

German Reflexives as Proper and Improper Arguments

0. The Issue

Reflexive pronouns as central anaphoric elements are subject to general principles determined by Universal Grammar and shared by all languages that use reflexives as part of their grammatical structure. In addition to these general conditions, there are language particular properties, which different languages can exhibit on the basis of different regulations. One variation of this sort is the particular role of Reflexives in German, which can show up as improper Arguments, which are subject to standard syntactic and morphological conditions, but do not represent an argument of the head they belong to. Hence the particular property is the effect of syntactic, morphological and semantic conditions. A simple illustration of the phenomena I will explore in this contribution is based on the following observation.

In addition to so-called Ergative Verbs like (A) with the standard transitive/intransitive alternation, German has a (much larger) group (B) of Verbs that realize the unergative variant by Reflexivization:

- | | | |
|-----|------------------------------|--------------------|
| (A) | Paul zerbrach die Rute | Paul broke the rod |
| | Paul hat die Rute zerbrochen | |
| | Die Rute zerbrach | The rod broke |
| | Die Rute ist zerbrochen | |
| (B) | Paul bog die Rute | Paul bent the rod |
| | Paul hat die Rute gebogen | |
| | Die Rute bog sich | The rod bent |
| | Die Rute hat sich gebogen | |

The reflexive version of B-Verbs is similar in many respects to so-called absolute Reflexive Verbs as in (C):

- | | | |
|-----|-------------------------|---------------------|
| (C) | *Jemand verbeugte Paul. | *Someone bowed Paul |
| | Paul verbeugte sich | Paul bowed |
| | *Paul verbeugte | |

A general account of these facts emerges, if we assume that Reflexives determine a specific operation on semantic variables in accordance with standard requirements of c-Selection, Case-Assignment and syntactic conditions on Argument Positions and Binding.

1. Some General Observations

To begin with, we notice, that German Reflexives occur in three types of positions, which might be called Proper, Improper, and Pseudo-Argument Positions, shown in (1), (2) and (3), respectively:

- (1) (a) Ich_i rasiere mich_i nicht regelmäßig (I don't shave myself regularly)
 (b) Ihr_i konntet euch_i im Spiegel sehen (You could see yourself in the mirror)
- (2) (a) Wir_i bedanken uns_i beim Veranstalter (We thank the organizer)
 (b) Seine Annahmen_i ändern sich_i oft (His assumptions change frequently)
- (3) (a) Es_i handelt sich_i hier um Prinzipien (Here, principles are at stake)
 (b) Es fragt sich, ob das geht (One wonders, whether it is possible)

Reflexives in Proper Argument Positions (Proper Reflexives, for short) can be replaced by or conjoined with non-anaphoric DPs under appropriate conditions, as shown in (4):

- (4) (a) Ihr könnt Eva im Spiegel sehen (You can see Eva in the mirror)
 (b) Er_i sah sich_i und Eva im Spiegel (He_i saw Eva and himself_i in the mirror)

Improper Reflexives are obligatory Reflexives, they cannot be replaced by non-anaphoric elements or conjoined with other DPs:

- (5) (a) Er_i bedankt sich_i/*uns_k beim Veranstalter
 (b) *Wir_i bedanken sich_k und uns_i beim Veranstalter¹

Pseudo-Reflexives are a special case of Improper Reflexives. They are governed by a small number of verbs with improper subjects, i.e. subjects without referential capacity, restricted to the Pronoun *es*. Pseudo-Reflexives are therefore restricted to *sich*.

Some general observations about Proper and Improper Reflexives can be stated as follows:

First, Proper Reflexives can be Arguments of all major lexical categories – Verbs in (1) and (6a), Prepositions in (6b),(6c) and (6d)², and Adjectives in (6e) –, while Improper (and Pseudo-) Reflexives are licensed only by Verbs, as indicated in (7).

- (6)(a) Du_i glaubst dir_i vermutlich nicht (Presumably, you_i don't believe yourself_i)
 (b) Du_i glaubst bestimmt an dich_i (You_i certainly believe in yourself_i)
 (c) Dein_i Glaube an dich_i (Your_i belief in yourself_i)
 (d) Neben sich_i zu stehen, ist schwierig (It is difficult to stand beside oneself)
 (e) Vera_i ist sich_i nicht unangenehm (Vera_i isn't unpleasant to herself_i)
- (7)(a) Er_i hat sich_i über sich_i/ihn_k geärgert (He_i was vexed at himself_i/him_k)
 (b) Sein_i (*sich_i) Ärger über sich_i/ihn_k (His_i vexation at himself_i/him_k)

Second, for all Reflexives alike, the antecedent is the subject of the head. If the Reflexive depends on a Proposition or Adjective, which cannot provide a subject by

¹ Notice that due to fact that for a large group of verbs, Improper Reflexives indicate the inchoative variant corresponding to regular causatives (cf. (B) above), the obligatory character of the Reflexives is obscured by the ambiguity of the verb, as illustrated in (i). It still does not allow to conjoin the Reflexive with other DPs. Thus (ii) is deviant, unless one interprets the subject DP as agent causing an event that involves it as theme or patient:

