The Right Frontier Constraint

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Plan

Introduction

Description of the RFC

Why the RFC?

Attentional focus and the RFC

Conclusion

References
Foreword

Typical of the influential approaches to parsing discourse structure [...] is that they contain a number of apparently unmotivated defaults or preferences.

Henk Zeevat, Discourse Structure in OT Pragmatics
Introduction


RFC = A discourse constituent must be attached on the right frontier of the ongoing discourse

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Why should it be so?
Introduction


RFC = A discourse constituent must be attached on the right frontier of the ongoing discourse.

Why should it be so?

The proposed answer: RFC is a side-effect of a general avoidance of reference to non-active topics in discourse.
The RFC

- Polanyi 1985: two types of discourse relations
The RFC

- Polanyi 1985: two types of discourse relations
- Coordination vs. subordination DRs
The RFC – 1

- Polanyi 1985: two types of discourse relations
- Coordination vs. subordination DRs
- Coordination DRs between $\alpha$ and $\beta$: two main cases
Polanyi 1985: two types of discourse relations

Coordination vs. subordination DRs

Coordination DRs between $\alpha$ and $\beta$: two main cases

1. $\alpha$ and $\beta$ elaborate a common discourse topic.
The RFC – I

- Polanyi 1985: two types of discourse relations
- Coordination vs. subordination DRs
- Coordination DRs between $\alpha$ and $\beta$: two main cases
  1. $\alpha$ and $\beta$ elaborate a common discourse topic.
  2. $\beta$ refers to an eventuality posterior to $\alpha$. 
The RFC – II

- **Subordination DRs** \(\approx\) the rest, e.g. *Elaboration, Cause or Contrast.*
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Convention: vertical edges = subordination DRs, horizontal edges = coordination DRs.
The RFC – II

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Topic: John
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Topic: John

John is tall
The RFC  – II

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```
Topic: John

Elab  Elab

John is tall  He is 35 years old

Continuation
```
The RFC – III

Hyper-graph version

Topic: John
Hyper-graph version

Topic: John

John is tall
The RFC – III

Hyper-graph version

Topic: John

John is tall ———— He is 35 years old

Continuation
The RFC – III

Hyper-graph version

Topic: John

Elab

John is tall

Continuation

He is 35 years old
The RFC – iv

- The RFC says that, given a tree or a graph, an attachment cannot jump to a constituent on the left of the current one (Polanyi 1985, Asher 1993, Asher & Lascarides 2003).
The RFC – IV

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(1) Let $\Delta$ be a discourse structure with $\alpha$ the current (= last) constituent. A new constituent $\beta$ can be attached by a DR to $\gamma$ in $\Delta$ only if:

1. $\gamma = \alpha$, or
2. $\alpha$ is subordinated to $\gamma$. 
The RFC – v

(2) a. John bought a new Toyota.

He wanted to try a hybrid engine.

Then he bought an apartment
The RFC - v

(2)  a. John bought a new Toyota.

*Explanation*

He wanted to try a hybrid engine.

Then he bought an apartment
(2) a. John bought a new Toyota.
   He wanted to try a hybrid engine.
   Then he bought an apartment
The RFC

(2)  

a. John bought a new Toyota.

He wanted to try a hybrid engine.

Then he bought an apartment

b. John bought a new Toyota.

He got it from a garage in Washington.

He wanted to try a hybrid engine.
The RFC

(2) a. John bought a new Toyota.
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The RFC – v

(2) a. John bought a new Toyota.  
   Explanation  He wanted to try a hybrid engine.
   Narration  Then he bought an apartment

b. John bought a new Toyota.
   Explanation  He got it from a garage in Washington.
   Elaboration  He wanted to try a hybrid engine.
The RFC

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    Explanation  
    He wanted to try a hybrid engine.

    Narration  
    Then he bought an apartment

b. John bought a new Toyota.  
   Elaboration  
   He got it from a garage in Washington.

   Explanation  
   He wanted to try a hybrid engine.

c. John bought a new Toyota.

    Then he bought an apartment.

    He wanted to try a hybrid engine.
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   Narration
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The RFC

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   He wanted to try a hybrid engine.
Motivating the RFC – I

“Only constituents at accessible nodes enjoy the formal status of ‘currently being constructed’ – all other constituents are considered for the purpose of discourse construction to have been completed, or, if left incomplete, to have been abandoned. They are not resumable. Should a speaker wish to say more ‘about’ the content of a closed constituent, a new constituent must be created and the link with the old unit made explicit” (Polanyi 1985, section 4.1).
Motivating the RFC – II

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Motivating the RFC – II

- Polanyi’s comment might be circular:
- Only constituents at accessible nodes can be integrated into new discourse structures.
- **But why should accessible nodes be located on the right frontier?**
Motivating the RFC

Motivating the RFC


- Cornish’s basic distinction
Motivating the RFC

- Cornish’s basic distinction

