Reducing Binding to Agree

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Outline

1. CENTRAL ASSUMPTIONS

- SMT: the grammar contains no rules or principles specifically designed to derive the distribution and reference of anaphors and pronouns.
- Goal: to develop an analysis of the distribution of anaphors and pronouns that strictly makes use of mechanisms and principles that are independently needed in the grammar.
- Traditional Binding Theory:
  BT(A) → coindexation of anaphor and antecedent → agreeing φ-features.

(1) a. John$_i$ likes himself$_i$.
b. Mary$_i$ likes herself$_i$.
c. The girls$_i$ like themselves$_i$.

- Our proposal:
  - Agree → agreeing φ-features
  - Reflexive = probe, antecedent = goal
  - Referential identity is a consequence of Agree
- Variation in binding relationships is determined by
  - the syntactic configuration (simplex vs complex reflexives)
  - the morphological inventory of any given language (DM: the syntax manipulates features, lexical items are inserted post-syntactically)

2. THE PROPOSAL

2.1. Syntax

(2) *φ-features*
PERSON: 1, 2, 3
NUMBER: sg, pl
GENDER: masc, fem, neuter

(3) *Syntax of Reflexive Relationships*
a. Reflexive pronouns enter the derivation with (interpretable but) unvalued features (universally) (see also Reuland 2005, 2011, Heinat 2008, Hicks 2009).
b. These features are valued through an Agree relationship with the antecedent.

c. Agree does not copy feature values, but causes feature values to be shared by probe and goal (cf. Frampton & Gutmann 2000, 2006)

(4) *Agree*
a. Agree involves a probe α that has one or more unvalued features and a goal β that has matching (i.e. identical) valued features.
b. Agree is an asymmetric feature valuation operation that values the features of α with the features of β at a distance in a local domain.
c. α c-commands β and there is no potential alternative goal γ such that
α asymmetrically c-commands γ, and
γ asymmetrically c-commands or dominates β.

(5) a. {P:3, N:sg, G:m} lexically valued features (e.g. goal)
b. {P:_, N:_, G:_} unvalued features (probe)
c. {P:3*, N:sg*, G:m*} features valued after Agree (probe)

- What with c-command?
  - Low Nominative Hypothesis (Sigurðsson 2006)
  - Goal may c-command probe (Neeleman & Van de Koot 2002, Adger 2003, Von Stechow 2005, Zeijlstra 2008, Baker 2008, Hicks 2009)
  - ✓ Simplex anaphors start out in a configuration where traditional c-command relationships are reversed, i.e. where the anaphor c-commands its antecedent.
  - ✓ Complex anaphors move to a position c-commanding their antecedent.
- An example:

(6) a. Johannes$_i$ liebt sich$_{i/*j}$. [German]
Johannes loves himself
b. Johannes$_i$ liebt ihn$_{*i/j}$.
Johannes loves him

(7) [$_{vP}$ [$_{DP2}$ {P:_, N:_, G:_}] [$_{vP}$ [$_{DP1}$ {P:3, N:sg, G:m}] [$_{VP}$ V [~~$_{DP2}$ {P:_, N:_, G:_}~~]]]]
sich Johannes liebt

Agree →

[$_{vP}$ [$_{DP2}$ {P:3*, N:sg*, G:m*}] [$_{vP}$ [$_{DP1}$ {P:3, N:sg, G:m}] [$_{VP}$ V [~~$_{DP2}$ {P:3*, N:sg*, G:m*}~~]]]]
sich Johannes liebt

(8) [$_{vP}$ [$_{DP1}$ {P:3, N:sg, G:m}] [$_{VP}$ V [$_{DP2}$ {P:3, N:sg, G:m}]]]
Johannes liebt ihn

- The interface levels can distinguish the output of (7) (feature values shared as a result of Agree) from (8) (lexically determined feature values) (Frampton & Gutmann 2000, 2006)

2.2. Morphology

(9) a. {P:3*} ↔ sich / ___
b. {P:3, N:sg, G:m} ↔ ihn / ___ accusative Case

(10) *Subset Principle* (Halle 1997:428)
The phonological exponent of a Vocabulary item is inserted into a morpheme in the terminal string if the item matches all or a subset of the grammatical features specified in

the terminal morpheme. Insertion does not take place if the Vocabulary item contains features not present in the morpheme. Where several Vocabulary items meet the conditions for insertion, the item matching the greatest number of features specified in the terminal morpheme must be chosen.

2.3. Semantic interpretation

- a DP that has shared feature values, like DP_2 in (7), is interpreted as referentially dependent on the DP it shares its features with (DP_1 in (7))
- two DPs that have lexically specified φ-features, as in (8) receive a default interpretation of disjoint reference.

3. ABSENCE OF PRINCIPLE B EFFECTS (APBE)

3.1. What is it?

(11) a. Jan_i heeft $zich_{i/*j}$ gewassen. [Standard Dutch]
Jan has REFL washed
'Jan washed himself.'
b. Jan_i heeft $hem_{*i/j}$ gewassen.
'Jan washed him.'

(12) a. Ik_i heb me_i gewassen. [Standard Dutch]
'I washed myself.'
b. Jan_i heeft $me_{*i/j}$ gewassen.
'Jan washed me.'

(13) a. Jij_i heb $je_{i/*j}$ gewassen. [Standard Dutch]
'You washed yourself.'
b. Jan_i heeft $je_{*i/j}$ gewassen.
'Jan washed you.'