(i) Eva_i legte sich_i/ihre Tochter hin (Eva lied down / laid her daughter down)
 (ii) *Eva_i legte sich_i und ihre Tochter hin (*Eva lied and laid her daughter down)

² That Nouns cannot govern Reflexives directly, but only as part of a PP, as in (6c) or (7b), follows from a gap in the morphology of Reflexives. I will return to this problem below.

its own, the antecedent is subject of the governing category, as illustrated in (6)(b), (c), and (e). If there is no overt subject meeting this condition, the Reflexive remains unbound, as in infinite VPs like (6d), nominalized infinitives like (8a)³ or impersonal passives like (8b) and (8c):

- (8)(a) Das wiederholte sich Umdrehen (The repeated turn round)
 (b) Hier wird sich nicht unterhalten! (Here, one doesn't converse!)
 (c) Nun wurde sich ernsthaft angestrengt (Now, serious efforts were made)

Third, syntactically Proper and Improper Reflexives are subject to similar conditions, except that only Proper Reflexives can be in Topic- or Focus-Position, as can be seen from the contrast in (9):

- (9) (a) Sich_i haben sie_i nicht registriert (Themselves_i the did not register)
 (b) *Sich_i haben sie_i nicht geirrt (Personally, they made no error)

Otherwise, positions of Reflexives are remarkably free, as will be seen below.

Fourth, morphologically, Proper and Improper Reflexives alike have features of Case, Number, and Person, which are subject to two conditions:

- (i) Case is determined by the head governing the anaphor.
 (ii) Person and Number must agree with features of the antecedent.

In constructions without an overt antecedent, the default Reflexive *sich* shows up, as illustrated in (6d), (8) and (10):⁴

- (10) (a) Der Versuch, sich hinzusetzen (The attempt to sit down)
 (b) Die Möglichkeit, sich zu freuen (The possibility to be enjoyed)

Most of the properties of Proper and Improper Reflexives can be derived from the assumption that Proper Reflexives saturate a syntactic Argument Position which corresponds to a regular semantic variable, while Improper Reflexives saturate a syntactic Argument Position that does not correspond to a semantic variable.

A further peculiarity of German Proper Reflexives must be noted. Under appropriate semantic conditions, Reflexives can be interpreted as Reciprocals, as indicated in (11) and (12):

- (11) Die Studenten_i kennen sich_i gut ≙ (a) The students_i know themselves_i well
 ≙ (b) The students_i know each other_i well
 (12) Die Leute_i sind sich_i gleichgültig ≙ (a) The people_i are indifferent to themselves_i
 ≙ (b) The people_i are indifferent to each other_i

³ Derived Nouns do not allow for Reflexives, as this would require a Genitive Case, which is not available. Thus for cases like (i), only the non-reflexive version can be nominalized, as indicated in (ii):
 (i) Sich/ihn zu retten war schwierig (To rescue oneself/him was difficult)

(ii) Seine Rettung / *die Rettung seiner (selbst) war schwierig

⁴ It might be noted that Pseudo-Reflexives as in (3) cannot occur without an antecedent. Hence constructions like (i) and (ii) are out:

(i) *Die Idee, sich um Prinzipien zu handeln (The idea, to have principles at stake)
 (ii) *Der Gedanke, sich nicht zu gehören (The notion not to be appropriate)

Category	Noun	Verb	Adjective	Preposition
Nominal	+	-	+	-
Dependent	-	-	+	+

Person	2.	1.	3.
Participant	+	+	-
Addressee	+	-	-

Number	Singular	Plural
Plurality	-	+

Gender	Masculine	Neuter	Feminine
Masculine	+	-	-
Feminine	-	-	+

Case	Nominative	Accusative	Dative	Genitive
Governed	-	+	+	-
Oblique	-	-	+	+

- (16) / ich / [+N; + Part , - Addr, - Plur, - Gov, - Obl, -Refl]
 / mich / [+N; + Part , - Addr, - Plur, + Gov, - Obl, α Refl]
 / mir / [+N; + Part , - Addr, - Plur, + Gov, + Obl, α Refl]
 / wir / [+N; + Part , - Addr, + Plur - Gov, - Obl, -Refl]
 / uns / [+N; + Part , - Addr, + Plur + Gov, β Obl, α Refl]

- (17) / du / [+N; + Part , + Addr, - Plur, - Gov, - Obl, -Refl]
 / dich / [+N; + Part , + Addr, - Plur, + Gov, - Obl, α Refl]
 / dir / [+N; + Part , + Addr, - Plur, + Gov, + Obl, α Refl]
 / ihr / [+N; + Part , + Addr, + Plur - Gov, - Obl, -Refl]
 / euch / [+N; + Part , + Addr, + Plur + Gov, β Obl, α Refl]

- (18) / es / [+N; - Part , - Addr, - Fem, - Masc, - Plur, α Gov, - Obl, - Refl]
 / sich / [+N; - Part , - Addr, β Fem, γ Masc, δ Plur, + Gov, α Obl, + Refl]

