Binding theory from first principles
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Outline
1. Central assumptions .................................................................................................................................. 1
2. The Proposal .................................................................................................................................................. 1
3. Absence of Principle B Effects (APBE) ....................................................................................................... 3
4. The Syntax of Simplex Reflexives ................................................................................................................ 8
5. Self-Reflexives as Floating Quantifiers ...................................................................................................... 12
6. Reflexives in PPs ........................................................................................................................................... 16
7. Conclusion ..................................................................................................................................................... 18

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, likes himselfi.
  b. Mary, likes herselfi.
  c. The girls, like themselvesi.

- 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) \textit{Agree}
\begin{enumerate}
\item Agree involves a probe $\alpha$ that has one or more unvalued features and a goal $\beta$ that has matching (i.e. identical) valued features.
\item Agree is an asymmetric feature valuation operation that values the features of $\alpha$ with the features of $\beta$ at a distance in a local domain.
\item $\alpha$ c-commands $\beta$ and there is no potential alternative goal $\gamma$ such that $\alpha$ asymmetrically c-commands $\gamma$, and $\gamma$ asymmetrically c-commands or dominates $\beta$.
\end{enumerate}

(5) \begin{enumerate}
\item \{P:3, N:sg, G:m\} lexically valued features (e.g. goal)
\item \{P:_, N:_, G:\} unvalued features (probe)
\item \{P:3*, N:sg*, G:m*\} features valued after Agree (probe)
\end{enumerate}

\textgreater What with c-command?
\begin{itemize}
\item Simplex anaphors start out in a configuration where traditional c-command relationships are reversed, i.e. where the anaphor c-commands its antecedent.
\item Complex anaphors move to a position c-commanding their antecedent.
\end{itemize}

\textgreater An example:
\begin{enumerate}
\item Johannes\textsubscript{i} liebt sich\textsubscript{ij}.
\end{enumerate}

(6) \begin{enumerate}
\item Johannes\textsubscript{i} loves himself [German]
\item Johannes\textsubscript{i} loves him
\end{enumerate}

(7) \begin{enumerate}
\item [VP [DP\textsubscript{2} \{P:_, N:_, G:\}]] [VP [DP\textsubscript{1} \{P:3, N:sg, G:m\}]] [VP V \{P:_, N:_, G:\}]]
\item [VP [DP\textsubscript{2} \{P:3*, N:sg*, G:m*\}]] [VP [DP\textsubscript{1} \{P:3, N:sg, G:m\}]] [VP V \{P:3*, N:sg*, G:m*\}]]
\item [VP [DP\textsubscript{1} \{P:3, N:sg, G:m\}]] [VP V [DP\textsubscript{2} \{P:3, N:sg, G:m\}]]
\end{enumerate}

\textgreater 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)

\subsection{Morphology}
\begin{enumerate}
\item \{P:3\} \leftrightarrow \text{ \textsubscript{___} / sich}
\item \{P:3, N:sg, G:m\} \leftrightarrow \text{ \textsubscript{___} / ihm / accusative Case}
\end{enumerate}

\textbf{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.

\subsection{Semantic interpretation}
\begin{itemize}
\item a DP that has shared feature values, like DP\textsubscript{2} in (7), is interpreted as referentially dependent on the DP it shares its features with (DP\textsubscript{1} in (7))
\item two DPs that have lexically specified $\varphi$-features, as in (8) receive a default interpretation of disjoint reference.
\end{itemize}
3. **ABSENCE OF PRINCIPLE B EFFECTS (APBE)**

3.1. *What is it?*

(11) a. Jan, heeft zich gewassen.  
    [Standard Dutch]  
    Jan has REFLEX washed  
    ‘Jan washed himself.’

b. Jan, heeft hem gewassen.  
    ‘Jan washed him.’

(12) a. Ik, heb me gewassen.  
    [Standard Dutch]  
    ‘I washed myself.’

b. Jan, heeft me gewassen.  
    ‘Jan washed me.’

