

# Linking argumentativity and information structure in adversatives

Grégoire Winterstein  
Laboratoire de Linguistique Formelle  
Université Paris Diderot - Paris 7 – CNRS

gregoire.winterstein@linguist.jussieu.fr

## Abstract

This paper deals with the semantics of the adversative connective *but*. It argues for a unified description of the *semantic opposition* and *denial of expectation* uses of *but*. Our analysis is an attempt at reconciling approaches based on the focus-sensitivity of *but* and an argumentative description of its meaning. To show that both approaches are necessary, we rely on examples involving quantifiers. Throughout this work, we connect our account to works dealing with the derivation of scalar implicatures. We argue that our data are neutral towards the issue of the locality of these inferences, and that the semantics of *but* is not sensitive to the presence of scalar implicatures.

## 1 Introduction

A recurring problem in the description of the adversative *but* is the difference between its meaning in examples such as (1-a) (called *semantic opposition* or *contrastive* use, e.g. in (Lakoff, 1971)) and the one in (1-b) (called *denial of expectation* or *argumentative* use).

- (1) a. Lemmy plays the bass, but Ritchie the guitar.
- b. Lemmy has been smoking for 40 years, but he's in perfect health.

Semantic opposition is characterized by the fact that each conjunct contains two elements that have a corresponding contrastive element in the other conjunct; in other words the conjunction must involve two *contrastive pairs*. In (1-a), the pairs are  $\langle Lemmy, Ritchie \rangle$  and  $\langle bass, guitar \rangle$ . The interpretation of these examples is said to be *symmetric*: reverting the order of the conjuncts does not change the meaning of the whole, as shown in (2).

- (2) Ritchie plays the guitar, but Lemmy the bass.  $\approx$ (1-a)

It is also often noted that *and* can replace *but* without deeply affecting the meaning of the utterance:

- (3) Lemmy plays the bass and Ritchie the guitar.  $\approx(1-a)$

Uses of *but* that signal a denial of expectation have different properties. There is no requirement of double contrastiveness, the conjunction is not symmetric (cf. (4-a)) and *but* cannot be closely paraphrased by *and* (cf. (4-b)).

- (4) a. Lemmy is in perfect health, but he's been smoking for 40 years.  $\neq(1-b)$   
 b. Lemmy has been smoking for 40 years, and he's in perfect health.  $\neq(1-b)$

The only apparent requirement on denials of expectation is that the two conjuncts must stand in an oppositive relation: given the information of the first conjunct one would tend to reject what is asserted in the second one. This property does not seem to extend to semantic opposition cases. To verify this, one can check that in denial of expectation contexts, *but* can easily be replaced by *yet* without an apparent shift in meaning, whereas it is not true for semantic opposition:

- (5) a. Lemmy has been smoking for 40 years, yet he's in perfect health.  $\approx(1-b)$   
 b. Lemmy plays the bass, yet Ritchie plays the guitar.  $\neq(1-a)$

Besides these two uses, at least two others are often described:

- *Indirect Opposition* examples are sisters to denial of expectations. Instead of involving a direct clash between first and second conjunct, the opposition is indirect: the first conjunct evokes a certain conclusion and the second one evokes the opposite.

- (6) This ring is nice but expensive (so we shouldn't buy it).

In an argumentative framework as the one we'll be using below (e.g. the one in Anscombe and Ducrot (1983)), these examples and the denial of expectations are treated on a par: the denial of expectation cases have the property that the conclusion evoked by the first conjunct is the negation of the second conjunct.

- *Correction* cases are marked by a negation in the first conjunct and a second conjunct that corrects an information in the first conjunct:

- (7) It's not a car, but a Volkswagen.

In many languages (Spanish, German, Romanian...) these constructions use a specific connective. These uses of *but* have been analyzed as involving meta-linguistic negation by Horn (1989). We will not deal with such examples in this work, although it is our opinion that a complete account of *but* should cover them.

One can distinguish at least three approaches to the description of the meaning of *but*<sup>1</sup>:

- *Argumentation* based theories consider that the core meaning of *but* lies in its argumentative properties (e.g. (Anscombe and Ducrot, 1977), (Merin, 1999)) and that examples like (1-b) and (6) exhibit the central properties of *but*.
- Theories based on the notion of *semantic contrast* consider that denial of expectation and concessive interpretations are an over-interpretation of the contrastive meaning of *but* (e.g. (Umbach, 2005)). Rather, semantic opposition is what *but* is all about.
- Others claim that *but* is *ambiguous* and needs distinct descriptions for distinct uses (e.g. (Izutsu, 2008)).

