

# Reflexives, Reciprocals and Contrast

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**ABSTRACT:** In many languages, reflexively marked predicates with plural arguments can describe scenarios of reciprocal action (Evans 2008; Maslova 2008; Murray 2007, 2008; Nedjalkov 2007). This paper analyzes such cases, and shows that they can be given a rather simple, univocal analysis, one that follows from certain now-commonplace assumptions in the semantic theory of plurals and events (Krifka 1992; Kratzer 2003, 2008). In addition, I analyze the effect that so-called ‘intensifiers’ have upon the interpretation of reflexively marked predicates in these languages. Such intensifiers are often said to ‘disambiguate’ the sentence, only allowing it to describe cases of distributive reflexive action (Gast & Haas 2008, Heine & Miyashita 2008, Wiemer 2007). This is shown to be only partly true, as there are contexts where such sentences can also describe reciprocal action. I demonstrate that all the key interactions here follow from a few basic assumptions concerning the semantics of focus.

*Keywords:* reflexives, reciprocals, polysemy, intensifiers, cumulativity

## 1. Introduction

In many languages, ‘reflexively marked’ verbs appear to have rather different truth conditions from ‘reciprocally marked’ verbs. For example, the English reflexive sentence in (1a) seems not to overlap in meaning with the English reciprocal sentence in (1b).

### (1) English Reflexives and Reciprocals With Plural Antecedents

- a. The boys slapped themselves.
- b. The boys slapped each other.

To illustrate, sentence (1a) is most commonly understood to describe a scenario like that in (2a), while (1b) is understood to describe a scenario like that in (2b).<sup>1</sup> Moreover, (1a) cannot be understood as true or appropriate in scenario (2b), and (1b) can never serve as a true description of the scenario in (2a).

### (2) Reflexive and Reciprocal Scenarios

- a. Reflexive Scenario  
Each boy slapped himself. Dave slapped himself. Tom slapped himself. Bill slapped himself.
- b. Reciprocal Scenario  
Each boy slapped some other boy. Dave slapped Tom. Tom slapped Bill. Bill slapped Dave.

While the English pattern above is found in a majority of the world’s languages (61.4%; Heine & Miyashita 2008), many languages show an extensive overlap between the

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<sup>1</sup> Of course, there are many other kinds of scenarios that reciprocal sentences like (1b) can describe, an issue that has received extensive attention in the semantic literature on reciprocals (Dalrymple *et al.* 1998, Sternefeld 1998, Beck 2001, Kerem *et al.* 2009). For the purposes of this paper, I will put aside these issues, and for simplicity’s sake I will focus on interpretations akin to that in (2b), interpretations often labeled ‘weak reciprocity’ (Dalrymple *et al.* 1998). As shown above, I will use the informal label ‘reciprocal scenario’ to refer to such scenarios of weak reciprocity, while the label ‘reflexive scenario’ is used to refer to scenarios of distributed (atomic) reflexive action.

use of reflexively and reciprocally marked verbs. This pattern, illustrated below, is especially prevalent within Europe (Heine & Miyashita 2008), though it is by no means exclusive to that area (Murray 2007, 2008).

(3) **French Reflexives and Reciprocals With Plural Antecedents**<sup>2</sup>

- a. Les étudiants se sont frappés.  
the students REFL AUX slap

*The students slapped themselves.*

Judgment: Can truthfully describe both (2a,b).

- b. Les étudiants se sont frappés l'un l'autre.  
the students REFL AUX slap the.one the.other

*The students slapped each other.*

Judgment: Can truthfully describe only (2b).

(4) **Spanish Reflexives and Reciprocals With Plural Antecedents**

- a. Los estudiantes se golpeaban  
the students REFL slap.IMPF

*The students were slapping themselves.*

Judgment: Can truthfully describe both (2a,b).

- b. Los estudiantes se golpeaban unos a otros  
the students REFL slap.IMPF one.PL to other.PL

*The students were slapping each other.*

Judgment: Can truthfully describe only (2b).

(5) **Portuguese Reflexives and Reciprocals With Plural Antecedents**

- a. Os estudantes se bateram  
the students REFL slap.IMPF

*The students were slapping themselves.*

Judgment: Can truthfully describe both (2a,b).

- b. Os estudantes bateram um no outro  
the students slap.IMPF one to other

*The students were slapping each other.*

Judgment: Can truthfully describe only (2b).

(6) **Italian Reflexives and Reciprocals With Plural Antecedents**

- a. Gli studenti si sono picchiati.  
the students REFL AUX hit/fight

*The students slapped themselves*

Judgment: Can truthfully describe both (2a,b).

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<sup>2</sup> Unless otherwise indicated, all data in this paper are taken from my own interviews with native speakers.

- b. Gli studenti si sono picchiati uno all'altro  
 the students REFL AUX hit/fight one to.the.other  
*The students slapped each other.*  
Judgment: Can truthfully describe only (2b).

(7) **German Reflexives and Reciprocals With Plural Antecedents**<sup>3</sup>

- a. Die schüler schlugen sich.  
 the students hit REFL  
*The students slapped themselves.*  
Judgment: Can truthfully describe both (2a,b).

- b. Die schüler schlugen einander  
 the students hit one.other  
*The students slapped each other.*  
Judgment: Can truthfully describe only (2b)

In each of the languages in (3)-(7), reflexively marked sentences like those in (a) can easily be understood as truthfully describing either the reflexive scenario in (2a) or the reciprocal scenario in (2b).<sup>4</sup> Further examples of this pattern can be found in Evans 2008, Heine & Miyashita 2008, Maslova 2008, Murray 2007, 2008, Nedjalkov 2007, amongst many others. Many such languages also possess uniquely reciprocal markers, illustrated in the (b) sentences above. When containing these markers, the resulting sentences can only truthfully describe the reciprocal scenario in (2b).

The ability for reflexively marked sentences like (3a)-(7a) to be true in either the reflexive scenario (2a) or the reciprocal scenario (2b) has sometimes been informally described as a case of ‘ambiguity’ or ‘polysemy’ (Heine & Miyashita 2008, Gast & Haas 2008, Maslova 2008).<sup>5</sup> It should be noted, however, that for the languages studied here, it is more accurate to say that the reflexively marked (a)-sentences simply have an especially

<sup>3</sup> Gast & Haas (2008) argue that the ability of (7a) to describe both (2a,b) rests on a lexical ambiguity in the element *sich*. They argue that there is both a pronoun *sich* and a clitic *sich*, and that only the latter can be used in descriptions of reciprocal scenarios like (2b). Moreover, they propose that clitic *sich* permits such use because it has a more general use as a ‘middle marker’, and reciprocal scenarios are frequently described via the use of middles.

The main argument for this view is the oft-observed fact that *sich* cannot be used to describe reciprocal scenarios when it is complement to PP. However, as Gast & Haas themselves note, there are other languages where such a lexical ambiguity analysis would be incorrect. Moreover, we should note that there are many languages where (a) reflexively marked predicates can describe reciprocal scenarios, but (b) reflexive markers are *not* generally used as ‘middle’ markers. As described by Fortescue (2007), Kalaallisut is one such language.

(i) immi-ssin-nut tuqun-niar-pusi  
 REFL-2PL-ALL kill-FUT-2PL.IND  
*You are all going to kill yourselves / each other* (Fortescue 2007: 820)

For this reason, I will in this paper put aside the view that the data in (3a)-(7a) are due to the reflexive being interpreted as a ‘middle maker’. I will also put aside the view that these reflexive markers are ambiguous in any way. As we will see in Section 2, it is possible to have a rather simple, univocal analysis of these facts.

<sup>4</sup> Note that in some of the sentences in (3)-(7), the verb appears in imperfective aspect, while in others the verb appears in perfective aspect. The choice of verbal aspect was left open to the speakers translating the English sentences in (1), given the contexts in (2). I will ignore these differences in aspect throughout this paper, as I do not believe that they are significant.

<sup>5</sup> Although they can describe both the ‘reflexive’ and the ‘reciprocal’ scenarios in (2), I refer to the ‘a’-sentences in (3)-(7) as ‘reflexively marked’. This terminology, which is fairly standard for each language, reflects the fact that these sentences contain a morpheme that grammarians identify as a ‘reflexive marker’ in the language.

weak meaning, relative to their English counterpart in (1a). To illustrate, consider the ‘mixed’ scenario in (8), the importance of which was first noted by Murray (2007, 2008).

(8) **Mixed Reflexive and Reciprocal Scenario**

About half the boys slapped themselves (Dave slapped himself. Tom slapped himself, etc.). The other half of the boys slapped one another (Bill slapped Bob, Bob slapped Tony, etc.).

Importantly, neither of the English sentences in (1) are true or appropriate in a mixed scenario like (8). Thus, if the facts in (3a)-(7a) were due to an ambiguity or polysemy between the meaning expressed by the English (1a) and that expressed by (1b), we would expect that (3a)-(7a) would similarly fail to accurately describe the ‘mixed’ scenario in (8). This appears not to be the case. That is, speakers report that each of (3a), (4a), (5a), (6a), and (7a) can describe the mixed scenario in (8). Thus, we can conclude that these sentences are not ambiguous between a reading equivalent to (1a) and one equivalent to (1b). Rather, they possess a single, weak interpretation, one that encompasses all the scenarios in (2a), (2b) and (8).<sup>6</sup> This point will be returned to in Section 2, where we will see that – given current assumptions regarding the semantics of plurals – the truth-conditions predicted for sentences (3a)-(7a) are weak enough to hold in reflexive scenarios (2a), reciprocal scenarios (2b), and mixed scenarios (8).<sup>7,8</sup>

Interestingly, many languages exhibiting the pattern in (3)-(7) also possess a means for specifying a reflexive scenario like (2a). That is, along side the relatively weak sentences in (3a)-(7a), there are the sentences in (9)-(13), each of which is only true or appropriate in (2a).<sup>9</sup> Note that in each of the sentences below, the reflexive marker appears with a so-called ‘intensifier’, which is indicated in boldface.<sup>10</sup>

(9) **Focused Reflexives in French**

Les	étudiants	se	sont	frappés	<b>aux</b>	<b>mêmes.</b>
the	students	REFL	AUX	slap	to.the.PL	same.PL

*The students slapped themselves.*

Judgment: Can truthfully describe only (2a), not (2b) or (8).

<sup>6</sup> Murray (2007, 2008) uses precisely this argument to show that reflexive sentences in Cheyenne are not ambiguous between a ‘reflexive’ and a ‘reciprocal’ meaning, but rather have a weak semantics that covers both kinds of scenarios. I developed the scenario in (8) and the concomitant arguments independently. I thank an anonymous reviewer for *Journal of Semantics* for bringing Murray’s important work to my attention.

<sup>7</sup> McGregor (2000: 118) similarly argues that use of reflexives in Nyulnyulan languages to describe reciprocal scenarios is due to weakness (which she calls ‘vagueness’) rather than true ambiguity or polysemy: “...specific senses such as reflexive, reciprocal, chaining, etc. are contextual senses of the general meaning of the reflexive/reciprocals; the construction is not polysemous, and there is no ambiguity – merely vagueness...”.

<sup>8</sup> As mentioned in Footnote 6, Murray (2007, 2008) also develops a formal semantics for reflexives, whereby sentences like (3a)-(7a) receive weak readings that hold in scenarios (2a), (2b), and (8). Murray’s analysis, however, is embedded within the special formalism of Dynamic Plural Logic (van den Berg 1996), and so therefore differs substantially from the account presented here.