(13) a. Jij, heb je gewassen.  
    [Standard Dutch]  
    ‘You washed yourself.’

b. Jan, heeft je 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  
     2 je *jich  
     3 hem zich

(15) **Absence of Principle B Effect (APBE)**  

3.2. **Possessive pronouns**

(16) a. They like [{DP each other’s bags}].  

b. He likes [{DP his dog}].

(17) a. Hon, ser sin man.  
    [Swedish]  
    ‘She sees her husband.’

b. Hon, ser hennes man.  
    ‘She sees her husband.’

(18) a. Ioannes, sororem suam vidit.  
    [Latin; Bertocchi & Casadio 1980]  
    ‘Ioannes saw his sister.’

b. Ioannes, sororem eius vidit.  
    ‘Ioannes saw his sister.’

(19) a. On, uze rasskazal mne o svoej zizni.  
    [Russian; Timberlake 1979]  
    ‘He had already told me about his life.’

b. On, uze rasskazal mne o ego zizni.  
    ‘He had already told me about his life.’

(20) a. Jørgen, elsker sin kone.  
    [Danish]  
    Jørgen loves self’s wife

b. Jørgen, elsker hans kone.  
    Jørgen loves self’s wife
(21) a. *De, elsker sine i koner. [Danish]
   They love self’s wives
 b. De, elsker deres i koner.
   They love their wives

3.3. Languages without dedicated simplex reflexive forms

(22) a. Max, håld him/*himselsi.
   Max behaves him/himself ‘Max behaves himself.’
 b. Max, hatet himselsi/*himi.
   Max hates himself/him ‘Max hates himself.’

(23) a. Max, gedraagt ‘em*/’z’n eigeni.
   Max behaves him/hi’s own
   ‘Max behaves himself.’
 b. Max, haat ‘em*/’z’n eigeni/*’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):

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       |
    | 3sg.fem | sie        | ihr    | sie       | sich    |
    | 3sg.neut | es      |        |           |
    | 1pl    | wir        | uns    |           |
    | 2pl    | ihr        | euch   |           |
    | 3pl.masc | sie    | ihnen  | sie       | sich    |
    | 3pl.fem | sie        |        |           |
    | 3pl.neut | sie       |        |           |

(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

   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

   sich
   Johannes
   liebt

→ (26) applies

(31) \[vP [DP1 \{P:3, N:sg, G:m\}] [vP V [DP2 \{P:3, N:sg, G:m\}] ]]
   Johannes
   liebt
   ihn

→ (26) applies

3.4.2. Brabant Dutch

(32)
<table>
<thead>
<tr>
<th>Brabant Dutch</th>
<th>nonreflexive subject form</th>
<th>object form</th>
<th>reflexive</th>
</tr>
</thead>
<tbody>
<tr>
<td>strong</td>
<td>weak</td>
<td>strong</td>
<td>weak</td>
</tr>
<tr>
<td>1sg</td>
<td>ik</td>
<td>‘k</td>
<td>mij</td>
</tr>
<tr>
<td>2sg</td>
<td>gij</td>
<td>de</td>
<td>u</td>
</tr>
<tr>
<td>3sg.masc</td>
<td>hij</td>
<td>‘m</td>
<td>hem</td>
</tr>
<tr>
<td>3sg.fem</td>
<td>zij</td>
<td>ze</td>
<td>haar</td>
</tr>
<tr>
<td>3sg.neut</td>
<td>het</td>
<td>‘t</td>
<td>het</td>
</tr>
<tr>
<td>1pl</td>
<td>wijle</td>
<td>we</td>
<td>ons</td>
</tr>
<tr>
<td>2pl</td>
<td>gijle</td>
<td>ulle</td>
<td>ullen eige</td>
</tr>
<tr>
<td>3pl</td>
<td>zij</td>
<td>ze</td>
<td>hun</td>
</tr>
</tbody>
</table>

