Argumentation in Language

Layers of Meaning and Sensitivity to Context

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1 Argumentation

1.1 Argumentation as an activity

What is an argument?

- Mercier & Sperber (2011):

  > An argument is a *persuasive message*.

- Besnard & Hunter (2008, p. 2)

  > An argument is a *set of assumptions* (i.e., information from which conclusions can be drawn), together with a *conclusion* that can be obtained by one or more *reasoning steps* (i.e., steps of deduction).

- Prakken (2010): A is an argument iff
  - A is an axiom in the knowledge base $\mathcal{K}$ of the speaker
  - Or, if $A_1, \dots A_n$ are arguments in $\mathcal{K}$, then A can be:
    - The application of non-defeasible rule: $A_1, \dots A_n \rightarrow \psi$
    - The application of a defeasible rule: $A_1, \dots A_n \Rightarrow \psi$

Features of an argument

An argument

- Is intended to persuade an *addressee*/opponent/...
- *Targets* a conclusion or a *goal*
- Is potentially *defeasible*; i.e. arguments can:
  - be compared
  - supersede each other (via rebuttal, undercutting, undermining...)

  $\Rightarrow$ an argument has a given *strength* for its conclusion

1.2 Linguistic Argumentation

Goals and features

- **Hypothesis:** Argumentative features are *part of the linguistic code*. The contribution of some linguistic items is essentially geared towards argumentation.
- **Goals:** To treat aspects of discourse coherence that:
  - are not based on truth-conditions
  - relate to the *purpose* of the speaker when making a discourse move
  - involve several agents (possibly virtual)
- A successful interpretation of argumentation has been given in a *Bayesian* approach to discourse interpretation (Merin, 1999).
  - Agents attribute probabilities to propositions.
  - A discourse move affects the probability measure.
  - A argues in favor B iff asserting A raises the probability of B.

An example

(1) John was on time. Do not scold him.

(2) a. John was *nearly* on time. Do not scold him.
b. $\rightsquigarrow$John was not on time.

(3) a. John was *barely* on time. # Do not scold him.
b. $\rightsquigarrow$John was on time.

- The first segment of (1) is an *argument* for the second.
- Even though (2-a) conveys (2-b) it remains an argument for the same conclusion as (1).
- Surprisingly, (3-a) is *not* an argument for this conclusion, even though it entails (3-b).

$\Rightarrow$ Argumentation is not just a matter of truth conditions, but is also related to the way contents are conveyed.

Argumentation, Inferences, Reasoning

- Mercier & Sperber (2011): "*the function of* reasoning *is argumentative*"

$\Rightarrow$ What is the status of the elements considered by theories of linguistic argumentation from the point of view of reasoning?

- Are they inferences? If yes, what kind of?
- Are these inferences conscious and deliberate?
- How are these inferences affected by context, world-knowledge. . . ?

1. Argumentative goals (AG) can be treated as probabilistic inferences, not necessarily conscious.
2. AG are independent and distinct from conversational implicatures.
3. Preliminary experiments suggest that context cannot override what appear to be default AG.

2 Argumentative goals: the case of *but*

2.1 Abducing the goal

- One of the most prominent "argumentative" markers (Anscombre & Ducrot, 1977; Winterstein, 2012b).
- *But* connects two *contradictory arguments*.
- For a sentence "*p but q*" to be felicitous, there must exist an H s.t.
  - p argues for H
  - q argues against H, i.e. for $\neg H$
  - q must be at least as good an argument for $\neg H$ as p is for H

  (4)
  a. This ring is nice but expensive.
  b. H = We should buy the ring.
- H is the *argumentative goal*, or *pivot inference*
- In probabilistic terms (Merin, 1999):
  - p must raise the probability of H
  - q must lower the probability of H

Apparently non-inferential cases

- In some cases it is hard to pinpoint what is the debated goal debated by *but*; cf. the *semantic opposition* uses of *but*:

  (5) Lemmy plays the bass, but Ritchie the guitar.
- Winterstein (2012b): out of any particular context, (5) uses a goal of the form:

  (6) H_{alt} =Both Lemmy and Ritchie play the bass.
- *But* with H_{alt} is felicitous because asserting the second conjunct augments the probability that Ritchie only plays the guitar, which in turn contradicts H_{alt}.

Contrastiveness as an option?

- Some authors defend a non-inferential analysis of *but* (Sæbø, 2003; Umbach, 2005). For them, the central requirement of *but* is that its two conjuncts A and B must be *contrastive*:
  - A must give reason to assume $\neg B$
  - A and B must "*pull in opposite directions in some respect*"
  - A is good while B is bad, or vice-versa...
- But what about the pair in (7)?

  (7) a. [Lemmy plays the bass]$_A$, but [he's the only one]$_B$.
  b. [Lemmy plays the bass]$_A$, but [he's not the only one]$_{\neg B}$.
- (7) requires A to be contrastive both with B and $\neg B$.

