

The probabilistic dimension of discourse markers

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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: Anscombre 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 $P(\cdot)$ becomes $P'(\cdot) = P(\cdot|p)$.
- **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.

Probabilistic effects, argumentative goals, abduction

- 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 abducted 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 **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)
- #Lemmy solved all the problems, but Ritchie some of them.
 - Lemmy solved all the problems, and Ritchie some of them.
 - 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 .

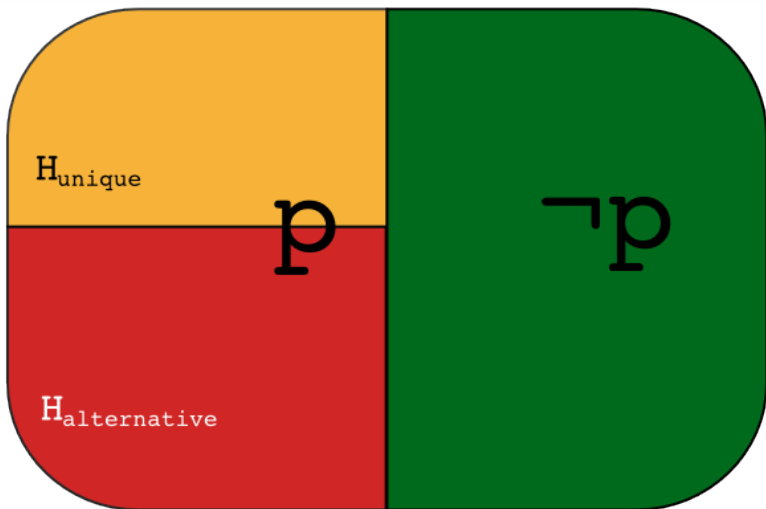
Uniqueness and alternative

- 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.

H_{unique} and $H_{alternative}$

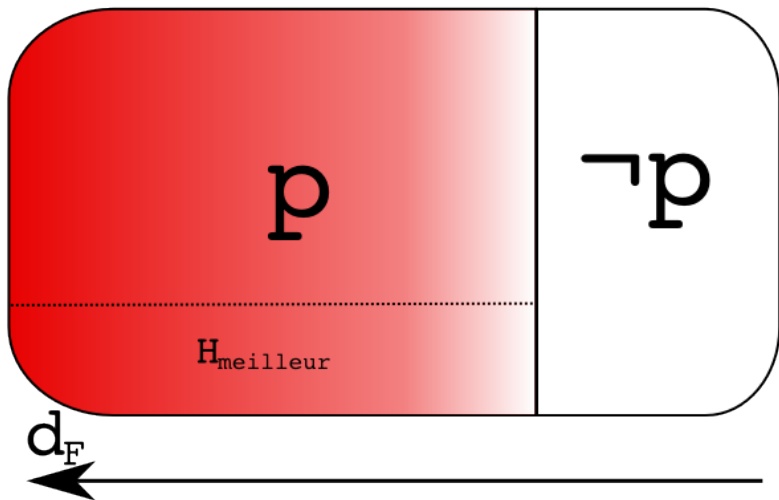
- The assertion of p only eliminates worlds that do not verify p , and thus that do not verify H_{unique} nor $H_{alternative}$ (p is the union of both propositions).
- The assertion of p thus preserves all worlds that verify H_{unique} and $H_{alternative}$.
- The probabilities of H_{unique} and $H_{alternative}$ are automatically raised.

H_{unique} and $H_{\text{alternative}}$ (II)



*H*_{meilleur}

- 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 $H_{meilleur}$

$H_{\text{meilleur}} \text{ (II)}$ 

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**.

Enriched context

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 = Lemmy solved all the problems and James some of them.

Consequences

- 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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Aussi

(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.

New aspects

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):

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

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

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