Inverse Linking and Telescoping as Polyadic Quantification

Manfred Sailer

Goethe University, Frankfurt a.M.

September 15–17, 2014
Overview

1. introduction

2. Phenomena: Inverse linking and Telescoping
   - Inverse Linking
   - Telescoping

3. Previous approaches

4. Analysis
   - Semantic Representation
   - Syntax-semantics interface

5. Additional observations: NPI licensing

6. Conclusion and next steps
Overview

1. **Introduction**

2. Phenomena: Inverse linking and Telescoping
   - Inverse Linking
   - Telescoping

3. Previous approaches

4. Analysis
   - Semantic Representation
   - Syntax-semantics interface

5. Additional observations: NPI licensing

6. Conclusion and next steps
Inverse Linking and Telescoping

(1) Inverse Linking: \textit{every} \textgreater \textit{some}

\[\text{A candidate [from every city]}\] supported the proposal.

Clause-boundedness of inverse scope readings:

(2) Rodman (1976): no \textit{every} \textgreater \textit{some} reading

\[\text{Guinevere has [a bone [that is in every corner of the house]}\].

Exception:

(3) Telescoping: \textit{every} \textgreater \textit{the}

\[\text{The picture of his mother [that every soldier kept wrapped in a sock]}\] was not much use to him. (Safir, 1999)
Argumentation

If \([\text{Det}_1 \ldots [\ldots \text{Det}_2 \ldots ]]\) can have reading \(\text{Det}_2 > \text{Det}_1\), then the two Det behave neither like the \(\text{Det}_1\) nor like \(\text{Det}_2\)

\[ \Rightarrow \text{polyadic analysis: } \langle \text{Det}_2, \text{Det}_1 \rangle \langle y, x \rangle \langle \phi_1, \phi_2 \rangle (\psi) \]
Overview

1 introduction

2 Phenomena: Inverse linking and Telescoping
   - Inverse Linking
   - Telescoping

3 Previous approaches

4 Analysis
   - Semantic Representation
   - Syntax-semantics interface

5 Additional observations: NPI licensing

6 Conclusion and next steps
Inverse Linking: *except*-phrases

A Det$_1$Det$_2$ sequence behaves like Det$_2$:

Moltmann (1995): [The wife of [every president]] behaves like a universal quantifier

(4) a. [The wife of [every president]] *except Hillary* has no political ambitions.

b. Every president *except Carter* hated peanuts.

c. *The wife *except Hillary* has no political ambitions.
Inverse linking: *there*-sentences

A $\text{Det}_1\text{Det}_2$ sequence behaves like $\text{Det}_2$:

(5) Woisetschlaeger (1983)

a. **There** is [the proof of [a difficult theorem]] on page 433.

b. **There** is [a difficult theorem] on page 433.

c. *There* is [the proof] on page 433.
Inverse linking: Haddock’s puzzle

\( \text{Det}_2 \) is relativized to \( \text{Det}_1 \)’s restrictor.

- \( \text{Det}_2 \) does not autonomously presuppose

(6) Champollion & Sauerland (2011)

[The circle in [the square]] is white.

(There is more than one square, but: only one square with a circle.)

- Only talking about baskets with apples.

(7) [An apple in [every basket]] is rotten.

Does not mean require that there be an apple in every basket

\( (\forall y (\text{basket}(y) \rightarrow \exists x (\text{apple}(x) \land \text{in}(y, x) \land \text{rotten}(x)))) \)
Inseparability of the two Det

No quantifier may intervene between $\text{Det}_2$ and $\text{Det}_1$

(8) Larson (1985): *Every $<$ Two $<$ Some

Two policemen spy on [someone from [every city]].
Inverse linking: Summary

\[ \text{[Det}_1 \ldots [\text{Det}_2 \ldots ]] : \]

- does not behave logically like a \([\text{Det}_1 \ldots ]\)-DP (except, there)
- does not behave logically like a \([\text{Det}_2 \ldots ]\)-DP (Haddock’s puzzle)
- does not allow for a separation of \(\text{Det}_1\) and \(\text{Det}_2\).

\[ \Rightarrow \text{behaves like something else, and like a unit.} \]
Telescoping

(9) [The picture [that every; soldier kept]] didn’t bring him; much luck.