There is a number of interesting regularities in the array of these items. Thus, the "stems" / mi- / and / di- / of the 1. and 2. Person Singular and the "inflections" / -r / and / -ch / of Dative and Accusative forms deserve attention in this respect. Whether and in which way an account in terms of some sort of rules is indicated, must be left aside here. Most of the information must be referred to lexical entries in any case. The specifications in (16) – (18) are highly redundant, however, and must be reduced by principles of morphological redundancy. If for example [- F] is taken to be the unmarked value for [F], which normally need not be specified, then (16) – (18) reduce to (19) – (21):

(19)	/ ich /	[+N; + Part]
	/ mich /	[+N; + Part ,	+ Gov,		α Refl]
	/ mir /	[+N; + Part ,	+ Gov, + Obl,		α Refl]
	/ wir /	[+N; + Part ,	+ Plur,]
	/ uns /	[+N; + Part ,	+ Plur + Gov,		α Refl]
(20)	/ du /	[+N;	+ Addr,]
	/ dich /	[+N;	+ Addr, + Gov,		α Refl]
	/ dir /	[+N;	+ Addr, + Gov, + Obl,		α Refl]
	/ ihr /	[+N;	+ Addr, + Plur,]
	/ euch /	[+N;	+ Addr, + Plur + Gov,		α Refl]
(21)	/ es /	[+N;		α Gov,	- Refl]
	/ sich /	[+N;		+ Gov,	+ Refl]

Instead of simply supplying negative values for unspecified features, more intricate conditions might be appropriate or necessary. The point to be made here is simply that pronouns in general and Reflexives in particular are categorized by sets of morpho-syntactic features in terms of which the agreement condition applying to them can be stated.

(22) The categorization Cat of a pronominal X_i must match the features $[F_n, \dots, F_m]$ of the categorization of its antecedent Y_i .

The choice of $[F_n, \dots, F_m]$ is determined by the language-particular morphological system, such that the overall condition (22) can be assumed to be part of UG, presumably a condition on the Binding relation. It is worth noticing that (24) is not restricted to Reflexives, but concerns the relation of antecedent-pronominal more generally, including ordinary cases like (23):

(23) $Mary_i$ talked to the waiter $_k$ hastily, because she $_i$ /he $_k$ was in a hurry.

For German, the choice for $[F_n, \dots, F_m]$ includes [Part, Addr, Plur, Masc, Fem,], i.e. the features for Person, Number, and Gender. Case-features must not be included, as they specify the Argument Position of a Pronominal, rather than its Binding relation. Also [Refl] cannot be included, although it directly defines the need of an antecedent and the conditions imposed on it.

Notice, incidentally, that Gender as a characteristic category of antecedent selection becomes irrelevant for German Reflexives, because only 3. Person Pronouns exhibit Gender distinctions, which are neutralized under [+ Refl] altogether.

The effect of (22) is illustrated by cases like (24) – (26):

- (24) (a) Du_i kannst *sich $_i$ / dich $_i$ / *euch $_i$ im Spiegel sehen
(You $_i$ can see *themselves $_i$ /yourself $_i$ /you $_i$ in the mirror)
(b) Du_i kannst mich $_k$ / euch $_i$ / *dich $_k$ im Spiegel sehen
- (25) (a) Wir_i möchten *sich $_i$ / uns $_i$ bei euch $_k$ bedanken (We $_i$ want to thank you $_k$)
(b) Er_i möchte sich $_i$ / *ihn $_i$ bei euch $_k$ bedanken
- (26) (a) $Euer_i$ Ärger über *sich $_i$ /euch $_i$ (Your $_i$ irritation at *themselves $_i$ /yourselves $_i$)
(b) Ihr_i werdet *sich $_i$ /euch $_i$ lästig (You $_i$ will be a burden to themselves $_i$ /yourselves $_i$)

3. Syntactic Conditions on Reflexives

The morphological features considered so far play a role in the two syntactic relations Reflexives characteristically enter: Saturation of Argument Positions and Binding by Antecedents.

To begin with, Reflexives must be licensed as complements of appropriate lexical heads, which assign a Thematic Role to Proper Arguments and impose Case conditions on both Proper and Improper Arguments. The difference with regard to Thematic Roles of Proper, Improper, and Pseudo-Reflexives has been illustrated by (1) to (3) above and can easily be recognized in the following cases:

- (27)(a) Dann hat sie_i sich_i^{Acc}/dich_k angerufen (Then she_i called herself_i/you_k)
(b) Dann hat sie_i mit sich_i^{Dat}/dir_k gestritten (Then she_i quarreled with herself_i/you_k)
(28)(a) Ich_i habe mich_i geirrt . (I_i was mistaken)
(b) Ich_i habe mir_i das anders vorgestellt (I_i imagined that differently)
(29) Es_i dreht sich_i um eine neue Wohnung (At stake is a new apartment)

In (27a), the Thematic Role of *sich* is the recipient or patients of *anrufen*, while in (27b) roughly the same role is jointly assigned by *streiten mit*, i.e. by the Preposition combined with the Verb. In (28), the Reflexive doesn't have a separate Thematic Role at all, it simply refers to that of the subject. And in (29), neither the Reflexive nor its antecedent *es* realize a Thematic Role. The only Thematic Role in (29) is realized by the object of the Preposition *um*.