```
Indexicals
<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
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<tr>
<td>Deictic use</td>
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<tr>
<td></td>
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<tr>
<td>Anaphoric use</td>
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</tbody>
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Motivating the RFC – III

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Motivating the RFC – III

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- \textbf{Some expressions may be deictic or anaphoric (e.g. definite and demonstrative descriptions). Unaccented pronouns are deictic.}
Motivating the RFC – Ⅲ

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- **The high/low focus status can be assessed by different theories, e.g. Centering (Grosz et al. 1995).**
Motivating the RFC – iv

- Preliminary distinction: abstract (events, facts, propositions, etc.) vs. non abstract anaphora.
Motivating the RFC – IV

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- Three different sets of observations
Motivating the RFC – iv

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Motivating the RFC – IV

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  2. Abstract antecedents that are (interpretations of) non-accessible constituents are non-accessible (Asher, Asher and Lascarides).
Motivating the RFC – IV

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  2. Abstract antecedents that are (interpretations of) non-accessible constituents are non-accessible (Asher, Asher and Lascarides).
  3. The fact that accessibility conditions for non-abstract antecedents are satisfied does not entail that the RFC is satisfied.
Motivating the RFC – v

Motivating the RFC


(3) One plaintiff was passed over for promotion three times

Another didn’t get a raise for five years
These people were really badly treated
But the jury didn’t believe this
Motivating the RFC


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Motivating the RFC


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Motivating the RFC – vi

- Observation 3
Observation 3

(4) John bought a new Toyota.

Then he bought an apartment.

He wanted to try a hybrid engine.
Motivating the RFC – vi

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Motivating the RFC – VI

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Motivating the RFC – VII

- The present hypothesis: discourse attachments are regulated by several factors, including topic exploitation.
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Motivating the RFC – VII

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   a. **Standard topics**: abstract or non-abstract entities the discourse is about (*Karamanis 2003, TL 2004*).
Motivating the RFC – VII

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      In general, coordinated sequences address at least one common standard topic.
Motivating the RFC – VII

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1. The coordination vs. subordination distinction corresponds to two different kinds of topic:
   a. Standard topics: abstract or non-abstract entities the discourse is about (Karamanis 2003, TL 2004).
      In general, coordinated sequences address at least one common standard topic.
   b. ‘C-topics’ (topics corresponding to constituents), used by subordination.
Motivating the RFC – VIII

2. Topics are more or less active (attentional focus).
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3. Retrieving more active topics is preferred and the RFC reflects this preference.
Motivating the RFC – VIII

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Motivating the RFC – VIII

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Motivating the RFC – VIII

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Motivating the RFC – VIII

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   ▶ The example of discourse markers
   ▶ They have been characterized as anaphoric: Berrendonner 1983, Webber et al. 2003, Jayez 2004.
   ▶ Actually, they are deictic in Cornish’s sense.
   ▶ A DM points to a salient entity (eventuality, proposition) either in the utterance context or in the discourse. See Jayez 2004, and Zeevat 2004 for various related problems.
Motivating the RFC – IX

(5) a. [After a big noise] Yet, I had warned that I didn’t want to be disturbed
Motivating the RFC – ix

(5)  a. [After a big noise] Yet, I had warned that I didn’t want to be disturbed
b. [Pointing to a glaring red car] Do you remember Paul? He used to love this kind of car too.
Motivating the RFC – ix