- Basic intuition: 3P contrasts with 1/2P because there is a dedicated reflexive form for 3P that is lacking in 1/2P:

(14)

1	me	*mich	[Standard Dutch]
2	je	*jich	
3	hem	zich	

(15) *Absence of Principle B Effect (APBE)*
Pronouns behave like anaphors when a dedicated class of reflexive pronouns is lacking. (cf. Pica 1984, Bouchard 1983:58ff; 1985, Burzio 1989a, 1989b, 1991, 1992, 1996). In such a case, pronouns function as 'elsewhere' forms (Déchaine & Manfredi 1994).

3.2. Possessive pronouns

(16) a. They like [$_{DP}$ each other's bags].
b. He likes [$_{DP}$ his dog].

(17) a. Hon$_i$ ser sin$_{i/*j}$ man. [Swedish]
b. Hon$_i$ ser hennes$_{*i/j}$ man.
'She sees her husband.'

(18) a. Ioannes$_i$ sororem suam$_{i/*j}$ vidit. [Latin; Bertocchi & Casadio 1980]
b. Ioannes$_i$ sororem eius$_{*i/j}$ vidit.
'Ioannes saw his sister.'

(19) a. On$_i$ uze rasskazal mne o svoej$_{i/*j}$ zizni. [Russian; Timberlake 1979]
b. On$_i$ uze rasskazal mne o ego$_{*i/j}$ zizni.
'He had already told me about his life.'

(20) a. Jørgen$_i$ elsker sin$_{i/*j}$ kone. [Danish]
Jørgen loves self's wife
b. Jørgen$_i$ elsker hans$_{*i/j}$ kone.
Jørgen loves self's wife

(21) a. *De$_i$ elsker sine$_i$ koner. [Danish]
They love self's wives
b. De$_i$ elsker deres$_{i/j}$ koner.
They love their wives

3.3. Languages without dedicated simplex reflexive forms

(22) a. Max$_i$ hâld him$_i$/*himsels$_i$. [Frisian]
Max behaves him/himself
'Max behaves himself.'
b. Max$_i$ hatet himsels$_i$/*him$_i$.
Max hates himself/him
'Max hates himself.'

(23) a. Max$_i$ gedraagt 'em$_i$/*z'n eigen$_i$. [Flemish Brabant Dutch]
Max behaves him/his own
'Max behaves himself.'
b. Max$_i$ haat z'n eigen$_i$/*'em $_i$.
Max hates his own/him
'Max hates himself.'

3.4. A Distributed Morphology account

- DM (Halle & Marantz 1993, Harley & Noyer 1999) allows us to account for the APBE.
  - Lexical insertion occurs postsyntactically, and it is the process that provides morphosyntactic features with a phonological expression.
  - Vocabulary items specify a relation between a morpheme (i.e. a feature bundle) and a phonological exponent, as well as the context where that phonological string may be inserted.
  - Insertion rules are ordered, subject to the Elsewhere Principle in (24):

(24) *Elsewhere Principle* (Anderson 1992:132)
Application of a more specific rule blocks that of a later more general one

3.4.1. German

(25)

German	nonreflexive			reflexive
	nominative	dative	accusative	
1sg	ich	mir	mich	
2sg	du	dir	dich	
3sg.masc	er	ihm	ihn	sich
3sg.fem	sie	ihr	sie	
3sg.neut	es			
1pl	wir	uns		
2pl	ihr	euch		
3pl.masc	sie	ihnen	sie	sich
3pl.fem				
3pl.neut				

(26) *Insertion Rules*

a. {P:1, N:sg} ↔ ich /___ nominative Case
b. {P:1(*), N:sg(*)} ↔ mir / ___ dative Case
c. {P:1(*), N:sg(*)} ↔ mich / ___ accusative Case
d. {P:2, N:sg} ↔ du / ___ nominative Case
e. {P:2(*), N:sg(*)} ↔ dir / ___ dative Case
f. {P:2(*), N:sg(*)} ↔ dich / ___ accusative Case
g. {P:1, N:pl} ↔ wir / ___ nominative Case
h. {P:1(*), N:pl(*)} ↔ uns / ___ accusative Case
i. {P:2(*), N:pl(*)} ↔ euch / ___ accusative Case
j. {P:3*} ↔ **sich**
k. {P:3, N:sg, G:m} ↔ er / ___ nominative Case
l. {P:3, N:sg, G:m} ↔ **ihn / ___ accusative Case**
m. {P:3, N:sg, G:m} ↔ ihm / ___ dative Case
n. {P:3, N:pl} ↔ ihnen / ___ dative Case
o. {P:3, N:sg, G:n} ↔ es
p. {P:3} ↔ sie
q. elsewhere ↔ ihr

(27) a. Ich liebe mich. [German]
I love myself
b. Johannes liebt mich.
Johannes loves me

(28) a. $[_{vP}\ [_{DP2}$ {P:1*, N:sg*, G:0*}$]\ [_{vP}\ [_{DP1}$ {P:1, N:sg, G:0}$]\ [_{VP}$ V ~~$[_{DP2}$ {P:1*, N:sg*, G:0}$]$~~$]]]]$
mich ich liebe
b. $[_{vP}\ [_{DP1}$ {P:3, N:sg, G:m}$]\ [_{VP}$ V $[_{DP2}$ {P:1, N:sg, G:0}$]]]$
Johannes liebt mich
→ (26c) applies

(29) a. Johannes$_i$ liebt sich$_{i/*j}$. [German]
Johannes loves himself
b. Johannes$_i$ liebt ihn$_{*i/j}$.
Johannes loves him

