We present an in depth study of reciprocals in Malagasy (W. Austronesian, Madagascar), arguing that they exhibit both lexical and syntactic properties and so are not localized to the Lexicon or to the Syntactic component thus do not support a Lexicon/Syntax parameter (for Malagasy) a la Siloni 2012. Rather they fit more naturally into a Distributed Morphology perspective (Embick and Noyer, 2005). Malagasy reciprocals are very productive and expressed exclusively in the verbal morphology; it has no reciprocal pronouns. In distinction to Romance, Germanic and Slavic, reciprocals do not overlap with reflexives, the latter expressed exclusively by pronouns in argument position. Reciprocals only overlap some with sociatives; there being a sociative prefix distinct from the reciprocal.

Preliminaries

Like Philippine languages generally Malagasy syntax rides on its voice system. Verbs are derived by iteratively affixing roots (radicals) not themselves always words. We illustrate the four atelic voices below: AV (active voice): m+pfx+root; TV (theme voice): a+root; PV (patient 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.av.offer rice det guest prep’det dishes new he/she
   He offers rice to the guests on the new dishes

1 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

1 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

1 d. [anolory (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

These Ss all consist of a Predicate constituent followed by a subject DP. All are atelic, all have an imperative form, and all mark past tense with n/no and future with h/ho. They differ as follows: only the AV verb has m in present tense (which alternates with past n and future h). Also AV imperatives are formed 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 they suffixe y (= /i/). The imperatives of the verbs in (1) in order are: manolora, atolory, tolory, anolory. Independent of voice suffixing a root (+/- prefix) may induce an epenthetic consonant (better treated as part of the root, Erwin 2001 and Pearson 2001)

The first three voices, (1a,b,c), affix the root directly. The neutral active prefixes are mi, man, ma, and o (The latter two are closed classes). Whether a root takes only mi, only man, or both, must be listed. Some verbs have suppletive forms in some voices. The most usual PV ending is -ina, but in some cases, as here, -ana, (or -ena or just -na). We use passive for tv and pv collectively. Whether a root takes tv, pv or both must, again, be listed, and so is lexically conditioned.
In contrast, circumstantial verb (CV) formation is fully productive, built by suffixing -ana to any of the AV forms. All AV verbs feed circumstantial (cv) forms, which nominalize by prefixing f- with complete productivity, preserving subcategorization and case marking of arguments and so is more transparent than gerund formation in English (see Ntelitheos 2012). 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’ vs -ny ‘his/her’). In all the Ss in (1) only the clause final nominative DP can be relativized, host the interrogative particle ve, etc.

We now discuss the derivation of reciprocals, arguing that it is both lexical and syntactic in nature and thus not limited to just one component of the grammar.

1. Basic Reciprocals

Reciprocal IF affixes n+2 place AV predicates φ to form n+1 place AV ones IF(φ) which take a set as argument (per DMP/Poortman et al).

1. Lexical Properties:

1.1 Reciprocal IF selects AV verbs, its allomorphs conditioned by the choice of AV prefix

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

b. Mifanenjika (m+rec+av+chase) Rabe sy Rakoto  
  R&R are chasing each other

c. Mifanendonje! (Stress shifted from ne to nje = "dze")  
  Chase each other! (imperative)

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

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

c. **Nifiarahaba isika  
  We greeted each other

4 a. Mahita anao aho  
  see you.acc 1s.nom  
  I see you

b. Mifankahita Rabe sy Rakoto  
  Rabe and Rakoto see each other

A closed class of o-prefix verbs behave similarly: m+o+ino ‘believe’, mifampino ‘believe in each other’

Remark amp- and ank- are causative prefixes but in av mi-, ma- and o- verbs they just support if-. Historically amp- is likely aN+f = nominalizer, as in synchronic aN+fo = ampo (= /a."pu/ ‘in heart’. And ank- is likely aN+h = nominalizer. So historically if may just prefixe to aN-active verbs.