However different they are with regard to Thematic Roles, Reflexives must uniformly realize the Case conditions associated with the Argument Positions they saturate. As (27) and (28) show, the Accusativ/Dativ-distinction must be realized, although the syncretism of *sich* does not make it explicit.

The next point to be noted is the fact that German Reflexives are subject to the usual Binding conditions in the sense introduced in Chomsky (1981). They include, as already mentioned, the requirement of morphological identity with respect to Person and Number.

- (30)(a) Wir_i haben *sich_i/uns_i gründlich gereinigt
(We_i cleaned *themselves_i/ourselves_i carefully)
(b) *Die Gäste_i haben *sie_i/sich_i gründlich gereinigt
(The guests_i cleaned *them_i/themselves_i carefully)
(31)(a) Clara_i hat sich_i sich_i mit Hut vorgestellt (Clara_i imagined herself_i with a hat)
(b) Clara_i hat sich_i zog sich_i/ihr_k den Manel an (Clara_i put (her_k) the coat on)
(32)(a) Hans_i war sich_i/ihm_k/^{*i} verdächtig (Hans_i was suspicious to himself_i/him_k/^{*i})
(b) Hans_i war mit sich_i/ihm_k/^{*i} zufrieden (Hans_i was satisfied with himself_i/him_k/^{*i})

It must be noted that there are at least three types of constructions, which allow for Reflexives without overt antecedents within the domain of the Head determining the functional complex in the sense of Chomsky (1995). This applies to both for Proper and Improper Reflexives, as shown by a- and b-cases of (33) to (35), respectively.

The three types of constructions include infinitives, impersonal passives, and imperatives:

- (33) (a) Es ist gut, sich_i warm anzuziehen (Appropriate dressing is recommended)
 (b) Sich_i ärgern nützt nichts (To be vexed does not help)
- (34) (a) Hier wird sich_i gründlich gereinigt! (Here one cleans oneself carefully)
 (b) Jetzt wird sich_i nicht unterhalten! (No conversation!)
- (35) (a) Rasier dich_i vorsichtig (Shave with caution)
 (b) Setzt euch_i! (Sit down!)

While for imperatives an implicit subject can naturally be assumed, as evidenced by the Person and Number of the Reflexive, this is not the case for infinitives and passives without subject. Here only the unmarked Reflexive *sich* is possible.

Nominalizations exclude Reflexives, as non-Genitive Arguments are excluded for independent reasons, and the Genitive *seiner* cannot properly serve as a Reflexive (as mentioned in fn. 5). Hence (36b) cannot nominalize the reflexive version of (36a), while (37b) and (38b) illustrate the regular pattern, according to which improper Reflexives are obligatorily dropped under nominalization:

- (36) (a) Peter_i verteidigt sich_i/einen Freund_k (Peter defends himself/a friend)
 (b) Peters Verteidigung (*sich_i)([?]seiner selbst)/eines Freundes
 (Peter's defence of himself/of a friend)
- (37) (a) Der Fahrplan_i hat sich_i geändert (The schedule changed)
 (b) Die (*sich_i) Änderung des Fahrplans_i (The change of the schedule)
- (38) (a) Peter_i weigert sich_i teilzunehmen (Peter refuses to participate)
 (b) Peters_i (*sich_i) Weigerung teilzunehmen (Peters refusal to participate)

As objects of Prepositions, however, Reflexives can become complements or adjuncts of Nouns, bound to the inherited subject, as shown in (39b).

- (39) (a) Hannah_i ärgert sich_i über sich_i (Hannah_i is irritated with herself_i)
 (b) Hannahs_i Ärger über sich_i (Hannah's_i irritation with herself_i)

Finally, a short remark must be made about the linear ordering of Reflexives, which is fairly free with respect to other Arguments and Adjuncts of the Verb governing the Reflexive. Presumably any position between major constituents depending on the Verb:

- (40) (a) Die Kinder_i haben sich_i mit Freude auf die Feier vorbereitet
 (The kids got ready with pleasure for the celebration)
 (b) Die Kinder_i haben mit Freude sich_i auf die Feier vorbereitet
 (c) Die Kinder_i haben mit Freude auf die Feier sich_i vorbereitet

Also, various types of cliticization are possible:

- (41) (a) weil es_i sich_i so nicht machen läßt (as it cannot be done that way)
 (b) weil's_i sich_i so nicht machen läßt
 (c) weil sich_i's_i so nicht machen läßt
 (d) [?]weil sich_i es_i so nicht machen läßt
 (e) weil es_i so sich_i nicht machen läßt

In spite of this wide range of options, there seems to be a sufficiently clear preference for what comes close to the so-called Wackernagel-Position, viz. (40a) and (41a). A systematic characterization of overt positions of Reflexives in terms of underlying and surface conditions is a intriguing problem of its own, which cannot be pursued here. I merely add a hint to a peculiar phenomenon in this respect, which has been called the "Adorno-Position". This position immediately before the governing Verb, is illustrated in (42)(b) and (c):

- (42)(a) der Kleinbürger, der sich mit der Macht identifiziert, die er nicht hat
 (the petit bourgeois, who identifies himself with the power that he lacks)
 (b) der Kleinbürger, der mit der Macht sich identifiziert, die er nicht hat
 (c) nennt man Kultur, was immer die Herrschaft des Tauscherts zu akzeptieren sich weigert, so...
 (if culture is called, whatever refuses to accept the control of exchange value, then...)

