Discourse subordination licenses
optional movement of D-linked \textit{wh}-phrases

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A bugbear in the syntax-information structure literature is the optionality of movement like topicalization (Szendrői 2017)

- E.g. English contrastive topicalization (CT; Constant 2014)

(1)  
  a. The GAZPACHO$_{CT}$, Persephone brought...
  b. Persephone brought the GAZPACHO$_{CT}$...

Movement of D-linked *wh*-phrases (DWh’s) in multiple *wh*-questions also display optionality effects (e.g. Pesetsky 1987)

(2)  
  a. Which student$_{DWh}$ read which book$_{DWh}$?
  b. Which book$_{DWh}$ did which student$_{DWh}$ read?

This talk argues that topicalization and movement of DWh’s can be optional because of competition between forms of anaphora

- In situ topics/DWh’s act as regular discourse anaphors
- Moved topics/DWh’s mark *discourse subordination*

The optionality is derived from competing economy and interpretive constraints
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Introduction: QUD

- Consider ways in which continuation $\psi$ can be a subpart of $\phi$
- In the Question Under Discussion literature, a question $\phi$ can be elaborated upon via sub-questions (Roberts 1998)
  - Sub-questions address some subpart of the broader question
  - Inside a sub-question, the QUD is not completely answered
- Contrastive topicalization requires an anaphoric link inside a sub-question that contrasts with others (Constant 2014)

\[
\begin{align*}
\phi & \quad \text{(QUD)} \\
\psi_1 & \quad \text{(Sub-QUD)} \\
\psi_2 & \quad \text{(Sub-QUD)} \\
\text{...} & \\
\text{Who brought what to the potluck?} & \\
\text{Who brought the gazpacho?} & \\
\text{Who brought the minestrone?} & \text{...}
\end{align*}
\]
Introduction: Discourse subordination

- Discourse subordination (DS) does not require an open QUD or contrasting sub-questions

- Segmented Discourse Representation Theory (Asher & Lascarides 2003; Asher & Vieu 2005): One sentence is, roughly, a subevent of another
  - Elaboration & Explanation = subordinating
  - Narration, Contrast, Background = non-subordinating

- Grosz & Sidner (1986): One sentence is in the same focus space as another, leaves the prior sentence ‘open’ (using the term ‘dominance’; cf. also Webber 1988)
Introduction: Discourse subordination

- López (2009) analyzes Catalan clitic right-dislocation as anaphora with antecedents in a superordinate sentence.

\[ \phi \]
\( \psi_1 \) (Superordinate) \( \psi_2 \) (Subordinate) ... 

(a)  

(b) Look at Thuận cooking frog. 
He cooks frog\(_{DC}\) very well. ...
Introduction: DS, questions, and answers

- According to Segmented Discourse Representation Theory, answers to questions can have two forms:
  - Direct answers to questions (e.g. *Do you want to eat dinner? Yes.*)
  - Elaborating answers to questions, which are subordinating (e.g. *…I already ate dinner.*)

- Additionally, questions can have the same kinds of discourse relations as statements*
  - Elaboration vs. Elaboration$_q$, Narration vs. Narration$_q$

\[
\phi \\
(\text{Superordinate})
\]
\[
\psi_1 \quad \psi_2
\]
(\text{Subordinate}) \quad \text{(Subordinate)}

---

(b)

Look at my father cooking a pot of frog and a pot of ing-aong.

Which pot$_{DC}$ is he working on right now?
Discourse connectedness in Eastern Cham

- Eastern Cham (Austronesian: Vietnam) is an SVO, wh-in situ language with little bound morphology
  - Examples in this section include a line of the romanization of Cham script (‘Rumi’) and traditional Cham IPA (Brunelle and Phú 2018)
  - Data was collected from 35 native speakers in Vietnam from 2015–2018, using semi-directed discourse elicitation

- Topics can optionally be moved to the left periphery

(3)  a. *Nyu ngap ing-aong bingi ralo.*  
\[
\begin{array}{l}
\text{ɲu} & \text{ŋǎ?} & \text{ʔiŋ ʔɔŋ} & \text{ŋ̥ːi} & \text{lo} \\
3.\text{ANIM} & \text{make} & \text{ing-aong} & \text{be.delicious} & \text{very} \\
\end{array}
\]
‘He makes[cooks] ing-aong very well [Lit: deliciously].’

a'. *Ing-aong, nyu ngap bingi ralo.*  
\[
\begin{array}{l}
\text{ʔiŋ ʔɔŋ} \text{ɲu} & \text{ŋǎ?} & \text{ŋ̥ːi} & \text{lo} \\
\text{frog} & 3.\text{ANIM} & \text{make} & \text{be.delicious} & \text{very} \\
\end{array}
\]
‘He makes[cooks] frog very well [Lit: deliciously].’
Topicalization

This optional movement is possible in subordinating (DS) contexts, such as Elaboration and Elaborating answers to questions

(4)  

a. CONTEXT: ‘Look at Thuận cook ing-aong.’

b. Nyu ngap ing-aong bingi ralo.

