accept quantified DP antecedents just as non-reciprocal ones do (see Keenan 2008, Paul 2012).

33 Mifankahazo / Mifanentana   ny mpianatra rehetra (ao an-dakilasy)
    Get-along-with e.o // get-along-with e.o. det student   all   (there in-class)
    The students in the class all get along with each other

ny mpianatra rehetra 'det student all' can be replaced by: *ny ankamaroan'ny mpianatra* 'the majority of the students', *ny mpianatra vitsivitsy* 'few students', *ny antsasaky ny mpianatra* 'half the students', *ny valompolo isan-zaton'ny mpianatra* '80% of the students, *ny roa ampahatelon'ny mpianatra* 'two thirds of the students'. Often non-increasing DPs are expressed predicatively:

34 a. Tsy nisy afa-panadinana ny mpianatra na iray aza   *No student at all passed the exam*
      not was/had free-exam det student   or one even

    b. Latsaka ampahatelony ny mpianatra m.ifank.ahazo   L
      Less   a-third-of   det student   pres.rec.receive (get-along-with e.o.)
      Less than a third of the students get along with each other

    c. Antsasaky ny mpianatra katroka no m.if.an.entana
      half.gen det student   exactly FOC get along with each other
      Exactly half the students get along with e.o.

4.9 We vs I readings
     In passing, though not clearly relevant to our current concerns, we note that the "I" reading, (35c) of (35a) is not available in Malagasy:

35 a. John and Mary think they love each other
   b. John and Mary each think "We love each other"   ("We" reading)
   c. John thinks he loves Mary and she thinks she loves him ("I" reading)

36 a. Mihevitra Rabe sy Rasoa fa   mifankatia   *R & R think that they love e.o.*
       pres.av.think R and R   comp love e.o.
       Each thinks "we love each other" – no other reading

HLM represent the scope ambiguity in (35) according to the landing site of *each* which flitters. But reciprocal *if* in Malagasy is synchronically monomorphemic. (But historically the Malagasy reciprocal reconstructs to *fai* (Blust, pc < *paRi*). (cf Futunan *fe-*). Perhaps the *i* in *if* is just the active voice *i-* and the dipthongue *ai* assimilates to the following vowel.

5.0 Productive Processes which feed Reciprocal Formation

5.1 Circumstantial verbs (cv)
     These are formed with full productivity by suffixing *-ana* to an active form and shifting stress rightward. The active prefix may be *aN-*, *i-*, *a-* as well as the result of prefixing them with reciprocal and causative affixes (plus a few others mentioned in passing below). CV verbs are used when a "subject" DP is oblique: locative, instrumental, temporal, manner,...

37 a. n.an.enjika   azy   amin'io fiara io Rabe
       pst.av.chase him.acc with that car that Rabe
       Rabe chased him with that car

   b. N+aN+enjika+ana+Rabe (nanenjehan-dRabe) azy   io   fiara io
       pst+[[av chase]+cv]+Rabe   him.acc that car that
       That car was used by Rabe to chase him (Rabe ≠ him)

   c. nifanenjehan-dRabe sy Rakoto ireto   fiara ireto
      pst.rec.av.chase.cv-R and R   dem.pl car dem.pl
      Those cars were used by R & R to chase each other in

   d. ny fiara (izay) nifanenjehan-dRabe sy Rakoto   *the car(s) in which R & R chased each other*
      the car (that) av+chase+cf.Rabe him

Gen Recall: only subjects relativize, etc. so we often illustrate cv with relative clauses

38 a. ny soa (izay) nifanaovantsika   (n+if+aN+tao+ana+ntsika)
       the good (that) was done by us to e.o.   pst+[[rec+av+do]+cv]+our.incl

   b. ny taratasy nifanoratan-dRabe sy Rasoa   n+if+aN+soratra+ana+R&R
      the letters written to e.o by Rabe & Rasoa pst+[[rec+av+write]+cv]+R&R

c. Nahoana izy ireo no tsy hifanampy?   Tsy fantatro   izay   tsy   h.if.an.ampi.a.ny
    why   they   foc not fut.rec.av.help?   Not known.by.me Comp not fut.rec.av.help.cv.3gen
    Why don't they help each other?   *I don't know why they don't help each other*

5.2 Causative verb formation

     Causative *amp-* (*ank-*) forms active verbs from active verbs, increasing arity by one (as does cv formation), as with morphological causatives generally (Turkish, Japanese). The "subject" argument of the causativized verb becomes accusative, and any preexisting accusatives remain as such.   Unlike cv formation it is not a "voice" and, like reciprocals, just forms imperatives like actives in general.