<sup>9</sup> Note that this claim will be qualified in Section 3 below. There, we will see that there are ways of augmenting the context so that even the sentences in (9)-(13) can describe reciprocal and mixed scenarios.

<sup>10</sup> The term ‘intensifier’ is equivalent to the oft-used labels ‘emphatic reflexive’ and ‘intensive reflexive’ (Heine & Miyashita 2008). The fact that such intensifiers rule out a reciprocal construal of a reflexive sentence has long been noted throughout the descriptive and typological literature (Gast & Haas 2008, Heine & Miyashita 2008).

(10) **Focused Reflexives in Spanish**

Los estudiantes se golpeaban a sí mismos.  
the students REFL slap.IMPF to REFL same.PL

*The students were slapping themselves.*

Judgment: Can truthfully describe only (2a), not (2b) or (8).

(11) **Focused Reflexives in Portuguese**

Os estudantes bateram neles mesmos.  
the students slap.IMPF to.the.PL same.PL

*The students were slapping themselves.*

Judgment: Can truthfully describe only (2a), not (2b) or (8).

(12) **Focused Reflexives in Italian**

Gli studenti si sono picchiati a se stessi.  
the students REFL AUX hit/fight to REFL same.PL

*The students slapped themselves*

Judgment: Can truthfully describe only (2a), not (2b) or (8).

(13) **Focused Reflexives in German**

Die schüler schlugen sich selbst.  
the students hit REFL self

*The students slapped themselves.*

Judgment: Can truthfully describe only (2a), not (2b) or (8).

Following much work on ‘intensifiers’ in reflexive constructions, I will assume that the appearance of the intensifiers in (9)-(13) serves to place contrastive focus upon the reflexive marker (Eckardt 2001; Gast & Haas 2008; Saebo 2009, Wiemer & Nedjalkov 2007; Zribi-Hertz 1995, 2008).<sup>11</sup> Although it remains a difficult open question exactly *how* these intensifiers contribute such contrastive focus (Eckardt 2001, Saebo 2009), I will assume here a relatively simplified picture. I will assume that, despite their varying surface syntax, each of the sentences in (9)-(13) is mapped to an LF akin to the following.

(14) **The Basic LF Structure of Sentences (9)-(13)**

[ [ the students ] [ 1 [ t<sub>1</sub> hit [ themselves<sub>1</sub> ]<sub>F</sub> ] ... ]

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<sup>11</sup> Gast & Haas (2008) claim that focal accent on the reflexive marker *sich* does not really require presence of the modifier *selbst*, as sentences like the following are (to them) acceptable.

(i) Die schüler schlagen SICH  
the students hit REFL

*The students are hitting themselves.*

Judgment: Can truthfully describe only (2a), not (2b) or (8).

However, as noted by Wiemer & Nedjalkov (2007), most speakers of German tend not to like sentences like (i), preferring that a focused *sich* also appear with the intensifier *selbst*. Thus, I will put aside sentences like (i) in my discussion here.

Under this syntax, there is a single structural unit serving as a bound reflexive pronoun. Furthermore, via the appearance of the intensifier, this bound reflexive bears F(ocus)-marking. Finally, I assume the syntax and semantics for pronominal binding developed by Heim & Kratzer (1998), whereby both the reflexive and the trace of the subject are bound by a higher index 1, which ultimately contributes a lambda operator.

The main goal of this paper is to develop a formal semantic analysis of the contrast between the sentences in (3a)-(7a) and those in (9)-(13). That is, we will primarily be concerned with (i) the relatively weak semantics of (3a)-(7a), and (ii) the effect that contrastive focus seems to have on the truth-conditions of the sentences in (9)-(13). I will not in this paper be concerned with the effect of the reciprocal markers in (3b)-(7b), though that is also an important part of the overall picture.

In the following section, I show that current approaches to the semantics of plural predication predict that reflexively marked predicates with plural arguments can receive especially weak truth-conditions, ones that hold in reflexive scenarios (2a), reciprocal scenarios (2b) and mixed scenarios (8). Thus, the facts in (3a)-(7a) are easily accounted for under current semantic assumptions, and those sentences can easily be provided a single, univocal analysis.

Having accounted for the facts in (3a)-(7a), I turn in Section 3 to the complementary facts in (9)-(13). There, I argue that some rather basic assumptions regarding the semantics of focus predict that F-marking of the reflexive anaphor in (3a)-(7a) will create a structure that (without a facilitating context) only truthfully describes reflexive scenarios like (2a). Importantly, the proposed analysis correctly predicts that certain key changes to the context in which (9)-(13) are uttered allows for those sentences to again describe the reciprocal scenario in (2b) and the mixed scenario in (8). Thus, under this analysis, the existence of focus in (9)-(13) doesn't truly preclude the weak interpretation of (3a)-(7a). Rather, it causes that interpretation to only be felicitous if certain discourse conditions are satisfied. In contexts where those conditions are *not* satisfied – such as null (out-of-the-blue) contexts – focus of the reflexive marker will force a stronger, distributive reading of (3a)-(7a), one that only holds in reflexive scenarios like (2a). These points will become clearer in Section 3, where the details of the analysis are put forth.

I conclude by offering some informed speculations regarding languages like English, where reflexive sentences seem (at first) only to ever be true in reflexive scenarios like (2a), and never in reciprocal (2b) or mixed scenarios (8). I show that, in all the languages examined, the same contextual manipulations that allow (9)-(13) to describe reciprocal and mixed scenarios also allow reflexive sentences in those languages to describe such scenarios. I therefore speculate that in these English-like languages, the reflexive markers inherently possess something akin to the focus-semantics of the F-marked reflexives in (9)-(13). I argue that some support for this can be found in the etymology of these languages' reflexive markers, which all seem to descend from 'intensifiers' like those in (9)-(13).

## **2. The Semantics of Reflexive Predicates with Plural Arguments**

The ability of (3a)-(7a) to describe any of the scenarios in (2a), (2b), or (8) has sometimes been informally labeled a case of 'ambiguity' or 'polysemy' (Heine & Miyashita 2008, Gast & Haas 2008, Maslova 2008). Importantly, however, current approaches to the semantics of plurals predict that reflexive predicates with plural arguments have especially weak truth-conditions, ones that hold in reflexive, reciprocal and mixed scenarios (Sternefeld 1998, Beck

2001, Faller 2007).<sup>12</sup> Thus, under these common semantic assumptions, it is the behavior of reflexive sentences in languages like English that is the unexpected puzzle, as reflexive sentences like (1a) are expected to be weaker than reciprocal ones like (1b).

To begin laying this out in detail, it's long been observed that sentences containing multiple plural arguments allow for readings with very weak truth conditions (Langendoen 1978, Scha 1984). For example, a sentence like (15a) can be read as true as long as each girl hit some boy, and each boy was hit by some girl. Thus, it can be read as true in a scenario like (15b), where the girls are Mary, Sue and Jen, and the boys are Dave, Tom and Bill.

**(15) The Weak Truth Conditions of Sentences Containing Multiple Plurals**

a. The girls hit the boys.

b.	<i>Event of Hitting</i>	<i>Agent</i>	<i>Theme</i>
	e <sub>1</sub>	Mary	Dave
	e <sub>2</sub>	Sue	Tom
	e <sub>3</sub>	Jen	Bill

A key insight into the nature of these ‘cumulative’ readings was discovered through the work of Krifka (1992, 1999), who proposed that all natural language predicates exhibit the following key property.

**(16) The Cumulativity of Natural Language Predicates (Krifka 1992, Kratzer 2008)**

If  $[[P]](x_1)\dots(x_n) = T$ , and  $[[P]](y_1)\dots(y_2) = T$ , then  $[[P]](x_1+y_1)\dots(x_n+y_n) = T$

According to the principle in (16), for any natural language predicate  $P$ , if  $P$  holds between the entities  $x_1, \dots, x_n$ , and holds between the entities  $y_1, \dots, y_n$ , then  $P$  holds for the plural sums  $(x_1+y_1), \dots, (x_n+y_n)$ . Of course, as a limiting case, we derive that unary predicates such as *boy* in (17) are closed under plural sum formation. Thus, if the individual boys are Dave, Tom and Bill, then the predicate *boy* will be true of the individuals in (17ii).

**(17) Illustration of (16): NP Denotations**

[[ boy ]] = (i)  $[\lambda x_e : *boy(x)]$   
 = (ii) { Dave, Tom, Bill, Dave+Tom, Dave+Bill, Tom+Bill, Dave+Tom+Bill }

Note that like many others who assume (16), I will mark metalanguage predicates with an asterisk ‘\*’ as a small notational mnemonic, to remind the reader that the predicates in question are all assumed to be cumulative.

More interesting, however, is the case of verbal predicates, which are assumed to denote relations between entities and events (Krifka 1992, Kratzer 2008). As shown below, a verb such as *hit* will be assumed to denote the cumulative predicate in (18). Given the

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<sup>12</sup> Although this fact is hinted at by Sternefeld (1998), Beck (2001) and Faller (2007), none of them draw attention to it, nor its connection to the well-known facts in (3a)-(7a). On the other hand, Murray (2007, 2008) does note explicitly that the treatment of plurality within the framework of Dynamic Plural Logic (DPIL) predicts the weakness of plural reflexives. Again, however, Murray’s treatment of plural reflexives depends upon the special technical assumptions of DPIL, and so differs significantly from the approach taken here.

generalization in (16), then, it follows that in a scenario like (15b), the extension of *hit* will be equivalent to the set of triples in (18ii).

**(18) Illustration of (16): VP Denotations**

$$\begin{aligned}
[[ \text{hit} ]] &= \text{(i)} \quad [ \lambda x_e : \lambda y_e : \lambda e_e : *hit(e) \ \& \ *Agent(e) = y \ \& \ *Theme(e) = x ] \\
&= \text{(ii)} \quad \{ \langle \text{Dave, Mary, } e_1 \rangle, \langle \text{Tom, Sue, } e_2 \rangle, \langle \text{Bill, Jen, } e_3 \rangle, \\
&\quad \langle \text{Dave+Tom, Mary+Sue, } e_1 + e_2 \rangle, \\
&\quad \langle \text{Dave+Bill, Mary+Jen, } e_1 + e_3 \rangle, \\
&\quad \langle \text{Tom+Bill, Sue+Jen, } e_2 + e_3 \rangle, \\
&\quad \langle \text{Dave+Tom+Bill, Mary+Sue+Jen, } e_1 + e_2 + e_3 \rangle \}
\end{aligned}$$

It is apparent, then, that as long as  $[[\text{the girls}]] = \text{Mary+Sue+Jen}$ , and  $[[\text{the boys}]] = \text{Dave+Tom+Bill}$ , our semantics will correctly predict that (15a) is true in ‘cumulative’ scenarios like (15b). To flesh this out in a bit more detail, we assume the standard semantics for definite plurals in (19) below.

