The probabilistic dimension of discourse markers

Grégoire Winterstein
Laboratoire de Linguistique Formelle, Université Paris Diderot-Paris 7
gregoire.winterstein@linguist.jussieu.fr

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Plan

1. Introduction

2. *Mais*
   - My approach
   - Abduction of the argumentative goals

3. Other elements
   - *Aussi*
   - *Et*
The basic question

- Given contemporary semantic theories, is it still relevant to postulate an argumentative dimension in language?
- Empirical domain: discourse markers
- Answers
  - **Mais (but)**: argumentation is necessary
  - **Aussi (too), et (and)**: argumentation is relevant
  - Combinatorial properties of argumentative elements are productive
Argumentation: Anscombe and Ducrot (1983)

(1)  

(a) Il fait nuit, allume tes phares.  
It is dark, use your headlamps.  
(b) Il fait presque nuit, allume tes phares.  
It is almost dark, use your headlamps.  
(c) Il fait à peine nuit, allume tes phares.  
It is barely dark, use your headlamps.

- The interpretation of an utterance is not just truth-conditional content.
- Some linguistic elements encode argumentative properties.

A&D differentiate between

- The orientation of a proposition relative to a goal, which is contextual and non-lexical.
- The conventional sensitivity of some operators to argumentation.
Probabilistic Interpretation: Merin (1999)

- The assertion of $p$ has a probabilistic Bayesian effect:
  - In an epistemic base, the knowledge of $p$ may affect the probability of other propositions, the measure $P(.)$ becomes $P'(.) = P(.)|p)$.

- **Argumentation**: the measure of the influence of an assertion on the probability of another proposition in the epistemic model.

- The argumentative properties of orientation relative to a goal are thus probabilistic effects, not meaning postulates.
Among the propositions affected by the assertion of $p$ there are:

1. Propositions whose probability is affected by contextual knowledge brought forth by $p$.
2. Propositions whose probability is “mechanically” modified, by Bayesian effects.

The speaker selects a sub-set of these propositions: these are the argumentative goals. The hearer needs to abduce these goals from the speaker’s assertion.

The mechanically affected elements can all be abduced by default.

The instructions of some connectives, e.g. but, imply the abduction of one/some goals that satisfy certain conditions. By themselves, the instructions do not specify these goals.
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Proposition

- The semantics of **mais** can be unified in an argumentative fashion, and is similar to the one given by Anscombre and Ducrot (1977); an utterance “\( p \text{ mais } q \)” is such that:
  - \( p \) argues for a conclusion \( r \)
  - \( q \) argues against \( r \), i.e. for \( \neg r \)
  - \( q \) must be a better argument for \( \neg r \) than \( p \) is for \( r \)

- For A&D the question of the abduction of \( r \) is not a linguistic affair but a world-knowledge question.

- I propose that the abduction is guided by discursive clues, and that an utterance suggests by default a set of goals that can be deduced by considering the probabilistic nature of argumentation.
Central examples

(2)  

a. Lemmy solved all the problems, but Ritchie some of them.

b. Lemmy solved all the problems, and Ritchie some of them.

c. Lemmy solved some of the problems, but Ritchie solved all of them.

- But is responsible for the degradation of (2-a): (2-a) vs. (2-b).
- The order of the conjuncts of but matters (asymmetry): (2-a) vs. (2-c).
- Hypothesis: the goals abduced by default are not compatible with the semantics of mais.
Abduction of the argumentative goals

- Let’s suppose the assertion of an utterance $p$ of the form $(Q)F$ with:
  - $F$ the informational focus of the utterance
  - $Q$ the background of the utterance

- Let $E_{Cib}$ be the set of propositions targeted by $p$, i.e. for which $p$ is an argument.

- Amidst the elements of $E_{Cib}$ some have the probabilities raised in a purely mechanical fashion.

- The activated targets are relative to the focus $F$. 
Uniqueness and alternative

In a neutral context (regarding $p$), $E_{Cib}$ minimally includes

1. $H_{unique}$: $F$ is the only one that can combine with $Q$.

   (3) a. Lemmy [plays the bass]$_F$, but he also plays the guitar.
   b. [Lemmy]$_F$ plays the bass, but Ritchie plays it too.
   c. [Lemmy played the bass], but James also danced a polka.

2. $H_{alternative}$: there is an alternative to $F$ that can combine with $Q$.

   (4) a. Lemmy [plays the bass]$_F$, but not the guitar.
   b. [Lemmy]$_F$ plays the bass, but he’s the only one.
   c. [Lemmy plays the bass]$_F$, but that’s all there is.

3. $H_{meilleur}$: If $F$ belongs to a scale, there is no alternative to $F$ that is superior to it on this scale. $F$ is the highest degree of the scale that is true.