39 a. Nandihy izy   b. nampandihy azy aho   (n.amp.aN.dihy)
      He danced   *pst.cause.av.dance him I "I made him dance"*   pst.caus.av.dance

40 a. manasa (m.aN.sasa) lamba izy   b. mampanasa (m.amp.aN.sasa) lamba azy aho
    wash   *clothes he*   pres.cause.av.wash clothes him I
    He is washing clothes   *I am making him wash clothes*

Causativizing ditransitive verbs yielding four arguments is unproblematic, and even iterating *amp-* (once) is grammatical (but heavy):

41 a. Nanome vola azy aho   b. Nampanome vola an-dRabe azy aho
      gave money him I   made-give money acc-Rabe him I   *I made him give money to Rabe*

    c. mampandroso vary ny vahiny an-dRasoa Rabe   *Rabe made Rasoa offer rice to the guests*
       cause-offer   rice the guest   acc-Rasoa Rabe

    d. m.amp.amp.i.homehy azy an-dRabe aho   *I made Rabe make him laugh*
       pres.caus.caus.av.laugh 3acc acc-Rabe I

But Causatives and Reciprocals commute syntactically: Rahajarizafy 1960. But semantically **IFoAMP** ≠ **AMPoIF**. Similar claims hold for Futunan (Moyse-Faurie) and for Chicewa (Mchombo)

42 a. Nifampanoratra   taratasy fisaorana ireo ben'ny tanana ireo   (n.if.amp.aN.soratra)
      pst-rec+caus+av-write letter   thanks   those mayors   those   pst.rec.caus.av.write
      Those mayors made each other write thank-you letters

   b. Nampifanoratra   an'ireo   zanany   ireo ny rainy   (n.amp.if.aN.soratra)
      pst+cause+rec+av+write acc'those children.his those the father.their   pst.caus.rec.av.write
      Their father made his children write to each other

43. Mfûmu i+na+mény+án+its+á   anyǎni   (Chicewa; DMP)
     9chief 9sub+pst+hit+rec+cause+fv 2baboons
     The chief made the baboons hit each other

     Alenje   a+na+mény+ets+an+a   (kw á mûbzi)
     2hunters 2sub+past+hit+cause+rec+fv (by 10goats)
     The hunters got each other hit (by the goats)

44. na faka-fe-'u'uti-'aki a   le   *sā*   kuli e   le toe   Futunan; Claire Moyse-Faurie

pst cause-rec-bite-rec abs art clsf dog erg art child
The child made the two dogs bite each other

e fe-faka-gakulu'aki   a   le sā toe
3 rec-cause-move.slightly'rec abs art clsf child
The two children made each other move a little

In causatives of reciprocals, e.g. (42b), the antecedent of reciprocal *if* is the surface object, not the subject, which is the Agent of the causativized verb. This pattern holds for reflexives as well:

45. Nampamono   tena an-dRabe ianao   *You made Rabe kill/hit himself*
     pst.caus.aN.kill self acc-Rabe 2s.nom

5.3 Causatives of Reciprocals take Passive-INA and Circumstantial-ANA

46 a. Tokony *h.amp.if.an.entan.ina*   ve ny isan'ny olom-boafidy sy ny isan'ny mponina?
      Should [fut+[[cause+[rec+av+entana]]+pv]] Q the number of officials elected and the number of
      the inhabitants be made to correspond to e.o.? (Nws92-95)

   b. ny taratasy *nampifanoratan*-dRabe (n+amp+if+an+soratra+ana+gen.Rabe) ny zanany
      the letters   pst+cause+rec+av+soratra+cv-Rabe   the children-his
      the letter(s) that Rabe made his children write to each other
      (*The letters that were caused by Rabe to be written by his children to e.o.*)

   c. ny teny vahiny nifampianarantsika   (n + if+ amp + i + anatra + ana + ntsika)
      the foreign lgs taught to each other by us   pst+[[rec+caus+av+study]+cv+1pl.incl.gen]

NB: (46c) shows that reciprocals of causatives (-*amp*-) undergo Circumstantial Formation

5.4 Iterating Causative and Reciprocals?
      (42a,b) show that causative creating AMP applies to active verbs built from reciprocal IF and conversely, so in principle they should iterate.