**(19) The Semantics for the Definite Article**

$$\begin{aligned}
\text{(i)} \quad \underline{\text{Denotation for } The}: \quad [[ \text{the} ]] &= [ \lambda P_{\langle et \rangle} : \sigma_x . P(x) ] \\
\text{(ii)} \quad \underline{\text{Definition of the Operator } \sigma_x}: \\
\sigma_x . Q(x) &=_{df} \text{ the entity } \alpha \text{ such that } \alpha \in \{ x : Q(x) \} \text{ and} \\
&\text{ if } \gamma \in \{ x : Q(x) \}, \text{ then } \gamma \leq \alpha
\end{aligned}$$

We also assume that the Davidsonian event argument of the verb is bound by a covert existential operator. The exact mechanisms of this are not important for our discussion; for our purposes, we assume that the silent operator in (20) is appended just above the subject.

**(20) Phonologically Null Event Operator**

$$[[ \exists e ]] = [ \lambda P_{\langle et \rangle} : \exists e . P(e) ]$$

Consequently, we assume that sentence (15a) has the LF structure in (21a) below, and therefore we derive that its truth conditions are as in (21b).

**(21) The Semantics of Sentence (15a)**

$$\begin{aligned}
\text{a.} \quad & [ \exists e [ [\text{the girls}] [ \text{hit} [\text{the boys}] \dots ] ] \\
\text{b.} \quad & \exists e . [ \lambda x_e : \lambda y_e : \lambda e_e : *hit(e) \ \& \ *Agent(e) = y \\
&\quad \ \& \ *Theme(e) = x ] (\sigma_x . *boy(x)) (\sigma_y . *girl(y)) (e)
\end{aligned}$$

Now, note that in scenario (15b),  $\sigma_y . *girl(y) = \text{Mary+Sue+Jen}$  and  $\sigma_x . *boy(x) = \text{Dave+Tom+Bill}$ . Moreover, recall that in that scenario, the cumulative predicate  $[[ \text{hit} ]] = [ \lambda x_e : \lambda y_e : \lambda e_e : *hit(e) \ \& \ *Agent(e) = y \ \& \ *Theme(e) = x ]$  is true of  $\text{Dave+Tom+Bill}$ ,  $\text{Mary+Sue+Jen}$ , and  $e_1 + e_2 + e_3$ . It follows, then, that in scenario (15b), the existential truth-conditions in (21b) are witnessed by the plural event  $e_1 + e_2 + e_3$ , and so we correctly predict



that (15a) is true in that scenario. In this way, the cumulativity principle in (16) allows us to easily derive weak, cumulative readings for sentences like (15a).

With all this in mind, consider the truth conditions that are predicted for the reflexive sentence in (22a), assumed to have the LF in (22b) (Heim & Kratzer 1998).

(22) **Reflexive Sentences and Their LFs (Heim & Kratzer 1998)**

- a. The boys hit themselves.
- b. [  $\exists e$  [the boys] [ 1 [  $t_1$  [ hit themselves<sub>1</sub> ] ... ]

Given that the reflexive anaphor is bound by the plural subject, the truth conditions we obtain for LF (22b) are those in (23).

(23) **Truth conditions Predicted for Reflexive LF (22b)**

$$\exists e . [ \lambda x_e : \lambda y_e : \lambda e_e : *hit(e) \ \& \ *Agent(e) = y \ \& \ *Theme(e) = x ](\sigma_x.*boy(x))(\sigma_x.*boy(x))(e)$$

Importantly, if the set of boys is {Tom, Dave, Bill, Frank}, it follows that  $\sigma_x.*boy(x) = Tom+Dave+Bill+Frank$ , and so the truth conditions in (23) will hold in each of the following scenarios.

(24) **Scenarios Verifying the Truth conditions in (23)**

- a. (i) Reflexive Scenario: Each boy hit himself.
 

<i>Events of Hitting</i>	,	<i>Agent</i>	,	<i>Theme</i>
e <sub>1</sub>	,	Tom	,	Tom
e <sub>2</sub>	,	Dave	,	Dave
e <sub>3</sub>	,	Bill	,	Bill
e <sub>4</sub>	,	Frank	,	Frank
- (ii) Extension of Hit

{ <Tom, Tom, e<sub>1</sub>>, <Dave, Dave, e<sub>2</sub>>, <Bill, Bill, e<sub>3</sub>>, <Frank, Frank, e<sub>4</sub>>, ...  
 ..., <Tom+Dave+Bill+Frank, Tom+Dave+Bill+Frank, e<sub>1</sub>+e<sub>2</sub>+e<sub>3</sub>+e<sub>4</sub>> }
- b. (i) Reciprocal Scenario: Each boy hit some other boy and was hit by some other boy
 

<i>Events of Hitting</i>	,	<i>Agent</i>	,	<i>Theme</i>
e <sub>1</sub>	,	Tom	,	Dave
e <sub>2</sub>	,	Dave	,	Bill
e <sub>3</sub>	,	Bill	,	Frank
e <sub>4</sub>	,	Frank	,	Tom
- (ii) Extension of Hit

{ <Dave, Tom, e<sub>1</sub>>, <Bill, Dave, e<sub>2</sub>>, <Frank, Bill, e<sub>3</sub>>, <Tom, Frank, e<sub>4</sub>>, ...  
 ..., <Tom+Dave+Bill+Frank, Tom+Dave+Bill+Frank, e<sub>1</sub>+e<sub>2</sub>+e<sub>3</sub>+e<sub>4</sub>> }

- c. (i) Mixed Scenario:  
Half the boys each hit themselves. The other half hit each other.

<i>Events of Hitting</i>	,	<i>Agent</i>	,	<i>Theme</i>
e <sub>1</sub>	,	Tom	,	Tom
e <sub>2</sub>	,	Dave	,	Dave
e <sub>3</sub>	,	Bill	,	Frank
e <sub>4</sub>	,	Frank	,	Bill

- (ii) Extension of *Hit*

{ <Tom, Tom, e<sub>1</sub>>, <Dave, Dave, e<sub>2</sub>>, <Frank, Bill, e<sub>3</sub>>, <Bill, Frank, e<sub>4</sub>>, ...  
..., <Tom+Dave+Bill+Frank, Tom+Dave+Bill+Frank, e<sub>1</sub>+e<sub>2</sub>+e<sub>3</sub>+e<sub>4</sub> > }

Note that in each of the scenarios in (24), the sum of all the agents is Tom+Dave+Bill+Frank, and the sum of all the themes is also Tom+Dave+Bill+Frank. Consequently, the cumulativity principle in (16) entails that, in each of these scenarios, the extension of *hit* contains the triple <Tom+Dave+Bill+Frank, Tom+Dave+Bill+Frank, e<sub>1</sub>+e<sub>2</sub>+e<sub>3</sub>+e<sub>4</sub>>. Therefore, we find that our semantics predicts the reflexive sentence in (22a) to be true in reflexive scenarios (24a), reciprocal scenarios (24b), and mixed scenarios (24c).

Of course, as noted earlier, this prediction does not actually hold of the English sentence in (22a). However, it *does* hold for the non-English sentences in (3a)-(7a). Let us, then, assume this analysis for those sentences. That is, I will assume that each of (3a)-(7a) have an LF akin to (22b), where a plural DP binds a simple reflexive pronoun (or clitic). As we have just seen, the cumulativity principle in (16) will correctly predict that (3a)-(7a) are true in each of the scenarios in (2a), (2b) and (8). Regarding the differing behavior of English reflexive sentences like (22a) and (1a), I will offer a few tentative proposals in Section 5.

We therefore find that rather basic (and commonly held) assumptions regarding the semantics of plural predication entail that reflexive sentences like (3a)-(7a) will receive very weak truth-conditions, ones that hold in reflexive scenarios like (2a), reciprocal scenarios like (2b) and mixed scenarios like (8). It is no mystery, then, that a significant minority of languages can use reflexive sentences to describe reciprocal and mixed scenarios. Moreover, we find that such breadth of use is not due to an ambiguity or polysemy in the reflexive marker/anaphor itself. Rather, in all cases the reflexive marker is assumed to simply be a reflexive anaphor, bound by a plural argument within the sentence. Given the cumulativity principle in (16), such an LF will receive a very weak – but univocal – interpretation, one that encompasses many scenario types beyond the purely reflexive one in (2a).

Although we needn't posit an ambiguity to account for the facts in (3a)-(7a), our semantics does predict a kind of 'hidden ambiguity' in these sentences. That is, it is commonly assumed that sentences like (22a) and (3a)-(7a) do possess a structural ambiguity: in addition to the LF in (22b), such sentences can be assigned the LF in (25), where the sister of the plural subject contains a 'distributivity' operator (Link 1983, Schwarzschild 1996, Winter 2000).<sup>13</sup>

- (25) **Distributive LF For Plural Reflexive Sentences**  
[  $\exists e$  [the boys] [ **DIST** [ 1 [ t<sub>1</sub> [ hit themselves<sub>1</sub> ] ... ] ] ] ]

<sup>13</sup> A popular alternative to the 'DIST' operator in (25)-(26) is the cumulative '\*'-operator, which can also serve to derive distributive readings (Beck 2000; Kratzer 2003, 2008). In this paper, however, I will only make use of DIST operators like that in (26), simply because the key truth-conditional effect is somewhat more transparent.

If we assume the semantics for the DIST operator in (26), we predict the truth conditions in (27) for the LF in (25).<sup>14</sup>

(26) **The Semantics of the DIST Operator**

$$[[ \text{DIST} ]] = [ \lambda P_{\langle e, e \rangle} : \lambda x_e : \lambda e_e : \forall z . z \leq x \ \& \ \text{ATOM}(z) \rightarrow \exists e' . e' \leq e \ \& \ P(z)(e') ]$$

(27) **Truth Conditions Predicted for the Distributive LF (25)**

$$\exists e . \forall z . z \leq \sigma_x . * \text{boy}(x) \ \& \ \text{ATOM}(z) \rightarrow \exists e' . e' \leq e \ \& \\ [ \lambda x_e : \lambda y_e : \lambda e_e : * \text{hit}(e) \ \& \ * \text{Agent}(e) = y \ \& \ * \text{Theme}(e) = x ](z)(z)(e')$$

Note that the truth conditions in (27) will hold if and only if each individual boy  $z$  is such that there is an event  $e'$  of  $z$  hitting  $z$ . Thus, the distributive LF in (25) will only hold in a reflexive scenario like (24a), and not a reciprocal one like (24b) or a mixed one like (24c).

Since the distributive LF in (25) receives a stronger interpretation than the basic LF in (22b), it is difficult to detect the presence of this syntactic ambiguity. Furthermore, this ambiguity plays no role in our explanation of (3a)-(7a). However, the LF in (25) will play an important role in our analysis of sentences where the reflexive is marked by an intensifier, contributing contrastive focus.

### 3. The Effect of Intensifiers and Contrastive Focus upon Reflexive Sentences

In the preceding section, we saw that certain now-common semantic assumptions correctly predict that (3a)-(7a) will be true in reflexive, reciprocal and mixed scenarios. In the next two sections, we consider the contrasting behavior of the reflexive sentences containing so-called ‘intensifiers’ in (9)-(13).

First, we will observe in this section that, contrary to first appearances, there are indeed contexts where such sentences can describe both reciprocal and mixed scenarios. With this fact in mind, we will introduce in Section 4 a few relatively simple background assumptions concerning the interpretation and licensing of focus in context. We will see that these assumptions correctly predict that in null (‘out-of-the-blue’) contexts, sentences like (9)-(13) will only be true in reflexive scenarios like (2a). We will then see that these assumptions also correctly predict the contexts where (9)-(13) can be read as true in reciprocal and mixed scenarios.