(5) a. [After a big noise] Yet, I had warned that I didn’t want to be disturbed
b. [Pointing to a glaring red car] Do you remember Paul? He used to love this kind of car too.
c. Paul bought a new ecological Toyota. So, you can ask him if you have questions about hybrid engines
Motivating the RFC – ix

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b. [Pointing to a glaring red car] Do you remember Paul? He used to love this kind of car too.
c. Paul bought a new ecological Toyota. So, you can ask him if you have questions about hybrid engines
d. Paul bought a new ecological Toyota. He also bought a new apartment. #So, you can ask him if you have questions about hybrid engines
Motivating the RFC - x

- DMs have two properties.
Motivating the RFC \(-x\)

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  1. They determine or restrict the type of coherence relation featured by the sentence in which they occur.
Motivating the RFC - x

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Motivating the RFC \(-x\)

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- Property 2 \(\Rightarrow\) they are presuppositionally similar to pronouns (see for instance Geurts 1999).
Motivating the RFC – $x$

- DMs have two properties.
  1. They determine or restrict the type of coherence relation featured by the sentence in which they occur.
  2. They do not assign a significant descriptive content to the antecedent.
- Property 2 $\Rightarrow$ they are presuppositionally similar to pronouns (see for instance Geurts 1999).
- DRs not marked by DMs don’t assign significant descriptive content either.
Motivating the RFC

- Weak descriptive content $\leadsto$ higher focus needed
- Strong descriptive content $\leadsto$ lower focus is enough.
Motivating the RFC – xi

- Weak descriptive content $\rightsquigarrow$ higher focus needed
  Strong descriptive content $\rightsquigarrow$ lower focus is enough.
- **Two main sources for high focus in discourse:**
Why the RFC?

Motivating the RFC

- Weak descriptive content $\implies$ higher focus needed
  Strong descriptive content $\implies$ lower focus is enough.

- Two main sources for high focus in discourse:
  1. **Being a/the discourse topic in descriptions, narrations, etc.**
Motivating the RFC

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Motivating the RFC – XI

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  1. Being a/the discourse topic in descriptions, narrations, etc.
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- How do subordination and coordination interact with that in theories which make the distinction?
Motivating the RFC - XII

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Motivating the RFC – XII

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1. DRs (see the uncertain status of *Elaboration*, Knott et al. 2001, Jasinskaja 2006), and
2. subordination depth
Motivating the RFC

- E.g. (6a-b) is in general felt to be better than (6c-d):
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Motivating the RFC – XIII

- E.g. (6a-b) is in general felt to be better than (6c-d):

(6)  
  a. Paul spotted the dealers’ car in the street. Mary was quietly writing her paper. So, they had found him after all
  b. The dealers put their car two blocks away. So, they could approach more discretely. Mary was quietly writing her paper
Motivating the RFC

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a. Paul spotted the dealers’ car in the street. Mary was quietly writing her paper. So, they had found him after all

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Motivating the RFC – XIII

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   b. The dealers put their car two blocks away. So, they could approach more discretely. Mary was quietly writing her paper
   c. The dealers put their car two blocks away. Mary was quietly writing her paper. So, they could approach more discretely
   d. The dealers put their car two blocks away. Mary was quietly writing her paper. She wanted it to be ready by Thursday. So, they could approach more discretely
Motivating the RFC

- (6) suggests that the RFC is not enough.
Motivating the RFC – xiv

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Motivating the RFC - xiv

- (6) suggests that the RFC is not enough.
- Natural attachments favor recent discourse topics.
- Subordination DRs may introduce new, ‘parasitic’, topics.
- The feeling that a topic is parasitic or not depends, inter al., on its connection with the topic involved in the DR.
Motivating the RFC – xv

- An example with the French DM *en effet*: A *en effet* B $\Rightarrow$ B accounts for A.
Motivating the RFC – xv

► An example with the French DM *en effet*: A *en effet* B ⇒ B accounts for A.

► **Some speakers prefer (7b) to (7a).**
Motivating the RFC – xv

► An example with the French DM *en effet*: $A \text{ } \text{en effet} \text{ } B \Rightarrow B$ accounts for $A$.

► Some speakers prefer (7b) to (7a).

