

Reciprocal Reflexives

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The German plain reflexive *sich*, when anteceded by a plural DP, can receive a reciprocal interpretation. This is possible only if *sich* occurs in direct or indirect object function, but not when it is the object of a preposition. This squib illustrates this pattern in detail and outlines an analysis that treats *sich* as an intransitivizing element, along the lines of Keenan (1988, 2007).

Introduction

German, Spanish, and Polish, among others, allow for reflexive as well as reciprocal interpretations of transitive sentences with plural subjects and reflexive objects:

- (1) a. Die Anwälte hassen sich.
the lawyers hate SICH
b. Los abogados se odian.
the lawyers SE hate
'The lawyers hate themselves.' or 'The lawyers hate each other.'
- (2) Chłopczy rozmawiali ze sobą.
boys talk with SOBA
'The boys talk to themselves/each other.' (Reinders-Machowska 1992:p.139)

Similarly, various languages are reported to have only one morpheme to express reflexivity and reciprocity. The resulting sentences are thus regularly ambiguous; an example is (3) from Nyulnyul (McGregor 1999:p.91), where the circumfix *mar-nyj* does double duty:

- (3) Ku- rr irrjiwar arri ku- li- rr- mi- jal- inyj.
2 AUG *three no 2- IRREALIS AUG REF/REC see REF/REC*
'Don't you three look at each other!' or '... yourselves!'

One natural analysis for TRANSITIVE 'SICH' SENTENCES like (1-a), henceforth TSSs, assumes a specific combination of CUMULATION and REFLEXIVIZATION. As is well-known, transitive sentences with plural subject and objects are true as soon as each part of the subject denotation stands in the transitive relation expressed by the verb to at least one part of the object denotation, and *vice versa*; thus (4) can truly describe a dance in which each girl leads exactly one boy, and each boy is lead by a girl:

- (4) The girls lead the boys.

(5) formalizes this property, where relation R models a transitive verb meaning (see e.g. Scha 1984):

(5) Cumulation

For each $R \in \{0, 1\}^{E^E}$, $Cum(R)$ is the smallest function s.t.

- a. for all $x, y \in E$ if $R(x)(y) = 1$, $Cum(R)(x)(y) = 1$, and
- b. if $Cum(R)(a)(b) = 1$ and $Cum(R)(c)(d)$, then $Cum(R)(a+c)(b+d) = 1$

where $a+b$ is the group consisting of a and b

A group can be modelled as a set, a (plural) individual, or something else; nothing in the following hinges on this, as long as groups are also members of domain E . Using obvious names for constants of a semantic interpretation language, (4) can be analyzed as

Cum(lead)(theBoys)(theGirls):

Reflexivization is defined in (6) (cf. Keenan 1988, 2007):

(6) Reflexivization

For each $R \in \{0, 1\}^{E^E}$, $Rx(R)$ is that function in $\{0, 1\}^{E^E}$ s.t. for all $a, b \in E$, $Rx(R)(a)(b) = 1$ iff $R(a)(b) = 1$ and $a = b$

The reflexive *sich* and its cross-linguistic counterparts can now be modelled as a family of arity-reducing functions:

- (7) a. $\llbracket sich_1 \rrbracket = \lambda R2 \in \{0, 1\}^{E^E} . Rx(R)$
- b. $\llbracket sich_2 \rrbracket = \lambda R3 \in \{0, 1\}^{E^E} . \lambda z \in E . Rx(\lambda y . R(y)(z))$

These meanings are put to work in (8); *sich₁* reflexivizes a transitive predicate in (8-a), and the higher, dative argument of a ditransitive in (8-b); *sich₂* reflexivizes the lower, accusative argument of a ditransitive in (8-c).¹ Other members of this family will probably be necessary for other syntactic configurations, a matter I will not go into here (see sec.4 of Keenan 2007).

- (8) a. Eddie bekleckert sich.
E. spills on SICH-ACC
'Eddie is spilling on himself.'
- b. Lilli wünscht sich ein rotes Geschenk.
L. wishes SICH-DAT a red gift
'Lilli would like a red present for herself.'
- c. Summer zeigt sich der Menge.
S. shows SICH-ACC the crowd
'Summer presents herself to the crowd.'