1.2 P2s may be built from P3s+Argument, and P1s + “accessible” PPs:

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

b. m+if+aN+tolotra (mifanolotra) torovitarasa Rabe sy Rasoa  
pres+rec+av+offer advice Rabe and Rasoa  
  R and R offer e.o. advice
6 a. manoratra (m+aN+soratra) taratasy ho an-dRabe Rasoa
   writes       pres+av+write       letter   for acc-Rabe Rasoa
   Rasoa writes letters to Rabe

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

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

    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
     pres+av+lie       prep-Rasoa      Rabe
     Rabe lies to Rasoa

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

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

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

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

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

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 (though IF(φ) is AV: present tense m, imperative -a).

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

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

11 a. Enjehin-dRakoto (enjika+ina+Rakoto) Rabe
      chase+pass+Rakoto    Rabe
      Rabe is being chased by Rakoto

   b. *Ifenjehin-dRakoto sy Rabe
      Rabe and Rakoto are being e.o. chased

1.3 Some reciprocal verbs lack a non-reciprocal source

12 a. Mifanaritarika (m+if+an+tarika²) any an-tsena any ny tovolahy (w² = redup(w))
      pres+rec+av+lead there loc-market there det young.man
      The young men walk around the market a bit helter-skelter

   b. *manrika, *mifanarika. So the apparent sources for the reciprocal in (12a) do not exist.
13 a. Nifanena (n.if.an.tsena) t.any an-tsena Rabe sy Ravelo
   pst.rec.av.meet pst.there loc-market R and R
   R and R met e.o. at the market

   b. *manena ‘meet’; mitsena = m.i.tsena ‘meet’.

Similarly mifanerasera ‘to communicate’ appears derived from *manerasera, non-existent, (indeed
the apparent root sera no longer exists, serasera is (one of many) frozen reduplications).

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

14 a. mifampitaritarika any an-tsena any ny tovolahy ‘same meaning as (12a)’

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

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

So in (14a) 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 (14a)
using(14c) below we would not get the right meaning (interpreting if as EACH OTHER):

15 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)”

16 a. M.i.dera azy aho
   praise him 1s.nom

16 b. M.ifamp.i.dera hery ny candidats
   demonstrate (their) force the candidates

17 a. Kopahy ny vovoka manototra ny akanjo.nao Flap off the dust which covers your clothes
   brush.off det dust (rel) covers det clothes.your

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

So reciprocal mifanototra conjures images of people crowding each other, whereas non-reciprocal
manototra (m.an.tototra) means to fill in, cover. A more striking case is the interrogative verb
maninona? ‘What (are you) doing?’ and its “reciprocal” Mifaninona? ‘What kin relation are you?’

2. Some Syntactic Properties of Reciprocal Formation

2.1 Possessive Head Incorporation feeds Reciprocalization

   Keenan &Ralalaohervony 2000 discuss a highly productive process of Possessor Raising with
   incorporation of the head of an absolutive possessive DP into the predicate:

18 a. Tery [ny trano.nay]
   tight det house.our.excl

18 b. [Tery trano] izahay
   Tight house we.excl
   Our house is cramped

   We are house-crammed
Raising + Incorporation from Object also occurs productively and feeds Reciprocal Formation:

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

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

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

Similarly we have: nifanongotra nify Rasoa sy Ravelo ‘R&R reciprocally teeth extracted’;
mifankahita toetra Rasoa sy ny vadiny ‘Rasoa and her husband know each other’s character’. We
might 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:

21 a. Tsy fantatro izay ifandroritan’ny zazavavy volo
   not know.pass.1s comp rec.pul.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
   surprised us det nom.rec.av.pull.cv’3dem.pl teeth
   Their mutual pulling of teeth surprised us

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

There are cases however where a derived form is acceptable but the intermediate stage is not
(reminiscent of English Ed is said to be a thief vs. ??They say Ed to be a thief:)

22 a. mifangala-bady (m.if.aNhalatra-vady) Rabe sy Ranaivo
   rec. steal-spouse pres.rec.av.booty-spouse Rabe and Ranaivo
   R&R steal e.o.’s spouses
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 inalienable rather than
transitory. Still, this sequence of operations is very widely used, and can iterate at least once:

23 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 23c, whose verb straddles the performance boundary:
2. ECM (Raising to Object) feeds Reciprocization

24 a. Miahiahy Rasoa fa manitsakitsaka azy Rabe Rasoa suspects that Rabe is deceiving her
voy. sus Rabe that deceives her Rabe

b. [Miahiahy an-dRabe ho manitsakitsaka azy] Rasoa Rasoa suspects Rabe of deceiving her
voy. sus acc-Rabe HO deceives her Rasoa

25 a. Nandihy izy b. nampandihy azy aho (n.amp.aN.dihy) He danced pst.caus.av.dance him I “I made him dance” pst.caus.av.dance

26 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):

27 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 R

c. mampandroso vary ny vahiny an-dRaso Rabe Rabe made Rasoa offer rice to the guests cause-offer rice the guest acc-Raso 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
Causatives and Reciprocals commute syntactically: Rahajarizafy 1960. But semantically IFoAMP ≠ AMPoIF. Similar claims hold for Futunan (Moysse-Faurie) and for Chicewa (Mchombo)

28 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

29. Mfûmu i+na+mény+án+its+á anyâni Chicewa; DMP
9chief 9sub+pst+hit+cause+fv 2baboons
The chief made the baboons hit each other

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

30. na faka-fe-’u’uti-’aki a le sâ 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 sâ 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. (28b), 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:

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

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

32 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+satratra+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 nifampianaranantsika (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: (32c) shows that reciprocals of causatives undergo Circumstantial Formation and (32a) shows that -ina passives (pv) can be formed after Reciprococolization and Causativization, so these operations can
apply in the syntax as well. At the lexical level -\textit{ina} exhibits irregularities and some suppletion so it applies also in the lexicon.

\textbf{2.5 Iterating Causative and Reciprocals?}

(28a,b) show that causative creating AMP applies to active verbs built from reciprocal IF and conversely, so in principle they should iterate.

\begin{enumerate}
\item \textbf{a. Nandaka (n+aN+daka) azy isika} \hspace{1cm} \textbf{b. Nifandaka (n+if+aN+daka) isika}
\hspace{1cm} \textit{We kicked him} \hspace{1cm} \textit{We kicked each other}
\item \textbf{c. Nampifandaka (n+amp+if+aN+daka) antsika Rabe}
\hspace{1cm} \textit{Rabe made us kick each other} \hspace{1cm} \textbf{NB: The antecedent of if does not c-command it.}
\item \textbf{d. Nifampifandaka (n+if+amp+if+aN+daka) isika}
\hspace{1cm} \textit{We made each other kick each other}
\item \textbf{d'. N.if.amp.if.an.oratra taratasy fisaorana Rabe sy Rakoto} (Built from 28b)
\hspace{1cm} \textit{Each of Rabe and Rakoto brought it about that the other had letters of thanks written}
\item \textbf{e. N.amp.if.amp.an.oratra taratasy azy ireo aho} (Built from 28a)
\hspace{1cm} \textit{I obliged them to have letters written to each other}
\end{enumerate}

Educated non-linguists start pausing at (33d); 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 (34b). (34c) seems clearly to cross the performance boundary:

\begin{enumerate}
\item \textbf{a. Mampifanome vola an-dRabe sy Rakoto aho} \hspace{1cm} \textit{I had R and R give each other money}
\hspace{1cm} \textit{pres.rec.give money acc-R and R 1s.nom}
\item \textbf{b. M.if.amp.if.an.ome vola Rabe sy Rakoto} \hspace{1cm} \textit{Each of R and R had the other given money}
\hspace{1cm} \textit{pres.rec.caus.rec.av.give money R and R}
\item \textbf{c. M.amp.if.amp.if.an.ome vola azy ireo aho} \hspace{1cm} \textit{I made them each have the other given money}
\hspace{1cm} \textit{pres.caus.rec.caus.rec.av.give money 3acc dem.pl I}
\end{enumerate}