(30) $[_{vP}\ [_{DP2}$ {P:3*, N:sg*, G:m*}] $[_{vP}\ [_{DP1}$ {P:3, N:sg, G:m}] $[_{VP}$ V $[_{\sout{DP2}}$ ~~{P:3*, N:sg*, G:m*}~~]]]]
sich Johannes liebt
→ (26j) applies

(31) $[_{vP}\ [_{DP1}$ {P:3, N:sg, G:m}] $[_{VP}$ V $[_{DP2}$ {P:3, N:sg, G:m}]]]
Johannes liebt ihn
→ (26l) applies

3.4.2. Brabant Dutch

(32)

Brabant Dutch	nonreflexive				reflexive	
	subject form		object form			
	strong	weak	strong	weak	simplex	complex
1sg	ik	'k	mij	me		m'n eige
2sg	gij	de	u			uw eige
3sg.masc	hij	'm	hem	'm		z'n eige
3sg.fem	zij	ze	haar	'r		'r eige
3sg.neut	het	't	het	't		z'n eige
1pl	wijle	we	ons			ons eige
2pl	gijle		ulle			ullen eige
3pl	zij	ze	hun			hun eige

(33) Jan_i heed '$m_{i/j}$ gewasse. [Flemish Brabant Dutch]
Jan has him washed.
'Jan washed him(self).'

(34) {P:3(*), N:sg(*), G:m(*)} ↔ 'm / ___ accusative Case, weak

3.5. Competition among insertion rules

- Diachronic and synchronic relationships between reflexive systems:

	S1	S2	S3
reflexive meaning	pronoun	pronoun + reflexive	reflexive
nonreflexive meaning	pronoun	pronoun	pronoun

- These relationships become apparent in
  - diachronic evolutions
  - L1 acquisition

3.5.1. Diachronic evolutions

- English (Penning 1875, Farr 1905, Visser 1963, Mitchell 1985, van Gelderen 2000, Ogura 2001, Keenan 2002, Lange 2006, Sinar 2006)

	S1	S2	S3
English	before 1150	1150-1500	after 1500
reflexive meaning	hine	hine + hine selfne	himself
nonreflexive meaning	hine	hine	him

(35) a. Wyþ þe tokene he gan hym blesse. [Middle English]
With the token he began to bless himself
'With the token he began to bless himself.'
(Robert Mannyng, *Handlyng Synne*, line 3875, quoted in Keenan 2002)
b. Hys ryȝt hand vp he lyfte and blessede hym-self stedfastly.
His right hand up he lifted and blessed himself steadfastly
'He lifted his right hand up and blessed himself steadfastly.'
(Robert Mannyng, *Handlyng Synne*, line 3588, quoted in Keenan 2002)

- In S2, pronouns and *self*-forms coexist for the expression of reflexive meaning. *Self*-forms are analysed as syntactically complex DPs (cf. Sinar 2006).
- In S3, *self*-forms cease to be syntactically compositional: they are grammaticalized as reflexives (cf. Sinar 2006). Pronouns are no longer used as reflexives, Principle B effects arise.
- Grammaticalisation = loss of syntactic complexity → integration into the pronominal paradigm → competition for insertion.

3.5.2. L1 acquisition

English	S1	S2	S3
	below 3	3-8 yrs	8 and older
reflexive meaning	her(self)	her + herself	herself
nonreflexive meaning	her(self)	her	her

- Delay of Principle B Effect (DPBE):
  - English (Jakubowicz 1984, Chien & Wexler, 1990; Grodzinsky & Reinhart, 1993; Thornton & Wexler, 1999)
  - Dutch (Koster 1993, Philip and Coopmans 1996)
  - Russian (Avrutin & Wexler, 1992)

(36) a. Sue_i thinks that $Sally_j$ saw $her_{i/j}$ [English child language]
b. Sue_i thinks that $Sally_j$ saw $herself_{j/*i}$

- Clitic Exemption Effect (CEE, Baauw 1999):
  - Italian (McKee 1992)
  - French (Jacubowicz 1984, Hamann, Kowalski & Philip 1997, Hamann 2002)
  - Spanish (Padilla 1990, Baauw, Escobar & Philip 1997)
  - Catalan (Escobar & Gavarró 2001).

(37) Gianni$_i$ lo$_{*i/j}$ asciuga [Italian child and adult language]
John him-cl dries
'John dries him.'

- Additional languages with Exemption Effect (EE)
  - German (Ruigendijk 2007)
  - Icelandic (Sigurjónsdóttir & Hyams 1990)

(38)

	Dutch		German		Icelandic	
	non-reflexive	reflexive	non-reflexive	reflexive	non-reflexive ACC/DAT/GEN	reflexive ACC/DAT/GEN
1	me	me	mich	mich	mig/mér/mín	mig/mér/mín
2	je	je	dich	dich	þig/þér/þín	þig/þér/þín
3	hem	zich	ihn	sich	hann/honum/hans	sig/sér/sín

- DPBE is due to the fact that it may take a while before the child recognizes pronouns and anaphors as forming part of the same pronominal system, i.e. as competing for insertion.
- (C)EE is explained by the fact that morphosyntax in certain languages makes pronouns more easily recognizable as belonging to a pronominal paradigm, and therefore as competing for insertion.

4. THE SYNTAX OF SIMPLEX REFLEXIVES

4.1. Introduction

- *zich* is a body part, and has the syntax of constructions of inalienable possession.

