Processing (In)alienable Possessions at the Syntax-Semantics Interface

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Basic logic of the research

• Verbs take **arguments**—the necessary syntactic entities required to co-occur with a verb in a grammatical sentence.
  – Subcategorization frame
    • walk (X)
    • damage (X, Y)
    • put (X, Y, Z)
Basic logic of the research

• Do nouns also take arguments?
  Two ways to tackle this question:
  – **Syntactically**, certain nouns exhibit interesting alternations that can be accounted for by positing subcategorized nominal arguments that are internal to the noun phrase.
  – **Processing-wise**, nouns that take arguments are comprehended differently from those that do not.
Possessive Relations
(Alienability/Part-Whole)
Inalienable Nouns and Their Possessors

(1) Structure of inalienable nouns

\[
\text{XP(SC) [-alienable]}
\]

[possessor] \[X' \]

\[X \quad \text{IN (inalienable noun)}\]

(Alexiadou, 2003, in line with Marantz, 1993)
Alienable Nouns and Their Possessors

(2) Structure of alienable nouns

```
DP
   /\    D'  
  /   \   /  
D    NP /   \  
   \   \   \  
    de  N [+alienable]
```
Bottomline

• Inalienable nouns take nominal arguments like verbs do.
• The possessors are the internal arguments of inalienable nouns (together composing small clauses).
• Certain syntactic alternations are associated with inalienable nouns.
• The processing of inalienable nouns differ from that of alienable nouns.
Outline

• Possessive relations
• Alienability and nominal representation: Syntactic evidence from Mandarin
• Processing (in)alienable nouns on-line
• Conclusion
I. Alienable and inalienable nouns
The Saab has a Ford engine.

Hornstein et al. (1995) and Uriagereka (1996)

a. The Saab engine is made by Ford.  
   Inalienable (part–whole) reading

b. The Saab has a Ford engine inside it (on the back seat).  
   Alienable (locational) reading
Morphologically-Marked Alienability

• In some languages (e.g. most Oceanic languages), whether a noun is alienable or inalienable from its possessor is morphologically marked.
Alienability coded in grammar

- **Chatino** (Carleton and Waksler, 2000: 392):

  | yane kuna?a | ike ni?i | xolo? ji?i Jua |
  | neck woman | head house | knife of Juan |
  | ‘woman’s neck’ | ‘the house’s roof’ | ‘Juan’s knife’ |

Such grammatical distinction is common across **Austronesian** languages (see Lichtenberk, 1985) and **Oceanic** languages (Meryorhoff, 2002).
II. **Syntactic** properties of (in)alienability
The Saab has a Ford engine.

Hornstein et al. (1995) and Uriagereka (1996)

a. The Saab engine is made by Ford.

Inalienable (part–whole) reading

b. The Saab has a Ford engine inside it (on the back seat).

Alienable (locational) reading
a. [The Saab\textsubscript{i} BE + D/P\textsuperscript{0}\textsubscript{j}[\textsubscript{DP} t\textsubscript{i} t\textsubscript{j} [\textsubscript{SC} [\textsubscript{DPpos}\!s} t\textsubscript{i}] a Ford engine ]]]

\textit{Inalienable (part–whole) reading}

b. [The Saab\textsubscript{i} BE + P\textsuperscript{0}\textsubscript{j} [\textsubscript{SC} a Ford engine [\textsubscript{PP} (inside)\textsubscript{j} (it)\textsubscript{i} ]]]

\textit{Alienable (location) reading}

Hornstein et al. (1995) and Uriagereka (1996)
An internal argument for inalienable nouns (e.g. Guéron, 1985, 1995)

• Possessor as a subcategorized null pronominal

(1) Structure of inalienable nouns

\[ \text{X′} \]

\[ \text{XP(SC) [-alienable]} \]

\[ \text{[possessor]} \]

\[ \text{X} \]

\[ \text{IN (inalienable noun)} \]