‘He makes[cooks] ing-aong very well [Lit: deliciously].’

b’. Ing-aong, nyu ngap bingi ralo. ‘He makes[cooks] frog very well.’
Topicalization

- The optionality goes away in the absence of DS, such as Narration, Background, and Direct answer contexts

(5)  
   a. CONTEXT: ‘Look at Thuận cook ing-aong.’
   b. Sơn thau ngap ing-aong o.

   Sơn knows ⁄ make ing-aong makes neg

   ‘Sơn does not know how to make[cook] frog.’

b’. #Ing-aong. Sơn thau ngap o. ‘Sơn does not know how to make[cook] frog.’
Topicalization

- In contrastive topic contexts, movement is generally disfavored. Instead, CT’s are marked by the existential *hu* (Baclawski Jr. 2018)

(6)  
  a. CONTEXT: ‘Which person invited each of you to come here?’
  b. *Drei hu da-a Thuận mai pak ni…*  
      ṣěj hu ṭe thùən maj păʔ ni…  
      self EXIST invite Thuận come in this
  
      B: ‘I[myself] invited Thuận\(\) CT to come here…’
  b’. #*Thuận*, *drei hu da-a mai pak ni…*

- Thus, we conclude that Eastern Cham moved topics must be DC
- In other words, moved topics must be anaphora such that the antecedent’s sentence discourse subordinates the anaphor’s sentence
Movement of *wh*-phrases

- *Wh*-phrases can optionally be moved in DS contexts, again like Elaboration and Explanation
- However, the optionality disappears in Narration or Background contexts (in situ versions omitted for space)

(7)  
a. CONTEXT: ‘Look at my father boil one pot of ing-aong and one pot of frog.’

b. *Urak ni, gaok hagait ong nan daok ngap nan?*

   ja ni .nanoTime pot what old.man that PROG make that

   ‘Now, what pot is that old man making [working on]?’

b”. [#Urak ni, gaok hagait ong nan daok mbeng nan?]

   #ja ni .nanoTime pot what old.man that PROG eat that

   ‘Now, what pot is that old man eating?’

- We conclude that moved *wh*-phrases must also be DC
Movement of *wh*-phrases

- DC (i.e. moved) *wh*-phrases share certain properties with D-linking (Pesetsky 1987)
  - They denote sets that are saliently shared by the speaker and addressee (Comorovski 1996)
  - They are infelicitous out of the blue, except when a certain amount of context can be coerced
  - So-called ‘aggressively non-D-linked’ *wh*-phrases cannot be moved (8)
  - However, *what* X and bare *wh*-phrases (‘who’, ‘what’) appear to be more easily moveable than in English

(8)  

a. *Hâ daok ngap hanruai hagait?*

   hi  tɔʔ  ŋăʔ  {mbroj  kɛ}

   2SG  PROG  do  crazy  what

   ‘What the hell are you doing?’

b. *Hanruai hagait, hâ daok ngap?* ‘What the hell are you doing?’
Optionality as anaphora competition

- In all the examples so far, topics and \( wh \)-phrases can optionally remain in situ. Why would a speaker choose movement at all?
- We analyze this optionality in terms of anaphora competition, which is well known to give rise to optionality and has recently been framed in terms of competing constraints (e.g. Patel-Grosz & Grosz 2017)

Economy

- DC-movement involves something extra (whatever drives movement, such as additional structure)
- Patel-Grosz & Grosz (2017) propose a constraint for different sizes of pronouns, \textit{Minimize DP!}, that penalizes extraneous syntactic structure when less could have been used
- An economy constraint along these lines would always favor in situ anaphora:
  - In situ anaphor \( \gg \) DC-moved anaphor
Optionality as anaphora competition

Discourse coherence

- We posit an interpretive constraint: *Maximize Discourse Coherence!*
- Asher & Lascarides (2003) propose Maximise Discourse Coherence as a (scalar) maxim of discourse interpretation: (Not identical to discourse coherence in the sense of Hobbs 1985)
- All things equal, a hearer interprets a discourse with the most:
  - Anaphoric links
  - Discourse relations (among other things)
- Marking a phrase as DC not only indicates an anaphoric relation, but also a subordinating discourse relation
- Therefore, DC-marking increases discourse coherence:
  - DC-moved anaphor \( \gg \) In situ anaphor
Optionality as anaphora competition

- Optionality, thus, can be attributed to competing economy and discourse coherence constraints
  - **Economy constraint**: In situ anaphor $\gg$ DC-moved anaphor
  - **Interpretive constraint**: DC-moved anaphor $\gg$ In situ anaphor

- The optionality is always present, because the discourse is presumably interpretable either way

- The most obligatory instances of DC-movement we have involve hanging topics or reduced prior utterances:

  (9) *Dalam limâ abaoh kayau pak ni, abaoh hagait ayut âng mbeng?*

  lːam mːi p̥ɔh ʐːaw pǎʔ niᵈ p̥ɔh k̥ɛ́ɪtᵈ zut iŋ bǎŋ in 5 fruit here CLF what friend want eat
  ‘Of the 5 fruits here, what fruit do you[friend] want to eat?’
English optional movement: CT

- Is English like Eastern Cham?
  - No.
  - But, contrastive topicalization is optional

(10) a. The GAZPACHO\textsubscript{CT}, Persephone brought…
    b. Persephone brought the GAZPACHO\textsubscript{CT}…

And sub-questions in the sense of Büring (2003) and Constant (2014) have similarities to DC: elaborating answers to questions.