(39) a. Milo heeft zich bezeerd.
Milo has REFL hurt
'Milo hurt himself.'

b. ___ [bezeren [$_{RP}$ [$_{DP1}$ zich$_{Possessum}$] [R [$_{DP2}$ Milo$_{Possessor}$]]]]
hurt REFL Milo

- *zich* is merged as the Possessum in a possessive constituent RP (Relator Phrase), that also hosts its antecedent, the Possessor *Milo*.
- The Possessum (*zich*) is merged in a position which c-commands the Possessor (*Milo*) (Den Dikken 2006)
- RP is the internal argument of an unaccusative verb
- Possessum *zich* is the probe with unvalued φ-features entering an Agree relation with the Possessor-antecedent that it c-commands:

(40) [$_{VP}$ V [$_{RP}$ [$_{DP1}$ {P:_, N:_, G:_}$_{Possessum}$] [$_{DP2}$ {P:3, N:sg, G:m}$_{Possessor}$]]]
bezeer zich Milo

Agree →

[$_{VP}$ V [$_{RP}$ [$_{DP1}$ {P:3*, N:sg*, G:m*}$_{Possessum}$] [$_{DP2}$ {P:3, N:sg, G:m}$_{Possessor}$]]]
bezeer zich Milo

4.2. Support for the possessive analysis

4.2.1. A double alternation

- (39a) alternates with an overtly possessive construction (41a), for which we propose the same unaccusative syntax (41b):

(41) a. Milo heeft zijn been bezeerd.
Milo has his leg hurt
'Milo hurt his leg.'
b. ___ [$_{VP}$ bezeren [$_{RP}$ zijn been Milo]] (unaccusative)
hurt his leg Milo

- (39a) also alternates with a nonpossessive construction, for which we propose the transitive syntax (42b):

(42) a. Milo heeft Marie bezeerd.
Milo has Marie hurt
'Milo hurt Marie'
b. [$_{DP}$ Milo] [$_{VP}$ bezeren [$_{DP}$ Marie]] (transitive)
Milo hurt Marie

- The complex reflexive *zichzelf* occurs in the transitive construction (42):

(43) a. Milo heeft zichzelf bezeerd.
Milo has refl.self hurt
'Milo hurt himself.'
b. [$_{DP}$ Milo] [$_{VP}$ bezeren [$_{DP}$ zichzelf]]
Milo hurt refl.self

4.2.2. Distributional arguments

- The possessive/unaccusative configurations (39) and (41) behave systematically alike, and behave systematically different from the transitive configurations (42)/ (43).

1. Cause-PPs occur with the unaccusative configuration, not the transitive one:

(44) a. Milo heeft zich bezeerd aan de roestige spijker$_{CAUSE}$
Milo has REFL hurt on the rusty nail
'Milo hurt himself on the rusty nail.'
b. Milo heeft zijn voet/arm/rug bezeerd aan de roestige spijker$_{CAUSE}$
Milo has his foot/arm/back hurt on the rusty nail
'Milo hurt his foot/arm/back on the rusty nail.'
c. ?*Milo heeft Marina/zichzelf bezeerd aan de roestige spijker$_{CAUSE}$
Milo has REFL.self hurt on the rusty nail
'Milo hurt himself on the rusty nail.'

2. Instrument-PPs occur with the transitive configuration, not the unaccusative one:

(45) a. *?Marina heeft zich/haar voer bezeerd met behulp van een roestige spijker$_{INST}$
'Marina hurt herself/her foot by means of a rusty nail.'
b. Marina heeft Milo/zichzelf bezeerd met behulp van een roestige spijker$_{INST}$
'Marina hurt Milo/herself by means of a rusty nail.'

3. Passive: the transitive configuration passivizes, the unaccusative one does not:

(46) a. Milo werd verwond door Marie.
'Milo was wounded by Marie.'
b. Er werden mensen verwond.
There were people wounded.
'People were wounded.'

(47) a. *Er werd zich verwond.
there was REFL wounded.
b. *Zijn voet werd verwond door Milo aan de roestige spijker.
His foot was wounded by Milo on the rusty nail
'His foot was wounded by Milo on the rusty nail.'
c. *Er werden drie vingers verwond door Milo aan de roestige spijker.
There were three fingers wounded by Milo on the rusty nail.

4. Intentionality: the sentences with *zich* and body part DPs lack the intentional interpretation.

(48) a. Maxine (un)intentionally killed Judith.
b. Maxine (*un)intentionally murdered Judith.
c. Many people *(un)intentionally died after drinking contaminated water.

(49) a. Marina heeft Milo (on)opzettelijk bezeerd. *(± intentional)*
Marina has Milo (un)intentionally hurt
'Marina hurt Milo (un)intentionally.'
b. Milo heeft zichzelf (on)opzettelijk bezeerd. *(± intentional)*
Milo has REFL.self (un)intentionally hurt
'Milo hurt himself (un)intentionally.'

(50) a. Milo heeft zich *(on)opzettelijk bezeerd aan de tafel. *(– intentional)*
Milo has REFL (un)intentionally hurt on the table
'Milo hurt himself against the table (un)intentionally.'
b. Milo heeft *(on)opzettelijk zijn voet bezeerd aan de tafel. *(– intentional)*
Milo has (un)intentionally his foot hurt on the table
'Milo hurt his foot against the table (un)intentionally.'

5. Strict and sloppy identity: in comparative deletion contexts, *zich* and body part DPs only allow a sloppy reading, while *zichzelf* has both a sloppy and a strict reading.