$\Rightarrow$ Problematic under any definition of contrastiveness seen as the dual of alternativeness.

Abducing a goal

A two-step process in the case of *but*:

1. The first conjunct opens a set of potential goals, some of them being argumentatively contradictory:
   - Among other things, strengthenings of a content p are potential goals, e.g. for q independent from p, both $p \wedge q$ and $p \wedge \neg q$ are potential goals (q being potentially subject to certain constraints).
2. Among those, only the ones for which the second conjunct is a counter-argument are retained.

- These operations are *abduction*, i.e. they correspond to the construction of an appropriate context to warrant a certain observation (when the goal is not made explicit).
- This kind of operation is plausible from a cognitive point of view (see Oaksford & Chater (2010); Tenenbaum et al. (2011) about Bayesian reasoning).

Are goals reflective beliefs?

- In (4) the goal H_{buy} can reasonably be conceived as conscious:

  (4) a. This ring is nice but expensive.
  b. H_{buy} = We should buy the ring.

- However it is not evident that in (5), H_{alt} (or $\neg H_{alt}$ at the end of the assertion) is a reflective belief, i.e. *a belief held with awareness of one's reasons to hold it.*

  (5) a. Lemmy plays the bass, but Ritchie the guitar.
  b. H_{alt} =Both Lemmy and Ritchie play the bass.

⇒ Assuming that the argumentative theory is right, speakers are not necessarily always consciously arguing, but their use of argumentative items reflects a probabilistic inferential mechanism.

2.2 Inferential independence

Goals vs. other inferences

- The argumentative description of *but* belongs to the group of *inferential* approaches to contrast.
- Not all inferential approaches postulate that the inferential pivot is of a specific argumentative type.
- Relevance Theory (RT) (Blakemore, 1989, 2002):

  > A conjunct introduced by *but* must contradict and eliminate an *assumption* that was made *accessible* by the preceding utterance.

- Are argumentative goals reducible to a notion of accessible assumption?

Issues for Relevance Theory

- The RT hypothesis entails that any assumption should be cancellable by using *but*.
- In the RT approach, Q-implicatures are manifest assumptions (Carston, 1998).

  (8) a. Lemmy played some of the solos
  b. $\underset{imp}{\rightsquigarrow}$ Lemmy did not play all the solos.

- Therefore RT predicts that contradicting the content of a Q-implicature by introducing it with *but* should be fine.

  (9) #Lemmy played some of the solos, but he played all of them.

Contradictory inferences

- Rather than cancel a Q-implicature, it appears that *but* can reinforce it:

  (10) [Lemmy played some of the solos]$_A$, but [not all]$_B$.

- A conveys a Q-implicature B' that matches the content of B.
- To license the use of *but* there must be a proposition H such that
  - $A \underset{arg}{\rightsquigarrow} H$
  - $B \underset{arg}{\rightsquigarrow} \neg H$

$\Rightarrow$ Hence, A must:

  - Convey an inference B'
  - Argue against what B' argues for

- This is a further argument to keep the levels of Q-implicature and argumentative goals apart.

Independence

- If the argumentative goal is to be treated as a kind of inference, it needs to be kept apart from quantity implicatures (Winterstein, 2012a).

Independence Hypothesis

- Argumentative effects are only computed with the main content of the utterance, i.e. Q-implicatures are ignored.

$\Rightarrow$ an utterance can argue in a direction opposite to a content it conveys via other means (e.g. *almost*).

- *But* is only sensitive to argumentation goals.
- Thus, *but* can introduce a conjunct that is redundant with a Q-implicature, as long as that content is in argumentative opposition with its host.

Taking stock

Argumentative goals

- Are well treated as probabilistic inferences.
  - They are abductive inferences.
  - A given utterance can carry *contradictory* argumentative goals.
- Are not necessarily conscious.
  - Not incompatible with claims about the activity of argumentation.
- Must be kept apart from quantity implicatures: not just any inference will enter the semantics of some argumentative items (e.g. *but*).

3 The influence of context

- Most authors agree that the use of *but* requires the determination of a pivotal element: the argumentative goal, the *Tertium Comparationis*, the *quaestio*...
- The context of utterance is often cited as one of the main elements that guide this determination:
  - Spenader & Maier (2009) "*contrast is limited to denials of implications based on context and world-knowledge.*"
- Without a minimal context, many theories consider that the goal cannot be built.
- Therefore out of the blue, some minimal context is inferred to support the derivation of a goal.

Abduced vs. given context (I)

- In some cases, a *concessive* abduction appears natural:

(11) a. Paul is fat, but educated.
b. $\rightsquigarrow$ The speaker believes fat people are not educated.

- This can be overriden in the right context

(12) a. *Mary wonders whether she should marry Paul.* He is fat, but educated.
b. $\not\rightsquigarrow$ The speaker believes fat people are not educated.

- [**Sidenote:** this deserves experimental confirmation...]