To begin, we saw in (9)-(13) that placement of contrastive focus on the reflexive marker in (3a)-(7a) appears to strengthen the meaning of the sentence, so that it is only true in reflexive scenarios like (2a). This basic pattern is further illustrated below. Consider first the three scenarios in (28).

(28) **‘Simple’ Washing Scenarios**

a. Reflexive Washing:

Each boy is washing himself. (Dave is washing himself, Tom is washing himself, Frank is washing himself, etc.)

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<sup>14</sup> Under the semantics in (26a), the DIST operator obligatorily distributes over the atoms of the plural argument. As discussed extensively by Schwarzschild (1996), this is not generally correct. Rather, (26a) should be augmented so that the quantification of the DIST operator is sensitive to a contextually supplied ‘cover’ of the plurality. I avoid doing so here merely for purposes of simplicity.

- b. Reciprocal Washing:  
Each boy is washing some other boy. (We can imagine that the boys have dirty backs, and each boy is washing the back of some other boy. Dave is washing Tom, Tom is washing Frank, Frank is washing Dave, etc.)
- c. Mixed Washing:  
Half the boys are each washing themselves (Dave is washing himself, Tom is washing himself, etc.). The other half of the boys are each washing some other boys (Frank is washing Tony, Tony is washing Frank, etc.).

As observed in Section 1, we find that the plain reflexive sentences in (29a)-(33a) can describe all three scenarios in (28). Importantly, however, the sentences in (29b)-(33b) are reported to only describe the reflexive washing scenario in (28a). Note that these latter sentences all contain ‘intensifiers’, and so given the assumptions summarized in (14), these are all sentences where the reflexive pronoun (clitic) bears F-marking.

(29) **Reflexive Sentences in French**

- a. Les garçons se sont lavés  
the boys REFL AUX washed  
*The boys washed themselves.* Judgment: True in (28a,b,c)
- b. Les garçons se sont lavés aux mêmes.  
the boys REFL AUX washed to.the.PL same.PL  
*The boys washed themselves.* Judgment: True only in (28a)

(30) **Reflexive Sentences in Spanish**

- a. Los chicos se lavaron.  
the boys REFL wash.IMPF  
*The boys washed themselves.* Judgment: True in (28a,b,c)
- b. Los chicos se lavaron a sí mismos  
the boys REFL wash.IMPF to REFL same.PL  
*The boys washed themselves.* Judgment: True only in (28a)

(31) **Reflexive Sentences in Portuguese**

- a. Os meninos se lavaram  
the boys REFL washed.IMPF  
*The boys washed themselves.* Judgment: True in (28a,b,c)
- b. Os meninos lavaram eles mesmos.  
the boys washed.IMPF their same.PL  
*The boys washed themselves.* Judgment: True only in (28a)

(32) **Reflexive Sentences in Italian**

- a. I ragazzi si sono lavati  
the boys REFL AUX washed  
*The boys washed themselves.* Judgment: True in (28a,b,c)
- b. I ragazzi si sono lavati a se stessi  
the boys REFL AUX washed to REFL same.PL  
*The boys washed themselves.* Judgment: True only in (28a)

(33) **Reflexive Sentences in German**

- a. Die jüngen haben sich gewaschen.  
the boys AUX REFL washed  
*The boys washed themselves.* Judgment: True in (28a,b,c)
- b. Die jüngen haben sich selbst gewaschen.  
the boys AUX REFL self washed  
*The boys washed themselves.* Judgment: True only in (28a)

The judgments above cohere with the general pattern observed in Section 1 and widely reported in the literature on reflexive and reciprocal constructions (Gast & Haas 2008, Heine & Miyashita 2008, Wiemer 2007).

Interestingly, however, a rather minimal change to the linguistic context accompanying (28b) and (28c) has a dramatic effect upon the judgments of speakers. Consider the slight augmentation of (28b,c) below.

(34) **‘Contrastive’ Washing Scenarios**

- a. Reciprocal Washing:  
We work as assistants at a sleep-away camp for boys, along with some other assistants. I see that the boys we're in charge of all have really dirty backs (from rolling around in the dirt). I say to you “these boys need to get clean”, and then I leave to do some errands. You tell the boys to go to the showers and clean up. You supervise, and this is what you see: each boy washes some other boy (Dan washes Tom’s back, Tom washes Frank’s back, etc.).  
When I get back, I see that the boys are all sparkling clean. Taken aback, I say the following to you: “This is great! Who did this? Was it you? Did you wash them? Or did the other assistants wash them?...”
- b. Mixed Washing:  
Same as (34a), except that when you supervise, this is what you see: half the boys are washing themselves (Dave is washing himself, Frank is washing himself, etc.), and half the boys are washing some other boy (Dan washes Tom’s back, Tom washes Bill’s back, etc.).  
When I get back, I see that the boys are all sparkling clean. Taken aback, I say the following to you: “This is great! Who did this? Was it you? Did you wash them? Or did the other assistants wash them?...”

Strikingly, speakers report that the focused reflexive sentences in (29b)-(33b) *can* be construed as true answers to the prompting questions in (34a) and (34b). Note that this is despite the fact that in (34a) each boy washes some other boy, rather than himself, while in (34b), about half the boys are washing some other boy. In other words, although the focused reflexive sentences in (29b)-(33b) are not felt to be true in the ‘simple’ contexts in (28b) and (28c), if those contexts are altered to the ‘contrastive’ ones in (34a,b), then speakers feel that those focused sentences *can* describe both reciprocal and mixed scenarios.

What is the crucial difference between the ‘simple’ contexts in (28) and the ‘contrastive’ ones in (34)? As my chosen labels suggest, the view I will pursue here is that in the contrastive scenarios (34), the context is one where there are other salient entities that can contrast with the antecedent of the reflexive anaphor. That is, in the spare, simple scenarios under (28), the only entities introduced into the discourse are the boys who are washing. However, in the more articulated contexts under (34), the discourse also explicitly incorporates the speaker, the addressee, and the other individuals who serve as ‘assistants’ at the camp.

This same effect of contrast can be seen the data below. To begin, consider the simple scenarios sketched in (35).

(35) **‘Simple’ Grading Scenarios**

- a. Reflexive Grading:  
In this class, there is a rather unorthodox grading procedure. Every student assigns their own grades on their assignments. Thus, Dave has graded himself. Mary has graded herself. Tom has graded himself, etc.
- b. Reciprocal Grading:  
In this class, there is a rather unorthodox grading procedure. Every student assigns the grade of some other student. Thus, Dave has graded Mary. Mary has graded Tom. Tom has graded Dave, etc.
- c. Mixed Grading:  
In this class, there is a rather unorthodox grading procedure. About half the students each assigned their own grades (Dave graded himself, Mary graded herself). The other half assigned the grade of some other student (Tom graded Sue. Sue graded Tom, etc.

As we’ve seen before, in these simple contexts, speakers report that focalized reflexive sentences can only describe reflexive scenarios like (35a), and not the scenarios in (35b,c).

(36) **Reflexive Sentences in French**

- a. Les étudiants se sont évalués  
the students REFL AUX graded  
*The students graded themselves.* Judgment: True in (35a,b,c)
- b. Les étudiants se sont évalués aux mêmes.  
the students REFL AUX graded to.the.PL same.PL  
*The students graded themselves.* Judgment: True only in (35a)

(37) **Reflexive Sentences in Spanish**

- a. Los estudiantes se puntuaron  
the students REFL grade.IMPF  
*The students graded themselves.* Judgment: True in (35a,b,c)
- a. Los estudiantes se puntuaron a sí mismos  
the students REFL grade.IMPF to REFL same.PL  
*The students graded themselves.* Judgment: True only in (35a)

(38) **Reflexive Sentences in Portuguese**

- a. Os estudantes se deram uma nota  
the students REFL gave.IMPF a grade  
*The students graded themselves.* Judgment: True in (35a,b,c)
- b. Os estudantes deram uma nota para eles mesmos  
the students gave.IMPF a grade to they same.PL  
*The students graded themselves.* Judgment: True only in (35a)

(39) **Reflexive Sentences in Italian**

- a. Gli studenti si sono dati i voti  
the students REFL AUX given their grades  
*The students graded themselves.* Judgment: True in (35a,b,c)
- b. Gli studenti si sono dati i voti a se stessi.  
the students REFL AUX given their grades to REFL same  
*The students graded themselves.* Judgment: True only in (35a)

(40) **Reflexive Sentences in German**

- a. Die schüler haben sich benotet.  
the students AUX REFL graded  
*The students graded themselves* Judgment: True in (35a,b,c)
- b. Die schüler haben sich selbst benotet.  
the students AUX REFL self graded  
*The students graded themselves* Judgment: True only in (35a)

Again, however, the judgments regarding (36b)-(40b) change when the contexts are altered to the contrastive ones in (41) below.

(41) **‘Contrastive’ Grading Scenarios**

- a. Reciprocal Grading:  
You taught a class where the students were graded in a somewhat unorthodox fashion. Because it was an advanced class, the students were responsible for assigning the grades. Each student graded the work of some other student. You and I are now talking about your class, and I'm curious about how the

grades in your class were assigned. I ask the following question: “How was the work in your class graded? Did you grade the work? Did the TAs grade it?...”

b. Mixed Grading:

Same as (41a), except that half the students each graded their own work, while the other half graded the work of some other student. You and I are now talking about your class, and I'm curious about how the grades in your class were assigned. I ask the following question: “How was the work in your class graded? Did you grade the work? Did the TAs grade it?...”

Just as we saw for (34), within these more articulated, contrastive contexts, speakers feel that the sentences in (36b)-(40b) *would* be truthful and appropriate answers to the prompting questions. Again, this is despite the fact that in (41a), each student grades some other student, rather than themselves, while in (41b), about half the students grade some other student.

Taking these facts together, the following picture comes into view. First, in a simple context, a sentence containing an F-marked reflexive anaphor is felt to have stronger truth-conditions than one without F-marking on the anaphor. In such contexts, these sentences are felt to only truthfully describe reflexive scenarios like (2a), and not reciprocal ones like (2b) or mixed ones like (8). I hypothesize that the key property of such simple contexts is that the only salient entities in the discourse are those constituting the plural antecedent of the reflexive anaphor. Consequently, if the context is one where there are *other* salient entities besides the referent of the plural antecedent, then reflexive sentences with F-marked anaphors are judged to have the weak truth-conditions of the non-focused sentences. In such contexts, even sentences containing F-marked anaphors are judged to be true in reciprocal and mixed scenarios. In the sections to follow, these will be the key generalizations I will seek to predict; I therefore summarize them below.<sup>15</sup>

#### (42) The Key Generalizations

In a sentence S where (i) a reflexive anaphor is F-marked (*i.e.*, modified by an intensifier), and (ii) the antecedent of the anaphor is a plural NP<sub>pl</sub>, then

- a. If the discourse is such that  $\{ x : x \leq [[NP_{pl}]] \}$  are the only salient entities, then S is felt to only be true in a reflexive scenario.
- b. If the discourse contains other salient entities besides  $\{ x : x \leq [[NP_{pl}]] \}$ , then S is felt to be true in reflexive, reciprocal and mixed scenarios. That is, it is felt to have the exact same weak truth-conditions as the corresponding sentence without F-marking on the anaphor.