\textbf{2.6 Circumstantial verbs (cv)}

These are already illustrated in (32b,c). As they play a major role in Malagasy syntax we illustrate a more complete paradigm below: they are formed with full productivity by suffixing -\textit{ana} to an active form, possibly modifying the last consonant of the root and introducing an epenthetic consonant, and shifting stress rightward. \textit{CV} verbs are used when a subject DP is a non-subcategorized oblique: locative, instrumental, temporal, manner,...
35 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 (that) av+chase+cf.Rabe him
   the car(s) in which R & R chased each other

NB Whenever we relativize (question, cleft) an oblique the governing verb will be in the cv form as only subjects relativize., etc. Thus expressions like (35d) are common and natural.

36 a. ny soa (izay) nifanaovantsika
   the good (that) was done by us to e.o.
   pst+[[rec+av+do]+cv]+our.incl

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

c. Nahoana izy ireo no tsy hifanampy?
   why they foc not fut.rec.av.help?
   Tsy fantatro izay tsy h.if.an.ampi.a.ny
   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

2.7 Circumstantial Nominalizations (See Ntelitheos 2012 for a careful book length study).
Prefixing (tensessss) cv verbs with /yields a gerundive nominal. It preserves the subcategorization and case marking of its verbal arguments. It is highly productive and transparently interpreted. The nominal may have DP internal antecedents for /if/ or /if/ may lack an antecedent, interpreted as “mutual”.

37 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
   Our mutual offering of gifts each year will be continued (textual example)
   fut.continued det nom.rec.av.offer.cv.our gifts each-year

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

38 a. Nanameloka ny fifamonoana (f.if.aN.vono.ana) niseho tany Rwanda ny ONU
   The U.N. condemned the genocide
   nom.rec.av.kill.cv happened pst.there Rwanda det U.N.
   Condemned the mutual 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 (f.if.aN.voivoy.ana)
det police’gen.det town FOC control det traffic (mutual nom.rec.av.shuffle.cv)

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

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

2.8 Agent nominalizations

These are formed by prefixing AV verbs, including reciprocals of causatives, so the agentive
reciprocal marker mp- applies both to lexical items and to phrasal ones:

39 a. Mianatra ‘studies’ \(\rightarrow\) mpianatra ‘student’
   b. Mampianatra ‘cause to study’ \(\rightarrow\) mpampianatra ‘teacher’
   c. Mifanampy ‘help e.o.’ \(\rightarrow\) mpifanampy ‘people who are helping e.o.’
   d. Mifankahalala ‘detest e.o.’ \(\rightarrow\) mpifankahalala ‘people who detest e.o.’
   e. Mifankatia ‘love e.o.’ \(\rightarrow\) mpifankatia ‘lovers’
   f. Mifanome vola ‘give e.o. money’ \(\rightarrow\) mpifanome vola ‘givers of money to e.o.’
   g. Mifampilaza ho mpangalatra ‘call e.o. thieves’ \(\rightarrow\)
      mpifampilaza ho mpangalatra ‘people who call each other thieves’

40 a. ny mpampianatra (mp.amp.i.anatra) ahy “my teacher” lit: the teacher me
   Det teacher er.caus.av.study 1s.acc
   b. ny mpampianatro = ‘the teacher-my’ (the teacher I “possess” e.g. hired)

3. Further syntactic properties of reciprocal predicates

3.1 Coordination

Unsurprisingly reciprocal predicates coordinate with each other and with non-reciprocal ones.

41 ... ny fanaovana fanasana [ifampiarahabana sy [ifampirariana soa]] amin'ny mpiara-miasa aminy...
   (newspaper example)
   ... the doing of banquets in which they and the people who work with them greet each other and wish
   each other well ...