(33) Jan, heed ‘mijd 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:

<table>
<thead>
<tr>
<th>reflexive meaning</th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
</tr>
</thead>
<tbody>
<tr>
<td>pronoun</td>
<td></td>
<td>reflexive pronoun</td>
<td>reflexive</td>
</tr>
<tr>
<td>nonreflexive mean</td>
<td>pronoun</td>
<td>pronoun</td>
<td>pronoun</td>
</tr>
</tbody>
</table>

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

3.5.1. Diachronic evolutions


<table>
<thead>
<tr>
<th></th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td></td>
<td>before 1150</td>
<td>1150-1500</td>
</tr>
<tr>
<td>reflexive meaning</td>
<td>hine</td>
<td>hine</td>
<td>himself</td>
</tr>
<tr>
<td>nonreflexive meaning</td>
<td>hine</td>
<td>hine selfne</td>
<td>him</td>
</tr>
</tbody>
</table>

(35) a. Wyb 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 rȳt hand vp he lyfte and blessed 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

<table>
<thead>
<tr>
<th>English</th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
</tr>
</thead>
<tbody>
<tr>
<td>reflexive meaning</td>
<td>her(self)</td>
<td>her + herself</td>
<td>herself</td>
</tr>
<tr>
<td>nonreflexive meaning</td>
<td>her(self)</td>
<td>her</td>
<td>her</td>
</tr>
</tbody>
</table>

Delay of Principle B Effect (DPBE):
- Dutch (Koster 1993, Philip and Coopmans 1996)
- Russian (Avrutin & Wexler, 1992)

(36) a. Sue, thinks that Sally saw her
b. Sue, thinks that Sally saw herself

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

(37) Gianni, lo 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)

<table>
<thead>
<tr>
<th>Dutch</th>
<th>German</th>
<th>Icelandic</th>
</tr>
</thead>
<tbody>
<tr>
<td>non-reflexive</td>
<td>reflexive</td>
<td>non-reflexive</td>
</tr>
<tr>
<td></td>
<td>ACC/DAT/GEN</td>
<td>ACC/DAT/GEN</td>
</tr>
<tr>
<td>1 me</td>
<td>me</td>
<td>mich</td>
</tr>
<tr>
<td></td>
<td></td>
<td>mig/mér/min</td>
</tr>
<tr>
<td>2 je</td>
<td>je</td>
<td>dich</td>
</tr>
<tr>
<td></td>
<td></td>
<td>þigþérþin</td>
</tr>
<tr>
<td>3 hem</td>
<td>zich</td>
<td>ihn</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

(39)  
\[ \text{Ø} \text{zích} \text{ is a body part, and has the syntax of constructions of inalienable possession.} \]

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

(40)  
\[ \text{Ø} \text{RP is the internal argument of an unaccusative verb} \]

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)  
\[ \text{Ø}(39a) \text{ alternates with an overtly possessive construction (41a), for which we propose the same unaccusative syntax (41b):} \]

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

(43)  
\[ \text{Ø}(39a) \text{ also alternates with a nonpossessive construction, for which we propose the transitive syntax (42b):} \]

4.4. The complex reflexive *zich* occurs in the transitive construction (42):

(44)  
\[ \text{Ø} \text{ The complex reflexive *zich* occurs in the transitive construction (42):} \]
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\textsubscript{CAUSE}
        Milo has REF\textsubscript{L} hurt on the rusty nail
        ‘Milo hurt himself on the rusty nail.’
   
        b. Milo heeft zijn voet/arm/rug bezeerd aan de roestige spijker\textsubscript{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/\textit{zichzelf} bezeerd aan de roestige spijker\textsubscript{CAUSE}
        Milo has REF\textsubscript{L}.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 voet bezeerd met behulp van een roestige spijker\textsubscript{INST}
        ‘Marina hurt herself/ her foot by means of a rusty nail.’
   
        b. Marina heeft Milo/\textit{zichzelf} bezeerd met behulp van een roestige spijker\textsubscript{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 REF\textsubscript{L} wounded.
        ‘His foot was wounded by Milo on the rusty nail
        his foot was wounded by Milo on the rusty nail.’
   