This is by no means a complete account of the syntactic conditions general and language particular on Reflexives in German⁶, but it should be sufficient to discuss the semantic background and consequences to be taken up in the following sections.

4. Reflexives in Proper Argument Positions

Reflexives appear, among others, in argument positions of transitive verbs, saturating a Thematic Role with corresponding Case conditions. Thus, the same position is filled with a Reflexive in (43b) and a anaphoric personal Pronoun in (43a):

- (43)(a) Die Schwester_i reinigte sie_k (The nurse cleaned her)
 (b) Die Schwester_i reinigte sich_i (The nurse cleaned herself)

Ignoring details that are irrelevant in the present context, the minimal syntactic structure underlying these cases can be indicated as in (44):

- (44) [_v [_D die Schwester] [_v [_D sie/sich] [_v reingig-]]]

Suppose that a lexical entry distinguishes at least four types of information: the Phonetic Form PF, the morpho-syntactic Categorization Cat, specified in terms of features sketched in section 2, the Argument-Structure AS, and the Semantic Form SF, which is made up from variables and conceptual constants according to standard assumptions, characterizing the meaning of the entry:

- (45) / rein - ig / [+V, -N, ...] { y, x } [[X ACT] [CAUSE [BECOME [CLEAN y]]]]
 [+Gov]

PF Cat AS SF

⁶ Thus, Reflexives and Reciprocals are subject to different conditions on antecedents, depending on presumably semantic conditions of the governing Heads, as illustrated by the following examples:

- (i) Die Kinder_i legten die Bücher_k neben sich_i (The kids_i put the books_k besides themselves_i)
 (ii) Die Kinder_i legten die Bücher_k nebeneinander_k (The kids_i put the books_k besides each other_k)
 (iii) Sie_i sprachen zu den Eltern_k über sich_i (They_i talked to the parents_k about themselves_i)
 (iv) Sie_i sprachen zu den Eltern_k übereinander_i (They_i talked to the parents_k about each other_i)

The Argument Structure AS indicates which variables in SF are to be saturated by which complements under which conditions of Case marking. Each Position in AS can in fact be construed as a pair $\langle \underline{x}, F \rangle$, where x is the relevant position in SF, and F indicates the c -selection condition associated with \underline{x} , in particular predictable and idiosyncratic Case-features. Thus in (45), a standard causative Verb with the Agent x and the Theme y , the object position of the Theme is marked the feature [+Gov], which identifies the Accusative. While this condition is predictable as the default object Case and could hence be dropped from the lexical information, the Dative required by a Verb like *begegnen* (encounter) must be indicated as part of AS:⁷

(46) / be-gegn- / [+V...] { \underline{y} , \underline{x} } [x ENCOUNTER y]
[+Obl]

Technically, a position in AS functions as Lambda-operator, such that assigning a Theta-Role boils down to functional application. In other words, the SF of the appropriate syntactic argument replaces the variable in question, while the corresponding Argument-Position is deleted. Thus we get (47) as the effect of combining the verb (45) with the Pronoun *sie_k* of (43a), assuming x_k as a provisional representation of the oversimplified SF of *sie_k*:

(47) / sie_k reinig / { \underline{x} } [[x ACT] [CAUSE [BECOME [CLEAN x_k]]]]

The next step in the interpretation of (43a) must now combine (47) with the DP *die Schwester_i*, whose SF might provisionally be abbreviated by [DEF x_i [NURSE x_i]]. Instead of treating this expression as some sort of definite description to be substituted for the variable x bound by the Argument Position \underline{x} in (47), we have to construe it as an operator, that binds the variable x_i , which saturates the Argument Position \underline{x} in (47). This is not a trivial assumption, and it must ultimately be justified as part of an overall account of definiteness, and more generally of referential and quantificational conditions of natural language. As these matters can profitably be separated from the problems of Proper and Improper Reflexives, I will assume that the provisional assumptions made here can eventually be made precise as required. With this proviso, we get (ignoring Tense and other detail) (48) as the interpretation of (43a):

(48) [[DEF x_i [NURSE x_i]] [[x_i ACT] [CAUSE [BECOME [CLEAN x_k]]]]]

Looking on this background at the interpretation of (43b) and the Reflexive it contains, we can easily identify (49) as the required result, namely the same referential variable as both the Agent and the Patient or Theme of the Verb:

(49) [[DEF x_i [NURSE x_i]] [x_i ACT] [CAUSE [BECOME [CLEAN x_i]]]]

There are various ways in which the Reflexive *sich_i* could yield this effect. The following proposal is motivated by the problems to be considered in the next section dealing with Improper Arguments. Suppose that the effect of Reflexives is determined by the following principle:

⁷ For further discussion of these assumptions about the structure of lexical information, see e.g. Bierwisch (1997).

(50) Let X_i with the Binding index i be categorized by the feature [+Refl]. Then X_i saturates the Argument Position \underline{x} by substituting z for x , where \underline{z} is the Argument Position to which the antecedent of X_i is assigned.