In the following section, I will begin to lay out an explanation for the generalizations in (42). Before we come to this, however, I would like to address a claim sometimes found in the descriptive and typological literature. In their study of reflexive markers in German, Gast

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<sup>15</sup> I have also found this effect at play in the interpretation of reflexive sentences translating “The boys shot themselves.” Again, when only very basic, ‘simple’ contexts are presented, the sentences containing focused reflexives are judged not to be true in reciprocal and mixed scenarios. However, in richer contexts, where the subject *the boys* can contrast with other discourse-salient entities, speakers report that even the focused reflexive sentences can describe the reciprocal and mixed scenarios. For reasons of space, however, I omit here this further supporting data.



& Haas (2008) similarly note that German sentences with F-marked reflexive anaphors can sometimes describe reciprocal scenarios. However, they claim that what is crucial about such cases is that the predication can be understood as ‘collective’. They posit that:

“... a reflexive with a plural subject is ambiguous between a distributive reflexive and a collective reflexive reading... In the first case, each of the individuals denoted by the plural subject acts on him- or herself and in the second case the individuals collectively act on themselves as a group. The latter reading is conceptually very similar to the reciprocal reading: if a,b,c act on themselves as a group, a indirectly acts on b and c, b indirectly acts on a and c, etc.” (Gast & Haas 2008: 318).

Similar comments are made by Maslova (2008: 240-242), who likewise claims that ‘collectivity’ is what allows reflexive sentences to be understood as true in reciprocal scenarios.

Since these authors do not assume a formal semantics, it is somewhat unclear what exactly they mean by ‘collective readings’ of reflexive sentences. Under one interpretation, their claims are exactly those that we made earlier in Section 2: sentences like (22a) are syntactically ambiguous between a simple, ‘cumulative’ LF in (22b) and an obligatorily distributive LF (25). Moreover, reflexive sentences with focused anaphors can receive ‘reciprocal’ interpretations precisely when the cumulative LF in (22b) is available to them. If we simply trade the term ‘cumulative’ for the term ‘collective’ in the works cited above, the resulting (informal) analysis comes very close to the (formal) one defended here.

We should note, however, that the possibility of a ‘collective reading’ in the technical sense preferred by semanticists is *not* what underlies the judgments regarding the contrastive scenarios in (34) and (41). That is, it does not seem plausible that the crucial difference between the simple contexts (28)/(35) and the contrastive contexts (34)/(41) is that only the latter model a ‘collective reading’ of the sentence. To expand upon this, let me first clarify what semanticists usually intend by the term ‘collective reading’. First, as has long been observed, the sentence in (43a) below can describe any of the three scenarios in (43b).

- (43) a. Dave and Tom carried two boxes upstairs.
- b. Verifying Scenarios
- (i) *Cumulative Reading*: Dave carried box<sub>1</sub>. Tom carried box<sub>2</sub>.
  - (ii) *Distributive Reading*: Dave carried box<sub>1</sub>+box<sub>2</sub>. Tom carried box<sub>3</sub>+box<sub>4</sub>
  - (iii) *Collective Reading*: Dave and Tom *together* carried box<sub>1</sub>+box<sub>2</sub>.

Usually, semanticists use the term ‘collective reading’ to mean (roughly) an interpretation whereby the sentence describes a case of collective/joint action, like scenario (43biii). To be more precise, under a collective reading, the event *e* described by the sentence is one that does not contain any proper subevents *e*’ that have as their agent some proper sub-part of the agent of *e* (see Kratzer 2003, 2008). Note that this condition is satisfied in a scenario like (43biii), where there is a single event of ‘carrying’, with the plurality Dave+Tom as its agent.

With this in mind, consider again the contrast between the contexts in (28)/(35) and (34)/(41). Note that in each of these contexts, the character of the action described is held constant; the only real difference between (28)/(35) and (34)/(41) seems to be that the latter explicitly invokes entities besides those denoted by the plural subject. Thus, it’s quite hard to see how a ‘collective reading’ (in the sense explained here) would be possible in (34)/(41) but not in (28)/(35). Furthermore, none of the scenarios in (28)-(41) seem to involve ‘collection action’ in the sense described above. In all the scenarios in (28)/(34), any event of washing *e*

whose agent is the boys has a salient subevent of washing e' whose agent is some individual boy. Similarly, in all the scenarios in (35)/(41), any event of grading e whose agent is the students has a salient subevent of grading e' whose agent is some individual student. Consequently, given the meaning of 'collective reading' laid out above, *none* of the scenarios in (28)-(41) actually model a collective reading of the sentences in question.

Taking all of this together, we must conclude that the ability for sentences (29b)-(33b) to be understood as true in (contrastive) reciprocal scenarios (34a) or (contrastive) mixed scenarios (34b) cannot be due to their receiving a collective reading, at least in the sense preferred by semanticists. For this reason, I will put aside the view that a collective reading is required for (focused) reflexive sentences to describe reciprocal or mixed scenarios.<sup>16</sup>

#### 4. A Formal Analysis of Contrastively Focused Reflexives

In the preceding section, I presented evidence for the 'key generalizations' in (42), which state that a sentence with an F-marked reflexive can describe a reciprocal or mixed scenario only if the context makes salient entities other than the antecedent of the reflexive. In this section, I will show that this generalization actually follows from some relatively basic assumptions regarding the semantics and licensing of F-marking in context. I begin by first laying out those core assumptions.

##### 4.1 Key Assumptions Concerning the Semantics and Licensing of Focus

In this section, I will lay out the assumptions I make regarding the semantics of F-marking and its licensing in context. For my purposes here, I will adopt a somewhat simplified version of the well-known theory of Rooth (1985, 1992), combined with some key proposals developed by Sauerland (2000).

One central goal for a semantic theory of F-marking is to predict and explain the complex ways in which context affects its appearance. For example, in the context in (44), the accenting pattern in (44a) is licit, while that in (44b) is not.<sup>17</sup>

##### (44) Focus Licensing in Context

Context: Dave and Frank walked into the room. Frank wanted to sit down. What happened next?

- a. [ DAVE ]<sub>F</sub> sat down.
- b. ?? [ DAVE AND FRANK ]<sub>F</sub> sat down.

A theory of contrasts such as these often contains two main ingredients: (i) a semantics for F-marking, and (ii) a condition requiring that the semantic contribution of the F-marking in some sense 'fit' the prior discourse.<sup>18</sup> Regarding ingredient (i), I will adopt the well-known

<sup>16</sup> Having said this, however, it should nevertheless also be noted that basic, non-distributive LFs like (21a) and (22b) will also be true in scenarios of collective action (Kratzer 2003, 2008). Thus, our analysis in Section 4 will predict that contexts where such LFs are interpretable will allow (in principle) for 'collective readings' of reflexive sentences. Again, however, our analysis does not (incorrectly) predict that such collective readings are a necessary condition for a reflexive sentence to be understood as true in a reciprocal or mixed scenario.

<sup>17</sup> As is standard in the theoretical literature on focus, I use capitalization to indicate a focal accent, and an F-subscript to indicate the scope of the F-marking.

<sup>18</sup> Of course, not all theories of focus-licensing have this structure, Schwarzschild (1999) being one well-known example.

alternative semantics of Rooth (1985, 1992). To begin, I assume that besides the regular, ‘normal-semantic’ interpretation function “ $[[ \cdot ]]^g$ ”, there also exists the special ‘focus-semantic’ interpretation function “ $[[ \cdot ]]^{g,F}$ ”. The focus-semantic value of a given expression is defined partly in terms of its normal-semantic value. The definitions below are fairly typical.

**(45) The Definition of Focus-Semantic Values**

- a. If  $X_F$  is an F-marked head/phrase, then  $[[X_F]]^{g,F} = \{x \in D_\tau : [[X]]^g \in D_\tau\}$
- b. If X is a head that does not bearing F-marking, then  $[[X]]^{g,F} = \{[[X]]^g\}$
- c. If X is a phrase that does not bear F-marking, and if X is composed of the daughters Y and Z, then if
  - (i)  $[[Y]]^{g,F} \in D_{\langle\langle\sigma, \tau\rangle, t\rangle}$
  - (ii)  $[[Z]]^{g,F} \in D_{\langle\sigma, t\rangle}$
 then  $[[X]]^{g,F} = \{f(a) : f \in [[Y]]^{g,F} \text{ and } a \in [[Z]]^{g,F}\}$

Thus, the focus-semantic value of an expression X depends upon whether X bears F-marking. If X does bear F-marking, then its focus semantic value is the set of all things within the semantic type of the normal-semantic value of X (45a). If X does not bear F-marking, then its focus-semantic value depends upon whether it is a head or a phrase. If X is a head, then its focus-semantic value is simply the singleton set of X’s normal-semantic value (45b). If X is a phrase, then X’s focus-semantic value is the ‘point-wise semantic composition’ of the focus-semantic values of X’s daughters (45c).

Having put forth a semantics for F-marking, let us now consider the conditions that govern its appearance in context. For our purposes, I will follow Sauerland (2000) in simply assuming that the following necessary condition will be a consequence of any complete theory of focus licensing.<sup>19</sup>

**(46) Necessary Condition for the Licensing of Focus (Sauerland 2000)**

Let  $g$  be any variable assignment.  $[[XP_F]]^g$  is only ‘licensed’ if there is a Focus Antecedent (FA) salient in the discourse such that:

- a.  $FA \in [[XP_F]]^{g,F}$
- b. FA is ‘not entailed by’  $[[XP_F]]^g$

It is important to note that (46) is merely a necessary – and not sufficient – condition on the licensing of F-marking. To see how this condition accounts for contrasts like those in (44), we must first explain what ‘entailment’ in (46b) means for expressions of type e. As stated in (47), I will assume that one entity  $x$  ‘entails’ another  $y$  *iff*  $x$  contains  $y$ .

**(47) Entailment for Entities**

If  $x, y \in D_e$ , then  $x$  ‘entails’  $y$  *iff*  $y \leq x$

With hypotheses (46)-(47) in place, we can now account for contrasts like those in (44). First, let us consider the licit F-marking in (44a). Given the condition in (46), the F-marking on *Dave* is only licensed if there is an entity  $x$  such that  $x \in [[Dave_F]]^{g,F}$  and  $\neg x \leq Dave$ . Following the definitions in (45),  $[[Dave_F]]^{g,F} = D_e$ , which contains the discourse-

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<sup>19</sup> Note, however, that the condition in (46) differs slightly in letter, though not in spirit, from what is proposed by Sauerland (2000). Regarding the condition in (47), see the appendix discussion of Sauerland (2000).

salient entity Frank. Since  $\neg \text{Frank} \leq \text{Dave}$ , it follows that the condition in (46) is satisfied by (44a) in the associated context, and so we correctly predict the felicity of that accenting.

Now let us consider the illicit F-marking in (44b). Again, the condition in (46) requires that there is an entity  $x$  such that  $x \in [[ [\text{Dave and Frank}]_F ]]^{\text{g,F}}$  and  $\neg x \leq \text{Dave+Frank}$ . Unfortunately, in the context under (44), the only salient entities are Dave and Frank. Consequently, there is no discourse salient  $x$  such that  $\neg x \leq \text{Dave+Frank}$ . Therefore, the condition in (46) cannot be satisfied by (44b) in the associated context, and so we correctly predict (44b) to be infelicitous.