(2) Structure of alienable nouns

\[ \text{D} \]

\[ \text{de} \]

\[ \text{N [+alienable]} \]
What about Mandarin Chinese?
2 constructions

• BA construction as secondary predicates (a.k.a. *retained object construction*, Li & Thompson, 1981; Lu, 1948)

• DE omission
  • Double nominative construction
1. Mandarin BA construction

Mandarin BA construction--DP1 BA DP2 VP
descriptive secondary predicate
Mandarin

Mandarin BA construction--DP1 BA DP2 VP

(1) Structure of inalienable nouns
XP(SC) [-alienable]
[possessor] X' X IN (inalienable noun)
Mandarin

Mandarin BA construction--DP1  BA  DP2  VP

Possessor Raising

 ושל委会, wo ba ta daduan shuang tui
I BA he break two leg
‘I broke his two legs. (lit. I broke him two legs.)’
Mandarin

Mandarin BA construction--DP1  BA  DP2  VP

vP

DP1

v'

v

SC

v

BA

DP2

VP

N [–in alien able]

n

descriptive secondary predicate
Mandarin

Mandarin BA construction--DP1  BA  DP2  VP

a. 我把他的双腿打断
wo ba ta de shuang tui daduan
I BA he GEN two leg break
‘I broke his two legs.’

b. 我把他的鼓棒打断
wo ba ta de gu bang daduan
I BA he GEN drum stick break
‘I broke his drum stick.’

c. 我把他的演讲打断
wo ba ta de yanjiang daduan
I BA he GEN lecture break
‘I broke (interfered) his lecture.’
Mandarin

Mandarin BA construction--DP1 BA DP2 VP
descriptive secondary predicate

a. 我把他打斷雙腿
   wo ba ta daduan shuang tui
   I BA he break two leg
   ‘I broke his two legs. (lit. I broke him two legs.)’

b. *我把了他打斷鼓棒
   wo ba ta daduan gu bang
   I BA he break drum stick
   ‘I broke his drum sticks.’

c. *我把了他打斷演講
   wo ba ta daduan yanjiang
   I BA he break lecture
   ‘I broke (interfered) his lecture.’
2. DE omission in Mandarin

- DE omission:
  a. 我的鉛筆
     wo de qianbi
     I DE pencil
     ‘my pencil’
  b. *我鉛筆
     wo qianbi
     I  pencil
  a. 我的弟弟
     wo de didi
     I DE brother
     ‘my brother’
  b. 我弟弟
     wo didi
     I  brother
     ‘my brother’

kin > locations/institutions > body parts > concrete Ns
(Li, 1959; Chappell and Thompson, 1992)
DE omission in Mandarin

DE deletion/omission is epiphenomenal.

a. 我的鉛筆
   wo de qianbi
   I DE pencil
   ‘my pencil’

b. *我鉛筆
   wo qianbi
   I pencil

a. 我的弟弟
   wo de didi
   I DE brother
   ‘my brother’

b. 我弟弟
   wo didi
   I brother
   ‘my brother’
An internal argument exists inside inalienable nouns

- Possessor as a selected null pronominal
III. Processing Arguments of Inalienable Nouns in Sentences
Two experiments

• **Experiment 1**: Possessive Decision Tasks
• **Experiment 2**: Self-Paced Reading Tasks
Experiment 1: Possessive Decision Tasks

- Materials: X有Y “X has Y.”

- Alienable
  - 醫生有女兒。
  - yisheng you nyuer
docotor have daughter
  - ‘A doctor has a daughter.’

+ Alienable
  - 醫生有病人。
  - yisheng you binren
docotor have patient
  - ‘A doctor has a patient.’
Experiment 1: Possessive Decision Tasks

Filler Sentences:
猴子有羽毛。 24 sentences for each condition plus 62 Filler sentences.
houzi you yumao
monkey have feather
‘Monkeys have feathers.’