Perhaps, an analysis could be defended where CT’s involve discourse connectedness within a QUD

(a) \(\phi\) (QUD)
(b) Who brought what to the potluck?

\(\psi_1\) (Sub-QUD) \(\psi_2\) (Sub-QUD) …

Who brought the gazpacho? Who brought the minestrone? …
English optional movement: Multiple *wh*-questions

- Multiple *wh*-questions also display optionality when it comes to D-linking

(11)  a. Which student\textsubscript{DWh} read which book\textsubscript{DWh}?
    b. Which book\textsubscript{DWh} did which student\textsubscript{DWh} read?

- Comorovski (1996) demonstrates that a prior utterance can seed the relative D-linking of a multiple *wh*-question
  - (Comorovski 1996 rates left version of (c) as infelicitous)

(12)  a. It’s nice to be so busy, but {when are you doing what? / #what are you doing when?}
    b. It’s nice to have all those times scheduled, but {when are you doing what / #what are you doing when?}
    c. It’s nice to have all those activities ahead of you, but {when are you doing what / what are you doing when?}
Perhaps the optionality of (c) arises from competition between the unmarked default and DC-marking of the object.

**Figure:** Perhaps:

(a) Default

\[ \phi \]

\[ \psi \]

\{when...what\}

(b) DC subject

\[ \phi \]

\{times\}

\[ \psi \]

\{when\_DC...what\}

(c) DC object

\[ \phi \]

\{activities\}

\[ \psi \]

\{what\_DC...when\}
Preliminary experiment on English D-linking

- But what about two DWh’s?
- We tested whether a subordinating utterance like $\phi$ can influence the order of two DWh’s in $\psi$:
- If so, this could reveal a lurking sensitivity to discourse connectedness

(a) $\phi \{Y\}$
   
   $\psi$

   which $Y$...which $X$

(b) $\phi \{X\}$
   
   $\psi$

   which $X$...which $Y$
Design

- 50 participants on Amazon Mechanical Turk were given mini discourses (in addition to filler and attention checks)
- They were asked to complete discourses given a binary choice:

Task 1

(13)  a. I gave a list of 20 books to 20 students last week.
    b. The students/The books… (Elaboration)
    c. {Which student picked which book? / Which book did which student pick?}

(14)  a. I gave a list of 20 books to 20 students last week.
    b. As a background, the students/the books… (Background)
    c. {Which student picked which book? / Which book did which student pick?}

- Factors: Background vs. Elaboration, Antecedent in (b)
- Prediction: Interaction between Elaboration and Antecedent
Task 1: Preliminary results

- There was an overall preference for SO ordering (81%, n = 213), but OS ordering does appear.
- Unexpectedly, SO ordering is chosen significantly more often in the Elaboration contexts, regardless of the antecedent in (b) ($\beta = 0.9068, p < 0.05$).
- No other significant results.

(15) a. I gave a list of 20 books to 20 students last week.
    b. The students/the books…
    c. Which student picked which book?
Task 2

Perhaps there is a general dispreference for OS order

Task 2 asks participants to fill in the (b) sentence

Here, the converse predictions are made, that the moved DWh correlate with the referent in (b)

(16)  
a. I gave a list of 20 books to 20 students last week.  
b. {The students finally made their choices. / The books were finally chosen.}  
c. Which book did which student pick?
Task 2: Preliminary results

- The two types of (b) sentences were chosen about half the time (53/47%)

- Again, unexpectedly, the subject sentence was chosen significantly more often under Elaboration, regardless of the order in (c) ($\beta = 2.2137$, $p < 0.001$)

(17)  

a. I gave a list of 20 books to 20 students last week.  
b. The students…  
c. Which student picked which book?  
   Which book did which student pick?

- These results clearly do not support a discourse connectedness approach to multiple DWh-movement in English

- But more careful study is needed, starting with Comorovski’s specific contexts (when…what)
Conclusion

- Discourse connectedness gives us a way to account for optional syntactic movement that is usually attributed to information structure.
- Instead, the optionality is framed in terms of competition between forms of anaphora.
  - DC has a structural cost, but it increases discourse coherence.
- DC can account for topicalization and optional \textit{wh}-movement in Eastern Cham, but its application to English is less clear.
Thank you!

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References I