- Embedded quantifier takes scope outside the embedded clause.
- Diagnostics (Barker, 2012): Quantifier in an embedded clause binds a pronoun in a higher clause.
- Telescoping traditionally not assumed to be grammatical (Rodman, 1976),
- but naturally occurring data (Barker, 2012) and experimental evidence (Konietzko et al., t.a.)

(Mainly German data from now on;
no grammaticality judgements for the English translations)
Telescoping: *except*

(10) [Die Frau, [die jeder; Präsident geheiratet hat]], the woman that every president married has 

außer Hillary, unterstützt ihn; ohne eigene politische except Hillary supports him without own political Ambitionen.

ambitions

‘[The woman that every; president married]], *except Hillary, supports him; without own political ambitions.’
Telescoping: *there/es war einmal*

(11)  

a. *?Es war einmal [die Königin].

there was once the queen

‘Once upon a time there was the queen.’

b. Es war einmal [die Königin, [die über ein großes Reich herrschte]]

there was once the queen who over a big empire reigned

‘Once upon a time there was the queen [that reigned a big empire].’
Telescoping: Haddock’s puzzle

Champollion & Sauerland (2011): Weaker presupposition also with embedded *the*.

(12)  
\begin{align*}
a. & \quad \textbf{[The circle in [the/a square]] is white. (85.5% *the*)} \\
b. & \quad \textbf{[The circle [that is in the/a square]] is white. (76.2% *the*)}
\end{align*}

Analogous data for *every*:

(13)  
\[\textbf{[Die Frau, [die jeder; Präsident geheiratet hat]], unterstützt the woman that every president married has supports ihn;}.\]

Allows for presidents not married to a woman.
(14) [Die meisten Fans, [die jeder Popstar hat]], hören mindestens zweimal am Tag seinen aktuellen Hit. ‘Most of the fans that every pop star has, listen to his current hit at least twice a day.’

Natural reading: Every > Most > Two
No reading: # Every > Two > Most
Telescoping: Restriction

No telescoping from clauses depending on V:

(15) *[That Mary seems to know every boy] surprised someone. (Barker, 2012)

(16) Subject clause:
* [Dass jeder Student die Prüfung bestanden hat], überrascht seine Dozenten.
‘[That every student passed the exam] surprises his teachers.’

(17) Complement clause:
* [Dass jeder Student die Prüfung bestanden hat], teilte ihm die Dekanin mit.
‘[That every student passed the exam], the dean told him.’

Telescoping requires the presence of a c-commanding Det!

Telescoping: Summary

- Data analogous to those of inverse linking
- Telescoping requires c-commanding $\text{Det}_1$
- Cross-sentential formation of a complex determiner?
Overview

1. introduction

2. Phenomena: Inverse linking and Telescoping
   - Inverse Linking
   - Telescoping

3. Previous approaches

4. Analysis
   - Semantic Representation
   - Syntax-semantics interface

5. Additional observations: NPI licensing

6. Conclusion and next steps
“Classical” QR account

- If inverse linking is derived by QR to an S node:
  - non-$\text{Det}_1$-like behavior hard to capture
  - inseparability of Dets hard to derive

- If inverse linking is derived by DP-internal QR:
  - binding of a pronoun by $\text{Det}_2$ hard to derive (Heim & Kratzer, 1998)
  - Wrong readings (Haddock’s puzzle, Champollion & Sauerland (2011))
  - Clause-boundedness of QR excludes telescoping.

- If cross-clausal QR is permitted, then QR out of V-dependent clauses is hard to prevent.
Champollion & Sauerland (2011)

- **Analysis:**
  - QR of embedded $\text{DP}_2$ to S node
  - intermediate accommodation of the restrictor of $\text{Det}_1$

- **Advantages:**
  - Standard mechanisms
  - Right readings for Haddock’s puzzle

- **Problems:**
  - QR as a “weak island” to allow for telescoping
  - QR-to-S related problems
Continuations (Barker, 2012; Sternefeld, t.a.)