(51) a. Bij dat ongeval heeft zij zich erger gekwetst dan Peter. (sloppy)
In that accident has she REFL more.seriously hurt than Peter
'In that accident, she hurt herself more seriously than Peter hurt himself.'
*' In that accident, she hurt herself more seriously than Peter hurt her.'(*strict)
b. Bij dat ongeval heeft zij haar benen erger gekwetst dan Peter. (sloppy)
In that accident has she her legs more.seriously hurt than Peter

'In that accident, she hurt her legs more seriously than Peter hurt his legs.'
*' In that accident, she hurt her legs more seriously than Peter hurt her legs.'

c. Zij heeft zichzelf erger gekwetst dan Peter.
she hurt REFL.self more seriously than Peter
'She hurt herself more seriously than Peter hurt himself.' (sloppy)
'She hurt herself more seriously than Peter hurt her.' (strict)

6. Duplication: *zichzelf* allows for duplication readings in Mme Tussaud's contexts, while *zich* does not:

(52) a. Ze zag zich in een griezelige hoek staan. (Reuland 2001:483)
she saw REFL in a creepy corner stand
'She saw herself (=reflection) standing in a creepy corner.'

b. Ze zag zichzelf in een griezelige hoek staan.
she saw REFL.self in a creepy corner stand
'She saw herself (=statue) standing in a creepy corner.'

(53) a. Ringo heeft zich gestoten. *(– duplication)*
Ringo has REFL bumped
'Ringo bumped (into something).'

b. Ringo heeft zijn voet gestoten. *(– duplication)*
Ringo has his foot bumped
'Ringo stubbed his foot.'

(54) a. Ringo heeft zichzelf gestoten. *(± duplication)*
Ringo has REFL bumped
'Ringo hit himself.'

b. ?Ringo heeft Marie gestoten.
Ringo has Marie bumped
'Ringo hit Marie.'

(55)

		transitive	unaccusative
Syntax:	Cause PP	*	√
	Instrument PP	√	*
	Passivisation	√	*
Semantics:	Intentionality	√	*
	Strict-sloppy ambiguity	√	*
	Duplication readings	√	*

4.2.3. Developing the unaccusative analysis

➢ Kayne (1993), Den Dikken (2006): The Possessor moves to the subject position of *have*. The Possessum receives accusative case from the P present inside *have*.

(56) a. ____ T BE $[_{RP}$ [POSSESSUM] REL $[_{PP}$ P_{dative} [POSSESSOR]]]
b. [POSSESSOR] T $HAVE_{BE+R+P}$ $[_{RP}$ [POSSESSUM] ~~R+P~~ $[_{PP}$ ~~P_{dative}~~ ~~[POSSESSOR]~~]]]

(57) a. Liber est mihi. [Latin]
book.NOM is me.DAT

'I have a book.'
b. I have a book.

➢ We propose a similar analysis for the case of inalienable possession:

(58) a. Jan bezeert zich/zijn voet
Jan hurts REFL/his foot.
'Jan hurts himself/his foot.'
b. ____ T [$_{VP}$ bezeer [$_{RP}$ [$_{DP}$ zich/zijn voet] R [$_{PP}$ P [$_{DP}$ Jan]]]]
c. Jan bezeert+R+P+T [$_{VP}$ ~~bezeer~~+~~R~~+~~P~~ [$_{RP}$ [$_{DP}$ zich/zijn voet] ~~R~~+~~P~~ [$_{PP}$ ~~P~~ [$_{DP}$ ~~Jan~~]]]]

➢ (65a) involves a possessive RP as in (58b). The R+P head of the possessive RP raises and incorporates into the unaccusative verb, endowing it with accusative Case-licensing potential. The possessor undergoes inversion, raising to Spec, T with nominative Case.
➢ The ability to assign accusative Case is responsible for the selection of the perfect auxiliary in Dutch, i.e. *hebben* 'have' rather than *zijn* 'be':

(59) Jan heeft/*is zich bezeerd
Milo has/is REFL hurt
'Milo has hurt himself.'

4.3. Extending the analysis: inherently reflexive verbs

(60) a. Marie gedraagt zich.
Marie behaves REFL
'Marie behaves.'
b. *Marie gedraagt Jan.
'Marie behaves Jan.'

(61) ____ T [$_{VP}$ gedraag [$_{RP}$ [$_{DP}$ zich] R [$_{PP}$ P [$_{DP}$ Marie]]]]
behave refl M

➢ We expect *zich* to alternate with body part DPs in inherently reflexive configurations. This prediction is borne out:

(62)

Inherently reflexive verbs	*zich*	body part DP	other DP
Type 1: *gedragen* 'to behave'	+	–	–
Type 2: *verrekken* 'to strain'	+	+	–
Type 3: *verzwikken* 'to sprain'	–	+	–

(63) a. Milo verrekte zich/een spier.
Milo pulled REFL/a muscle
'Milo strained himself/Milo pulled a muscle.'
b. *Milo verrekte Marie/de veer.
Milo stretched Marie/the spring.

(64) a. Milo verzwikte zijn enkel/*zich.
Milo sprained his ankle/REFL
'Milo sprained his ankle.'
b. Milo verstuikte zijn voet/*zich.

Milo twisted his foot/REFL
c. *Milo verzwikte/verstuikte de tafelpoot/Marie
'Milo strained/twisted the leg of the table/Marie.'

5. SELF-REFLEXIVES AS FLOATING QUANTIFIERS

5.1. General structure of the argument

(65) a. John saw *himself* in the mirror.
b. John has *himself* been working on that problem.
c. The Dutch linguists have *all* been working on that problem.

- *Self*-reflexives as in (65a) are frequently built using an intensifier morpheme as in (65b).
- The properties of intensifiers match those of FQs such as *all* in (65c)
- In the analysis of FQs proposed by Doetjes (1997), the FQ is an adverbial that needs to bind a trace position. Put differently, a FQ needs to c-command its antecedent at some point in the derivation.
- *Self*-reflexives as in (65a) share the syntax of FQs: they raise to an adverbial position from which they c-command their antecedent.