   (5) [It is cold]$_F$ in Paris, but in Oslo it’s freezing.
The assertion of $p$ only eliminates worlds that do not verify $p$, and thus that do not verify $H_{unique}$ nor $H_{alternative}$ ($p$ is the union of both propositions).

The assertion of $p$ thus preserves all worlds that verify $H_{unique}$ and $H_{alternative}$.

The probabilities of $H_{unique}$ and $H_{alternative}$ are automatically raised.
$H_{unique}$ and $H_{alternative}$ (II)
Let's suppose that $F$ can be interpreted in a scalar manner, with a degree $d \geq d_0$

The assertion of $p$ eliminates all worlds such that $d < d_0$

The remaining worlds are all compatible with $d$ as the maximal "true" degree

All eliminated worlds include $d$ as the minimal degree, there is no argumentation for the opposite of $H_{meilleur}$
$H_{\text{meilleur}}$ (II)
Central example

None of the 3 preceding goals is compatible with (6)

(6) #Lemmy solved all the problems, but Ritchie some of them.
     =(2-a)

- $H_{unique}$:
  - Lemmy solved only all the problems.
  - Lemmy is the only one to have solved all the problems.

- $H_{alternative}$:
  - Lemmy solved something else than all the problems.
  - Somebody different than Lemmy solved all the problems.

- $H_{meilleur}$:
  - Nobody solved more problems than Lemmy.
  - A person better than Lemmy solved problems.

None of these goals is negated (or argued against) by the second conjunct, thus none legitimates the use of mais/but.
A specific question triggers an argumentative goal that validates the conditions of use of *mais* in (7):

(7)  

a. Est-ce que c’est Lemmy qui a résolu tous les problèmes et James qui en a résolu quelques-uns?  
Is it Lemmy who solved all the problems and James who solved some of them?

b. Lemmy les a tous résolus, mais Ritchie en a résolu quelques-uns.  
Lemmy solved all of them, but Ritchie solved some of them.

c. $H = \text{Lemmy solved all the problems and James some of them.}$
This account does not consider the contrastive use of **but** to be its central meaning.

The example (8-a) differs from (8-b) by being argumentative. A candidate for the argumentative goal is abduced by relying on information structure and Bayesian effects.

(8)  

a. Lemmy is tall but Ritchie is short.  
b. Lemmy is tall and Ritchie is short.

**Openings**: explicitly link the argumentative goal to the discourse topic/question under discussion/etc.
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(9) Lemmy aussi joue de la basse.  
**Lemmy plays the bass too.**

- Features of *aussi* traditionally covered:
  - Presupposition
  - Non-accommodation
  - Obligatory nature

- The presence of an antecedent for *aussi* does not account for all its distribution.
The antecedent of the presupposition of *aussi* does not necessarily belong to the main content:

(10) a. Ce matin, Lemmy a mangé une pomme. Ritchie aussi n’a pris qu’un fruit.  
*This morning, Lemmy ate an apple. Ritchie only took a fruit too.*

b. *Presupposition:* somebody different from Ritchie only took a fruit.

c. *Antecedent:* quantity implicature of the first segment.
There are cases such that the antecedent is present but the use of *aussi* is impossible (experimentally checked):

*Lemmy solved all problems. Ritchie solved some of them too.*

(12) #Lemmy a résolu quelques problèmes. Ritchie aussi n’a pas tout résolu.  
*Lemmy solved some problems. Ritchie didn’t solved all of them either.*
Proposition

- **Aussi** indicates the argumentative similarity between its host and the antecedent of its presuppositions.

- In (13) the predicates are usually argumentatively co-oriented, but differ in terms of strength:

  (13) Lemmy a résolu tous les problèmes. Ritchie aussi en a résolu quelques-uns.

- In (14) the predicates are argumentatively opposed; since *quelques/some* and *tous/all* belong to the same argumentative scale, the negation of one is opposed to the other.

  (14) Lemmy a résolu quelques problèmes. Ritchie aussi n’a pas tout résolu.
Et en effet/donc

Semantics of “p et/and q”:

- p and q must both be arguments for the same conclusion H.
- The knowledge of p must not exhaust the relevance of q for H.

Predictions:

- **And** is incompatible with an explanation relation:
  
  (15)  #Lemmy plays a string instrument, and indeed he plays the bass.

- **Et** will be compatible with a consequence relation, iff. it is not necessary:
  
  (16)  
  a. Lemmy plays the bass, therefore he plays a string instrument.
  b. ?Lemmy plays the bass, and therefore he plays a string instrument.
Conclusions

- **Mais/But** is given adversative semantics, and does not include a sensitivity to information structure (although IS activates some argumentative goals)

- There is more to **Aussi/Too** than its presupposition

- **Et/And** can also be described in probabilistic argumentative terms

- The combination of these elements (and others) is predictable
Thank you
References I