1 German, Basic Analysis

The German pattern can now be analyzed as follows: For the reciprocal reading of *sich*, reflexivization applies *after* cumulation. Thus, (1-a) is true if every lawyer hates a lawyer,

¹For perspicuity, *sich* here and below is glossed for case where relevant, even though it does not show morphological case marking; the glosses are based on what case a non-reflexive DP in structurally identical examples would bear.

and is hated by a lawyer. It should be clear that this is true whenever any reciprocal readings is true:²

(9) *Rx(Cum(hate))(theLawyers)*

The analysis is not complete, though. Note that (9) does not provide a reciprocal reading, but merely a VAGUE reading, which subsumes the truth conditions of a true reciprocal reading. This does not necessarily jibe with speakers' intuitions, according to which there is a genuine reciprocal *reading* for TSSs; and indeed I think these intuitions are accurate, as I will now try to show.

One way to substantiate this intuition is via ellipsis, as in (10):³

- (10) a. Die Brautleute kauften sich teure Geschenke.
the bride and groom bought SICH expensive gifts
 'The bride and groom bought each other/themselves expensive gifts.'
- b. Der MC kaufte sich teure Geschenke, und die Brautleute auch.
the MC bought SICH expensive gifts and the bride and groom too
 (i) 'The MC bought himself expensive gifts, and bride and groom bought themselves expensive gifts, too.'
 (ii) *'The MC bought himself expensive gifts, and bride and groom bought each other expensive gifts, too.'
- c. Die Brautleute kauften sich teure Geschenke. Der MC auch.
the bride and groom bought SICH expensive gifts the MC too

(10-a) is a TSS, and most naturally interpreted reciprocally. In (10-b), the first conjunct is singular, meaning 'the MC bought himself expensive gifts'; the second conjunct can only be understood reflexively: bride and groom each bought themselves expensive gifts, too. The reciprocal meaning ('they bought each other expensive gifts') is impossible.

(10-c) starts off with the same clause. Due to the strong preference for the reciprocal reading in this particular example, the second sentence in (10-c) feels zeugmatic. It forces a (re)interpretation of the first conjunct as reflexive, just as in (10-b). These effects in (10-b,c) would be unexpected if one semantic construal covered both reflexive and reciprocal situations.

Another indication that reflexive and reciprocal interpretations of TSSs are semantically distinct comes from negation. According to (9), the negation of a TSS will be true if *neither* the reciprocal nor the reflexive reading is true. This again seems too strong; intuitively, sentences like (11) do not imply that they don't love themselves anymore, that neither resembles themselves, nor that the victims didn't know themselves:⁴

- (11) a. Sie lieben sich nicht mehr.
they love SICH not any more

²I say 'any' reciprocal reading, because for groups of more than two, there are ostensibly a number of reciprocal readings, see Dalrymple, Kanazawa, Kim, Machombo, and Peters (1998); Keenan and Razafimamonjy (2001); Langendoen (1978); Lichtenberk (1985) a.o.

³German does not allow VP ellipsis, so we use bare argument ellipsis here.

⁴Many examples were found on the internet by googling frames with the subject *die beiden*, 'the two of them', hence the abundance of that phrase.

- ‘They don’t love each other any more.’
- b. Die beiden sind Geschwister, aber sie ähneln sich nicht.
the both are siblings but they resemble SICH not
 ‘The two of them are siblings, but they don’t much resemble each other.’
- c. Die Opfer kannten sich nicht.
the victims knew SICH not
 ‘The victims didn’t know each other.’

I therefore propose that in the absence of *sich/Rx*, relations are marked as *non-reflexive* by default; this has in fact been proposed to account for so-called Condition B effects, i.e. the prohibition against covalued coarguments without reflexive marking (see e.g. Jacobson 2007). (12) defines such an operation of ‘irreflexivization’:

- (12) Irreflexivization:
 For any $R \in \{0, 1\}^{E^E}$, $\bar{x}(R)$ is that functions in $\{0, 1\}^{E^E}$ s.t. for all $a, b \in E$, $\bar{x}(R)(a)(b) = 1$ iff $R(a)(b) = 1$ and $a \neq b$.

