Danish and English WH and RC islands

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Two approaches

• The COMPETENCE account:
  • The ACROSS type is ungrammatical due to a grammatical constraint:
    • The WH-island Constraint: A WH-element cannot be extracted from a +WH clause (Ross 1967)
    • Minimal Link Condition (Chomsky 1995), Relativized Minimality (Rizzi 1990), Subjacency Condition (Chomsky 1973)

• The PROCESSING account:
  • Parsing is affected by various non-syntactic factors
  • Degraded acceptability reflects increased processing cost / working memory (WM) load (Hofmeister & Sag 2010)

• In fact, independently of theoretical approach, it is standardly assumed that WM and processing play a role in acceptability.

Multiple centre-embedding / ‘nesting’

• 😊 Cars rust. ➔
• 😞 Cars men buy rust. ➔
• 😞Cars men women hate buy rust.
  • = 😞 Cars that men who women hate, buy, rust.

• Compare:
  • 😞 Cars that men who hate women, buy, rust.
Early attachment & ‘promiscuous Grammar’

• Attach fillers and fill the gaps as quickly as possible!
  • Attach anyway (Fodor & Inoue 2000)

• Why did she say that Charlie wasn’t at work?
  • Ambiguous

• Who did she want to leave?
  • Not ambiguous but...

https://doi.org/10.1007/978-94-011-3949-6_2.
Matrix Verb Compatibility [MVC]

• In online parsing, a wh-element is attached as early as possible, to the matrix V, even though it is ultimately a complement/modifier of an embedded V.

• Attach (Anyway):
  • On receiving a word of the input sentence, connect it to the current partial phrase marker for the sentence wherever it least severely violates the grammar, subject to the preference principles [Minimal Everything].
    • (Fodor & Inoue 2000, 26)

• Matrix Verb Compatibility MVC:
  • Is the WH-phrase compatible with a (temporary) reading where it is a complement/modifier of matrix V?

Matrix Verb Compatibility [MVC]

• **Temporary anomaly** due to [−MVC] reduces overall acceptability
  • (Fanselow & Frisch 2006)

• (a) is better than (b):
  • Extracting an argument potentially OBJ of matrix verb [+MVC] → temporary ambiguity:
    
    (a) **What** does she know [____] that you can buy ____ there?

  • Extracting an adjunct [−MVC] → temporary anomaly (*Where does she know __?*)
    → degraded acceptability:

    (b) **Where** does she know [****] that you can buy books ____?

Syntactic islands

• Complex NP: Complement clause

(1) a. She got the [NP idea [CP that he needed a hair cut ]].
   b. *What did she get the [NP idea [CP that he needed ___ ]]?  

• Complex NP: Relative clause

(2) a. She wanted to meet the [NP man [CP who recorded the conversation ]].
   b. *What did she want to meet the [NP man [CP who recorded ___ ]]? 

Syntactic islands

• Embedded Question: Wh-island

(1) a. He knew [CP where she left the car ___ ].
   b. He knew [CP what she left ___ in a ditch].

(2) a. *What did he know [CP where she left ___ ___ ]?
   b. **Where did he know [CP what she left ___ ___ ]?

• Classic asymmetry: (2a) > (2b)
  ?>??, ???>*, *>>**

Extracting an argument (the object) across an adjunct (adverbial)

- Degraded/Ungrammatical:

- A violation of Locality (*what crosses where*)
Extracting an adjunct (adverbial) across an argument (the object)

• Severely degraded / Ungrammatical:

• Two violations:
  • Locality (where crosses what)
  • Recoverability (the trace of where is not properly ‘governed’)
    • The Empty Category Principle (ECP) (what is a closer antecedent but is not coindexed with where)
The Empty Category Principle (ECP)

• **Empty category principle (ECP)**
  - Traces must be properly governed.
  - A properly governs B if and only if A theta-governs B or A antecedent governs B.
  - A theta-governs B if and only iff A governs B and A theta-marks B.
  - A antecedent-governs B iff A governs B and A is coindexed with B.

• **Government: A governs B if and only if**
  1. A is a governor;
  2. A m-commands B;
  3. no barrier intervenes between A and B;
  4. minimality is respected.