42. Nifampiarahaba sy nitsiky izahay \(\rightarrow\) We greeted each other and smiled
   greeted e.o. and smiled we.excl

3.2 Tensed VP Sequences: Voice Harmony

Malagasy does not distinguish an infinitival form of a verb from a voiced tensed form, so Malagasy
presents a variety of predicate types headed by sequences of tensed verbs. One such is as in (43) where
the second verb functions adverbially (see Kalin and Keenan 2011).

43 a. Mihinana mitsangana Rabe \(\rightarrow\) Rabe is eating standing up
   pres.av.eat pres.av.stand Rabe
b. Mihinana sy mifampiresaka mitsangana Rabe sy Ranaivo
   pres.av. eat and pres.rec.av.converse pres.av. stand Rabe and Ranaivo
   Rabe and Ranaivo are eating and conversing standing up

Of greater interest is that tensed verb sequences cover cases of control in English. It seems rather natural
to treat such a verbal sequence as a single complex predicate whose arity is determined by the last verb
and whose tense is determined by that on the initial verb, the tense on later verbs being determined as a
function of that of the previous one. Verbs like *mikasa* ‘intends’, *mitady* ‘seeks to’, *maniry* ‘wants’,
mikendry ‘plans’ form such complex predicates bound to the same subject and governing future tense.
Relativizing (etc) on an argument of the final verb triggers appropriate voice on all the verbs in the chain
– Voice Harmony. Here is an example. (Caveat: Iceberg ahead!). Note that the initial verb, *mikasa*
‘intend’ governs future on the following verbs (regardless of voice):

44 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.kas.ai.nay h.if.an.ampi.ana ho.tsara.ina omaly
   det exam comp pst.intend.pv.our.excl fut.rec.av.help.pv/cv fut.judge.pv yesterday
   lit: the exams that we intended to help each other grade yesterday
   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 commonly cited (e.g. Rajaobelina 1960) paraphrase of control as in (45a) is with an apparent
nominalization of the complement VP:

45 a. Maniry hiala sigara aho I want to quit smoking
   pres.av.desire fut.av.leave cigarettes 1s.nom

   b. Maniry [ny hiala sigara] aho I want to quit smoking
   pres.av.desire [det fut.av.leave cigarettes] 1s.nom

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

   d. Iriko [dp ny hiala sigara] I want to quit smoking
   desire.pv.by.me [ det fut. av. leave cigarettes]

The subject of (45a,b) is “I”, that of (45c) is “the cigarettes” and that of (45d) is the DP “the future
quitting smoking”. Tensed predicates host Dets like *ny* ‘the’ or demonstratives like *io...io* ‘that’ to form
a DP. 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 applies in our
more complex examples. Thus (44c) with all verbs circumstantial, is paraphrased by (44e) below:

44 e. 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]
   It was yesterday that we intended the helping of each other to grade the exams.
3.3 Cross clausal binding

It is common in Malagasy discourse to find an initial S followed by a complementizer or subordinate conjunction plus a mere tensed VP whose understood subject is the same as that of the initial VP.

46 a. Tsy nanatrika ny fety Rabe satria narary *R didn’t attend the party as (he was) sick*
not pst.av.attend det party Rabe because was.sick

b. Mihevitra Rabe fa hahazo ny valisoa *Rabe thinks that (he) will get the prize*
Pres.av.think Rabe that fut.receive det prize

c. Diso hevitra ianao raha mino izany *You are mistaken if (you) believe that*
Wrong thought 2.s if believe that

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

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

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

The main predicates in (47b’,b”’) are reciprocal and syntactically complex. We are clearly just touching serious binding patterns here. We note cases where both the matrix and “lower” verb are reciprocal:

48 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 that (they) will support e.o.*

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

In (48c) we have a complex reciprocal predicate with reciprocity marked twice, once on each verb. A similar example is (49)

49 a. Nifanampy nifandefa entana izahay *We help each other send each other packages*
pst.rec.help pst.rec.send package we.excl.

4. Malagasy Reciprocals compared with those of other languages

Here we note a bit randomly how Malagasy behaves relative to various properties discussed for reciprocals in other languages.