Abduced vs. given context (II)

- For some examples, it appears that an explicit context can "save" a degraded utterance:

(13) *We're looking for a stunt double for John. The double should have the same size as John, who's very tall, so that he does not get noticed on screen.* # Paul is tall, but taller than John.

1. Why does (13) appear degraded in the first place?
2. Does the addition of a context really saves (13) and similar examples?
3. If it does, why can't we abduce such a context?

3.1 Degrees and abduction

Degrees and abduction

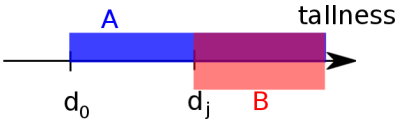
(14) #[Paul is tall]$_A$, but [taller than John]$_B$.

- Semantic contributions:

  $[\![A]\!]$ $\exists d : \text{tall'}(p) = d \wedge d \geq d_0$ (d_0 = standard of tallness)

  $[\![B]\!]$ $\exists d : \text{tall'}(p) = d \wedge d > d_j$

- If $d_0 > d_j$: then A entails B and B cannot have any relevant argumentative effect.
- If $d_j > d_0$: B entails A, then: $\forall H : r(B, H) > 0 \rightarrow r(A, H) > 0$, i.e. for any goal positively affected by B, it is also positively affected by A: no *counter*-argumentation is possible.



Degree verbs

(15) #The truck moves, but fast.

- Similar explanation as the previous one, here limited only to the second case (*fast* specifies a degree superior to the norm).
- Therefore the argumentative perspective predicts the degraded nature of constructions of the form

  (16) a. A is Y, but more Y than B.
  b. A is Y, but to a high degree.

  if Y is a lower-bounded gradable predicate.

3.2 Experimental work

Experimental work

- Intuitively, in some cases, the proper context can override the previous prediction.

  (13) *We're looking for a stunt double for John. The double should have the same size as John, who's very tall, so that he does not get noticed on screen.* Paul is tall, but taller than John.

- However, it seems much harder with other constructions:

  (17) *A golfer is playing his last ball. He is on the top of a slope and must hit his ball without force so that it rolls towards the hole.* ? He's going to miss because the ball is rolling towards the hole, but fast.

⇒ Experimental testing

Pilot experiment

Test items

- Gradable expressions, combined with an expression of low/high degree
- Presence/Absence of *but* for introducing the high/low degree.
- Use of a context biased to favor the introduction of a high/low degree.

(18) La balle roule vers le trou, mais (lentement/rapidement). *The ball is rolling towards the hole, (but) (slow/fast).*

The experiment

- Online judgment task experiment (hosted on the `IbexFarm`).
- 30 native speakers of French.
- Items were presented in a random manner, distributed according to a latin square and interspersed with filler items.
- Subjects had to rate the naturality of the sentences presented on screen on a scale from 1 ("Mauvais") to 10 ("Naturel").

Results

	∅	**Mais**
Low degree	6,5	7,2
High degree	6,1	*5,1*

- The acceptability of *mais + high degree* is the only significant depart from the other acceptability scores (Mann-Whitney/Wilcoxon U-test).
- Variances do not vary between the four configurations (although some tests suggest they should not be considered equal).
- Two possible explanations:
  1. The contexts used for biasing *mais+high degree* were not good enough.
  2. It suggests that default argumentative orientations cannot be that easily overriden by context.

A future experiment

Work in progress inside Labex EFL (joint work with E. Ellsiepen, B. Hemforth, and J. Jayez).

- *Goal*: measure the effect of context on (13) via self-paced reading.

(13) *We're looking for a stunt double for John. [. . .]* Paul is tall, but taller than John.

- Compare the reading speed of the phrase *but taller than John*, with/without the presentation of a biasing context. Possible outcomes:
  1. No effect of context
  2. Context improves reading time, but not up to par with felicitous controls, e.g.:

     (19) Paul is short, but taller than John.

  3. Context improves reading time to times comparable to (19).

Predictions

- Strongly *contextualist theories* (e.g. Relevance Theory) predict that a contextually salient inference given by the context should immediately license *but*.
- *Referentialist argumentation* predicts the same, e.g. Merin (1999)'s version of argumentation which considers that the goals activated by an utterance only depend on the semantic denotation of the utterance.
- *Linguistic argumentation* (which constrains the activated goals by the linguistic form of the mother utterance) predicts a conflict between lexical properties and the context.

	Improved reading times.	"Felicitous" reading times
Strong contextualism	✓	✓
Referentialist Argumentation	✓	✓
"Linguistic" Argumentation	?	×

Conclusions

- The argumentative perspective in language appears coherent with other argumentative accounts and productive in its predictions.
- However the empirical profile of argumentative elements is still blurry.
- Plans for the future:
  - Carry out the previous experiment.
  - Further investigate the cases of:

    (20) The ball is rolling, but fast.

  - Compare the effects of context on the *processing* and the judgment of *acceptability* of a sentence (eye-tracking).

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