We find, then, that the basic assumptions in (45)-(47) are able to predict contrasts such as those in (44). In the following subsection, we will see that these assumptions are also enough to predict the all the key generalizations in (42). Before we turn to this, however, I should make clear one final assumption that our account will rest upon. Throughout our discussion, I will assume that if a sentence  $S$  contains a definite plural DP, then (i)  $[[\text{DP}]]$  is made salient in the discourse, as well as (ii) all the entities  $x$  such that  $x \leq [[\text{DP}]]$ . Thus, when a sentence like *The boys left* is uttered, not only is  $\sigma_x.*\text{boy}(x)$  made salient, but also all the individual boys.

## 4.2 The Effect of Contrastive Focus Upon Reflexive Sentences

We ended Section 3 with the empirical generalizations repeated in (48). In this section, we will see that preceding hypotheses regarding focus – particularly (46) and (47) – are able to predict both these generalizations.

### (48) The Key Generalizations

In a sentence  $S$  where (i) a reflexive anaphor bears focus, and (ii) the antecedent of the anaphor is a plural  $\text{NP}_{\text{pl}}$ , then

- a. If the discourse is such that  $\{ x : x \leq [[\text{NP}_{\text{pl}}]] \}$  are the only salient entities, then  $S$  is felt to only be true/appropriate in a reflexive scenario.
- b. If the discourse contains other salient entities besides  $\{ x : x \leq [[\text{NP}_{\text{pl}}]] \}$ , then  $S$  is true in both reflexive, reciprocal and mixed scenarios. That is, it has the exact same weak truth-conditions as the corresponding sentence without focus on the anaphor.

We will begin by considering the generalization in (48a). This generalization covers data such as those repeated in (49) below.

### (49) Illustration of Generalization (48a)

#### a. Contexts

##### (i) *'Simple' Reflexive Washing*

Each boy is washing himself. (Dave is washing himself, Tom is washing himself, Frank is washing himself, etc.)

##### (ii) *'Simple' Reciprocal Washing*

Each boy is washing some other boy. (Dave is washing Tom, Tom is washing Frank, Frank is washing Dave, etc.)

- (iii) *‘Simple’ Mixed Washing*  
 Half the boys are each washing themselves (Dave is washing himself, Tom is washing himself, etc.). The other half of the boys are each washing some other boys (Frank is washing Tony, Tony is washing Frank, etc.).

b. Truth-Conditional Judgments

Die jüngen haben sich selbst gewaschen.  
 the boys AUX REFL self washed

*The boys washed themselves.*

Judgment: True only in simple reflexive washing (49ai), not in simple reciprocal washing (49aii), nor simple mixed washing (49aiii).

In the discussion to follow, I will focus specifically upon the German sentence in (49b). The reader is invited to confirm that the account developed here will extend to the parallel data from other languages in Section 3.

To begin, recall my assumption that the key property of the ‘simple’ contexts in (49a) is that the only salient entities are the boys who are washing. That is, in each of these contexts, the only salient entities are  $\{ x : x \text{ is a boy or } x = \sigma_x \cdot *boy(x) \}$ . With this in mind, let us consider the readings our semantics predicts for sentence (49b) in such contexts. First, given our syntactic assumptions in (14) and (22), it follows that (49b) can in principle receive the LF below.

(50) **‘Cumulative’ LF for Sentence (49b)**

$[[ \exists e [ \text{Die jüngen} ] [ 1 [ t_1 [ [ sich_1 ]_F \text{ gewaschen} ] \dots ] ] ] ]^g$

Under this LF, the reflexive *sich* bears F-marking (contributed by the intensifier *selbst*), and is bound by a lambda operator adjacent to the plural antecedent *die jüngen* ‘the boys’. For purposes of simplicity, I omit the auxiliary *haben*, as well as the intensifying particle itself.

Let us now consider whether the F-marking in (50) is licensed within a ‘simple’ context, where the only salient entities are  $\{ x : x \text{ is a boy or } x = \sigma_x \cdot *boy(x) \}$ . To begin, let us note that, in order to obtain an interpretation for (50), we must ultimately calculate the value of  $[[ [ sich_1 ]_F ] ]^{g(1/\sigma_x \cdot *boy(x))}$ . The following derivation briefly illustrates this point.

(51) **Short Truth-Conditional Derivation for (50)**

- a.  $[[ [ \exists e [ \text{Die jüngen} ] [ 1 [ t_1 [ [ sich_1 ]_F \text{ gewaschen} ] \dots ] ] ] ]^g =$   
 b.  $\exists e . [[ [ \text{Die jüngen} ] [ 1 [ t_1 [ [ sich_1 ]_F \text{ gewaschen} ] \dots ] ] ]^g(e) =$   
 c.  $\exists e . [[ [ 1 [ t_1 [ [ sich_1 ]_F \text{ gewaschen} ] \dots ] ] ]^g(\sigma_x \cdot *boy(x))(e) =$   
 d.  $\exists e . [ \lambda y : [[ [ t_1 [ [ sich_1 ]_F \text{ gewaschen} ] \dots ] ] ]^g(1/y) ](\sigma_x \cdot *boy(x))(e) =$   
 e.  $\exists e . [[ [ t_1 [ [ sich_1 ]_F \text{ gewaschen} ] \dots ] ] ]^g(1/\sigma_x \cdot *boy(x))(e) =$   
 f.  $\exists e . [[ \text{gewaschen} ] ]^g(1/\sigma_x \cdot *boy(x))([ [ sich_1 ]_F ] ]^g(1/\sigma_x \cdot *boy(x)))(\sigma_x \cdot *boy(x))(e)$

As line (51f) makes clear, the semantic computation for (50) requires that one determine the value of  $[[ [sich_1]_F ] ]^{g(1/\sigma_x.*boy(x))}$ . We must therefore ask whether the licensing condition in (46) is satisfied by  $[[ [sich_1]_F ] ]^{g(1/\sigma_x.*boy(x))}$  within the contexts in (49a). Crucially, it is not. From the definitions in (45), it follows that  $[[ [sich_1]_F ] ]^{g(1/\sigma_x.*boy(x)), F} = D_e$ . Furthermore, note that  $[[ [sich_1]_F ] ]^{g(1/\sigma_x.*boy(x))} = \sigma_x.*boy(x)$ . Now recall that the only discourse salient entities in (49ai-iii) are  $\{ x : x \text{ is a boy or } x = \sigma_x.*boy(x) \}$ . Clearly, then, there is no discourse salient  $z$  such that  $\neg z \leq \sigma_x.*boy(x)$ . Consequently, the licensing condition in (46) will not be satisfied by  $[[ [sich_1]_F ] ]^{g(1/\sigma_x.*boy(x))}$  in any of the simple contexts in (49a).

We find, then, that relative to the contexts in (49a), the F-marking in LF (50) is not licensed. Put informally, the problem is that the normal-semantic value of the F-marked anaphor in (50) is the denotation of its antecedent, ‘the boys’. However, in simple contexts like those in (49a), there is no discourse salient entity that properly *contrasts* with ‘the boys’; the only salient entities are the boys themselves. Thus, the contrastive licensing condition on F-marking (46) will not be satisfied by the F-marked reflexive, and so LF (50) does not receive a felicitous interpretation in any of the contexts in (49a). We must conclude, then, that any interpretation that *is* available to sentence (49b) in those ‘simple’ contexts is *not* derived from the ‘cumulative’ LF in (50).

Fortunately, however, (50) is not the only LF available to (49b). As noted in Section 2, sentences like (49b) can also receive a ‘distributive’ LF such as that in (52) below.

(52) ‘Distributive’ LF for Sentence (49b)

[  $\exists e$  [ Die jüngen ] [ DIST [ 1 [  $t_1$  [ [  $sich_1$  ]<sub>F</sub> gewaschen ] ... ] ] ] ]

Importantly, the F-marking in such distributive LFs does satisfy the contrastive licensing condition (46) in simple contexts like (49a). To see this, let us first note that to calculate an interpretation for (52), it must be that for every boy  $z$ ,  $[[ [sich_1]_F ] ]^{g(1/z)}$  has a defined interpretation. Again, the calculation below illustrates.

(53) Short Truth-Conditional Derivation for (52)

- a.  $[[ [ \exists e$  [ Die jüngen ] [ DIST [ 1 [  $t_1$  [ [  $sich_1$  ]<sub>F</sub> gewaschen ] ... ] ] ] ] ] ] ]^g =
- b.  $\exists e . \forall z . z \leq \sigma_x.*boy(x) \ \& \ \text{ATOM}(z) \rightarrow \exists e' . e' \leq e \ \&$   
 $[[ [ 1 [  $t_1$  [ [  $sich_1$  ]<sub>F</sub> gewaschen ] ... ] ] ] ]^g(z)(e') =$
- c.  $\exists e . \forall z . z \leq \sigma_x.*boy(x) \ \& \ \text{ATOM}(z) \rightarrow \exists e' . e' \leq e \ \&$   
 $[ \lambda y : [[ [  $t_1$  [ [  $sich_1$  ]<sub>F</sub> gewaschen ] ... ] ] ] ]^g(1/y)](z)(e') =$
- d.  $\exists e . \forall z . z \leq \sigma_x.*boy(x) \ \& \ \text{ATOM}(z) \rightarrow \exists e' . e' \leq e \ \&$   
 $[[ [  $t_1$  [ [  $sich_1$  ]<sub>F</sub> gewaschen ] ... ] ] ]^g(1/z)(e') =$
- e.  $\exists e . \forall z . z \leq \sigma_x.*boy(x) \ \& \ \text{ATOM}(z) \rightarrow \exists e' . e' \leq e \ \&$   
 $[[ gewaschen ] ]( [[ [  $sich_1$  ]<sub>F</sub> ] ]^g(1/z) )(z)(e') =$

Thus, as line (53e) makes clear, the LF in (52) only has an interpretation if for every boy  $z$ , a value can be calculated for  $[[ [sich_1]_F ] ]^{g(1/z)}$ . We must therefore consider whether, for an arbitrary boy  $z$ , the F-marking in  $[[ [sich_1]_F ] ]^{g(1/z)}$  will satisfy the contrastive licensing condition (46) in simple contexts like (49ai-iii). Happily, it will. Let  $z$  be any boy in any

context in (49a). From the definitions in (45), it follows that  $[[ [sich_1]_F ] ]^{g(1/z), F} = D_e$ . Furthermore, note that  $[[ [sich_1]_F ] ]^{g(1/z)} = z$ . Now recall that the discourse salient entities in (49ai-iii) are  $\{ x : x \text{ is a boy or } x = \sigma_x \cdot *boy(x) \}$ . Since there are other boys besides  $z$  in (49ai-iii), it follows that there *is* another discourse salient entity  $z'$  such that  $\neg z' \leq z$ . Consequently, the licensing condition in (46) will be satisfied by  $[[ [sich_1]_F ] ]^{g(1/z)}$  in any of the simple contexts in (49a).

We find, then, that the relative to the contexts in (49a), the F-marking in a distributive LF like (52) is indeed licensed. Given that this is the only possible LF for (49b) that is licensed in (49a), it follows that the truth conditions assigned to (52) represent the only reading that (49b) can receive under the ‘simple’ contexts in (49a). Finally, as the reader can confirm, the truth conditions that (52) receives are the ones in (54) below.