- **Analysis:** Extended scope domain through type-shifting/unrestrained $\beta$-reduction

- **Advantages:**
  - Inverse linking and telescoping follow directly from the basic mechanism.
  - Inseparability captured

- **Problems:**
  - Unclear how to handle the *except* and *there* data.
  - Haddock’s puzzle
  - Overgeneralization: Telescoping from V-dependent clauses cannot be excluded.
Overview

1. introduction

2. Phenomena: Inverse linking and Telescoping
   - Inverse Linking
   - Telescoping

3. Previous approaches

4. Analysis
   - Semantic Representation
   - Syntax-semantics interface

5. Additional observations: NPI licensing

6. Conclusion and next steps
Polyadic quantification

- Usually discussed case: different
- For except phrases: Moltmann (1995)
- For negative concord: de Swart & Sag (2000), Iordăchioaia (2009)
Example semantic representation

- An apple in [every basket] is rotten.
- $\text{Det}_1$ and $\text{Det}_2$ form a complex polyadic quantifier.
- The restrictors of both quantifiers are restrictors of the new quantifier.
- Semantic representation:
  \[
  \langle \text{Every}, \text{Some} \rangle \langle y, x \rangle \langle \text{basket}(y), (\text{apple}(x) \land \text{in}(y, x)) \rangle (\text{rotten}(x))
  \]

- Same truth conditions as:
  \[
  \text{Every}_y [\text{basket}(y) \land \exists x (\text{apple}(x) \land \text{in}(y, x))] (\text{Some}_x [\text{apple}(x) \land \text{in}(y, x)] (\text{rotten}(x)))
  \]
Semantics of the polyadic quantifier

- Truth conditions similar to Champollion & Sauerland (2011)
- For $n$ quantifiers in scope order $Q_1 > \ldots > Q_n$:
  $Q_i$ restricted to existence of elements in restrictors of $Q_{i+1}, \ldots, Q_n$.

For determiners $Q_1, \ldots, Q_n$, variables $x_1, \ldots, x_n$, and formulæ $\phi_1, \ldots, \phi_n$, $\psi$,

- $\langle Q_1, \ldots Q_n \rangle \langle x_1, \ldots, x_n \rangle \langle \phi_1, \ldots, \phi_n \rangle (\psi)$ is a formula, and
- $\langle Q_1, \ldots Q_n \rangle \langle x_1, \ldots, x_n \rangle \langle \phi_1, \ldots, \phi_n \rangle (\psi) \\
  \equiv Q_1 x_1[\phi_1 \land \exists x_2 \ldots \exists x_n (\phi_2 \land \ldots \land \phi_n)] \\
  (Q_2 x_2[\phi_2 \land \exists x_3 \ldots \exists x_n (\phi_3 \land \phi_n)] \\
  (\ldots (Q_n[\phi_n](\psi) \ldots))$

With two determiners: An apple in every basket is rotten.
$\langle \text{Every, Some} \rangle \langle x, y \rangle \langle \text{bask}(x), (\text{ap}(y) \land \text{in}(y, x)) \rangle (\text{rott}(y))$

$\equiv$
$\text{Every} x[\text{bask}(x) \land \exists y (\text{ap}(y) \land \text{in}(y, x))] (\text{Some} y[\text{ap}(y) \land \text{in}(y, x)] (\text{rott}(y)))$
Logical properties of the polyadic quantifier: Existentials

\langle \text{Some, Det} \rangle \text{ can occur in existential sentences because it is non-presuppositional (Zucchi, 1995):}

(18) There is [the proof [of a theorem]] on page 423.
\langle \text{Some, The} \rangle \langle x, y \rangle \langle \text{theorem}(x), \text{proof}(y, x) \rangle (p423(y))

\equiv \text{Some} x [\text{theorem}(x) \land \exists y (\text{pr}(y, x))] (\text{The} y [\text{pr}(y, x)] (p423(y)))
Moltmann (1995):
The quantifier in an exception phrase must be a universal (or negative universal)

(19) [The wife [of every president]] is popular.
⟨Every, The⟩⟨x, y⟩⟨president(x), wife(y, x)⟩(…)  
≡ ∀x[president(x)∧∃y(wife(y, x))](They[wife(y, x)](pop(y)))
Example with telescoping

(20)  [The picture [that every soldier kept]] didn’t bring him much luck.