(66) Pete invited himself.

(67) $[_{vP}\ [_{DP1}$ {P:3, N:sg, G:m}$]\ [_{VP}$ V $[_{DP2}$ {P:_, N:_, G:_}]]]
Pete invited himself

Adjunction of DP_2 to vP →

$[_{vP}\ [_{DP2}$ {P:_, N:_, G:_}$]\ [_{vP}\ [_{DP1}$ {P:3, N:sg, G:m}$]\ [_{VP}$ V ~~$[_{DP2}$ {P:_, N:_, G:_}]~~]]]
himself Pete invited

Agree →

$[_{vP}\ [_{DP2}$ {P:3*, N:sg*, G:m*}$]\ [_{vP}\ [_{DP1}$ {P:3, N:sg, G:m}$]\ [_{VP}$ V ~~$[_{DP2}$ {P:3*, N:sg*, G:m*}~~]]]]
himself Pete invited

5.2. Morphological evidence

- Intensifiers appear in the morphological make-up of reflexives (König & Siemund 2000a,b,c)
- Examples: Albanian *vetë*, Arabic *nafs*, Japanese *zibun*, Mandarin *ziji*, Persian *xod*, and Turkish *kendi*.

- Malayalam ***ṯanne*** (from Jayaseelan 1988):

(68) a. raaman awan-e ṯanne aṭicc-u.
Raman.Nom he.Acc *self* hit.Past
'Raman hit himself.'
b. raaman ṯanne pooy-i.
Raman.Nom *self* go.Past
'Raman himself went.'

5.3. Intensifiers, FQs, anaphors: a syndrome of properties

- The FQ-antecedent relation, the intensifier-antecedent relation and the complex reflexive-antecedent relation are all subject to the following four properties:
  - obligatoriness
  - c-command
  - locality
  - uniqueness

- *Obligatoriness*: there must be a suitable antecedent:

(69) a. The children have all left.
b. *John has all left.
(70) a. The caterers have gone home themselves.
b. *Mary has gone home themselves.

- *C-command:* the antecedent must c-command the floating quantifier:

(71) a. *[The mother of my friends$_i$] has all$_i$ left.
b. *John has all$_i$ seen the boys$_i$
(72) a. *[The mother of my friends$_i$] has themselves$_i$ left.
b. *John has themselves$_i$ seen the boys$_i$.

- *Locality*: the antecedent must be local

(73) a. *My friends$_i$ think that I have all$_i$ left.
b. *My friends$_i$ think that I have themselves$_i$ left.

(74) a. *I all$_i$ think that my friends$_i$ have left.
b. * I themselves$_i$ think that my friends$_i$ have left.

- *Uniqueness*: no split antecedents.

(75) Les enfants$_i$ leur$_j$ ont tous$_{i/j/*i+j}$ parlé.
The children to-them have all talked
'All of the children talked to them.'
' The children talked to all of them.'
*'All of the children talked to all of them.'

(76) *John$_i$ gave Mary$_j$ themselves$_{i+j}$ the book.

(77)

	Intensifiers	Floating Qs
Obligatoriness	+	+
C-command	+	+
Locality	+	+
Uniqueness	+	+

5.4. Analysis of FQs

- Doetjes (1992, 1997): the FQ is an adverb binding an empty category in argument position:

(78) [$_{DP}$ Les enfants$_i$] ont [$_{vP}$ [$_{FQ}$ tous *pro*$_i$] [$_{vP}$ ~~les enfants~~$_i$ [$_{VP}$ dormi]]] [French]
'The children have all slept.'

- FQs show φ-feature agreement with their antecedent:

(79) a. (les livres) Pierre les a tous lus.
b. (les photos) Pierre les a toutes vues.
c. John ate the pizza himself/ *herself.

- A FQ has unvalued φ-features, and probes for a Goal in its c-command domain.

(80) a. My friends all laughed.
b. [$_{vP}$ [$_{QP}$ {P:_, N:_,G:_}] [$_{vP}$ [$_{DP}$ {P:3, N:pl, G:m}] *v*]]
all my friends laughed

Agree →

[$_{vP}$ [$_{QP}$ {P:3*, N:pl*, G:m*}] [$_{vP}$ [$_{DP}$ {P:3, N:pl, G:m}] *v*]]
all my friends laughed

- Deriving the properties of FQs
  - Obligatoriness follows from the need to value unvalued features
  - C-command, locality, and uniqueness follow from Agree.

5.5. Intensifiers

- Intensifiers are adjuncts with unvalued φ-features that need to be valued by a Goal in their c-command domain.

(81) a. John himself laughed.
b. [$_{vP}$ [$_{DP}$ {P:_, N:_,G:_}] [$_{vP}$ [$_{DP}$ {P:3, N:sg, G:m}] *v*]]
himself John laughed

Agree →

[$_{vP}$ [$_{DP}$ {P:3*, N:pl*, G:m*}] [$_{vP}$ [$_{DP}$ {P:3, N:pl, G:m}] *v*]]
himself John laughed

- Semantically, intensifiers like *zelf*, *himself* and *eux-mêmes* 'themselves' are quantifiers because of focus properties: they pick out an element from a contrast set (Eckardt 2001, Siemund 2000).
- The properties of *obligatoriness, c-command, locality* and *uniqueness* follow as they did for FQs.

5.6. Self-reflexives

- *Self*-anaphors have unvalued φ-features (see Reuland 2005, Heinat 2006, Hicks 2009).
- *Self*-anaphors raise to an adjoined position (vP or VP). They value their features by probing for a suitable Goal.