47 a. Nandaka (n+aN+daka) azy   isika   b. Nifandaka (n+if+aN+daka) isika
          pst+av+kick 3acc we.incl   pst+rec+av+kick we.incl
      We kicked him   *We kicked each other*

   c. Nampifandaka (n+amp+if+aN+daka) antsika   Rabe
                  pst+cause+rec-af+kick us.acc.incl Rabe
      Rabe made us kick each other   NB: The antecedent of *if* does not c-command it.

   d. Nifampifandaka (n+if+amp+if+aN+daka)   isika   *We made each other kick each other*
                  pst+rec+cause+rec+av+kick we.incl

   d′. N.if.amp.if.an.oratra   taratasy fisaorana Rabe sy Rakoto   (Built from 42a)
       pst.rec.cause.rec.av.write letter   thanks   Rabe and Rakoto
       Each of Rabe and Rakoto brought it about that the other had letters of thanks written

   e. N.amp.if.amp.an.oratra   taratasy azy ireo   aho   (Built from 42b)

> pst.caus.rec.caus.av.write letter   3acc dem.pl 1s.nom
> *I obliged them to have letters written to each other*

Educated non-linguists start pausing at (47d); structural linguists smile but do not reject it – it is well formed morphosyntactically and compositionally interpreted. So we count it grammatical, though it is pushing the performance boundary. Another example that was interpreted correctly with only modest exasperation was (47b). But (47c) seems clearly to cross the performance boundary:

48 a. Mampifanome vola an-dRabe sy Rakoto aho   *I had Rabe and Rakoto give each other money*
        pres.rec.give money acc-R and R 1s.nom

   b. M.if.amp.if.an.ome   vola   Rabe sy Rakoto   *Each of R and R had the other given money*
        pres.rec.caus.rec.av.give money R and R

   c. M.amp.if.amp.if.an.ome   vola   azy ireo   aho   *I made them each have the other given money*
        pres.caus.rec.caus.rec.av.give money 3acc dem.pl I

5.5 Abstract Circumstantial Nominalizations f+Vcv
     Nominalization of circumstantial verbs (preserving subcategorization and case marking of arguments) is highly productive. Reciprocal verbs fully participate; the reciprocal may have an Agent phrase antecedent or be abstracted to mean "mutual".

49 a. Mifanolotra (m.if.aN.tolotra) f.an.omez.ana isan-taona isika   *We offer e.o. gifts each-year*
                pres.rec.av.offer nom.av.give.cv each-year we.incl

   b. Ho.tohizana   ny fifanolorantsika (f.if.aN.tolotra.ana.ntsika) fanomezana isan-taona
        fut.continued det   nom.rec.av.offer.circ.our   gifts   each-year
        Our mutual offering of gifts each year will be continued (textual example)

   c. f.if.anka.tiav.ana 'mutual love';   ny fifankatiavan-dRabe sy Rasoa
        nom.rec.caus.love.cv   det mutual love-gen.Rabe and Rasoa   *R&R's mutual love*

50 a. Nanameloka ny fifamonoana (f.if.aN.vono.ana) niseho   tany   Rwanda ny ONU
        condemned the genocide   nom.rec.av.kill.cv happened pst.there Rwanda det U.N.
        The U.N. condemned the killings (which) happened in Rwanda

   b. Ny fifandirana (f.if.aN.ditra.ana)   ela   loatra no   tsy mampiroso ny dinika
        det squabbling nom.rec.av.dispute.cv long too   FOC not advance   det careful.study
        This continual squabbling hinders the deliberations (lit: not make-advance = make not advance)

   c. Ny polisin'ny tanana   no   mandamina ny fifamoivoizana
        det police'gen.det town FOC control   det traffic (mutual going back and forth)

   d. Fifanampiana Malagasy 'Malagasy Mutual Aid (Society)'   (F.if.aN.ampy.ana = nom.rec.av.aid.cv)

Morphological reciprocal verbs nominalize in Chicewa (Mchombo) and Futunan (Moyse-Faurie).

5.6 Reciprocal Predicates Coordinate

51 a... ny fanaovana fanasana [ifampiarahabana sy [ifampirariana soa]] amin'ny mpiara-miasa

aminy ... (newspaper example)
b... the doing of banquets in which they and their co-workers greet each other and wish
each other well ...