**(54) Truth-Conditions Predicted for (49b) in the ‘Simple’ Contexts in (49a)**

$$\exists e . \forall z . z \leq \sigma_x \cdot *boy(x) \ \& \ \text{ATOM}(z) \rightarrow \exists e' . e' \leq e \ \& \\ [ \lambda x_e : \lambda y_e : \lambda e_e : *wash(e) \ \& \ *Agent(e) = y \ \& \ *Theme(e) = x ](z)(z)(e')$$

Informal Paraphrase: *Each individual boy  $z$  is such that  $z$  washed  $z$ .*

Crucially, the truth conditions in (54) will only hold in reflexive scenarios (49ai), and not in either reciprocal (49aii) or mixed scenarios (49aiii). Given that these are the only truth conditions we derive for (49b) in ‘simple’ contexts, we find that our semantics successfully captures the key generalization in (48a).

Our overall explanation for generalization (48a) is difficult to summarize informally, but it could be put as follows. A sentence where a plural DP binds an F-marked anaphor can receive two possible LFs: (i) a distributive LF, where the sister of the DP contains a DIST-operator, and (ii) a cumulative LF, where the sister of the DP contains no such DIST-operator. In a context where the only salient entities are those that constitute the extension of the DP, the only interpretable LF is the distributive one. In the cumulative LF, the anaphor is coextensive with the plural DP. Thus, the contrastive focus on that anaphor requires that the plurality denoted by the DP contrast with some other (non-overlapping) entity. In a context where the only salient entities are parts of the DP’s extension, there is no such contrasting entity, and so the cumulative LF does not receive a licit interpretation. On the other hand, in the distributive LF, the anaphor is (in a sense) interpreted as each of the individual members of the extension of the DP. Thus, the contrastive focus on the anaphor requires that the atomic subparts of the DP’s extension contrast with some other salient entities. Of course, such contrasting entities could be the other subparts of the DP’s extension, and so the distributive LF does receive a licit interpretation. Finally, since only the distributive LF receives a licit interpretation in such contexts, the sentences in question will only receive the truth-conditions of the distributive LF. Therefore, they can only be true in reflexive scenarios, ones where each atomic subpart of the plural DP bears the reflexive relation to itself.

Having accounted for the generalization in (48a), let us now consider that in (48b). This generalization covers data such as those repeated in (55) below. As before, I will focus upon the specific judgments in (55b). The reader is invited to confirm that the account developed here will extend to the other, parallel data from Section 3.

(55) **Illustration of Generalization (48b)**

a. Contexts

(i) *Contrastive Reciprocal Washing*

You tell the boys to go to the showers and clean up. You supervise, and this is what you see: each boy washes some other boy (Dan washes Tom's back, Tom washes Frank's back, etc.). When I get back, I see that the boys are all sparkling clean. Taken aback, I say the following to you: "This is great! Who did this? Was it you? Did you wash them? Or did the other assistants wash them?..."

(ii) *Contrastive Mixed Washing*

Same as above, except that when you supervise, this is what you see: half the boys are washing themselves (Dave is washing himself, Frank is washing himself, etc.), and half the boys are washing some other boy (Dan washes Tom's back, Tom washes Bill's back, etc.). When I get back, I see that the boys are all sparkling clean. Taken aback, I say the following to you: "This is great! Who did this? Was it you? Did you wash them? Or did the other assistants wash them?..."

b. Truth-Conditional Judgments

Die jüngen haben sich selbst gewaschen.  
the boys AUX REFL self washed

*The boys washed themselves.*

Judgment: True in both contrastive reciprocal washing (55ai) and in contrastive mixed washing (55aii).

To begin, recall my assumption that the key property of the 'contrastive' contexts in (55a) is that 'the boys' are not the only discourse salient entities. At the very least, the salient entities include  $\{x : x \text{ is a boy or } x = \sigma_x \cdot \text{boy}(x) \text{ or } \mathbf{x \text{ is a camp assistant}}\}$ . Importantly, due to this minimal change in the context, we now predict that the F-marking in the cumulative LF below is properly licensed.

(56) **'Cumulative' LF for Sentence (49b)**

[  $\exists e$  [ Die jüngen ] [ 1 [  $t_1$  [ [  $sich_1$  ]<sub>F</sub> gewaschen ] ... ]

Recall that, in order to determine whether the F-marking in (56) is licensed, we must check whether the licensing condition in (46) is satisfied by  $[[ [sich_1]_F ]]$  <sup>$g(1/\sigma_x \cdot \text{boy}(x))$</sup>  within the contexts in (55a). Note that, in these contexts, it is. As before, the definitions in (45) entail that  $[[ [sich_1]_F ]]$  <sup>$g(1/\sigma_x \cdot \text{boy}(x))$</sup> ,  $F = D_e$ . Furthermore, note that  $[[ [sich_1]_F ]]$  <sup>$g(1/\sigma_x \cdot \text{boy}(x))$</sup>  =  $\sigma_x \cdot \text{boy}(x)$ . Now, note again that in the contrastive contexts in (55a), the salient entities include  $\{x : x \text{ is a camp assistant}\}$ . Consequently, there *are* discourse salient entities  $z$  such that  $\neg z \leq \sigma_x \cdot \text{boy}(x)$ , and so condition (46) will be satisfied by  $[[ [sich_1]_F ]]$  <sup>$g(1/\sigma_x \cdot \text{boy}(x))$</sup>  in the contrastive contexts in (55a).

We therefore find that, relative to the contrastive contexts in (55a), the F-marking in the cumulative LF (56) will indeed be licensed. Furthermore, recall from Section 2 that such cumulative LFs will receive especially weak truth-conditions, ones that hold in reflexive, reciprocal and mixed scenarios. It follows, then, that we correctly predict sentence (55b) to be



true in the contrastive reciprocal and contrastive mixed scenarios in (55a). In this way, our semantics successfully captures the key generalization in (48b).

Again, our explanation of (48b) is a bit difficult to summarize succinctly, but it is basically as follows. As before, a sentence where a plural DP binds an F-marked anaphor can receive two possible LFs: (i) a distributive LF, where the sister of the DP contains a DIST-operator, and (ii) a cumulative LF, where the sister of the DP contains no such operator. In a context where the salient entities include ones that are *not* part of the extension of the DP, the cumulative LF becomes licensed. As before, in the cumulative LF, the anaphor is coextensive with the plural DP, and so the contrastive focus on that anaphor requires that the plurality denoted by the DP contrast with some other (non-overlapping) entity. Since such contrasting entities do exist in these contexts, there is no problem interpreting the cumulative LF. Finally, the truth conditions of the cumulative LF are such that they hold in both reciprocal and mixed scenarios. Consequently, we correctly predict that the sentences in question can be interpreted as true in these types of scenarios.

Taking these results together, we see that our semantics from Sections 2 and 4.1 indeed predicts the two key generalizations in (48), and thus the empirical patterns observed in Section 3. We find, then, that relatively basic and common assumptions concerning the semantics of plurals, reflexives, and (contrastive) focus can provide a rather clear formal explanation of the facts in (3)-(13), as well as the novel data paradigm presented in Section 3. In the following section, I offer some tentative thoughts regarding reflexives in languages like English, where reflexive sentences seem (at first blush) to never felicitously describe either reciprocal or mixed scenarios.

## 5. Languages Where Reflexive Sentences Only Ever Describe ‘Reflexive’ Scenarios

We saw in Section 2 that the pattern of judgments in (3a)-(7a) is an easy consequence of certain commonly held semantic assumptions. Nevertheless, as noted in Section 1, it appears that only a relative minority of languages exhibit this pattern. In most languages (61.4%; Heine & Miyashita 2008), reflexively marked predicates cannot (at first blush) describe reciprocal or mixed scenarios. For example, the English sentence in (57a) cannot truthfully describe the ‘simple reciprocal washing’ scenario (28b) nor the ‘simple mixed washing’ scenario (28c). Similarly, (57b) cannot describe ‘simple reciprocal grading’ (35b) nor ‘simple mixed grading’ (35c).

### (57) Reflexive Sentences in English

- a. The boys washed themselves.  
Judgment: Of the ‘simple’ scenarios in (28), can only describe the reflexive scenario (28a), and not the reciprocal or mixed scenarios (28b,c).
  
- b. The students graded themselves.  
Judgment: Of the ‘simple’ scenarios in (35), can only describe the reflexive scenario (35a), and not the reciprocal or mixed scenarios (35b,c).

It should be noted that the reflexive anaphor *themselves* in (57) is the only (3<sup>rd</sup> plural) reflexive English possesses. There is no productive reflexive marker in the language that contrasts with *themselves* and allows sentences like (57a,b) to describe the reciprocal and mixed scenarios in (28) and (35).

This same situation holds for quite a number of languages, as the following data illustrate. In each of the sentences below, the reflexive marker shown is the only productive reflexive marker in the language.

(58) **Reflexive Markers in Turkish** <sup>20</sup>

- a. Erkekler kindilerini yikadiler  
 boys their.selves.ACC washed

*The boys washed themselves.*

Judgment: Of the ‘simple washing’ scenarios in (28), can only describe the reflexive scenario (28a), and not the reciprocal or mixed scenarios (28b,c).

- b. Öğrenciler kindilerine not verdiler  
 students their.selves.DAT grade gave

*The students graded themselves*

Judgment: Of the ‘simple grading’ scenarios in (35), can only describe the reflexive scenario (35a), and not the reciprocal or mixed scenarios (35b,c).

(59) **Reflexive Markers in Russian** <sup>21</sup>

- a. Mal’chiki myli sebja.  
 boys washed REFL

*The boys washed themselves.*

Judgment: Of the ‘simple washing’ scenarios in (28), can only describe the reflexive scenario (28a), and not the reciprocal or mixed scenarios (28b,c).

- b. Ucheniki proverjali sebja  
 students graded REFL

*The students graded themselves.*

Judgment: Of the ‘simple grading’ scenarios in (35), can only describe the reflexive scenario (35a), and not the reciprocal or mixed scenarios (35b,c).

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<sup>20</sup> Turkish also possesses a verbal affix *-n-* that can directly mark the verb as reflexive. However, this affix is not fully productive, and so I set it aside in the current study.

<sup>21</sup> Russian also possesses a verbal affix *-s’* that can directly mark the verb as reflexive. However, this affix is not productive, and so I set it aside in the current study.

(60) **Reflexive Sentences in Hebrew** <sup>22</sup>

- a. Habanim raxcu et acmam  
the.boys washed ACC REFL.PL

*The boys washed themselves.*

Judgment: Of the ‘simple washing’ scenarios in (28), can only describe the reflexive scenario (28a), and not the reciprocal or mixed scenarios (28b,c).<sup>23</sup>

- b. Hatalmidim badku et hamivxanim Sel acmam.  
the.students checked ACC exams of REFL.PL

*The students graded themselves.*

Judgment: Of the ‘simple grading’ scenarios in (35), can only describe the reflexive scenario (35a), and not the reciprocal or mixed scenarios (35b,c).

(61) **Reflexive Sentences in Hindi**

- laRkoN-ne apne aap-ko dho-yaa  
boys-ERG REFL-ACC wash-AUX

*The boys washed themselves.*

Judgment: Of the ‘simple washing’ scenarios in (28), can only (unquestionably) describe the reflexive scenario (28a), and not the reciprocal or mixed scenarios (28b,c).<sup>24</sup>

As shown above, speakers report that it is not possible (or is somewhat ‘degraded’) to offer (57)-(61) as descriptions of the ‘simple reciprocal/mixed washing’ scenarios in (28b,c), nor the ‘simple reciprocal/mixed grading’ scenarios in (35b,c).