- *Self*-anaphors are pronouns turned into anaphors by adopting the syntax of FQs: they are binders rather than bindees.

(82) $[_{vP}\ [_{DP1}\ \{P{:}3, N{:}sg, G{:}m\}]\ [_{VP}\ V\ [_{DP2}\ \{P{:}\_, N{:}\_, G{:}\_\}]\ ]]$
Pete invited himself

Adjunction of DP_2 to vP →

$[_{vP}\ [_{DP2}\ \{P{:}\_, N{:}\_, G{:}\_\}]\ [_{vP}\ [_{DP1}\ \{P{:}3, N{:}sg, G{:}m\}]\ [_{VP}\ V\ \lfloor\!\lfloor_{DP2}\ \{P{:}\_, N{:}\_, G{:}\_\}\rfloor\!\rfloor\ ]]]$
himself Pete invited

Agree →

$[_{vP}\ [_{DP2}\ \{P{:}3^*, N{:}sg^*, G{:}m^*\}]\ [_{vP}\ [_{DP1}\ \{P{:}3, N{:}sg, G{:}m\}]\ [_{VP}\ V\ \lfloor\!\lfloor_{DP2}\ \{P{:}3^*, N{:}sg^*, G{:}m^*\}\ self\rfloor\!\rfloor\ ]]]$
himself Pete invited

Raising of DP_1 and V (Johnson 1991, Koizumi 1995) to the TP domain →

$[_{TP}\ [_{DP1}\ \{P{:}3, N{:}sg, G{:}m\}]\ V\ [_{vP}\ [_{DP2}\ \{P{:}3^*, N{:}sg^*, G{:}m^*\}]\ [_{vP}\ \lfloor\!\lfloor_{DP1}\ \{P{:}3, N{:}sg, G{:}m\}\rfloor\!\rfloor$
Pete invited himself
$[_{VP}\ V\ \lfloor\!\lfloor_{DP2}\ \{P{:}3^*, N{:}sg^*, G{:}m^*\}\rfloor\!\rfloor]]]$

- *Obligatoriness.*

No Goal available:

(83) a. *Himself smiled.
b. $*[_{vP}\ [_{DP1}\ \{P{:}\_, N{:}\_, G{:}\_\}]\ [_{VP}\ V\ ]]$
himself smiled

Feature mismatch:

(84) a. *I invited himself.
b. $[_{vP}\ [_{DP2}\ \{P{:}\_, N{:}\_, G{:}\_\}]\ [_{vP}\ [_{DP1}\ \{P{:}1, N{:}sg\ , G{:}0\}]\ [_{VP}\ V\ \lfloor\!\lfloor_{DP2}\ \{P{:}\_, N{:}\_, G{:}\_\}\rfloor\!\rfloor]]]$
himself I invited

- *C-command: if the reflexive must c-command its antecedent, what rules out (85)?*

(85) *Himself invited Pete.

(86) $[_{vP}\ [_{DP1}\ \{P{:}\_, N{:}\_, G{:}\_\}]\ v\ [_{VP}\ V\ [_{DP2}\ \{P{:}3, N{:}sg, G{:}m\}]\ ]]$
himself invited Pete

- Heinat (2006): the Agree-relationship between the *v* head of *v*P and the object DP leaves no unvalued φ-features behind on DP_2. This renders the object DP inactive for further φ-feature agreement. As a result, the *self*-form in subject position cannot value its features and the derivation crashes.

(87) *[Pete's girlfriend] invited himself.
(88) $[_{vP}\ [_{DP3}\ \{P{:}\_, N{:}\_, G{:}\_\}]\ [_{vP}\ [_{DP1}\ [_{DP2}\ \{P{:}3, N{:}sg, G{:}m\}]\ D_1\ [_{NP}\ \{P{:}3, N{:}sg, G{:}f\}]]\ v{+}V$
himself Pete 's girlfriend invited
$[_{VP}\ V\ \lfloor\!\lfloor_{DP3}\ \{P{:}\_, N{:}\_, G{:}\_\}\rfloor\!\rfloor\ ]]]$

- The complex reflexive cannot have its features valued by the DP2 (*Pete*), which is embedded in the subject DP1 (*Pete's girlfriend*) because of minimality, i.e. because there is a closer candidate for Agree.

- *Locality* is derived by assuming that the *self*-reflexive can only adjoin to its local vP or VP. No successive-cyclic movement is possible: once the reflexive has valued its features, it is inactive for further syntactic processes.

(89) a. *John thought [that himself was the best]
b. *John believed [Mary to have invited himself]

- *Uniqueness*

(90) $Piet_i$ vertrouwde Jan_j $zichzelf_{i/j/*i+j}$ toe.
Piet entrusted Jan refl.self prt
'Piet entrusted Jan with himself.'

(91) $[_{vP}\ [_{DP3}$ {P:3*, N:sg*, G:m*}] $[_{vP}\ [_{DP2}$ {P:3, N:sg, G:m}] $[_{vP}\ [_{DP1}$ {P:3, N:sg, G:m}]
zichzelf Jan Piet
$[_{VP}\ [_{DP2}$ ~~{P:3, N:sg, G:m}~~] V $[_{DP3}$ ~~{P:3*, N:sg*, G:m*}~~]]]]
toevertrouwde

- the indirect object and the reflexive adjoin to *v*P (scrambling). The reflexive probes, and values its features, either with those of the subject DP_1 or with those of the indirect object DP_2.