• **Minimality: A governs B if and only if there is no node Z such that**
  1. Z is a potential governor for B;
  2. Z c-commands B;
  3. Z does not c-command A.

(Haegeman 1994, 442)
Islands

• Island constraints are standardly assumed to be universal:
  Part of Universal Grammar
  • Rules that block extraction from syntactic islands

• Part of the human genetic makeup
  • Constrains the space in which language can vary
Parsing & WH-islands: Syntax vs. WM
(Christensen et al. 2013)

Fig. 1 Partial syntactic structures corresponding to movement-derived stimuli. Top row: argument (object) movement, bottom row: adjunct (sentence adverbial) movement. A SHORT (ARG), B LONG (ARG), C ACROSS (ARG). A′ SHORT (ADJ), B′ LONG (ADJ), C′ ACROSS (ADJ)

Parsing & WH-islands: Syntax vs. WM (Christensen et al. 2013)

• Hypothesis: Priming effects (on acceptability) can only be found with degraded but grammatical sentences (Sprouse 2007, 123-124). **Hence, structural priming/training is suggestive of grammaticality.**

No difference btw. *what* and *where*!


Because
(a) Movement is successive cyclic...

• Wh-movement proceeds stepwise via the local Spec-CP

Evidence for successive cyclic wh-movement

1. Languages with wh-agreement
   - Irish, Chamorro, Palauan, Hausa, Passamaquoddy, Coptic
2. Successive inversion phenomena
   - Belfast English, Spanish, French
3. Intermediate copy pronunciation
   - Child English, German dialects
4. Wh-scope marking (‘partial wh-movement’)
   - German, Romany, Hungarian, Hindi
5. Stranded all in West Ulster English
6. Intermediate reconstruction effects

(From handout by prof. Jason Merchant:
...and 
(b) ACROSS is grammatical in Danish...

Priming effects (on acceptability) can only be found with degraded but grammatical sentences (Sprouse 2007, 123-124).


...then
(c) WH-clauses are not islands in Danish

• Cf. also grammatical extraction from embedded y/n-questions (Christensen, Kizach & Nyvad 2013, 248):
  
  (a) Ved hun ikke [\( \text{CP} \) om Lars har fundet kablet]?
      *Knows she not if John has found the cable*

  (b) *Ved hun ikke [\( \text{CP} \) hvad om Lars har fundet __]?*
      *Knows she not what if John has found*

  (c) Hvad ved hun ikke [\( \text{CP} \) __ om Lars har fundet __]?
      *What knows she not if John has found*

• Priming / “satiation” effects have also been reported for whether-islands in English (Snyder 2000)

Some islands have bridges...
Extraction from RC in Danish

- Acceptability survey (Christensen & Nyvad 2014)
  - (64 items + fillers. 7-point Likert scale.
    Constant: Structure, Length, Tns, Asp, Animacy, Cohesion, MVC)

- Pia har engang **set** en pensionist [som/der havde sådan en hund].
  *Pia has once seen a pensioner* COMP had such a dog

  [-SC, -EXTR]

- **Sådan en hund** har Pia engang **set** en pensionist [som/der havde ___].
  *Such a dog has Pia once seen a pensioner* COMP had

  [+SC, +EXTR]

- Pia har engang **mødt** en pensionist [som/der havde sådan en hund].
  *Pia has once met a pensioner* COMP had such a dog

  [-SC, -EXTR]

- **Sådan en hund** har Pia engang **mødt** en pensionist [som/der havde ___].
  *Such a dog has Pia once met a pensioner* COMP had

  [-SC, +EXTR]

---

[https://doi.org/10.1017/S0332586514000055](https://doi.org/10.1017/S0332586514000055).
Extraction from RC in Danish

- No effect of ±SC or COMP...
- Movement effect (\(p<.0001\))
  - Extraction reduces acceptability
- Frequency effect (\(p<.0001\))
  - Positive correlation btw. frequency and acceptability
- And learning/priming effect (“Trial”) (\(p<.0001\))
  - Suggesting that RC-extraction is indeed grammatical...
- (For replication for Swedish, see Müller 2015)

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**Table 2. Summary of fixed effects. ***Significant effect, \(p<0.001\).**