We will argue that a single description is sufficient to account for both readings of *but* described above. To give a satisfactory account, we will borrow from both argumentation and semantic contrast based theories, and state an *argumentative strength* constraint which will rely on the information structure of each conjunct.

First, we study examples that show the interplay between information structure and strength in the felicitous licensing of *but*. Then, we formulate our proposition and show how it applies to some examples. Throughout the presentation we also look at alternative explanations and theories, especially the theory of local scalar implicature derivation and we show that it cannot account for our data.

## 2 Motivating Data

To motivate our account of *but* we will study (8) in detail.

(8) #Lemmy answered all the questions, but Ritchie some of them.

Out of the blue, (8) appear infelicitous which motivates our use of the # mark. However, we will show that the felicity of (8) depends on its information structure. Then, we will look at two different aspects of the quantifiers in (8). The first one is the *contrastiveness* of the quantifiers, the second is their relative *strengths* (in a sense to be made precise). Our claim is that the quantifiers form a proper contrastive pair, and that it is their strength that interferes with the meaning of *but* to yield infelicitousness.

### 2.1 Information Structure

We claim that the information structure of a coordination with *but* has an effect on its felicity (as already noted in Umbach (2005)). More specifically, for the case of (8) we claim that:

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<sup>1</sup>An approach that does not properly fit in these categories is the one proposed by Blakemore (2002) where she argues for an underspecified description of *but* that gets enriched in particular contexts. Although this approach has its merits, we leave a thorough discussion of it for the future.

- If *some* is in the second conjunct and is an *informational focus*, the coordination is not felicitous<sup>2</sup>.
- If *some* is in the second conjunct and is not narrowly focussed (be it as a *contrastive topic* or if the whole conjunct is *all-focus*), then the coordination is felicitous.

To prove our claim, we rely on a number of tools that help us manipulate the informational structure of an utterance:

- Information Structure can be forced by an *overt question*.
- *Prosody* can indicate Information Structure<sup>3</sup>.
- *Clefts* can identify Informational Focus.

### 2.1.1 Quantifiers as Informational Foci

The question in (9-a) marks Lemmy and Ritchie as contrastive topics, and is open regarding the number of questions they answered, i.e. the quantities of answers will be informational foci. As can be observed, (9-b) is not felicitous as an answer to (9-a).

- (9) a. How many questions did Lemmy and Ritchie answer each?  
 b. # $[\text{Lemmy}]_{CT}$  answered  $[\text{all the questions}]_F$  but  $[\text{Ritchie}]_{CT}$   $[\text{some of them}]_F$ .

### 2.1.2 Quantifiers as Contrastive Topics

We use the question (10-a) to show that if the quantifiers in (8) are contrastive topics, then the utterance is felicitous. This question establishes that somebody answered all the questions and that someone else answered some of them.

- (10) a. Who answered all the questions and who answered some of them?  
 b.  $[\text{Lemmy}]_F$  answered  $[\text{all the questions}]_{CT}$  but  $[\text{Ritchie}]_F$   $[\text{some of them}]_{CT}$ .

Example (10-b) sounds slightly better than (9-b). However, in order to sharpen our judgement, we propose to use (11) instead. There, each subject is clefted, which here means that the subjects are informational foci, just as they would be in (10-b). The resulting (11) shows that if the quantifiers are contrastive topics and not foci, then the sentence is indeed felicitous.

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<sup>2</sup>Throughout this work, the notions of *Informational Focus* and *Contrastive Topic* are based on those found in Büring (2003). These notions are not prosodic in nature, although informational foci and contrastive topics do have prototypical prosodic realizations (e.g. the *A* and *B* accents in English).

<sup>3</sup>We had no access to english speakers to test the effects of prosody on the felicity of (8). We ran a preliminary experiment on French *mais*(=*but*) which showed that prosodic information is not a very good indicator of information structure for (8) in French. Therefore, we will keep a detailed study of these effects for future work.