(50) identifies the variable of the Argument Position filled by a Reflexive with the variable to be replaced by its antecedent. To put it differently, the result of interpreting the Reflexive is a second occurrence of the variable bound by the Argument Position of the antecedent. To illustrate the point, consider (43b), which combines (45) with the Reflexive $sich_i$ to yield (51), where the Argument Position \underline{x} binds two occurrences of x .

(51) / $sich_i$ *reinig* / { \underline{x} } [[X ACT] [CAUSE [BECOME [CLEAN X]]]]

If this representation combines with *Die Schwester_i*, we derive the desired (49) in strictly parallel fashion to (48). Intuitively, the semantic effect of Reflexivization expressed by (50) is to bind a semantic position to a designated second occurrence.

Under this presumption, two closely related problems will have to be faced: Reflexives as Improper Arguments and Reflexives without antecedents.

5. Reflexives in Improper Argument Positions

For absolute reflexive Verbs like *sich schämen* (be ashamed), *sich verlaufen* (go astray)⁸ with two Positions in AS, but only one regular variable in SF, formally two options arise:

(52)(a) / *schäm* / { \underline{y} , \underline{x} } [BE-ASHAMED x]
 (b) / *schäm* / { \underline{y} , \underline{x} } [BE-ASHAMED y]

Notice first, that \underline{y} is the object-position, which must be saturated first. It differs from ordinary object positions as in *reinigen* above by obligatory association with the c-selectional condition [+Refl]. As we will see below, it is plausible to assume, that the presence of this feature is predictable as the default for an Argument Structure containing an improper Argument Position – very much like the predictable Case features requiring Accusative for the object position.

The question to be decided is the following: Is the actual variable in SF bound to the subject or to the Reflexive? One might intuitively be inclined to adopt (52a), i.e. to consider the subject as the Proper Argument Position and the Reflexive as the pseudo-position, which does not really participate in the semantic interpretation. no becomes the Improper Position.

The previous considerations require the opposite choice, however. In fact, for intuitive and for purely formal reasons, absolute reflexive verbs must be represented according to (52b), where the variable in SF is bound to the Reflexive in object

⁸ It might be noted that a large number of verbs are absolute reflexive on one particular reading, but open for non-reflexive use under alternative interpretation(s). Thus *verlaufen*, *verschreiben*, *versprechen*, and many others have different readings when used with and without Reflexives. This is phenomenon still to be distinguished from the inchoative reflexives like *sich setzen* (sit down), which will be discussed below.

position. The obvious derivation of cases like (53) is shown in (53b), where the Reflexive is interpreted according to Principle (50), and (53c), where the subject position is saturated.

- (53)(a) Weil die Kinder_i sich_i schämen (Because the kids are ashamed)
 (b) / sich_i schämen / { x } [BE-ASHAMED x]
 (c) / die Kinder_i sich_i schämen / [[DEF x_i [KIDS x_i]] [BE-ASHAMED x_i]]

Now, the interesting point is the fact that this analysis automatically yields a plausible solution for the de-causative reflexive verbs of the type *sich setzen* (sit down), *sich ändern* (change), etc.

Suppose that the two variants of ergative verbs like *zerbrechen* (break) *schmelzen* (melt) are represented roughly as follows:

- (54)(a) / zerbrech / { y, x } [[x ACT] [CAUSE [BECOME [BROKEN y]]]]
 (b) / zerbrech / { y } [BECOME [BROKEN y]]

The causative verb (a) and the un-ergative, inchoative verb (b) can easily be collapsed into one complex entry, where the causative component – including the pertinent position in AS – is optional, marked by heavy parentheses:

- (55) / zerbrech / { y, (x) [[x ACT] [CAUSE] [BECOME [BROKEN y]]]]

With this observation in mind, reflexive "Ergative verbs" like (*sich*) *ändern* (change) can simply be represented as (56). The main difference with respect to (55) is the fact that the position bound to the agent of the causative verb is preserved in the AS of the inchoative:

- (56) / änder / { y, x } [[[x ACT] [CAUSE] [BECOME [DIFFERENT y]]]]

As in (55), two entries are collapsed in (56), as made explicit in (57):

- (57)(a) / änder / { y, x } [[[x ACT] [CAUSE [BECOME [DIFFERENT y]]]]]
 (b) / änder / { y, x } [BECOME [DIFFERENT y]]

The causative verb (57a) is a regular transitive entry with two proper argument positions. The interesting point is the inchoative verb (57b), which still has two argument positions, of which only the object position is bound to a variable in SF, however. This is exactly the configuration of absolute reflexive verbs illustrated in (52b).

Suppose now, that we call a position in AS an improper position, if it does not bind a variable in SF, i.e. if it is semantically empty. With this proviso, the reflexive Position in the AS of absolute Reflexives like *sich ändern* can be warranted as follows:

- (58)(a) x is an improper position in AS, if there is no variable x in SF.
 (b) x is associated with the feature [+Refl], if it is directly precedes an improper position y in AS.