Consequence: Recursive CP

• The **embedded** CP\^[+WH] can be RECURSIVE in Danish (and English?)
• Outer SPEC licensed as Last Resort

(2) a.

\[
\begin{array}{c}
\text{cP} \\
\text{t}_{WH} \\
\text{c'} \\
\text{c°} \\
\text{[OCC]} \\
\text{WH/OP} \\
\text{cP} \\
\end{array}
\]

b.

\[
\begin{array}{c}
\text{cP} \\
\text{c°} \\
\text{at} \\
\text{TOPIC} \\
\text{C'} \\
\text{Verb}[\text{Finite}] \\
\text{IP} \\
\end{array}
\]

---


Escaping a relative clause in Danish

(10)


Formal vs. informal ratings

• Acceptability ratings are often lower in formal experiments than in informal settings
  • Examples in naturalistic discourse are rated low in experiments (see Müller 2019, 182, 185 for discussion and references)

• Perhaps due to misparse (structural misanalysis)?
  • (Kush et al. 2019, 24)

• Difficult to maintain naturalness while trying to control for everything else
  • Lexical material, coherence, early attachment, length, frequency, etc.

• Perhaps a supporting context would help: Supportive context facilitates comprehension of object-initial clauses (Kristensen et al. 2014)

Is the pattern the same in English as in Danish?
1. Extraction from WH-clauses
Extraction from English complement *wh*-clauses
(Christensen & Nyvad, submitted)

• Assuming that complement *wh*-clauses are weak islands in English
  • Weak islands exhibit a selective, non-uniform extraction pattern (Szabolcsi 2006).

• **Prediction 1**: There are processing effects: Movement per se increases processing load which decreases acceptability.

• **Prediction 2**: Extraction from English *wh*-clauses leads to consistent ungrammaticality or (at least) severely reduced acceptability.
  • ACROSS < LONG < SHORT
  • Extraction is blocked structurally ➔ not a matter of processing load (immune to lexical effects and independent of frequency of the matrix verb)

• **Prediction 3**: ARG>ADJ asymmetry.
  • Argument extraction ‘only’ violates locality (or rather, Subjacency)
  • Adjunct extraction also violates the Empty Category Principle (the trace is unrecoverable).

• **Prediction 4**: The pattern is not due to participant bias
  • Neither expert bias (effect of being a linguist), nor repetition (effect of trial).

https://doi.org/10.1002/9780470996591.ch64.

Christensen, Ken Ramshøj, and Anne Mette Nyvad. submitted. “No Escape from the Island: On Extraction from Complement *Wh*-Clauses in English”.

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Extraction from English complement *wh*-clauses (Christensen & Nyvad, submitted)

• The target stimuli consisted of 72 target sentences, 12 sets corresponding to:
  1. The mother explained that they should treat the children very leniently. (Baseline)
  2. Which children did the mother explain that they should treat very leniently? (Long ARG)
  3. How leniently did the mother explain that they should treat the children? (Long ADJ)
  4. Which children did the mother explain how leniently they should treat? (Across ARG)
  5. How leniently did the mother explain which children they should treat? (Across ADJ)
  6. The mother explained how leniently which children they should treat. (Anomaly)

• Plus 10 fully grammatical fillers, 10 completely ungrammatical fillers, and 48 other sentences that form the basis for a different experiment [extraction from RCs] (140 in total).

• Target sentences were distributed evenly over 6 lists such that each participant saw only one member of each set.

• Same 20 fillers occurred all lists, such that each list consisted of 40 sentences in randomized order. Each participant chose a list based on the month of their birthday: January-February = list 6, March-April = list 5, etc.

• The 6 lists were presented as online surveys using Google Drive sent to various forums for English speakers on Facebook.
Acceptability survey

In this survey, you are asked to evaluate 40 sentences and to judge/rate how acceptable you find each of them on a scale from 1 (completely unacceptable) to 5 (completely acceptable).

Please base your judgments on your own intuition, not on what you might expect to be correct or standard language. Also, please ignore punctuation.

Feel free to provide comments on your judgments.

*** Please note that you must be a native speaker of English to participate! ***

Once you have rated all the sentences, please click [submit] at the bottom to complete the survey.