- (11) It's [Lemmy]<sub>F</sub> who answered [all the questions]<sub>CT</sub>, but it's [Ritchie]<sub>F</sub> who answered [some of them]<sub>CT</sub>.

### 2.1.3 All Focus Conjuncts

A last configuration we need to look at is the case of quantifiers in all-focus utterances, as in (12-b).

- (12) a. Tell me who fared well on the test?  
 b. [Lemmy answered all the questions]<sub>F</sub> but [Ritchie some of them (too)]<sub>F</sub>.

As we have claimed, (12-b) is felicitous, but it is worth noting that *too* facilitates its interpretation. In this case, some approaches even predict that *too* should be obligatory (see (Winterstein, 2010) for more details about the behaviour of *too* in such cases).

Nevertheless, whatever the effect of *too* in (12-b), it cannot be used to account for the infelicity of (9-b), as seen in (13-b). In this regard, (12-b) and (9-b) can be considered as a minimal pair for felicity.

- (13) a. How many questions did Lemmy and Ritchie answer each?  
 b. # [Lemmy]<sub>CT</sub> answered [all the questions]<sub>F</sub> but [Ritchie]<sub>CT</sub> [some of them]<sub>F</sub>  
     too. =(9-b)+*too*

### 2.1.4 Summing-Up

The examples seen above show that our previous claim is correct: as long as the quantifiers in (8) are not narrowly focussed, (8) is felicitous.

## 2.2 The Contrastiveness of Quantifiers

In this section, we look at a potential explanation for the infelicity of (9-b). It can be argued that the quantifiers *all* and *some* do not form a proper contrastive pair because the former logically entails the latter. If we assume that *but* requires truly contrastive pairs, the infelicity of (9-b) would follow as a consequence. We argue that this explanation is inconclusive for several reasons.

First, we show that these quantifiers can be contrasted with connectives different from *but*. Second, we claim that in order to be contrasted with *all*, *some* needs to be exhaustified. We then show that nothing prevents this exhaustification in (9-b).

### 2.2.1 Romanian and *And*

If *all* and *some* did not form a contrastive pair, we would not expect them to appear in constructions requiring contrastiveness. Besides coordination with *but*, we present

two such constructions that require and allow a contrast between these quantifiers.

The first one is taken from Romanian and relies on the connective *iar*. The semantics of *iar* is often described as intermediate between that of *and* and *but* (for more details about *iar*, see (Bilbîie and Winterstein, forthcoming)). The characteristics that interest us are the following:

- A coordination with *iar* requires two pairs of contrastive items. Having just one pair as in (14) does not license the use of *iar*.

(14) \*Inelul e frumos iar scump.  
*The ring is nice IAR expensive*

- *Iar* does not allow non-contrastive elements in one pair:

(15) #Paul a mâncat un măr, iar Petre un fruct.  
*Paul ate an apple, IAR Peter a fruit*

The pair  $\langle \textit{apple}, \textit{fruit} \rangle$  is not contrastive because the first one is an hyperonym of the second. This prevents the use of *iar* in (15).

We can now check that *iar* can contrast the Romanian equivalents of *all* and *some*:

(16) Paul a răspuns la toate întrebările, iar Petre la câteva.  
*Paul answered all the questions, IAR Peter some of them*

The example (16) is felicitous, and it must be noted that our informants told that its second conjunct strongly conveys that Peter did not answer all the questions.

A similar point can be made with the connective *and*, as in (17-b):

(17) a. How many questions did Lemmy and Ritchie answer each?  
 b. Lemmy answered all the questions, and Ritchie some of them.

The answer (17-b) would typically be produced with contrastive accents on *all* and *some*. Here again, the favoured interpretation of *some* is an exhausted one: Ritchie did not answer all the questions.

### 2.2.2 Exhaustification

We have seen that in (16) and (17-b) the preferred interpretation of *some* is an exhausted one. *Exhaustification* is often assumed to be the mechanism yielding scalar inferences (e.g. Groenendijk and Stokhof (1984), van Rooij and Schulz (2004), Chierchia et al. (2008)...), i.e. that allows *some of the questions* to be interpreted as *some of, but not all, the questions*.

Therefore, we make the hypothesis that to form a contrastive pair with *all*, *some* must be exhausted. The hypothesis makes sense since an exhausted *some* is not linked by an entailment relation with *all* and the two are likely to form a proper contrastive pair (being thereby both similar and different).