\langle \text{Every, The} \rangle \langle x, y \rangle \langle \text{soldier}(x), (\text{pict}(y) \land \text{keep}(x, y)) \rangle \langle \text{no-luck}(y, x) \rangle

Binding to parts of a polyadic quantifier is possible:

(21)  Jeder; hat ein anderes Verständnis von seiner; Umwelt.
    ‘Everyone has a different understanding of his environment.’
Combinatorics with polyadic quantifiers?

- Moltmann (1995): Polyadic effect through pragmatic inference
- Champollion & Sauerland (2011): Polyadic effect through intermediate accommodation
- de Swart & Sag (2000): Polyadic quantifiers through quantifier amalgamation at the lexical head
- Iordăchioaia (2009): Polyadic quantifiers through underspecified combinatorics
Constraints on polyadic quantifier formation

All determiners that contribute to the polyadic quantifier . . .

- must be in a c-command relation (C-command condition)
- must be within the same V-dependent clause (Clause-boundedness)
Personal choice

- Techniques of underspecified semantics Bos (1996); Copestake et al. (2000); Egg (1998, 2010); Pinkal (1996); ...
- Integrated with a surface-oriented syntax (HPSG, Pollard & Sag (1994))
- Based on a feature logic (Richter, 2004a,b)
- General idea: Words and phrases constrain the semantic representation of their utterance (specifying what must occur in the representation and where)
An apple in every basket is rotten

- **every**: \( \langle \ldots, \text{Every}^i, \ldots \rangle \langle \ldots, x^i, \ldots \rangle \langle \ldots, (\ldots x \ldots)^i, \ldots \rangle(\psi) \)
- **every basket**: \( \text{basket}(x) \) must be in the restrictor of every
- **in every basket**: \( (\ldots \land \text{in}(y, x)) \)
- **apple**: \( \text{apple}(y) \)
- **apple PP**: \( (\text{apple}(y) \land \ldots \text{in}(y, x) \ldots) \)
- **an**: \( \langle \ldots, \text{Some}^j, \ldots \rangle \langle \ldots, y^j, \ldots \rangle \langle \ldots, (\ldots y \ldots)^j, \ldots \rangle(\psi) \)
- **an apple PP**: \( \text{apple}(y) \) is in the restrictor of an
- **is rotten**: \( \text{rotten}(y) \)
- **NP is rotten**: \( \text{rotten}(y) \) is in the scope of the quant that binds \( y \)
  no other expression occurs in the semantic representation
An apple in every basket is rotten

- **every**: \(\langle \ldots, \text{Every}^i, \ldots\rangle\langle \ldots, x^i, \ldots\rangle\langle \ldots, (\ldots x \ldots)^i, \ldots\rangle(\psi)\)
- **every basket**: \(\text{basket}(x)\) must be in the restrictor of every
- **in every basket**: \((\ldots \land \text{in}(y, x))\)
- **apple**: \(\text{apple}(y)\)
- **apple PP**: \((\text{apple}(y) \land \ldots \text{in}(y, x) \ldots)\)
- **an**: \(\langle \ldots, \text{Some}^j, \ldots\rangle\langle \ldots, y^j, \ldots\rangle\langle \ldots, (\ldots y \ldots)^j, \ldots\rangle(\psi)\)
- **an apple PP**: \(\text{apple}(y)\) is in the restrictor of an
- **is rotten**: \(\text{rotten}(y)\)
- **NP is rotten**: \(\text{rotten}(y)\) is in the scope of the quant that binds \(y\)
  no other expression occurs in the semantic representation
An apple in every basket is rotten

- every: $\langle \ldots, \text{Every}^i, \ldots \rangle \langle \ldots, x^i, \ldots \rangle \langle \ldots, (\ldots x \ldots)^i, \ldots \rangle (\psi)$
- every basket: basket$(x)$ must be in the restrictor of every
- in every basket: $(\ldots \wedge \text{in}(y, x))$

- apple: $\text{apple}(y)$
- apple PP: $(\text{apple}(y) \wedge \ldots \text{in}(y, x) \ldots)$

- an: $\langle \ldots, \text{Some}^j, \ldots \rangle \langle \ldots, y^j, \ldots \rangle \langle \ldots, (\ldots y \ldots)^j, \ldots \rangle (\psi)$
- an apple PP: $\text{apple}(y)$ is in the restrictor of an
- is rotten: $\text{rotten}(y)$