* Required

Are you a native speaker of English? *

- Yes
- No

What kind of letter did the assistant open very slowly? *

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<th>4</th>
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Completely Acceptable
Participants

- Only native speakers of English.
- N=100 (male 52, female 48; linguists 57, non-linguists 43)
- Age: Mean=42.6 years (18-81, SD=17.7)
- Education: Mean=19.5 years (12-27, SD=3.2).

- Including only nationalities with 10 or more participants.

Christensen, Ken Ramshøj, and Anne Mette Nyvad. submitted. “No Escape from the Island: On Extraction from Complement Wh-Clauses in English”.
Results

1. The mother explained that they should treat the children very leniently.
2. Which children did the mother explain that they should treat very leniently?
3. How leniently did the mother explain that they should treat the children?
4. Which children did the mother explain how leniently they should treat?
5. *How leniently did the mother explain which children they should treat?
6. *The mother explained how leniently which children they should treat.

Extraction from English complement wh-clauses (Christensen & Nyvad, submitted)

ARG/ADJ asymmetry predicted by syntactic theory (marginal effect)

N=100. 12 items/type Linear mixed effects, ***p<0.001, **p<0.05, ·p<0.1

Christensen, Ken Ramshøj, and Anne Mette Nyvad. submitted. “No Escape from the Island: On Extraction from Complement Wh-Clauses in English”.

Data from (Christensen & Nyvad, submitted).
Results

• Extraction reduces acceptability (marginal effect, p<0.1)
• Extraction from a complement *wh*-clause is significantly less acceptable than long movement (p<0.001)
• ARG/ADJ asymmetry: Across ARG > Across ADJ (only marginal, p<0.1)
• Small but significant negative main effect of age (p<0.027)
• No main effects of education, bilingualism, or nationality (p>0.1)

**FREQ (of matrix V)**
- Negative (!) effect: Long ADJ * Freq (p=0.017)
- All other interactions not sign.

**TRIAL**
- Negative (!) effects: Long ADJ (p=0.008) and Across ADJ (p=0.042)
- No effect on Across!

**LINGUIST**
- Positive effect on Long ARG (p=0.002) (and marginal negative effect on Anom, p=0.075)
- No effect on Across!

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Extraction from English complement *wh*-clauses
(Christensen & Nyvad, submitted)

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Christensen, Ken Ramshøj, and Anne Mette Nyvad. submitted. “No Escape from the Island: On Extraction from Complement Wh-Clauses in English”.

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Results

• **Prediction 1**: There are processing effects: Movement per se increases processing load which decreases acceptability.
  • Confirmed (but only marginal effect)

• **Prediction 2**: Extraction from English *wh*-clauses leads to consistent ungrammaticality or (at least) severely reduced acceptability.
  • ACROSS < LONG < SHORT, not due to processing
  • Confirmed

• **Prediction 3**: ARG>ADJ asymmetry.
  • Confirmed

• **Prediction 4**: The pattern is not due to participant bias
  • Neither expert bias (effect of being a linguist), nor repetition (effect of trial).
  • Confirmed

• Conclusion: Complement *wh*-clauses are strong islands in English
• Support for the standard assumption
• The ARG/ADJ asymmetry is marginal (because the contrast is subtle)

Christensen, Ken Ramshøj, and Anne Mette Nyvad. submitted. “No Escape from the Island: On Extraction from Complement Wh-Clauses in English”.

Extraction from English complement *wh*-clauses (Christensen & Nyvad, submitted)
Danish vs. English

- Almost identical overall acceptability patterns

- English WH = weak island
  - No positive Trial effects
    - Negative effect on Long ADJ and Across ADJ (not ARG)
  - ARG/ADJ asymmetry in Across

- Danish WH = “non-island”?
  - Trial effect on Long and Across, but not Anom
  - No ARG/ADJ asymmetry in Across

- This suggests parametric variation
  - An escape hatch is required in Danish
  - ±cP-recursion

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Christensen, Ken Ramshøj, and Anne Mette Nyvad. submitted. “No Escape from the Island: On Extraction from Complement Wh-Clauses in English”. 33
2. Extraction from RCs
Extraction from RCs in English (Christensen & Nyvad, in prep)

• Assuming that RCs are strong islands in English, we made three predictions:

  • **Prediction 1:** The level of acceptability of extraction from an RC does not correlate with the frequency of occurrence of the matrix verb.
    • Processing effect found for Danish.