4.1 Is reciprocal -if- an anaphor moved into the verb in the syntax?
It has been suggested to me that as in (50) we might treat -if- as an object pronoun interpreted as EACH OTHER. It would later move to incorporate into the verb:

50 a. Manaja (m+an+haja) azy, Rabe
   Rabe respects him (i ≠ j)

b. Mifanaja [e,j] [Rabe sy Rakoto]
   Rabe and Rakoto respect each other

But there are many reasons to reject this analysis. First, the personal pronouns distinguish three cases: nominative, accusative, and genitive. And they vary with person and number. -if- is morphologically constant, showing none of these pronominal attributes. Further pronouns do not incorporate into the verb (though the possessors, including pronominal ones, are linked to the end of the verb). So verbs vary in form with tense, aspect and voice but not with person. We note that -if- does not impose a plural requirement on its subject, as the use of the comitative construction with a singular subject is common:

51 a. Mifanaraka hevitra aminao aho I rec-agree with you / We agree with each other
   pres.rec.av.follow thought with.your I

b. Nifankahita t.amin-dRabe Rakoto Rakoto reciprocally saw Rabe
   pst.rec.av.see pst.with-Rabe Rakoto

Second, we have already noted that in several cases the semantic interpretation of a reciprocal verb is somewhat idiosyncratic, not that predicted by rendering symmetric the relation denoted by the underlying non-reciprocal verb. Manisa means to count, but reciprocal mifanisa does not mean to (mutually) count each other. Rather it is better rendered as “divide in half”.

Third, and even worse, we noted several cases above where the underlying non-reciprocal verb simply does not exist and so has no interpretation that we could enrich by forcing it to be symmetric. That is (52b) does not provide a semantic basis for interpreting (52a) as the Malagasy speaker does not assign an interpretation to *manena:

52 a. mifanena any an-tsekoly Rabe sy Rasoa meet.e.o. there at-school Rabe and Rasoa

b. *[manena [if]] any an-tsekoly Rabe sy Rasoa

Fourth the existence of an object comparison reading in Ss like (53) has been held to justify the existence of a reciprocal anaphor in object position. And as indicated Malagasy lacks this reading:

53. 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)

Fifth Malagasy does not support the “I” reading in cases like (54):

54 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)

55 Mihevitra Rabe sy Rasoa fa mifankatia R & R think that they love e.o.
   pres.av.think Rabe and Rasoa comp love e.o.
   Each thinks “we love each other” – no other reading
HLM represent the scope ambiguity in (54) using each other as an object anaphor and moving each to different landing sites. This assumes each other is in argument position. So the absence of a reciprocal anaphor in Malagasy is consistent with the absence of an object comparison reading. Also reciprocal if in Malagasy is synchronically monomorphemic, so no movement of “each” can be appealed to. (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 diphthongue ai assimilates to the following vowel.

Sixth, on the if = anaphor view the reciprocal allomorphy is unexpected as pronouns do not vary in shape with the active prefix of their governing verb: manenjika azy izy lit: chases him he; mikapoka azy izy ‘beats him he’; mahita azy izy ‘sees him he’. Additional reasons for rejecting the if = anaphor view are given in Keenan & Razafimamonjy 2004. Here is just the most obvious one: if does not occur in argument positions:

56 a. *[Niarahaba [if]] isika
   greeted EO we.incl
   We greeted each other

   b. Niarahaba azy isika
   greeted him we.incl
   We greeted him

One might counter that if-incorporation is obligatory, but if should still occur in contexts that independently block movement:

57 a. Niarahaba azy sy ny vadiny isika
   greeted him and the spouse.his we.incl

   b. *Niarahaba if sy ny vadiny isika
      greeted EO and the spouse.his we.incl

4.2 Semantic diversity: Chaining and Inanimates

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

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

   c. mifanapatapaka (m+if+an+tapaka2) eto ireto roa tsipika ireto
      pres+rec+av+cut here dem.pl two line dem.pl
      These two lines intersect here

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

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

   b. mifanakaiky (m+if+ an+akaiky) ny tranonay
      Our houses are near each other

A similar case is tandrify / mifanandrify ‘be opposite (each other)’.