- NP is rotten: $\text{rotten}(y)$ is in the scope of the quant that binds $y$
  - no other expression occurs in the semantic representation
An apple in every basket is rotten

- **every**: \(\langle \ldots, \text{Every}^i, \ldots \rangle \langle \ldots, x^i, \ldots \rangle \langle \ldots, (\ldots x \ldots)^i, \ldots \rangle (\psi)\)
- **every basket**: \(\text{basket}(x)\) must be in the restrictor of every
- **in every basket**: \(\langle \ldots \wedge \text{in}(y, x) \rangle\)
- **apple**: \(\text{apple}(y)\)
- **apple PP**: \((\text{apple}(y) \wedge \ldots \text{in}(y, x) \ldots)\)
- **an**: \(\langle \ldots, \text{Some}^j, \ldots \rangle \langle \ldots, y^j, \ldots \rangle \langle \ldots, (\ldots y \ldots)^j, \ldots \rangle (\psi)\)
- **an apple PP**: \(\text{apple}(y)\) is in the restrictor of an
- **is rotten**: \(\text{rotten}(y)\)
- **NP is rotten**: \(\text{rotten}(y)\) is in the scope of the quant that binds \(y\)

No other expression occurs in the semantic representation.
An apple in every basket is rotten

- **every**: $\langle \ldots, \texttt{Every}^i, \ldots \rangle \langle \ldots, x^i, \ldots \rangle \langle \ldots, (\ldots x \ldots)^i, \ldots \rangle (\psi)$
- **every basket**: $\texttt{basket}(x)$ must be in the restrictor of every
- **in every basket**: $\langle \ldots \wedge \texttt{in}(y, x) \rangle$
- **apple**: $\texttt{apple}(y)$
- **apple PP**: $(\texttt{apple}(y) \wedge \ldots \texttt{in}(y, x) \ldots)$
- **an**: $\langle \ldots, \texttt{Some}^j, \ldots \rangle \langle \ldots, y^j, \ldots \rangle \langle \ldots, (\ldots y \ldots)^j, \ldots \rangle (\psi)$
- **an apple PP**: $\texttt{apple}(y)$ is in the restrictor of an
- **is rotten**: $\texttt{rotten}(y)$
- **NP is rotten**: $\texttt{rotten}(y)$ is in the scope of the quant that binds $y$
  no other expression occurs in the semantic representation.
An apple in every basket is rotten

- **every**: $\langle \ldots, \text{Every}^i, \ldots \rangle \langle \ldots, x^i, \ldots \rangle \langle \ldots, (\ldots x \ldots)^i, \ldots \rangle (\psi)$
- **every basket**: $\text{bask}(x)$ must be in the restrictor of every
- **in every basket**: $(\ldots \land \text{in}(y, x))$
- **apple**: $\text{apple}(y)$
- **apple PP**: $(\text{apple}(y) \land \ldots \text{in}(y, x) \ldots)$
- **an**: $\langle \ldots, \text{Some}^j, \ldots \rangle \langle \ldots, y^j, \ldots \rangle \langle \ldots, (\ldots y \ldots)^j, \ldots \rangle (\psi)$
- **an apple PP**: $\text{apple}(y)$ is in the restrictor of an
- **is rotten**: $\text{rotten}(y)$
- **NP is rotten**: $\text{rotten}(y)$ is in the scope of the quant that binds $y$
  
  no other expression occurs in the semantic representation
An apple in every basket is rotten

- **every**: \(\langle\ldots, \text{Every}^i, \ldots\rangle\langle\ldots, x^i, \ldots\rangle\langle\ldots, (\ldots x \ldots)^i, \ldots\rangle(\psi)\)
- **every basket**: \text{basket}(x) must be in the restrictor of every
- **in every basket**: \((\ldots \land \text{in}(y, x))\)
- **apple**: \text{apple}(y)
- **apple PP**: \((\text{apple}(y) \land \ldots \text{in}(y, x) \ldots)\)
- **an**: \(\langle\ldots, \text{Some}^i, \ldots\rangle\langle\ldots, y^i, \ldots\rangle\langle\ldots, (\ldots y \ldots)^i, \ldots\rangle(\psi)\)
- **an apple PP**: \text{apple}(y) is in the restrictor of an
- **is rotten**: \text{rotten}(y)
- **NP is rotten**: \text{rotten}(y) is in the scope of the quant that binds \(y\)
  - no other expression occurs in the semantic representation
An apple in every basket is rotten