6. REFLEXIVES IN PPS

6.1. Introduction

(92) a. Peter keek achter zich.
Peter looked behind REFL
'Peter looked behind himself.'
b. Piet keek naar zichzelf in de spiegel.
Piet looked at REFL.SELF in the mirror
'Piet looked at himself in the mirror.'

- Complex reflexives: the floating quantifier analysis extends to these cases. The *self*-part of the complex reflexive makes it raise covertly to an adjoined position from where it c-commands it antecedent.

- Simplex reflexives: no analysis in terms of a possessive R/PP as in (93), but one as in (94), with the reflexive merged as the complement of P:

(93) $[_{vP}$ Peter $[_{VP}$ keek $[_{PP}$ achter $[_{RP}$ zich R $[_{PP}$ P ~~Peter~~]]]]]

(94) $[_{PP}$ P zich]

- How does the reflexive reach a position from which it c-commands its antecedent?

6.2. Two kinds of PPs: spatial vs functional

(95) a. Jan stond *aan/voor* het hek. (+locative)
'Jan stood at/in front of the gate'
b. Karen sprong *over* het hek. (+locative)
'Karen jumped over the gate.'

(96) a. Jan denkt *aan* zijn vakantie. (–locative)
'Jan is thinking of his vacation.'
b. Karen praat met Piet *over* het weer. (–locative)
'Karen is talking with Piet about the weather.'

➢ The following generalizations hold (cf. Vat 1980, Koster 1985, De Vries 1999):

(97) a. *zich* can occur as a prepositional complement when the preposition has a spatial meaning.
b. *zich* cannot occur as a prepositional complement when the preposition is functional.
c. *zichzelf* can occur in the complement of any preposition.

(98) a. Karel praatte met Marie *over* zich*(zelf). (–locative)
'Karel talked with Marie about himself.'
b. Karel heeft *op* zich*(zelf) geschoten. (–locative)
'Karel shot at himself.'
c. Karel vecht *voor* zich*(zelf). (–locative)
'Karel fights for himself.'

(99) a. Fred luisterde naar zich*(zelf) op de radio.
Fred listened to REFL on the radio
b. Fred beluisterde zich(zelf) op de radio.
Fred PRT-listened REFL on the radio
'Fred listened to himself on the radio.'

(100) a. Piet keek naar zich*(zelf) in de spiegel.
Piet looked at REFL in the mirror
b. Piet bekeek zich(zelf) in de spiegel.
Piet PRT-looked REFL in the mirror
'Piet looked at himself in the mirror.'

6.3. Analysis

➢ Functional PPs are sisters of V, spatial PPs are left-adjoined to vP (Barbiers 1995).

(101) a. $[_{vP}$ DP *v* $[_{VP}$ V $[_{PP}$ P *zich(zelf)*]] *(functional PP)*
b. $[_{VP}$ $[_{PP}$ P *zich(zelf)*] $[_{vP}$ DP $[_{VP}$ V]]] *(spatial/temporal PP)*

➢ In (101a), there is no way for the reflexive to c-command its antecedent. Therefore, the probe *zich* cannot find an appropriate goal and the derivation crashes.

(102) *[$_{vP}$ [$_{DP1}$ {P:3, N:sg, G:m}] *v* [$_{VP}$ V [$_{PP}$ P [$_{DP2}$ {P:_, N:_, G:_}]]]
Fred luisterde naar zich

- In (101b), the reflexive c-commands out of its PP.

(103) a. Peter keek achter zich.
'Peter looked behind himself.'
b. [$_{vP}$ [$_{PP}$ P [$_{DP2}$ {P:3*, N:sg*, G:m*}]] [$_{vP}$ [$_{DP1}$ {P:3, N:sg, G:m}] [$_{VP}$ V]]]
achter zich Peter keek

- Barbiers (1995:15ff) presents evidence suggesting that c-command out of a PP is possible. The evidence includes Condition C effects, quantifier binding and negative polarity items.

(104) a. *We geven aan hem$_i$ een boek over Jan$_i$.
'We gave to him a book about Jan.'
b. *We hebben bij hem$_i$ Jans$_i$ vader ontmoet.
'We met Jan's vader at his place.'
c. *It seems to him$_i$ that John$_i$ is sick.

(105) a. In elke schrijver zijn boek las Marie dat ie huwelijksproblemen had.
'In each writer's book Marie read that he had marital problems.'
b. Van elke man wist ik wat ie dacht.
'Of each man I knew what he thought.'
c. John gave candy to every boy on his birthday.
d. She spoke to each employee about his paycheck.

(106) a. Op *niemand* heeft Jan ook maar iets aan te merken.
on no-one has Jan anything at to mark
'Jan has no qualms with anyone.'
b. Op *geen enkel idee* was ze ook maar een dag trots geweest.
'She had not been proud of any idea for a single day.'

- Technical implementation:
  - redefine c-command as in Barbiers (1995:22) (in terms of 'a (connected) path of left branches')
  - (covert) PP-internal movement of the complement of P to a PP-internal specifier position (possibly of a functional head) (Van Riemsdijk 1978, Kayne 1994).

(107) [$_{PP}$ DP$_i$ [$_{PP}$ P ~~DP$_i$~~]]

7. CONCLUSION

- SMT: the grammar contains no rules or principles specifically designed to derive the distribution and reference of anaphors and pronouns.
- Our analysis of the distribution of anaphors and pronouns uses mechanisms and assumptions that are independently needed in the grammar:
  - Absence of Principle B Effects: Agree + Elsewhere Principle
  - Simplex reflexives (*zich*): Agree + syntax of inalienable possession
  - Self-reflexives: Agree + syntax of floating quantifiers

- Reflexives in PPs: Agree + structural difference between functional & lexical PPs

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