In addition to absolute and un-ergative Reflexives, there is a small number of Verbs with more than one improper position in AS:

- (59)(a) Es handelt sich um Drucksachen (It is printed matter)
 (b) Es dreht sich um eine Genehmigung (It concerns a permission)
 (c) Damit hat es sich (With that, it is enough)
 (d) Es macht sich (It's getting better)

In these cases, an absolute reflexive is combined with a pseudo-subject position as in weather verbs like *es schneit* (it is snowing), *es regnet* (it's raining), *es ist kalt* (it's cold), etc. Improper positions of this sort require a condition for independent reasons, which guarantees that they must be saturated by the pronoun *es*, which is categorized by the features [-Masculine, -Feminine, -Plural]

We still have to account for (Proper and Improper) Reflexives without antecedent. There is no problem with imperatives: Although Reflexives don't have an overt antecedent in cases like (60), they must reasonably be assumed to have an underlying subject, as evidenced by the agreement conditions observed by the Reflexive.

- (60)(a) Benehmt euch/*dich/*sich/*uns! (Behave yourselves!)
 (b) Setz dich/*mich/*sich! (Sit down)

Examples like these corroborate the assumption that imperatives do have an underlying subject, which is fully present in SF and can also serve as antecedent of Reflexives, to be checked for its morphological features, independently of its absence from PF.

What appears to be more intriguing is the question how infinitives like (61) are to be accommodated under the present analysis.

- (61)(a) Sich aufzuregen ist nutzlos (To be worried, is useless)
 (b) Es ist sinnlos, sich zu ärgern (It doesn't make sense to be angry)

Two options might be taken into consideration: Either infinitives are considered as Verb Phrases that are indeed subject-less, such that Reflexives governed by the Verb must be unbound. Or we assume some kind of an underlying subject – as for imperatives – which then may act as antecedent. I will briefly look at these options in turn.

Suppose, for the sake of illustration, that *sich/jemanden ärgern* has a lexical entry like (62a), along the lines indicated in (56)/(57) for (*sich*) *ändern*. What we are interested in, is the reflexive variant (62b)

- (62) (a) /ärger-/ { y, x } [[[X ACT] [CAUSE] [BE-IRRITATED y]]]
 (b) /ärger-/ { y, x } [BE-IRRITATED y]
 [+Refl]

The way in which the subject position x is to be dispensed with under the specific conditions of infinitivals, must be clarified for independent reasons. Suppose we indicate the suppressed subject position by < x >, such that The result would be a

kind of defective Argument Structure with a suspended subject and a reflexive object that cannot be bound to an antecedent. Hence principle (50) cannot apply to the combination *sich ärger*- indicated in (63a), such that (63b) would be the resulting interpretation.

(63)(a) *sich ärger* { \underline{y} $\langle \underline{x} \rangle$ } [BE-IRRITATED *y*]
 [+Refl]

(b) *sich ärger* { $\langle \underline{x} \rangle$ } [BE-IRRITATED *y*]

The dispensed subject position must, of course, be ignored, and the free variable *y* is most naturally construed as some kind of arbitrary reference. This result, although not completely implausible, requires certain ad-hoc stipulations and is therefore not very convincing.

The alternative option is based on the assumption that infinitivals without an overt subject do nevertheless have an underlying subject, realized by something like the PRO of Chomsky (1981), which does not show up in PF, but provides appropriate default properties which the Reflexive can rely on. On this account, the Reflexive *sich* in cases like (61) is bound by PRO as its antecedent. Hence (50) can apply, to the effect that the Reflexive substitutes the variable *y* in the initial, lexical item (62b) by the variable *x* bound by the subject position in the usual way. As the result, we get (64), where the Argument Position \underline{x} will eventually will be replaced by whatever the semantic contribution of PRO should be.

(64) *sich ärger* { \underline{x} } [BE-IRRITATED *x*]

This account is not only free of unmotivated stipulations, it also extends naturally to infinitivals the subject of which enters syntactic relations like Control or Exceptional Case Marking, as indicated in (65):

(65)(a) *Eva_i hat ihm_k versprochen sich_{i/*k} zu ändern* (Eva promised him to change)
 (b) *Wir_i haben ihn_k sich_k verbeugen sehen* (We saw him bow)

This retreat to an invisible PRO as the Reflexive's antecedent is not naturally available for impersonal passives like (34) – *Jetzt wird sich nicht unterhalten* – , as the gist of passivization in German is the deletion of the subject position from the AS, as is obvious in cases like (66) or (67).

(66) (a) *Karl hat das Buch gefunden* (Karl found the book)
 (b) *Das Buch ist gefunden worden* (The book was found)
 (67) (a) *Die Kinder schliefen* (The kids slept)
 (b) *Es wurde geschlafen* (It was slept)

Differing from infinitives without subject, the subject of passives is not covert, but deleted and cannot be used as a hidden antecedent of a Reflexive. An automatic consequence of the elimination of the subject from AS is furthermore the promotion the direct object, in case there is one, to the subject position, as can be seen in (66). This usual promotion of the object creates a further conflict for Reflexives with the basic position of the direct object, as a Reflexive can function as a subject. As a

matter of fact, passives with Reflexives, although occasionally used, have a grammatically dubious status:

- | | | |
|----------|---|-----------------------------|
| (68) (a) | Man _i hat sich _i häufig rasiert | (One shaved frequently) |
| | (b) *Es ist sich häufig rasiert worden | (It was shaved frequently) |
| (69) (a) | Heute ärgern sie _i sich _i | (Today, they are irritated) |
| | (b) ??Heute wird sich geärgert | |

Hence the fact that the present analysis of Reflexives does not provide a natural account for reflexive passives seems to me in plausible correspondence to the facts.