The reciprocal reading of a TSS would now the be represented not as in (9), but as in (13):

- (13) $Rx(\text{Cum}(\bar{x}(R)))$

The true reflexive reading, on the other hand, would be as in (14):

- (14) $\text{Cum}(Rx(R))$

(13) in fact seems to be the only combination of the three operators **Rc**, **Cum**, \bar{x} that leaves a non-empty R , at least for relations over individuals.

2 English

For languages like English, which do not allow reciprocal readings for TSSs, it has to be assumed that neither (9) nor (13) are available, so that (14) is the only available interpretation for a reflexivized relation. More cautiously, the basic, singular relation is reflexivized, then pluralized (e.g. by cumulation).

It is not obvious what should be responsible for this difference. It is suggestive that the English reflexive is a complex reflexive; it morphologically resembles the emphatic reflexive in other Germanic languages, including German, which has the emphatic reflexive forms *sich selbst* (reflexive) and *er/sie/es... selbst* (non-reflexive). Notably, these forms can generally occur wherever the parallel simple pronoun can occur (with the exception of non-thematic *sich*, similar to English *behave*), but never yield reciprocal readings:

- (15) Die Anwälte hassen sich selbst.
the lawyers hate SICH self
 ‘The lawyers hate themselves.’ (not: ‘... hate each other’)

It must be emphasized, though, that the English reflexives, though resembling German emphatic reflexive morphologically, are not interpreted emphatically. I will thus not speculate further on the reason for the absence of reciprocal readings for English TSSs.

3 Supporting Evidence: Chaining

We have gone to great lengths above to derive the reciprocal reading using a regular reflexive meaning for *sich*, while at the same time deriving a genuine ambiguity—rather than a vagueness—between the two interpretations. An obvious alternative would be to assume that *sich* is simply ambiguous between a reflexive and a reciprocal meaning.

While we cannot show that this alternative analysis is *not* correct, we can find suggestive evidence that *sich* and *einander*, ‘each other’, are not synonymous even on *sich*’s reciprocal interpretation, and that the difference between their interpretive options is as expected on the perspective developed above, according to which reciprocal readings of TSSs involve reflexivization of a cumulated relation.

Our evidence involves so-called CHAINING READINGS. These are cross-linguistically common for *each other* type reciprocals, but systematically absent for TSSs:

- (16) a. The children chased each other out of the room.
 b. Die Kinder jagten einander aus dem Zimmer.
the children chased each other out of the room
 c. #Die Kinder jagten sich aus dem Zimmer.
the children chased SICH out of the room
 ‘The children chased themselves out of the room.’
 d. Die Kinder jagten sich kreuz und quer durch das Zimmer.
the children chased SICH across and through through the room
 ‘The children chased each other back and forth through the room.’

The English sentence (16-a) naturally describes a scenario in which the children run out of the room one after the other. On this reading, not every child chases another (the first one doesn’t), and not every child is chased by another (the last one isn’t). Such chaining scenarios are regularly describable by reciprocals in the languages of the world (Dalrymple et al. 1998; Lichtenberk 1985, 1999:a.o.), including German, cf. (16-b). However, the same scenario *cannot* be described by (16-c), which has a reflexive in place of the reciprocal in (16-b). Notably, a reciprocal reading for *sich* is possible with the verb *jagen*, ‘chase’, in general, as in (16-d). The difference is that (16-d) describes a scenario in which each child is sometimes the chaser, sometimes the chased. (In fact, a similar reading *is* remotely available for (16-c), if we assume that the children go in and out of the room repeatedly, switching roles of chaser and chasee.)

Note now that (17-a) (as well as (17-b)) are true in a scenario of chasing each other through the room (i.e. (16-c)), so long as each child is chasing as well as chased at one time or another:

- (17) a. $Cum(chase)(theChildren)(theChildren)$
 b. $Cum(\bar{x}(chase))(theChildren)(theChildren)$

Therefore it is also predicted that (18-a) (and (18-b))—our proposed representations for the reciprocal readings of the TSS—are true in such a situation:

- (18) a. $Rx(Cum(chase))(theChildren)$
 b. $Rx(Cum(\bar{x}(chase)))(theChildren)$

The chaining scenario, as elaborated above, on the other hand, is strictly ‘weaker’ than that. That is to say, none of (17) or (18) is met when the first child is chased by the second, the second by the third etc., but no one chases the last, and none is chased by the first.