To explain the infelicity of (9-b), one could then argue that since *but* blocks the exhaustification of its right conjunct (note that this presupposes that *but* requires contrastive pairs in its conjuncts, a fact we actually argue against later in favor of an analysis based on the strength of the items). But such a hypothesis would be rather *ad-hoc*, and counter-intuitive: if *but* requires a contrastive pair, it should not block the mechanism that would properly force the proper interpretation of the quantifiers. Furthermore, an exhaustive interpretation of *most* is accessible in (18), indicating that the exhaustification is not hampered in the second conjunct.

(18) Lemmy answered some questions, but Ritchie most of them.

We conclude that the infelicity of (9-b) cannot be attributed to a blocking of the exhaustification mechanism of the right quantifier.

### 2.3 Strength

An immediate way to modify (9-b) into a felicitous utterance is to switch its conjuncts:

- (19) a. How many questions did Lemmy and Ritchie answer each?  
 b. Lemmy answered some of the questions, but Ritchie all of them.

*Some* and *all* are often described as belonging to the same *scale*, be it an entailment based one (e.g. Horn (1989)) or a relevance based one (e.g. Merin (1999), van Rooij (2004)). Some scale examples are  $\langle All, most, some, a bit \rangle$  and  $\langle None, few, not all \rangle$  (these two scales are related by negation: the negation of each element of a scale belongs to the other, e.g. *not some=none*). The contrast between (19-b) and (9-b) thus shows that if the foci in the left and right conjuncts belong to the same scale, the stronger item must be placed in the right conjunct.

If each focus belongs to negated scale of the other, the constraint is more complex: the right focus must be stronger than the negation of the left focus. In (20-a) and (20-b), the right focus is the strongest on its scale, and the coordination with *but* is felicitous. In (20-c), the negation of the left focus is *None*, and it is stronger than the right focus: the utterance is not felicitous.

- (20) a. Lemmy answered a few questions, but Ritchie none of them.  
 b. Lemmy answered some of the questions, but Ritchie none of them.  
 c. #Lemmy answered some of the questions, but Ritchie not all of them.

If one admits that *semantic opposition* is one of the uses of *but* and constitutes a class of its own, then the examples (9-b) and (19-b) both have a structure of this kind, which, as stated above, is traditionally considered to be symmetric. However, the contrast between (9-b) and (19-b) shows that this cannot be a general property of semantic opposition. We take it to mean that *but* is intrinsically asymmetrical, in both its denial of expectations and semantic opposition uses. This will be our starting point for the formalization of its semantics.

## 2.4 Taking Stock

We sum-up the main observations we have made in this section:

- *But* is sensitive to information structure (as already noted by Umbach (2005))
- *But* is intrinsically asymmetrical: a scalar item in the focus of the second conjunct in a *but*-coordination must be stronger or opposed to its counterpart in the first conjunct:
  - It is not a contrastability issue.
  - It is not an exhaustification issue.

## 3 Proposed Solution

Our proposed analysis will borrow from two formalizations we already mentioned:

- the analysis by Umbach (2005) that relies on the sensitivity of *but* to information structure,
- the description of *but* given by Anscombe and Ducrot (1977) that is based on the theory of argumentation.

We briefly present the merits and flaws of each approach, and then take the best of both worlds to build our final proposal.

### 3.1 Umbach (2005)'s Analysis

The central claim of Umbach's analysis is that *but* is sensitive to the information structure of its conjuncts. A simple way to observe this sensitivity is the intuitive difference between (21-a) and (21-b):

- (21) a. ...but BILL has washed the dishes.  
 b. ...but Bill has washed the DISHES.