        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 \textit{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. \(\pm\) intentional
        Marina has Milo (un)intentionally hurt
        ‘Marina hurt Milo (un)intentionally.’
   
        b. Milo heeft zichzelf (on)opzettelijk bezeerd. \(\pm\) intentional
Milo has REF.L.self (un)intentionally hurt
‘Milo hurt himself (un)intentionally.’

(50) a. Milo heeft zich *(on)opzettelijk bezeerd aan de tafel.  (← intentional)
Milo has REF.L (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 REF.L 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.’

*c. Zij heeft zichzelf erger gekwetst dan Peter.
She hurt REF.L.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 REF.L 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 REF.L.self in a creepy corner stand
‘She saw herself (=statue) standing in a creepy corner.’

(53) a. Ringo heeft zich gestoten.  (← duplication)
Ringo has REF.L 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 REF.L bumped
‘Ringo hit himself.’

b. ?Ringo heeft Marie gestoten.
Ringo has Marie bumped
‘Ringo hit Marie.’
Reference and antecedence: how far does the grammar reach?

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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.

\[ (56) \]
\[
\begin{array}{ll}
a. &_{} T \quad BE \quad [RP \quad [POSSESSUM] \quad REL \quad [PP \quad P_{dative} \quad [POSSESSOR]]] \\
b. & [POSSESSOR] \quad T \quad HAVE \quad BE+R+P \quad [RP \quad [POSSESSUM] \quad R+P \quad [PP \quad P_{dative} \quad [POSSESSOR]]] \\
\end{array}
\]

\[ (57) \]
\[
\begin{array}{ll}
a. & Liber \quad est \quad mihi. \quad [Latin] \\
& \quad book.NOM \quad is \quad me.DAT \\
& \quad 'I have a book.' \\
b. & I \quad have \quad a \quad book. \\
\end{array}
\]

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

\[ (58) \]
\[
\begin{array}{ll}
a. & Jan \quad bezeert \quad z\text{\textsuperscript{\textperiodcentered}}ich/\text{\textperiodcentered}zijn \quad voet \\
& \quad Jan \quad hurts \quad REFL/his \quad foot. \\
& \quad 'Jan \quad hurts \quad himself/his \quad foot.' \\
b. & _{} T \quad [VP \quad bezeer \quad [RP \quad [DP \quad z\text{\textsuperscript{\textperiodcentered}}ich/\text{\textperiodcentered}zijn \quad voet] \quad R \quad [PP \quad [DP \quad Jan]]]] \\
c. & Jan \quad bezeert+R+P+T \quad [VP \quad bezeer+R+P \quad [RP \quad [DP \quad z\text{\textsuperscript{\textperiodcentered}}ich/\text{\textperiodcentered}zijn \quad voet] \quad R+P \quad [PP \quad [PP \quad [DP \quad Jan]]]]] \\
\end{array}
\]

(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’:

\[ (59) \]
\[
\begin{array}{ll}
Jan \quad heeft/*is \quad z\text{\textsuperscript{\textperiodcentered}}ich \quad bezeerd \\
Milo \quad has/is \quad REFL \quad hurt \\
'Milo \quad has \quad hurt \quad himself.' \\
\end{array}
\]