(7) a. Marie est allée voir Paul. (‘Mary visited Paul’)

Elle s’est rendue chez lui avec sa Porsche. (‘She went to his home with her Porsche’)

En effet elle avait besoin de lui parler. (‘*En effet* she needed to speak to him’)

b. Marie a allé voir Paul en effet. (‘Mary visited Paul *en effet*’)

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Motivating the RFC – xv

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− *en effet*
Motivating the RFC – xv

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[en effet]
Motivating the RFC - xv

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- Some speakers prefer (7b) to (7a).
Motivating the RFC – xvi

The problem of (7a): constituent $\beta$ can be attached to $\alpha$ by Elaboration, but ...
Motivating the RFC – XVI

- The problem of (7a): constituent $\beta$ can be attached to $\alpha$ by *Elaboration*, but . . .

- the Porsche episode is irrelevant and introduces a separate topic which is either ‘hanging’ or forced into an *Explanation* relation (?? $\beta \overset{Explanation}{\longrightarrow} \gamma$)
Motivating the RFC – XVI

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- (7b) might be better because the second attachment creates a topic (what happened to Mary).
Motivating the RFC – XVI

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- (7b) might be better because the second attachment creates a topic (what happened to Mary).
- One can makes the interpretation more difficult by making the saliency of the topic even weaker.

(8) **Marie est allée voir Paul.** (‘Mary visited Paul’)

**Elle s’est rendue chez lui avec sa Porsche.** (‘She went to his home with her Porsche’)

**Elle l’avait achetée une semaine auparavant.** (‘She had bought it a week before’)
**En effet elle avait besoin de lui parler.** (‘*En effet* she needed to speak to him’)

[9x261]26 out of 41
[17x249]Why the RFC?
Motivating the RFC – XVI

- The problem of (7a): constituent $\beta$ can be attached to $\alpha$ by *Elaboration*, but …
- the Porsche episode is irrelevant and introduces a separate topic which is either ‘hanging’ or forced into an *Explanation* relation (?? $\beta$ *Explanation* $\gamma$)
- (7b) might be better because the second attachment creates a topic (what happened to Mary).
- One can makes the interpretation more difficult by making the saliency of the topic even weaker.

(8) Marie est allée voir Paul. (‘Mary visited Paul’)

   Elle s’est rendue chez lui avec sa Porsche. (‘She went to his home with her Porsche’)

   Elle l’avait achetée une semaine auparavant. (‘She had bought it a week before’)

   En effet elle avait besoin de lui parler. (‘*En effet* she needed to speak to him’)

Motivating the RFC – xvi

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### Notes
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Discourse attachment may correspond to indexicals (DMs) or not (lexically ‘free’ attachments where the DR is unspecified).
Attentional focus and the RFC

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- \((\text{RESOLVE} \lor \text{ACCOM}) \gg (\text{RESOLVE} \& \neg \text{ACCOM}) \gg (\neg \text{RESOLVE} \& \text{ACCOM})\)
- \(\text{RESOLVE} \& \neg \text{ACCOM} \text{ displays an internal hierarchy.}\)
Attentional focus and the RFC – II

The content is partially visible, but it appears to be discussing the concept of attentional focus and the RFC. The visible text suggests that one must find or construct a topic. The possibilities include using a specific C-topic provided by the last constituent.

1. Use the specific C-topic provided by the last constituent.
Attentional focus and the RFC – II

- One must find or construct a topic. Possibilities:
  1. Use the specific C-topic provided by the last constituent.
  2. Use a common topic which the last constituent elaborates (description or narration)
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     In theories that represent topic sets as stacks or trees, the number of violations = the distance of the chosen topic to the most recent topic(s).
  5. **Manipulate context (by accommodation) to preserve recency.**
Attentional focus and the RFC – III

- The hierarchy of constraints
  (specific DRs are not considered here: see Zeevat 2006, Jasinskaja 2007, Zeevat and Jasinskaja 2007 for an application of OT to the hierarchy of DRs)
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- \((\text{RESOLVE} \lor \text{ACCOM}) \gg\)
Attentional focus and the RFC – III