- **every**: \( \langle \ldots, \text{Every}^i, \ldots \rangle \langle \ldots, x^i, \ldots \rangle \langle \ldots, (\ldots x \ldots)^i, \ldots \rangle (\psi) \)
- **every basket**: \text{basket}(x) must be in the restrictor of every
- **in every basket**: \((\ldots \land \text{in}(y, x))\)
- **apple**: \text{apple}(y)
- **apple PP**: \((\text{apple}(y) \land \ldots \text{in}(y, x) \ldots)\)
- **an**: \( \langle \ldots, \text{Some}^j, \ldots \rangle \langle \ldots, y^j, \ldots \rangle \langle \ldots, (\ldots y \ldots)^j, \ldots \rangle (\psi) \)
- **an apple PP**: \text{apple}(y) is in the restrictor of an
- **is rotten**: \text{rotten}(y)
- **NP is rotten**: \text{rotten}(y) is in the scope of the quant that binds \( y \)

no other expression occurs in the semantic representation
An apple in every basket is rotten

- **every**: \(\langle \ldots, \textbf{Every}^i, \ldots \rangle \langle \ldots, x^i, \ldots \rangle \langle \ldots, (\ldots x \ldots)^i, \ldots \rangle(\psi)\)
- **every basket**: \(\textbf{basket}(x)\) must be in the restrictor of **every**
- **in every basket**: \((\ldots \land \textbf{in}(y, x))\)
- **apple**: \(\text{apple}(y)\)
- **apple PP**: \((\text{apple}(y) \land \ldots \land \text{in}(y, x) \ldots)\)
- **an**: \(\langle \ldots, \textbf{Some}^j, \ldots \rangle \langle \ldots, y^j, \ldots \rangle \langle \ldots, (\ldots y \ldots)^j, \ldots \rangle(\psi)\)
- **an apple PP**: \(\text{apple}(y)\) is in the restrictor of **an**
- **is rotten**: \(\text{rotten}(y)\)
- **NP is rotten**: \(\text{rotten}(y)\) is in the scope of the quant that binds \(y\)
  - no other expression occurs in the semantic representation
An apple in every basket is rotten: Readings

Possible readings:

- Non-polyadic: (There is the same rotten apple in every basket.)
  $$\text{Some}_y[\text{apple}(y) \land \text{Every}_x[\text{basket}(x)](\text{in}(y, x))](\text{rotten}(y)))$$
  \(i = 1, j = 1; \) non-identical quants

- Non-polyadic: (Every basket contains a rotten apple.)
  $$\text{Every}_y[\text{basket}(y)](\text{Some}_x[\text{apple}(y) \land \text{in}(y, x)](\text{rotten}(y)))$$
  \(i = 1, j = 1; \) non-identical quants

- Polyadic:
  $$\langle \text{Every}, \text{Some} \rangle \langle x, y \rangle \langle \text{basket}(x), (\text{apple}(y) \land \text{in}(y, x)) \rangle (\text{rotten}(y))$$
  \(i = 1, j = 2; \) quantifier unification

- Unavailable polyadic reading:
  $$\# \langle \text{Some}, \text{Every} \rangle \langle y, x \rangle \langle (\text{apple}(y) \land \text{in}(y, x)), \text{basket}(x) \rangle (\text{rotten}(y))$$
  \(i = 2, j = 1; \) quantifier unification
  \(x\) is not bound in the first restrictor!
An apple in every basket is rotten: Readings

Possible readings:

- **Non-polyadic:** (There is the same rotten apple in every basket.)
  \[ \text{Some} y \left[ \text{apple}(y) \land \text{Every} x \left[ \text{basket}(x) \left( \text{in}(y, x) \right) \right] \left( \text{rotten}(y) \right) \right] \]
  \( i = 1, j = 1; \) non-identical quants