I take this state of affairs to be an argument for the idea pursued here that the reciprocal reading of TSSs is indeed a cumulative reading. The alternative, according to which *sich* is ambiguous between a reflexive and a *bona fide* reciprocal would wrongly predict, *ceteris paribus*, that *all* readings found with reciprocals—including the chaining readings—should be found with reflexives as well.

4 Distributional differences

Reciprocal readings of TSSs seem possible whenever the reflexive occurs as a grammatical object, i.e. as a DP. We saw examples of reciprocal *sich* in direct object as in (1-a) above; similar examples can be found for indirect objects, be they recipients as in (10-b), malefactive, as in (19), or ‘raised possessors’ as in (20):

- (19) Die beiden Firmen machen sich Konkurrenz.
the both companies make SICH-DAT competition
 ‘The two companies compete with each other.’
- (20) 1 Million Menschen treten sich auf die Füße — Erfahrungsbericht über
1 million people step SICH-DAT on the feet report about
 Loveparade
love parade
 ‘One million people stepping on each other’s feet — a first-hand report from the Love Parade.’

In other cases, *sich* could conceivably analyzed as the subject of a small clause, (21), or the argument of a predicative AP, (22):

- (21) a. Die Beiden finden sich anziehend.
the both find SICH-ACC attracting
 ‘They are attracted to each other.’
 b. Die beiden haben sich lieb.
the both have SICH-ACC dear
 ‘They like each other.’
- (22) a. Die beiden waren sich todfeind.
the both were SICH-DAT dead enemy
 ‘The two of them were nemeses (to each other).’
 b. Die beiden waren sich geistig ebenbürtig.
the both were SICH-DAT mentally equal
 ‘They were intellectually equal to each other.’

Finally, reciprocal *sich* is found as the subject in *accusativus cum infinitivo* (AcI) constructions under *lassen*, ‘let’:

- (23) Sie lassen sich nicht ausreden und reden dazwischen.
they let SICH-ACC not finish and talk in between

- ‘They don’t let each other finish and interrupt.’
 (23) Sind sie aber beide zusammen drin, lassen sie sich nicht in Ruhe.
are they but both together inside let they SICH-ACC not in quiet
 ‘But if they are both in there together, they don’t leave each other alone.’

What all of these examples illustrate is that reciprocal *sich* seems possible in any object function reflexive *sich* is possible in, regardless of whether it reflexivizes on a co-argument or not.

This strikingly contrasts with the systematic unavailability of reciprocal readings for *sich* as an object of a preposition, as in the (b)-examples in (24)–(26):

- (24) a. Die Angeklagten beschuldigen sich.
the defendants accuse SICH
 ‘The defendants accuse each other’ (or: ‘...accuse themselves’)
 b. Die Angeklagten schieben die Schuld auf sich.
the defendants push the guilt on SICH
 ‘The defendants accuse themselves.’
- (25) a. Endlich haben sie sich gefunden.
finally have they SICH found
 ‘Finally, they found each other.’ (or: ‘...found themselves’)
 b. Endlich haben sie zu sich gefunden.
finally have they to SICH found
 ‘Finally they found themselves.’
- (26) a. Die Patienten müssen sich beschreiben.
the patients must SICH describe
 ‘The patients have to describe each other.’ (or: ‘...describe themselves.’)
 b. Die Patienten müssen von sich berichten.
the patients must of SICH report
 ‘The patients have to report about themselves.’

Other environments in which a reciprocal reading for reflexives seems systematically absent are inside DPs and within coordinations, but I will not investigate these case further here.

(24)–(26) present semantically rather minimal pairs, which have a DP object in the (a)-examples, and a PP in the thematically parallel position in the (b)-examples. Whereas *sich* in the (a)-sentences is easily interpreted as reciprocal, this is entirely impossible in the (b)-sentences. This contrast is very clear (clearer than many other binding contrasts in German) and applies, as far as I found, to any DP object *vis-à-vis* PP object in German.

In all of the (b)-examples in (24)–(26), *sich* can be replaced by *einander*, ‘each other’, to yield a reciprocal reading (there is thus nothing wrong semantically or pragmatically with such a reading).

It is also worth noting that the reflexives in the PPs in (24)–(26) are simple reflexives, not emphatic ones (*sich selbst*); these sound natural in these examples and have a perfectly clear (albeit non-reciprocal) meaning.