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  (specific DRs are not considered here: see Zeevat 2006, Jasinskaja 2007, Zeevat and Jasinskaja 2007 for an application of OT to the hierarchy of DRs)

- \((\text{RESOLVE} \lor \text{ACCOM}) \gg\)

- \(\text{CTXT-PLAUSIBILITY} \gg\)
Attentional focus and the RFC – III

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  (RESOLVE ∨ ACCOM) ≫

  CTXT-PLAUSIBILITY ≫

  RECENT-TOPIC ≫
The hierarchy of constraints

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- \(\text{CTXT-PLAUSIBILITY } \gg\)
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- \((\neg \text{RESOLVE } \& \text{ ACCOM})\)
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- \(\text{RECENT-TOPIC} \gg\)
- \(\neg\text{RESOLVE} \& \text{ACCOM}\)

Forms: sequences of constituents, meanings: attachment networks
### Attentional focus and the RFC – IV

<table>
<thead>
<tr>
<th>Form</th>
<th>Meaning</th>
</tr>
</thead>
</table>
| $f_1 = \begin{align} 
\alpha &= visit, \\
\beta &= Porsche, \\
\gamma &= intend to see 
\end{align}$ | $m_1 = \begin{align} 
visit because intend to see \\
visit with Porsche 
\end{align}$ |
| $f_2 = \begin{align} 
\alpha &= visit, \\
\beta &= intend to see, \\
\gamma &= Porsche 
\end{align}$ | $m_1 = \begin{align} 
visit because intend to see \\
visit with Porsche 
\end{align}$ |
| $f_3 = \begin{align} 
\alpha &= visit, \\
\beta &= Porsche, \\
\gamma &= bought recently \\
\delta &= intend to see 
\end{align}$ | $m_3 = \begin{align} 
visit because intend to see \\
visit with Porsche \\
bought recently 
\end{align}$ |
### Attentional focus and the RFC

<table>
<thead>
<tr>
<th>Form</th>
<th>Meaning</th>
</tr>
</thead>
</table>
| $f_1 = \alpha = visit,$  
$\beta = Porsche,$  
$\gamma = intend to see$ | $m_4 = $ visit with Porsche because intend to see Porsche |
| $f_3 = \alpha = visit,$  
$\beta = Porsche,$  
$\gamma = bought recently$  
$\delta = intend to see$ | $m_5 = $ visit with Porsche bought recently because intend to see |
| $f_3 = \alpha = visit,$  
$\beta = Porsche,$  
$\gamma = bought recently$  
$\delta = intend to see$ | $m_4 = $ visit with Porsche Porsche because intend to see |
Plausible interpretation: Mary visits Paul to see him.

<table>
<thead>
<tr>
<th>pairs</th>
<th>RESOLVE ∨ ACCOM</th>
<th>CTXT-PLAUSIBILITY</th>
<th>RECENT-TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>$&lt;f_1, m_1&gt;$</td>
<td>✓</td>
<td>✓</td>
<td>*</td>
</tr>
<tr>
<td>$\otimes &lt;f_2, m_1&gt;$</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>$&lt;f_3, m_3&gt;$</td>
<td>✓</td>
<td>✓</td>
<td>**</td>
</tr>
<tr>
<td>$&lt;f_1, m_4&gt;$</td>
<td>✓</td>
<td>*</td>
<td>✓</td>
</tr>
<tr>
<td>$&lt;f_3, m_5&gt;$</td>
<td>✓</td>
<td>*</td>
<td>✓</td>
</tr>
<tr>
<td>$&lt;f_3, m_4&gt;$</td>
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<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>
Attentional focus and the RFC

- Asher and Vieu (2005) and Prévot and Vieu (2005) contemplate the possibility for the same DR to be of different types (coordinating vs. subordinating).
Attentional focus and the RFC

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- **At the moment, no precise mechanism has been offered to regulate these variations.**
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- Asher and Vieu (2005) and Prévot and Vieu (2005) contemplate the possibility for the same DR to be of different types (coordinating vs. subordinating).

- At the moment, no precise mechanism has been offered to regulate these variations.