瓢蟲有子宮。
piaochong you zigong
ladybug have womb
‘Ladybugs have wombbs.’
Experiment 1: Possessive Decision Tasks

醫生有女兒
F 代表「可能」，J 代表「不可能」
Experiment 1: Possessive Decision Tasks

• Results--Accuracy of responses:
  96.70% for all trials
  98.10% for the target trials
Experiment 1: Possessive Decision Tasks

• Results:

![Graph showing response time differences between alienable and non-alienable persons](image)

* $p < 0.01$

- Alienable: - Alienable

$ps > 0.05$
Experiment 1: Possessive Decision Tasks

• Discussion:
  – The **effect of alienability** was not observed in tasks that directly inquire possessive relations based on encyclopedic knowledge.
Experiment 1: Possessive Decision Tasks

• Discussion:
  – This task (requiring participants to determine the possibility of a possessive relation between two nouns) consciously focused participant attention on the *semantic* relation between the nominal pairs.
Experiment 2: Self-Paced Reading Tasks

- A linguistic task that is more natural.
- Participants read sentences in which the nouns formed possessive relations.
- We focus on “Possessor Relative Clauses.”
Experiment 2: Self-Paced Reading Tasks

• Mandarin Possessor Relative Clauses:

daughter spill water DE that guy voice very loud
‘The guy whose daughter spilled the water has a loud voice.’
• Materials:

- **Alienable**
  - Yisheng--nyuer
  - Doctor--daughter

+ **Alienable**
  - Yisheng--binren
  - Doctor--patient
Experiment 2: Self-Paced Reading Tasks

- Materials: Passive Possessor Relative Clauses

- Alienable

daughter BEI police take DE chairperson appear very nervous
‘The chairperson whose daughter was taken by the police appeared very nervous.’

+ Alienable

employee BEI police take DE chairperson appear very nervous
‘The chairperson whose employee was taken by the police appeared very nervous.’
Experiment 2: Self-Paced Reading Tasks

Experiment 2: Alienable/Inalienable Person

Possessee

Possessor
Experiment 2: Self-Paced Reading Tasks

• Discussion:
  – The effect of inalienability was observed.
  – Sentences with inalienable possesseees were read more quickly on the possessor head nouns.
  • RT difference was not directly found on the alienable and inalienable nouns (N1).
  • Differences were found only on the head-noun region (N3)–the possessor argument of N1. This is where integration between the head noun and a relativized gap takes place.
Experiment 2: Alienable/Inalienable Person

![Graph showing reading times for Alienable and Inalienable Person categories.]

- Exp2 Inalienable-Person
- - Exp2 Alienable-Person

**Regions**

- N1
- BE1
- N2
- V1
- DE
- N3
- V2

**Argument**

Diagram showing N [±inalienable] and N_ [±possessor] relationships.
Experiment 2: Alienable/Inalienable Person

- Exp2 Inalienable-Person
- - Exp2 Alienable-Person

Reading Times (msec)

N1 BEI N2 V1 DE N3 V2

Regions

N [-inalienable]  
|  

n

Coercion

adjunct
V. Conclusion
Conclusion

• An empty argument position—for the possessor of an inalienable noun—exists and should be represented within the inalienable noun.

(1) Structure of inalienable nouns

\[ \begin{array}{c}
\text{XP(SC) [-alienable]} \\
\text{[possessor]} \\
\text{X'} \\
\text{X} \\
\text{IN (inalienable noun)}
\end{array} \]

(2) Structure of alienable nouns

\[ \begin{array}{c}
\text{DP} \\
\text{DP (possessor)} \\
\text{D} \\
\text{N [+] alienable]}
\end{array} \]
Conclusion

• The argument position associated with inalienable possesees (not semantic/encyclopedic knowledge) is responsible for
  – possessor-raising in secondary predicates (BA), DE-omission in Mandarin.
  – processing advantage at the possessor head nouns in relative clauses.
Conclusion

- Inalienable nouns, like verbs, subcategorize for nominal arguments.
- The possessor of an inalienable noun is processed as an argument, while that of an alienable noun is processed as an adjunct.
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