52. Nifampiarahaba sy nitsiky izahay   *We greeted each other and smiled*
greeted e.o.   and smiled we.excl

5.7 Possessive Head Incorporation feeds Reciprocalization

Keenan & Ralalaoherivony 2000 discuss a highly productive process of Possessor NP Raising with
incorporation of the head of the possessive DP incorporated into the predicate:

53 a. Tery [ny trano.nay]   *Our house is cramped*   b. [Tery trano] izahay   *We are house-cramped*
tight det house.our.excl   Tight house we.excl

Raising + Incorporation from Object also occurs productively and feed Reciprocal Formation:

54 a. Mandidy [ny nonon'i Soa] ny dokotera   b. [Mandidy nono] an'i   Soa ny dokotera
av.cuts   det breast'art Soa det doctor   av.cuts   breast acc'art Soa det doctor

55 a. mandrirotra ny volon'i Soa i   Vao   b. mandriro-bolo an'i Soa i Vao
pres.act.pull det hair'art Soa art Vao   pull-hair   acc'at Soa art Vao
Vao is pulling Soa's hair   *Vao is hair-pulling Soa*

c. mifandriro-bolo   i Soa sy i   Vao   *Soa and Vao are hair-pulling each other*
pres.rec.av.pull-hair art Soa and art Vao

Similarly we have: *nifanongotra nify Rasoa sy Ravelo* 'R&R reciprocally teeth pulled'; *mifankahita
toetra Rasoa sy ny vadiny* 'Rasoa and her husband know each other's character'. We might further note
that the incorporated possessive head is not fully fused with the host verb, and separates from it when the
host verb is non-active and the Agent phrase is present:

56 a. Tsy fantatro   izay   ifandroritan'ny zazavavy   volo
not know.pass.1s comp rec.pull.cv'det   young.women hair
I don't know why the women pulled e.o.'s hair

b. Nahagaga anay ny fifanongotan'izy ireo   nify   *Their mutual pulling of teeth surprised us*
surprised us   det nom.rec.av.pull.cv'3dem.pl teeth

c. Mampalahelo anay ny fifandroritan'i Soa sy i Vao volo   S & V's mutual hair-pulling saddened us
cause-sad   us.acc det nom.rec.av.pull.cv Soa & Vao hair

There are cases however where a derived form is acceptable but the intermediate stage is not:

57 a. mifangala-bady (m.if.aN.halatra.vady)   Rabe sy Ranaivo   *R&R steal e.o.'s spouses*
rec. steal-spouse   pres.rec.av.booty, spouse Rabe and Ranaivo

b. *mangala-bady an-dRanaivo Rabe   *Rabe spouse-steals Ranaivo*

Nor is Raising+Incorporation totally free: the predicates created when Raising is from subject tend to be

individual level, not stage level, and so the possession is often inherent rather than transitory. Notwithstanding these bounds this sequence of operations is widely used, and can iterate at least once:

58 a. Lavitra tokoa [ny lalana halehanay (h.a.leha.nay)]   *The route we have to go on is long*
       far   very det route   fut.tv.go.our-excl

   b. [Lavi-dalan-kaleha tokoa] izahay   *We have a long way to go* (izahay = we.excl.nom)

We even managed to squeak an acceptance for 58c, whose verb straddles the performance boundary:

   c. Nifampifandaka (n+if+amp+if+aN+daka)   zanaka isika
                       pst+rec+cause+rec+av+kick child   we.incl
       We made each other's children kick each other

5.8 Voice Harmony
       Malagasy does not distinguish an infinitival form of a verb from a voiced tensed form, so complex control structures in English correspond to sequences of tensed verbs in which tense on later verbs is usually determined as a function of the tense/root of the earlier verbs. Verbs like *mikasa* 'intends', *mitady* 'seeks to', *maniry* 'wants', *mikendry* 'plans' form complex verbs bound to the same subject and governing future tense. Relativizing (etc) on an argument of the final verb triggers to appropriate voice on all the verbs in the chain – Voice Harmony. (Caveat: Iceberg ahead!). Here is a representative example. Note that the initial verb, *mikasa* 'intend' governs future on the following verbs (regardless of voice):