- **Non-polyadic:** (Every basket contains a rotten apple.)
  \[ \text{Every} y \left[ \text{basket}(y) \right] \left( \text{Some} x \left[ \text{apple}(y) \land \text{in}(y, x) \right] \left( \text{rotten}(y) \right) \right) \]
  \( i = 1, j = 1; \) non-identical quants

- **Polyadic:**
  \[ \langle \text{Every}, \text{Some} \rangle \langle x, y \rangle \langle \text{basket}(x), (\text{apple}(y) \land \text{in}(y, x)) \rangle \left( \text{rotten}(y) \right) \]
  \( i = 1, j = 2; \) quantifier unification

- **Unavailable polyadic reading:**
  \[ \# \langle \text{Some}, \text{Every} \rangle \langle y, x \rangle \langle (\text{apple}(y) \land \text{in}(y, x)), \text{basket}(x) \rangle \left( \text{rotten}(y) \right) \]
  \( i = 2, j = 1; \) quantifier unification
  \text{x is not bound in the first restrictor!}
An apple in every basket is rotten: Readings

Possible readings:

- **Non-polyadic:** (There is the same rotten apple in every basket.)
  \[
  \text{Some}_{y}[\text{apple}(y) \land \text{Every}_x[\text{basket}(x)][(\text{in}(y, x))][\text{rotten}(y))])
  \]
  \(i = 1, j = 1;\) non-identical quants

- **Non-polyadic:** (Every basket contains a rotten apple.)
  \[
  \text{Every}_{y}[\text{basket}(y)][(\text{Some}_x[\text{apple}(y) \land \text{in}(y, x)][\text{rotten}(y))])
  \]
  \(i = 1, j = 1;\) non-identical quants

- **Polyadic:**
  \[
  \langle \text{Every}, \text{Some} \rangle \langle x, y \rangle \langle \text{basket}(x), (\text{apple}(y) \land \text{in}(y, x)) \rangle (\text{rotten}(y))
  \]
  \(i = 1, j = 2;\) quantifier unification

- **Unavailable polyadic reading:**
  \[
  \# \langle \text{Some}, \text{Every} \rangle \langle y, x \rangle \langle (\text{apple}(y) \land \text{in}(y, x)), \text{basket}(x) \rangle (\text{rotten}(y))
  \]
  \(i = 2, j = 1;\) quantifier unification
  \(x\) is not bound in the first restrictor!
Are the non-polyadic readings desirable? (remark by B. Schwarz)

- if we allow them, we need an additional constraint to ensure inseparability of $\text{Det}_1$ and $\text{Det}_2$, which was one of our core arguments for a polyadic analysis.
- if we do not allow them, we need additional possible interpretations for a polyadic quantifier to allow for $\langle \text{Det}_1, \text{Det}_2 \rangle$ and for a reading where every basket must contain an apple.
Constraints on polyadic readings

- C-command condition: Quantifier unification can only happen if a Det combines with a phrase that contains a quantifier.
- Clause-boundedness: If a CP is a dependent of a verb, then the CP’s sem. representation contains all quantifiers that it dominates.
(22) Scenario: There are some empty cars in the train:

a. Fahrscheinkontrolle ist wichtig, weil [mindestens ein Passagier [in jedem Wagen]] normalerweise schwarz fährt. ‘Ticket control is important because usually [at least one passenger [in each car]] has no ticket.’

b. #Fahrscheinkontrolle ist wichtig, weil [in jedem Wagen] normalerweise [mindestens ein Passagier] schwarz fährt. ‘...because there usually is at least one passenger with no ticket in each car.’

Preventing telescoping from V-dependent clauses

(23)  
  a. *[That Mary seems to know every boy] surprised someone.  
      (Barker, 2012)  
  b. *Someone is surprised [that Mary seems to know every boy].  
     no $\forall > \exists$ reading

- every boy contained in a CP that is a dependent of a verb (surprise).
- Therefore: neither iterative nor polaydric analysis
- (Already excluded by c-command condition)

(24)  *[Die Professorin, [die sagt, dass jeder Student faul ist] hat Vorurteile über ihn].  
     ‘The professor that says that every student is lazy has prejudices about him.’
Overview