4.3. Extending the analysis: inherently reflexive verbs

\[ (60) \]
\[
\begin{array}{ll}
a. & Marie \quad gedraagt \quad z\text{\textsuperscript{\textperiodcentered}}ich. \\
& Marie \quad behaves \quad REFL \\
& 'Marie \quad behaves.' \\
b. & *Marie \quad gedraagt \quad Jan. \\
& 'Marie \quad behaves \quad Jan.' \\
\end{array}
\]

\[ (61) \]
\[
\begin{array}{ll}
_{} T \quad [VP \quad gedraag \quad [RP \quad [DP \quad z\text{\textsuperscript{\textperiodcentered}}ich] \quad R \quad [PP \quad [DP \quad Marie]]]] \\
\quad behave \quad refl \quad M \\
\end{array}
\]

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

<table>
<thead>
<tr>
<th>Type</th>
<th>Verb</th>
<th>zich</th>
<th>body part DP</th>
<th>other DP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>gedragen</td>
<td>+</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Type 2</td>
<td>verrekken</td>
<td>+</td>
<td>+</td>
<td>–</td>
</tr>
<tr>
<td>Type 3</td>
<td>verzwikken</td>
<td>–</td>
<td>+</td>
<td>–</td>
</tr>
</tbody>
</table>

(62)

(63) a. Milo verrekte zich/een spier.
Milo pulled REF/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 verstuipte 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) \[ [\text{DP}_1 \{ \text{P:3, N:sg, G:m} \}] \ [\text{VP} \ {\text{DP}_2 \{ \text{P:3}, \text{N:sg}, \text{G:m} \}}] ] \]

Adjunction of DP₂ to vP →

\[ [\text{VP} \ {\text{DP}_2 \{ \text{P:3}, \text{N:sg}, \text{G:m} \}}] \ [\text{VP} \ {\text{DP}_1 \{ \text{P:3, N:sg, G:m} \}}] ] \]

Agree →

\[ [\text{VP} \ {\text{DP}_1 \{ \text{P:3, N:sg, G:m} \}}] \ [\text{VP} \ {\text{DP}_2 \{ \text{P:3}, \text{N:sg}, \text{G:m} \}}] ] \]
5.2. **Morphological evidence**

- Intensifiers appear in the morphological make-up of reflexives (König & Siemund 2000a,b,c).

- Malayalam *tanne* (from Jayaseelan 1988):

  (68) a. raaman awan-e tanne aticc-u.
      Raman.Nom he.Acc *self* hit.Past
      ‘Raman hit himself.’
  b. raaman tanne 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,] has all, left.
  b. *John has all, seen the boys,

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

- **Locality**: the antecedent must be local

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

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

- **Uniqueness**: no split antecedents.

  (75) Les enfants, leur, ont tous, 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 gave Mary themselves the book.

(77)

<table>
<thead>
<tr>
<th></th>
<th>Intensifiers</th>
<th>Floating Qs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obligatoriness</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>C-command</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Locality</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Uniqueness</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

5.4. Analysis of FQs

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

(78) \[ [\text{DP Les enfants,} ont [\text{vP FQ tous pro} [\text{vP les enfants, [vP dormi]]}]] \] [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. \[ [\text{vP [QP \{P:3, N:pl, G:m\} v]}] [\text{vP [DP \{P:3, N:pl, G:m\} v]]} \] all my friends laughed

\[ \text{Agree} \rightarrow \]

b. \[ [\text{vP [QP \{P:3*, N:pl*, G:m*\} v]}] [\text{vP [DP \{P:3, N:pl, G:m\} v]]} \] 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. \[ [\text{vP [DP \{P:3, N:sg, G:m\} v]}] [\text{vP [DP \{P:3, N:sg, G:m\} v]]} \] himself John laughed

\[ \text{Agree} \rightarrow \]

b. \[ [\text{vP [DP \{P:3*, N:pl*, G:m*\} v]}] [\text{vP [DP \{P:3, N:pl, G:m\} v]]} \] 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.