Many other object-like PPs in German sound odd with simple reflexives, such as *sprechen mit*, ‘talk to’, in (27):

- (27) a. ??Peter spricht mit sich.
P. speaks with SICH
 b. Peter spricht mit sich selbst.
P. speaks with SICH self
 ‘Peter talks to himself.’

For these, it could be argued that the reciprocal reading is impossible because simple reflexives are impossible, and emphatic reflexives, as discussed above, never allow for a reciprocal readings. However, *die Schuld auf X schieben*, *zu X finden* and *von X berichten*, the verbs used in (24)–(26), are *not* of this kind. They do sound natural with simple reflexives, as in the example above. Still, they clearly lack the reciprocal reading. So the lack of reciprocal readings for reflexives in PPs cannot be reduced to a general ban on simple reflexives in PPs.

Additionally, the PP objects in such examples are available for cumulation. This can be seen in (28-a–c), which all have a natural cumulated reading on which each defendant implicates some police person, each person finds some desk (presumably their own), and each patient describes some symptoms (again presumably their own):

- (28) a. Die Angeklagten schieben die Schuld auf die Polizisten.
the defendants push the guilt on the police
 ‘The defendants accuse the police.’
 b. Sie habe zu den Schreibtischen gefunden.
they have to the desks found
 ‘They found their desks.’
 c. Die Patienten müssen von den Symptomen berichten.
the patients must of the symptoms report
 ‘The patients have to report about their symptoms.’

But if (regular) reflexivization and cumulation are each available for the PP internal DP positions, it remains mysterious why the reciprocal reading, which supposedly results from combining them, are not available here. One possibility is that while both processes are available separately, it is for some reason impossible to apply them both, in particular reflexivization *after* cumulation (as we assumed was possible in the case of simple TSS):

- (29) a. $Cum(\lambda x.\lambda y.y \text{ pushes the guilt onto } x)$
 but not: $Rx(Cum(\lambda x.\lambda y.y \text{ pushes the guilt onto } x))$
 b. $Cum(\lambda x.\lambda y.y \text{ finds the way to } x)$
 but not: $Rx(Cum(\lambda x.\lambda y.y \text{ finds the way to } x))$
 c. $Cum(\lambda x.\lambda y.y \text{ reports about } x)$
 but not: $Rx(Cum(\lambda x.\lambda y.y \text{ reports about } x))$

It is unclear, though, what should block the combination of two otherwise available and generally combinable operators. Therefore, in the last section, I will speculate on a different line of explanation.

5 Speculation: Towards an Analysis

Consider again a sentence with a plural subject and *sich* inside a PP:

- (30) Die Schauspieler reden gern über sich.
the actors talk like about SICH
 ‘The actors like to talk about themselves.’

As noted above, this sentence cannot mean ‘the actors like to talk about each other’. It can either mean that each actor likes to talk about her- or himself, or that the actors like to talk about the actors in general. This latter reading could be analyzed either as a collective reading —‘each actors likes to talk about the actors’— or as a cumulative reading —‘each actor likes to talk about some actor(s) and each actor is a favorite subject of some of the others’.

Whether or not these two are indeed semantically different readings is not important for our purposes (see e.g. Lasersohn 1995; Roberts 1991:for discussion). What is crucial is that such a reading is indeed somewhere between a reciprocal and a reflexive reading.

It is therefore worth exploring the following line of analysis: *sich* inside PPs can have a reflexivized cumulated reading, but —unlike *sich* in TSSs— not a truly reciprocal reading. Recall that we analyzed the reciprocal reading for *sich* as the reflexive cumulative reading *minus* the singular reflexive reading. Formally:

- (31) the actors talk about *sich*
- a. strictly reflexive reading:
 $Cum(Rx(talk - about))(theActors)$
 ‘the actors are a group of individuals that each talk about themselves’
 - b. reflexive cumulative reading:
 $Rx(Cum(talk - about))(theActors)$
 ‘each actor talks about some actor(s), and is talked about by some actors’
 - c. *reflexive cumulative irreflexive reading:
 $Rx(Cum(\bar{x}(talk - about)))(theActors)$
 ‘the actors are a group of people that each talk about some group members (and are talked about by some), but not themselves’ (aka. the actors talk about each other)

I will assume for the remainder of this section that this is an empirically adequate way of modelling the data. The next question then is what explains the (un)availability of these different construals. We hypothesized above that two-(and more)place predicates are irreflexivized by default, in particular whenever they are not (directly) combined with a reflexivizer like *sich*/**Rx**. What I suggested earlier in this section is that a predicate like *sprechen über*, ‘talk about’, is not so irreflexivized, yielding a vague, reflexivized cumulated reading. So, more formally, the question to answer is: what prevents irreflexivization in these cases?