6. Middles and Related Constructions

It might finally be noted, that (50), together with the general interpretation of Reflexives, accounts for crucial properties of the German type of Middle Constructions as illustrated in (70):

- | | | | |
|---------|-------------------------|---------------------------|------------------------------|
| (70)(a) | Sie liest das Buch | Das Buch wird gelesen | Das Buch liest sich (leicht) |
| | (She reads the book) | (The book is read) | (The book reads easily) |
| (b) | Hier schläft man | Hier wird geschlafen | Hier schläft es sich (gut) |
| | (Here, one is sleeping) | (Here, it is being slept) | (Here, one sleeps well) |

Like Passives, Middle constructions suppress the argument position of the subject. As a consequence, the direct object – if there is one, as in (70a) – moves up to the highest position. So far, Middles seem to be parallel to Passives. However, if there is no direct object, such that Passives must be impersonal, i.e. without subject, Middles introduce an empty subject that is obligatorily realized by the Pronoun *es*. The actual peculiarity of German Middles, however, is the addition of an improper position into AS, which leads to the characteristic obligatory presence of *sich*.

Given the analysis developed so far, the difference between a transitive Verb and the corresponding Middle is to be accounted for as shown in (71), :

- | | | | | |
|----------|---------|-------------------|-------------------------|--------------|
| (71) (a) | / les / | [Verb,...] | { <u>y</u> , <u>x</u> } | [x READ y] |
| (b) | / les / | [Verb,...] | { <u>y</u> , <u>z</u> } | [x READ y] |
| (c) | / les / | [Verb, +Pass...] | { <u>y</u> } | [x READ y] |

(71a) is the standard transitive pattern with predictable Case requirements for subject and object. In (71b), which has the same semantic content, the original subject-position x is dropped. Hence the original Agent is not syntactically available any more. Now, while for Passive – rather incompletely indicated in (71c) – the original object position y is the only position left in AS, such that it becomes the new subject position, the Middle construction replaces it with an improper Argument Position z. The resulting configuration in AS is already familiar from inchoatives like *sich ändern*, etc. and the effect is completely parallel: The position y in (71b) is according to (58b) automatically associated with the feature [+Refl], the Reflexive thus required replaces the variable *y* according to (50) with the variable to be saturated by its antecedent, i.e. with *z*. This yields the desired result without any stipulation – except the

assumption that Middle formation replaces the subject in AS with an improper Argument Position⁹.

Looking finally at the Middle construction of intransitives, exemplified in (70b), we notice that a regular intransitive (un-accusative) verb like *schlafen* or *atmen* as represented in (72a) is turned into an item with two improper positions in AS, which must be saturated by *sich* and *es*. Hence for verbs with only one proper position \underline{x} in AS, Middle formation does not only replace \underline{x} by an improper position \underline{z} , but introduces an additional improper argument \underline{y} :

- (72)(a) / schlaf / [Verb, ...] { \underline{x} } [SCHLAF x]
(b) / schlaf / [Verb, ...] { \underline{y} , \underline{z} } [SCHLAF x]

Whether and how the operation that changes (72a) into (72b) can be collapsed with that deriving (71b) from (71a), that is how Middle formation can be reduced to one operation, is to be left open here. Once an intransitive verb is changed into a Middle as indicated in (72b), however, all other consequences are follow automatically: \underline{y} is associated with the feature [+Refl] by (58b), \underline{z} must be restricted to *es* by conditions mentioned in connection to the cases in (59). The Reflexive is bound to the antecedent *es*, without any semantic consequence, however, since it saturates an improper position, where it cannot have any semantic effect. Finally the pronoun *es* will then replace *is* semantically empty, such that the variable *x* in the SF of (72b) will remain a free variable with arbitrary, contextual interpretation.

7. In Conclusion

Although there are many loose ends around the German Reflexives, two fairly general points should be clear enough:

First, German Reflexives serve a number of different constructions which differ from those of Anaphors in other languages. These constructions include – besides standard and absolute Reflexives – improper Argument positions of various types, especially de-causatives or un-ergatives and Middle constructions. German Reflexives furthermore allow for reciprocal interpretation under particular conditions.

Second, most of the effects of Reflexives can be accounted for, if they are supposed to connect their referential option to that of their antecedent. In contrast to usual assumptions, this is done not in terms of identifying referential indices, but rather by unifying semantic variables underlying the argument positions saturated by Reflexives and their antecedents.

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⁹ It must be noted here, that this is by no means the complete story. The Middle construction always requires in particular some sort of modal adverbial. This requirement must be accounted for by the operation creating the Middle construction. I will put aside these issues here, as they do not directly affect the role of the Reflexive.

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