  • **Prediction 2:** The level of acceptability of extraction from an RC does not increase as a function of exposure over time (trial effect).
    • Processing effect found for Danish.

  • **Prediction 3:** Extractions of topics and of *wh*-elements are equally bad, and both are ungrammatical.
    • Information structure effect found for Swedish (Topicalization better than *wh*-movement)
Extraction from RCs in English (Christensen & Nyvad, in prep)

- The target stimuli consisted of 48 target sentences, 12 sets corresponding to:
  1. Peter once kissed a girl who preferred that type of man. (Baseline)
  2. What type of man did Peter once kiss a girl who preferred? (Wh)
  3. That type of man Peter once kissed a girl who preferred. (Topic)
  4. *What type of man did Peter once kiss a girl who preferred men? (Anomaly)

- Plus 10 fully grammatical fillers, 10 completely ungrammatical fillers, and 72 other sentences that form the basis for a different experiment [extraction from complement wh-clauses] (140 in total).
- Target sentences were distributed evenly over 6 lists such that each participant saw only one member of each set.
- Same 20 fillers occurred all lists, such that each list consisted of 40 sentences in randomized order. Each participant chose a list based on the month of their birthday: January-February = list 6, March-April = list 5, etc.
- The 6 lists were presented as online surveys using Google Drive sent to various forums for English speakers on Facebook.

Christensen, Ken Ramshøj & Anne Mette Nyvad. in prep. "On the nature of inescapable relative clauses in English".
Participants

• N=190 (84 male, 106 female), mean age 42 years (range = 16–81, SD = 16).

• Only native speakers of English.

• Including only nationalities with 10 or more participants.

Proportion of participants by nationality (n=190)

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Results

1. Emma truly disliked guys who drove that type of car.

2. *What type of car did Emma truly dislike guys who drove?


4. *What type of car did Emma truly dislike guys who drove cars?

Extraction from RCs in English (Christensen & Nyvad, in prep)

N=190. 12 items/type. Linear mixed effects, ***p<0.001

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Results

- Extraction reduces acceptability (p<0.001)
- Marginal difference between TOPIC and WH (p<0.1)
- No main effects of education, bilingualism, nationality, or frequency (p>0.1)

**TRIAL**
- Negative (!) effects on WH (p=0.07)
- No effect on TOPIC or ANOM

**LINGUIST**
- Small positive (!) effect on BASE (p<0.001), WH (p<0.001), and TOPIC (p<0.01)
- No effect on ANOM

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<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
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RC: conclusion

• Assuming that RCs are strong islands in English, we made three predictions:
  
  • **Prediction 1**: The level of acceptability of extraction from an RC does not correlate with the frequency of occurrence of the matrix verb.
    • Confirmed: Freq. not significant
  
  • **Prediction 2**: The level of acceptability of extraction from an RC does not increase as a function of exposure over time (trial effect).
    • Confirmed: No significant positive effect of Trial
    • (Negative effect in WH)
  
  • **Prediction 3**: Extractions of topics and of *wh*-elements are equally bad, and both are ungrammatical.
    • Confirmed
  
• **Conclusion**: RCs are strong islands in English
• **Support for the standard assumption**

Extraction from RCs in English
(Christensen & Nyvad, in prep)

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Danish vs. English

• English RC = strong island:
  • All extraction from RC < 3 in acceptability
  • No lexical or processing effects

• Danish RC = “weak/non-island”:
  • Extraction ‘smeared’ from 1-4
  • Lexical effect of Freq.
  • Positive effect of Trial

• Again, this suggests **parametric variation**
  • An escape hatch is required in Danish
  • ±cP-recursion

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Conclusions

• Island constraints are universal
  • UG-based: Locality & Successive cyclicity

• The status of particular island ‘constructions’ is subject to parametric variation

• Strong islands are ‘true’ islands: They block extraction.
• But if extraction is (sometimes) allowed, it is not a syntactic island.
  • Acceptability is a matter of degree, depending on a range of syntactic and non-syntactic factors.
  • Weak islands are not really syntactic islands after all...
Thanks