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 Reciprocalization (in distinction to Chicewa where the reciprocal affixes copy under Reduplication). Reduplicating after reciprocalization in (58c) we get, incorrectly, *mifanapakapaka.
4.3 Sociatives

As reciprocals require two or more participants they may involve a notion of “togetherness”, with some verbs more than others. Of note though Malagasy presents a specifically sociative prefix derived from the verb *miaraka* ‘to do or be together’.

60 a. *miaraka* (m+i+araka) izahay
   pres+av+follow we.excl
   *We are together*

b. *miasa* (m+i+asa) izy ireo
   pres+av+work 3nom dem.pl
   *They are working*

c. *miara-miasa* (m+i+ara(ka)-m+i+asa) izahay
   pres+av+follow-pres-av-work we.excl
   *We work together*

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

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 consonant of w’ to the corresponding non-continuant: *manapaka+hevitra* ‘decide’ = *manapa-kevitra* : lit cut+thought’, *mivarotra+hena* = *mivaro-kena* ‘sells meat’. 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.

4.4 Affixless Reciprocals

Malagasy presents lexical verbs which incorporate mutual participation. They normally also take reciprocal morphology, so here reciprocal and non-reciprocal verbs have the same meaning.

61 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*

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

4.5 Event quantifiers

Ss like (62a) are not felt as ambiguous as between (62b) and (62c). A speaker of (62a) might simply not have considered the distinct situation types expressed by (62b,c). So the adverbial modification adds new information.

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

b. *Nifandaka* intelo nisesy Rabe sy Rakoto
   *They kicked each other three times in a row*

c. *Nifandaka* intelo avy Rabe sy Rakoto
   *They kicked each other three times each*

4.6 Quantified antecedents

Worth noting that reciprocal P1s accept quantified DP antecedents just as non-reciprocal ones do (see Keenan 2008, Paul 2012).
63. 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*’n’*ny mpianatra* ‘the majority of the students’, *ny mpianatra vitsivitsy* ‘few students’, *ny antsasaky ny mpianatra* ‘half the students’, *ny valompolo isan-zaton*’n’*ny mpianatra* ‘80% of the students’, *ny roa ampahatelon*’n’*ny mpianatra* ‘two thirds of the students’. Often non-increasing DPs are expressed predicatively:

64 a. Tsy nisy afa-panadinana ny mpianatra na iray aza  
   *No student at all passed the exam*

64 b. Antsasaky ny mpianatra katroka no m.an.entana  
   *Exactly half the students get along with each other*

4.7 A Closing note on reciprocal imperatives

   We have claimed that reciprocals are active in voice and indeed take their imperative with -a, shifting stress. When we put them in the circumstantial form they take their imperatives with -o/-y, as indicated.

65 a. Mana (m.an.tao) farafara ho azy  
   *Rabe is making beds for him/them*
   Rabe pres.av.do bed for 3acc Rabe

   b. Manaova (m.an.tao,va) farafara ho azy!  
   *Make beds for him/them!*
   pres.av.do.imp

66 a. Mifanao (m.if.an.tao) farafara Rabe sy Rajaona  
   *R and R are making beds for e.o.*
   pres.rec.av.do

66 b. Mifanaova (m.if.an.taov.a) farafara!  
   *Make beds for each other!*
   pres.rec.av.do.imp

67 a. ifanaovan-dRabe sy Rakoto farafara ity vy ity  
   *This metal is used by R&R to make e.o beds*
   rec.make.cv R and R bed this metal this

67 b. ifanaovy farafara ity vy ity!  
   *Use this metal to make beds for each other!*
   rec.make.cv.imp bed this metal this

NB: The English translations of non-active Ss are clumsy, but they remind the reader that the verbs have a different voice morphology than the active one. They are fully natural in Malagasy. □

Conclusion

Malagasy reciprocals are highly productive. They exhibit both 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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