59 a. Nikasa   hifanampy hitsara   ny fanadinana omaly   izahay   (All verbs active)
       pst.intend fut.rec.help fut.judge det exam   yesterday we.excl/nom
       We intended to help each other grade the exams yesterday

   b. ny fanadinana (izay) no.kasai.nay   h.if.an.ampi.ana   h.i.tsara.ina   omaly
       det exam   comp pst.intend.our.excl fut.rec.av.help.pv/cv fut.av.judge.pv yesterday
       the exams that we intended to help each other grade yesterday
       lit: *the exams that were intended by us to be helped by each other to be corrected yesterday*

   c. Omaly   no n.i.kas.an.tsika   h.if.an.ampi.ana   hitsarana   ireo fanadinana ireo
       yesterday FOC pst.av.intend.cv.our-incl fut.rec.av.help.cv fut.av.judge.cv those exams those
       It was yesterday that we intended to help each other grade those exams

A common way of expressing control uses an apparent nominalization of the complement verbs:

60 a. Maniry   hiala   sigara   aho   *I want to quit smoking*
       pres.av.desire fut.av.lose cigarettes 1s.nom

   b. [Iriko (iry.ina.ko)   hialana]   ny sigara   *I want to quit smoking*
            desire.pv.1s.gen fut.lose.pv det cigarettes

   c. Iriko   [DP ny hiala sigara]   *I want to quit smoking*
      desire.pv.,by.me [det fut. av. lose cigarettes]

The subject of (60a) is "I", that of (60b) is "the cigarettes" and that of (60c) is the DP "the fut.quitting smoking". The DP boundary breaks the verbal sequence so the voice of the verb within the DP is active,

independent of that of the matrix verb, which is passive (pv). This use of the DP boundary works in our more complex examples. Thus (59c) above, with all verbs circumstantial, is paraphrased by (60d) below:

   d. Omaly no nikasantsika [ny hifanampy hitsara ireo fanadinana ireo]
       yesterday FOC intend.cv.our [det fut.rec.av.help fut.av.judge those exams those]

5.9 Cross clausal binding

61 a. Mampanantena an'i   Koto ny zokiny   fa   ho azony   ny valisoa (iriny)
      cause.hope   acc'art Koto det elder sibling comp fut receive.pass.3gen the prize (desired by him)
      Koto promises his elder sibling$_j$ that the prize will be received by him$_j$

   b. Mifampanantena   i   Koto sy ny zokiny   fa   hahazo   ny valisoa (iriny)
      pres.rec.caus.hope art Koto and det elder sibling.his comp fut.av.receive det prize desired by him
      Koto and his elder sibling promise each other that he (the other) will get the prize (*he desires*)

   b′. Mifampanantena fa hahazo ny valisoa (iriny)   i Koto   sy   ny zokiny
       rec.hope   that fut.receive the prize desired by him art Koto and det elder sibling of his

   b′′. Mifampanantena hahazo   ny valisoa (iriny)   i Koto sy   ny zokiny
       rec.hope   fut.receive the prize   (desired by him) art Koto and det elder sibling of his

We are clearly just touching serious binding patterns here. Let us note cases where both the matrix and "lower" verb are reciprocal:

62 a. Manome toky Rabe fa   hamelona an-dRasoa   *Rabe promises that (he) will support Rasoa*
       av.give   trust Rabe comp fut.av.live acc-Rasoa

   b. Mifanome toky Rabe sy Rasoa fa hifamelona   *R&R promise e.o. to support e.o.*

   c. Mifanome toky hifamelona Rabe sy Rasoa   *R&R promise e.o. to support e.o.*

In addition Raising to Object (Paul and Rabaovololona 1998) feeds reciprocalization:

63 a. Miahiahy Rasoa fa   manitsakitsaka azy Rabe   *Rasoa suspects that Rabe is unfaithful to her*
      suspects Rasoa that unfaithful to   her Rabe

   b. [Miahiahy an-dRabe ho manitsakitsaka azy] Rasoa *Rasoa suspects Rabe of being unfaithful to her*
      suspects acc-Rabe   HO deceives   her Rasoa

   c. Mifampiahiahy ho manitsakitsaka / mifanitsakitsaka Rabe sy Rasoa
      rec.suspect   HO deceive   deceive e.o.   Rabe and Rasoa
      Rabe and Rasoa suspect each other of being unfaithful (to e.o.)

Interim Conclusion

    Malagasy reciprocals are highly productive. They exhibit most if not all classical properties of being lexical, but also enter many syntactically productive paradigms. Thus our data do not support a universal Lexicon/Syntax parameter (contra Siloni 2012) nor do we see anything conceptually problematic about an operation that introduces bound morphology in the syntax and also has exponents in the lexicon.

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