1. introduction

2. Phenomena: Inverse linking and Telescoping
   - Inverse Linking
   - Telescoping

3. Previous approaches

4. Analysis
   - Semantic Representation
   - Syntax-semantics interface

5. Additional observations: NPI licensing

6. Conclusion and next steps
NPI licensing in complex restrictor

- NPIs licensing of the complex determiner is like that of the highest one in the complex.
- NPIs in restrictor of Det$_1$ are licensed, if they are licensed in the restrictor of Det$_2$
- Definite determiner does not license NPIs, but universal does → licensing in IL constellation:

(25) *Auf der Liste wurde [der$_i$ Name] vermerkt,
   [der$_i$ je im Zusammenhang mit dem Skandal genannt wurde].
   ‘On this list [the$_i$ name] was noted
   [that$_i$ had ever been mentioned in connection with the scandal].’

Manfred Sailer (GU Frankfurt) Sinn und Bedeutung 2014, Göttingen September 15–17, 2014 40 / 47
NPI licensing in complex restrictor

- NPIs licensing of the complex determiner is like that of the highest one in the complex.
- NPIs in restrictor of $\text{Det}_1$ are licensed, if they are licensed in the restrictor of $\text{Det}_2$.
- Definite determiner does not license NPIs, but universal does $\rightarrow$ licensing in IL constellation:

(26) Auf der Liste wurde [der; Name [jeder Politikerin]] vermerkt, [der; je im Zusammenhang mit dem Skandal genannt wurde].

‘On this list [the; name [of every politician]] was noted [that; had ever been mentioned in connection with the scandal].’

$\langle$Every, The$\rangle$$\langle x, y \rangle$$\langle$politician$\langle x \rangle$, (name$\langle y, x \rangle$ $\wedge \ldots$ NPI $\ldots$)$\rangle$(is-noted$\langle y \rangle$)$\rangle$
An definite DP is not a barrier for NPI licensing, but it may become one when embedding a universal with an inverse linking reading.

(27) Imposing a barrier in Det$_2$

   ‘Noone told the advisor anything.’

b. *Niemand hat [dem Berater [jedes Präsidenten]]
   auch nur irgendetwas erzählt.
   ‘Noone told [the advisor of [every president]] anything.’

c. Niemand hat [dem Berater [eines Präsidenten]]
   auch nur irgendetwas erzählt.
   ‘Noone told [the advisor of [a president]] anything.’
NPI licensing in the scope

- Definite NPs do not license NPIs.
- If an NPI licensing quantifiers is embedded, licensing is possible.

(28)  

a. *[Die Autobiographie] enthält auch nur irgendwelche neuen Informationen.  
   ‘The autobiography contains any new information.’

b. [Die wenigsten Autobiographien] enthalten auch nur irgendwelche neuen Informationen.  
   ‘Few autobiographies contain any new information.’

c. [Die Autobiographie [der wenigsten Politiker]] enthält auch nur irgendwelche Informationen.  
   ‘[The autobiography [of few politicians]] contains any new information.’
NPI licensing: Summary

- NPI licensing confirms the unit-approach to inverse linking constellations.
- Strong influence of $\text{Det}_2$
- Show that restrictor of $\text{Det}_1$ behaves as being in the restrictor of $\text{Det}_2$.
- Champollion & Sauerland (2011): not clear how to handle the NPI data because
  - the two quantifiers are kept separately
  - the relativization of $\text{Det}_2$’s restrictor is by a contextually filled variable, not be an addition to semantic representation.
Overview

1. Introduction

2. Phenomena: Inverse linking and Telescoping
   - Inverse Linking
   - Telescoping

3. Previous approaches

4. Analysis
   - Semantic Representation
   - Syntax-semantics interface

5. Additional observations: NPI licensing

6. Conclusion and next steps
C-commanding determiners can behave like a unit.

Telescoping is real, but so is the clause-boundedness of strong quantifiers.

Existing approaches to inverse linking and telescoping address unit-like behavior at best indirectly.

Alternative: Polyadic analysis

Polyadic analysis technically difficult for many approaches to syntax-semantics interface

One way: Underspecification account
Next steps

- Case-by-case study of individual determiner combinations
- Investigate constraints on telescoping further
- Search for empirical confirmation of c-command condition on quantifier unification.
- Relation to other cases of polyadic quantification?
- ...
References