\[
[\text{VP} [\text{DP}_1 \{p:3, n:sg, g:m\}] \text{ [VP} [\text{DP}_2 \{p:_, n:_, g:_{-}\}]]) \text{ [VP} V [\text{DP}_2 \{p:3, n:sg, g:m\}] [\text{VP} V \{\text{P:3}, n:sg*, g:m*\text{-self}\}]])] \]

Adjunction of DP₂ to vP →

\[
[\text{VP} [\text{DP}_2 \{p:3, n:sg, g:m*\}] \text{ [VP} [\text{DP}_1 \{p:3, n:sg, g:m\}] [\text{VP} V \{\text{P:3}, n:sg*, g:m*\text{-self}\}]])] \]

Agree →

\[
[\text{VP} V \{\text{P:3}, n:sg*, g:m*\}] [\text{VP} [\text{DP}_1 \{p:3, n:sg, g:m\}] [\text{VP} V \{\text{P:3}, n:sg*, g:m*\text{-self}\}]])] \]

Raising of DP₁ and V (Johnson 1991, Koizumi 1995) to the TP domain →

\[
[\text{TP} [\text{DP}_1 \{p:3, n:sg, g:m\}] [\text{VP} [\text{DP}_2 \{p:3, n:sg, g:m\}] [\text{VP} V \{\text{P:3}, n:sg*, g:m*\text{-self}\}]])] \]

Obligatoriness.

No Goal available:

(83) a. *Himself smiled.
    b. *[\text{VP} [\text{DP}_1 \{p:_, n:_, g:_{-}\}] [\text{VP} V \}]
       himself smiled

Feature mismatch:

(84) a. *I invited himself.
    b. *[\text{VP} [\text{DP}_2 \{p:_, n:_, g:_{-}\}] [\text{VP} \text{DP}_1 \{p:1, n:sg, g:0\}] [\text{VP} V \{\text{P:3}, n:sg*, g:f\}]])]
       himself invited

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

(85) *Himself invited Pete.

(86) [\text{VP} \text{DP}_1 \{p:_, n:_, g:_{-}\}] [\text{VP} V \text{DP}_2 \{p:3, n:sg, g:m\}] [\text{VP} V \{\text{P:3}, n:sg*, g:m*\text{-self}\}]]
       himself invited Pete

Heinat (2006): the Agree-relationship between the v head of vP and the object DP leaves no unvalued φ-features behind on DP₂. 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) [\text{VP} \text{DP}_3 \{p:_, n:_, g:_{-}\}] [\text{VP} \text{DP}_1 \{p:3, n:sg, g:m\} \text{DP}_2 \{p:3, n:sg, g:m\}] [\text{D}_1 \{\text{VP} \{p:3, n:sg, g:f\}\} \text{v+V}]
       himself invited Pete’s girlfriend

[\text{VP} V \{\text{P:3}, n:sg*, g:m*\}] \]
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

Pieti vertrouwde Janj zichzelfiij*i+j toe.
‘Piet entrusted Jan with himself.’

(90)

(91)

the indirect object and the reflexive adjoin to vP (scrambling). The reflexive probes, and values its features, either with those of the subject DP1 or with those of the indirect object DP2.

6. Reflexives in PPs

6.1. Introduction

(92) a. Peter keek achter zich.
‘Peter looked behind REFLEF.

b. Piet keek naar zichzelf in de spiegel.
‘Piet looked at REFLEF.SELF 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 its 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 [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.’


(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 to 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 [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:3, N:sg, G:m}]]]

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, een boek over Jan,
       ‘We gave to him a book about Jan.’
 b.  *We hebben bij hem, Jans, vader ontmoet.
       ‘We met Jan’s vader at his place.’
 c.  *It seems to him, that John, 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.
       ‘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:
  o redefine c-command as in Barbiers (1995:22) (in terms of ‘a (connected) path of left branches’)
  o (covert) PP-internal movement of the complement of P to a PP-internal specifier position

(107)  \[[PP \text{DP}_1 [PP P \text{DP}_2]]\]

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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