To motivate the analysis to be explored in this section, let me make a detour to reflexives inside nominals, as in (32):

- (32) Die Patienten betrachten Bilder von einander / sich.
the patients look at pictures of each other SICH

In such environment—as mentioned in passing above—, no reciprocal readings for reflexives are possible either, just as with reflexives inside PPs. The available readings—again just as we argued with PPs—are strictly reflexive or collective (the pictures show several or all of the patients).

Betrachten here denotes a relation between individuals (patients) and objects (pictures). The object DP *Bilder von sich*, ‘pictures of SICH’, denotes, or quantifies over, pluralities consisting of pictures of the patients. As before, every patient has to see some picture, and every picture has to be seen by some patient. Even if the predicate ‘see’ is irreflexivized, there can still be pairs of patients and their *pictures* in its extension (just not of patients and themselves). Therefore the cumulative reading here is a truly vague reading, not a reflexive or a reciprocal one. This is represented in (33):

- (33) $Rx(Cum(\lambda y[(\bar{x}(betracht))(\text{pictures of } y)]))(thePatients)$

So in this kind of case, we have a rather natural explanation for the fact that we get a vague reading (‘the patients looked at pictures of the patients’), as well as a truly reflexive one (‘each looked at pictures of her/himself’), but not a reciprocal one (which would be the vague minus the strictly reflexive): what is irreflexivized is the relation between lookers and things they look at, whereas what is cumulated and reflexivized is the relation between lookers and the things depicted on the pictures they look at. With plain transitives, on the other hand, these two relations fall into one (the one expressed by the transitive verb), yielding a reciprocal reading.

How could we extend this to the case of prepositional complements, as e.g. in *sprechen über*, ‘talk about’? Assume that *sprechen*—not *sprechen über*—denotes a relation between individuals (the speakers) and whatever kind of thing an *about* PP denotes, which for want of a better term⁵ we will call an ABOUTEE. Crucially, aboutees are not individuals, or more carefully speaking, are not identical to the denotation of the object DP of an *about* PP, but rather a different, more abstract sort of individuals. For concreteness, let us assume that there is a bijection from (traditional) individuals to aboutees, so that we can write **about(a)** for the aboutee corresponding to individual **a**. Intuitively, we can think of **about(Ed)** as ‘the subject of Ed’ as in ‘Kim talked about the subject of Ed’, translated as **talk(about(Ed))(Kim)**.⁶

A translation of *the actors talk about the movie* would now look as in (34):

- (34) $(Cum(\bar{x}(talk)))(about(theMovie))(theActors)$

For *die Schauspieler sprachen über sich*, ‘the actors talked about SICH’, we get (35):

- (35) $(Rx(Cum(\lambda y.\bar{x}(talk)(about(y)))))(theActors)$

⁵avoiding the obvious but already-used-otherwise choices ‘theme’, ‘topic’ and ‘subject’

⁶An alternative would be to model **about** as a function from individuals to *sets* of aboutees, so that ‘talking about Ed’ would be modelled as the set of individuals who talk about *some* element of **about(Ed)**, i.e. having *about Ed* be a generalized quantifier over Ed-aboutees; as far as I can see, nothing in the present context hinges on that choice.

As before, **talk** is irreflexivized by \bar{x} by default here. However, what is irreflexivized is the relation between talkers and aboutees, not a relation between talkers and the things/people they talk about. Since aboutees are distinct from ordinary individuals, \bar{x} is in fact trivially satisfied. Cumulation and reflexivization, on the other hand, do not operate on the relation expressed by *talk*, but the relation expressed by *talk about*.

So according to this line of analysis, what happens with reflexives inside PPs is that the relation that is cumulated and reflexivized (by *sich*) is different from the relation that is irreflexivized by default \bar{x} . The former corresponds to the relation expressed by *talk about* (as one would have expected), the latter to the relation expressed by *talk* alone. This latter case of irreflexivization turns out to be in fact trivial, since the denotation of PPs like *about DP* turns out to be something different from ordinary individuals.