However, it is possible to find contexts where these sentences *can* truthfully describe reciprocal and mixed scenarios. Intriguingly, these are the same contexts that allow the ‘intensified’ reflexives in (9)-(13) to describe such scenarios. That is, as shown below, the ‘contrastive reciprocal’ and ‘contrastive mixed’ scenarios can be described by the reflexive sentences above.

(62) **Reflexive Markers in English**

- a. The boys washed themselves.

Judgment: Can describe the ‘contrastive reciprocal washing’ scenario (34a) and the ‘contrastive mixed washing’ scenario (34b).

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<sup>22</sup> Hebrew also possesses a verbal affix than can directly mark the verb as ‘reflexive’ or ‘reciprocal’ (Siloni 2008). However, since this affix is not fully productive, I set it aside in the current study.

<sup>23</sup> One speaker found that (60a) was slightly acceptable in the ‘simple mixed washing’ scenario (28c), though she felt that it was not in the ‘simple reciprocal scenario’ (28b). Another speaker found (60a,b) acceptable in all the scenarios in (28) and (35). I assume that this latter speaker was implicitly performing the contextual manipulations described below.

<sup>24</sup> The speaker I consulted found that (61) was somewhat acceptable in the ‘simple reciprocal’ and ‘simple mixed’ scenarios (28b,c). Since he also felt that such use of (61) markedly improves in the contexts described below, I group Hindi together with the other languages in (57)-(61).

- b. The students graded themselves.  
Judgment: Can describe the ‘contrastive reciprocal grading’ scenario (41a) and the ‘contrastive mixed grading’ scenario (41b).

(63) **Reflexive Markers in Turkish** <sup>25</sup>

- a. Erkekler kindilerini yikadiler  
 boys their.selves.ACC washed  
*The boys washed themselves.*  
Judgment: Can describe the ‘contrastive reciprocal washing’ scenario (34a) and the ‘contrastive mixed washing’ scenario (34b).
- b. Öğrenciler kindilerine not verdiler  
 students their.selves.DAT grade gave  
*The students graded themselves*  
Judgment: Can describe the ‘contrastive reciprocal grading’ scenario (41a) and the ‘contrastive mixed grading’ scenario (41b).

(64) **Reflexive Markers in Russian**

- a. Mal’chiki myli sebja.  
 boys washed REFL  
*The boys washed themselves.*  
Judgment: Can describe the ‘contrastive reciprocal washing’ scenario (34a) and the ‘contrastive mixed washing’ scenario (34b).
- b. Ucheniki proverjali sebja  
 students graded REFL  
*The students graded themselves.*  
Judgment: Can describe the ‘contrastive reciprocal grading’ scenario (41a) and the ‘contrastive mixed grading’ scenario (41b).

(65) **Reflexive Sentences in Hindi**

- laRkoN-ne apne aap-ko dho-yaa  
 boys-ERG REFL-ACC wash-AUX  
*The boys washed themselves.*  
Judgment: Can describe the ‘contrastive reciprocal washing’ scenario (34a) and the ‘contrastive mixed washing’ scenario (34b).

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<sup>25</sup> The speaker I consulted with found (63a,b) to still be somewhat odd in the contrastive scenarios (34) and (41). However, she also reported that there is a marked improvement over using (63a,b) in the ‘simple reciprocal/mixed’ scenarios (28b,c) and (35b,c).

## (66) Reflexive Sentences in Hebrew

- a. Habanim raxcu et acmam  
the.boys washed ACC REFL.PL  
*The boys washed themselves.*  
Judgment: Can describe the ‘contrastive reciprocal washing’ scenario (34a) and the ‘contrastive mixed washing’ scenario (34b).
- b. Hatalmidim badku et hamivxanim Sel acmam.  
the.students checked ACC exams of REFL.PL  
*The students graded themselves.*  
Judgment: Can describe the ‘contrastive reciprocal grading’ scenario (41a) and the ‘contrastive mixed grading’ scenario (41b).<sup>26</sup>

We find, then, that the reflexive markers of English, Turkish, Russian, Hindi and Hebrew exhibit the same behavior as the F-marked reflexives of French, Spanish, Portuguese, Italian and German. Optimally, we should seek a unified explanation for all reflexive markers found to exhibit this pattern. Given the analysis developed in Section 4, it would seem that such an account must assume that the reflexive pronouns in (62)-(66) are subject to the same licensing condition as the F-marked reflexives in (9)-(13). However, an obvious difficulty for such an account is that *none* of the reflexive markers in (62)-(66) need bear prosodic focus. For example, the English sentences in (57) are most naturally read with a pitch accent on the verbs *wash/grade*, and with de-accenting of the reflexive anaphor *themselves*. Even under this intonation, however, the facts in (57) stand: these sentences cannot be used to describe the ‘simple reciprocal/mixed’ scenarios. Thus, even when they are de-accented, reflexive pronouns in English behave like the F-marked reflexives in (9)-(13). Whether this also holds for the other reflexive markers in (62)-(66) is difficult to say, but it is rather implausible to suppose that all these reflexives are obligatorily focused.

How, then, can we hope to extend the analysis of Section 4 to the cases in (62)-(66)? In considering this question, it is worth bearing in mind one key fact concerning the etymology of the reflexives in (62)-(66): each of those reflexives derives historically from what was originally an ‘intensified’ or F-marked reflexive like those in (9)-(13). In English, *himself* contains the morpheme *self*, which originally functioned as an ‘intensifier’, akin to the etymologically related *selbst* of German. The same holds for Turkish *kindi-* ‘self’ and Hindi *apne aap* ‘self’s self’. Furthermore, in Russian, the pronoun *sebja* originally contrasted with a reduced reflexive clitic, one that has become grammaticalized in Russian as the (unproductive) verbal reflexive suffix *-s*. A similar scenario seems to hold in Modern Hebrew regarding *acm-* ‘self’.

Thus, each of the anaphors in (62)-(66) was, at an earlier state of the language, an F-marked reflexive pronoun. It would be natural to suppose, then, that at this earlier stage of the language, those reflexive pronouns exhibited exactly the behavior noted in Section 3 for the focused reflexives of (9)-(13). Over time, however, the unstressed, plain reflexives that these pronouns contrasted with disappeared, leaving these once specialized anaphors to become the general, productive means for signaling reflexivity. It is quite possible that, when the anaphors in (62)-(66) became grammaticalized as general reflexive markers, their characteristic contrastive meaning also became grammaticalized. That is, the contrasting

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<sup>26</sup> One speaker I consulted with found (66b) to still be infelicitous/false in the ‘contrastive/mixed grading’ scenarios (41a,b), though she did find marked improvement in using (66a) as a description of the ‘contrastive/mixed washing’ scenarios (34a,b).

alternatives that these pronouns regularly invoked via focus became reanalyzed as part of their basic lexical semantics. More concretely, we might suppose that the (plural) reflexives in (62)-(66) are each stipulated in the lexicon to be subject to the following licensing condition.

**(67) Necessary Condition for the Licensing of *Themselves* (cf. (46))**

Let  $g$  be any variable assignment.  $[[\textit{themselves}_i]]^g$  is only ‘licensed’ if there is a discourse salient entity  $x$  such that  $x$  is not a part of  $g(i)$ .

As the reader can confirm, reasoning akin to that laid out in Section 4.2 will derive from (67) all the core facts regarding English *themselves* in (57) and (62). In this way, we might view the facts in (57)-(66) as a kind of historical relic, an inheritance from the time when these anaphors were all F-marked reflexives.

With this in mind, it is important to note that the reflexive markers in (3a)-(7a) did not historically arise from ‘intensified’ reflexive pronouns. The reflexive clitics in Romance languages originate from the Latin reflexive pronoun *se*, which was a general reflexive marker in the language. Similarly, German *sich* originates from Proto-Germanic *si(c)h*, also a general reflexive marker. Thus, the diachronic path sketched here for the reflexives in (62)-(66) would not hold for those in (3a)-(7a), and so they would not come to have the grammaticalized licensing condition in (67).

While this general approach would account for the core patterns in (57)-(66), it faces at least two serious problems. The first is simply that it seems to incorrectly predict that contrastive focus on reflexives in English-like languages should be vacuous.<sup>27</sup> The second serious problem concerns singular reflexives. Note that the condition in (67) must somehow be restricted to plural reflexives, as discourses like the following are perfectly acceptable in English.

**(68) No Contrast Necessary for Singular Reflexives in English**

- a. Dave walked up to the mirror. What happened next?
- b. Dave saw himself.

Note that in the discourse above, there are no discourse salient entities other than Dave, the antecedent of *himself*. Consequently, the condition in (67) would be violated, were singular *himself* subject to it.

For these reasons, the crude implementation in (67) cannot be considered a serious account of the facts in (57)-(66). However, if it is true that a contrast condition akin to that in (46) underlies the central facts from Section 3, then the parallel facts concerning the reflexives in (57)-(66) must also be tied to contrast in some sense. Given their historical roots in contrastive, ‘intensified’ reflexives, this is not implausible, though a complete answer must be left for future research.

## 6. Conclusion

The main focus of this paper has been the behavior of reflexive markers in languages such as French and German, particularly the differences between the simple reflexive sentences in (3a)-(7a) and the sentences containing so-called ‘intensifiers’ in (9)-(13).

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<sup>27</sup> I thank Roger Schwarzschild for bringing this important point to my attention.

First, we saw that the oft-noted ability of the simple reflexive sentences to describe reciprocal scenarios is not a case of lexical ambiguity or polysemy. Rather, as shown by their ability to describe mixed scenarios like (8), these sentences simply have especially weak truth-conditions. Moreover, we saw in Section 2 that now-standard views regarding the semantics of plurals straightforwardly predict that reflexive sentences should exhibit such weak truth-conditions. Thus, the facts in (3a)-(7a), (8) can receive a rather simple, univocal analysis.

Next, we turned our attention to sentences containing ‘intensified’ reflexives, such as those in (9)-(13). As widely noted, in ‘simple’ contexts, such sentences can only be understood as truthfully describing purely reflexive scenarios, and not reciprocal or mixed ones. However, we also saw that there are contexts where such sentences can truthfully describe reciprocal and mixed scenarios. The key property is one of contrast: reflexive sentences with intensifiers can describe reciprocal/mixed scenarios as long as there are contextually salient entities that don’t overlap with the extension of the reflexive. We saw in Section 4 that one can give a rather explicit formal explanation for this generalization, one that makes relatively few special assumptions and largely rests upon very basic notions in the semantics of focus.

Finally, we examined languages like English, where reflexive sentences seem (at first glance) unable to describe reciprocal or mixed scenarios. We found that in many of those English-like languages, there are indeed contexts where reflexive sentences can describe reciprocal/mixed scenarios. Intriguingly those contexts are the same as those that allow ‘intensified’ reflexives to describe such scenarios. Consequently, I sought to extend the formal account developed in Section 4 to these English-like languages. The main complication in doing so is that even *unstressed* reflexives in these languages exhibit the properties of the F-marked reflexives in (9)-(13). I therefore propose that the alternatives invoked by the F-marked reflexives in (9)-(13) have become grammaticalized as part of the meaning of reflexives in English-like languages. While the etymology of the English-like reflexives supports this general view, very difficult questions remain regarding its formal implementation.

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