- These possible elaborations of the theory depend on interpretations that are unstable.
Attentional topic and the RFC \textsuperscript{– VII}

\begin{itemize}
\item Example from \textit{Asher \& Vieu 2005}
\end{itemize}
Attentional topic and the RFC – VII

- Example from Asher & Vieu 2005

(9) a. Mary screamed
Attentional topic and the RFC – VII

▸ Example from Asher & Vieu 2005

(9)  
   a. Mary screamed
   b. So the burglar ran away
Example from Asher & Vieu 2005

(9) a. Mary screamed
    b. So the burglar ran away
    c. Max woke up
Attentional topic and the RFC – VII

► Example from Asher & Vieu 2005

(9) a. Mary screamed
   b. So the burglar ran away
   c. Max woke up
   d. #She also got a sore throat

► Intended: Mary screamed and this caused the fact that the burglar ran away and the fact that she got a sore throat.
Attentional topic and the RFC – VII

Example from Asher & Vieu 2005

(9)  
(a) Mary screamed  
(b) So the burglar ran away  
(c) Max woke up  
(d) She also got a sore throat

Intended: Mary screamed and this caused the fact that the burglar ran away and the fact that she got a sore throat.

(9d) would be anomalous because we have the following structure:
Attentional topic and the RFC – VIII

- Standard assumptions: *Result* and *Narration* are coordination DRs, *Parallel* is a subordination DR.
Attentional topic and the RFC – VIII

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(10)  
  a. Mary screamed  
  b. So the burglar ran away  
  c. Max woke up  
  d. She also got a sore throat
Attentional topic and the RFC – VIII

- Standard assumptions: *Result* and *Narration* are coordination DRs, *Parallel* is a subordination DR.

(10) a. Mary screamed

\[ \text{Result} \]

b. So the burglar ran away

c. Max woke up

d. She also got a sore throat
Attentional topic and the RFC – VIII

- Standard assumptions: Result and Narration are coordination DRs, Parallel is a subordination DR.

(10) a. Mary screamed
    b. So the burglar ran away
    c. Max woke up
    d. She also got a sore throat
Standard assumptions: *Result* and *Narration* are coordination DRs, *Parallel* is a subordination DR.

(10)  

a. Mary screamed  

Result

b. So the burglar ran away  

Narr.

c. Max woke up  

Par.

d. She also got a sore throat  

Narr.
In fact, several parameters interact.
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1. **It is not that clear that (c) cannot be a result of (a).** It depends on two assumptions: the RFC (!) and the coordinating character of Result.
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2. The contribution of *also* might play a role since it ‘parallelizes’ screaming and a possible consequence (sore throat), but …

3. **Causes and effects are not to be parallelized** (*John fell #he also broke his leg*)!
Attentional topic and the RFC – x

- (11) is in general judged better.
Attentional topic and the RFC \(-x\)

\(\rightarrow\) (11) is in general judged better.

(11) a. Mary produced a huge knife
Attentional topic and the RFC - $x$

- (11) is in general judged better.

(11)

a. Mary produced a huge knife
b. The burglar ran away
Attentional topic and the RFC - x

(11) is in general judged better.

(11)
   a. Mary produced a huge knife
   b. The burglar ran away
   c. She also called the police
Attentional topic and the RFC

(11) a. Mary produced a huge knife
    b. The burglar ran away
    c. She also called the police

- If (b) is a result of (a), we should not connect (c) and (a).
The RFC is not a constraint ‘on’ the structure of discourse (although it pertains to discourse structure).
Conclusion

▸ The RFC is not a constraint ‘on’ the structure of discourse (although it pertains to discourse structure).

▸ It is a side-effect of topic management, specifically of the attentional hierarchy of topics.
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- It is a side-effect of topic management, specifically of the attentional hierarchy of topics.
- Its effects can be described more precisely in a framework that, like biOT, takes into account:
  1. interactions between constraints
  2. the form vs. meaning/message pairs
- In addition, because of its strong links with cumulative non-monotonic logics (Besnard et al. 2003), OT is a good starting points to study multi-constraint systems for (i) representing discourse (Karamanis 2003) and calibrating experimental protocols on discourse perception.
References

Asher, Nicholas and Lascarides, Alex (1997). Bridging. *Journal of Semantics*
References


References