In order to apply this analysis to all kinds of PPs, we obviously have to assume a different sort of individual for the various PP denotations. In some cases, this seems more plausible than in others. For example, *finden* in *finden zu* as in (25-b) ('they finally found to SICH') would—quite plausibly, one may argue—express a relation between an individual and some kind of path (the path to that individual in the case of a reflexive), whereas in (25-a) ('they finally found SICH') it denotes a relation between ordinary individuals. But by the same token, *verliebt* in (36-b) must denote a relation between an individual (the faller-in-love) and something other than an ordinary individual (the denotation of *in DP*), whereas *lieben* in (36-a) denotes the plain and expected relation between two individuals (the lover and the beloved):

- (36) a. Die beiden lieben sich.
 the both love SICH
 'The two of them love each other.'
- b. Die beiden sind in sich verliebt.
 the both are in SICH fallen in love
 'They have fallen in love with themselves.' (not: '... with each other')

It should be noted that virtually all of the PPs discussed in this squib are formally and idiosyncratically selected by the verbs; that is to say, there is no transparent reason why *verliebt* selects *in* and not *mit*, 'with' or *zu*, 'to'. The prepositions do not make any discernible semantic contribution to these sentences. It therefore seems *prima facie* plausible to treat them as semantically vacuous, and indeed the implicit consensus among semanticists seems to be to treat these V+P combinations as essentially transitive relations which for irrelevant morphosyntactic (and possibly diachronic) reasons happen to be expressed by V+P, rather than transitive V—much like English *rely on* or *believe in*. The analysis explored in this section—for better or for worse—explicitly disavows this intuition and treats all of these prepositions as *bona fide* semantic functions from one kind of individual to another (aboutees, paths, in-love-with-ees etc.).⁷

Apart from such concerns of general plausibility, it should be noted that these PPs are not EXEMPT ENVIRONMENTS in the sense of Pollard and Sag (1992) or Reinhart and Reuland (1993)—unlike those headed by semantically 'loaded' Ps like *behind*, or the typical

⁷To make matters worse, some prepositions would have to be assumed to have different meanings depending on the verb that selects them. For example *auf*, 'on(to)' in *achten auf*, 'pay attention to', would presumably map individuals to other things ('attendees') than in *freuen auf*, 'look forward to' ('look-forwardees'...?).

picture nominals like (32) that we modelled this analysis on. The DP position inside PP complements show complimentary distribution between reflexive and non-reflexives, and are taken by the authors just cited as genuinely thematic, much in the sense alluded to in the previous paragraph. On the present analysis, this fact remains mysterious, since we assumed that a ban on co-valued pronominals would follow from the default application of \bar{x} , the irreflexivizer. But since \bar{x} is, by assumption, *not* applied to the relation expressed by V+P, but that expressed by V alone, no Condition B effects are predicted, i.e. it is not predicted that e.g. (37) cannot mean ‘the actors talked about themselves’:

- (37) Die Schauspieler sprachen über sie.
 the actors talked about them

In sum, the idea to treat the absence of reciprocal readings for reflexives in PP complements as a semantic fact having to do with the intervention of a semantically contentful preposition—in analogy with nominals—is conceptually daunting, but also empirically incomplete, in that it needs to be supplemented with something to take care of Condition B effects in these environments, such as the syntactic conditions put forth in e.g. Pollard and Sag (1992) or Reinhart and Reuland (1993), a.o.

Summary

This squib has documented in detail the use of reflexive *sich* in German to express reciprocal meanings. In the first sections, I proposed to analyze these as involving a regular reflexivizer meaning along the lines of Keenan (1988, 2007), combined with, first, regular cumulation of relations, and, second, a local irreflexivization to get as from a general cumulative to a genuine reciprocal meaning.

In the second half of the paper, we documented the distribution of such readings; they turn out to be available in all contexts in which the reflexive occurs as the syntactic argument of a verb, and to be unavailable for reflexives inside PPs and DPs. We speculated on an analysis that analogizes all of these case to picture noun reflexives. For the case of PP complements, however, this raised a number of tricky questions, which we have to leave for future research.

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