The continuation in (21-a) bears a stress on *Bill* that suggests that the whole conjunction is an answer to a question bearing on persons (e.g. *Who prepared dinner and who washed the dishes?*). On the other hand, (21-b) bears a stress on *dishes* suggesting a question such as *What did Bob and Bill do?*

To describe the semantics that Umbach gives to a coordination with *but*, we assume an utterance with the following information structure<sup>4</sup>:  $\langle\langle CT_1, R_1 \rangle, F_1 \rangle$  but  $\langle\langle CT_2, R_2 \rangle, F_2 \rangle$ . Umbach's claim is that the asserted component of *but* is similar to the contribution of the more neutral conjunction *and*: it asserts the truth of each conjunct. In addition to this, *but* also conveys an implicature expressing the fact that the predication on the focus of the second conjunct does not hold for the first focus. She calls it the *denial condition*. With the structure and notations given above, we can spell out the condition as follows:

**Assertion:**  $((R_1)CT_1)F_1$  and  $((R_2)CT_2)F_2$

**Denial condition:**  $\neg((R_1)CT_2)F_1$

Applied to (22), this gives (22-a) and (22-b).

- (22) [John]<sub>CT<sub>1</sub></sub> [cleaned up the room]<sub>F<sub>1</sub></sub>, but [Bill]<sub>CT<sub>2</sub></sub> [did the dishes]<sub>F<sub>2</sub></sub>  
 a. *Assertion:* John cleaned up the room **and** Bill did the dishes  
 b. *Denial Condition:* Bill did not clean the room.

### 3.1.1 Wrong Predictions of the Denial Condition

If we apply the above analysis of *but* to our key-example (9-b) (repeated in (23-a)), the prediction of the denial condition (given in (23-b)) is not satisfactory.

- (23) a. # [Lemmy]<sub>CT</sub> answered [all the questions]<sub>F</sub> but [Ritchie]<sub>CT</sub> [some of them]<sub>F</sub>.  
       = (9-b)  
 b. *Denial Condition:*  $\neg$ (*Ritchie answered all the questions*)

The denial condition does not predict any inconsistency in (23-a); rather its content matches that of the scalar implicature that would be attached to the second conjunct of (9-b). Even worse, the denial condition predicts that (10-b) should be out because the denial condition (given in (24-b)) directly contradicts the second conjunct.

<sup>4</sup>Throughout this section we use the following notations:

- *F*: marks an informational focus
- *CT*: marks a contrastive topic
- *BG*: marks the background of an utterance (the part of the utterance to which the focus applies)
- *R*: marks the background minus the contrastive topic



argumentative properties of *but* and their shortcomings.

### 3.2.1 Brief Introduction to Argumentation

Argumentation theory stems from a very basic observation: the same sentence can have a truth-conditional content that contradicts the purpose of the sentence. For example, (27-b) entails that the dinner is not ready, but yet it is understood as a positive answer to the question (27-a).

- (27) a. Is the dinner ready?  
b. Yes, almost.

Anscombe and Ducrot (1983) analyze (27-b) by teasing apart its truth-conditional content and what they call its *argumentative orientation*. The item *almost* is thus described as conveying the negation of its argument, but retaining the same argumentative properties as this argument. Therefore, (27-b) is said to argue in the same way as “*The dinner is ready*” would, which explains that it can felicitously follow the affirmative *Yes*.

The argumentative orientation of an utterance has three remarkable properties:

- It is always relative to an argumentative goal that is contextually determined.
- It is oriented for, or against this goal.
- It is quantified: it is possible to order (at least partially) the arguments for a given goal.

Some linguistic items have conventional argumentative properties. This is the case for the already mentioned *almost*, and a score of other items have also been described in the literature (e.g. *negation* and *only* that revert the orientation of their hosts). Although Anscombe and Ducrot treat argumentation as a primitive, Merin (1999) proposed a way to derive the argumentative power of an utterance in a probabilistic framework. One can calculate the *relevance* of an utterance  $p$  to a goal  $H$  (which is noted  $r_H(p)$ ). If  $r_H(p)$  is positive,  $p$  is said to argue for  $H$ , if not, it argues against  $H$  ( $r_H(p) < 0$ ) or is neutral towards  $H$  ( $r_H(p) = 0$ ). The exact definition of the relevance function can vary (see (van Rooij, 2004) for examples) and does not interest us here.

### 3.2.2 The meaning of *but*

Argumentative approaches analyze the meaning of an utterance of the form  $p$  but  $q$  as follows:

- It asserts both  $p$  and  $q$

- There is an *argumentative orientation condition* on the conjuncts:  $p$  and  $q$  must have opposite argumentative orientation ( $r_H(q) < 0 < r_H(p)$ <sup>5</sup>)
- There is an *argumentative strength condition*  $r_H(p \wedge q) < 0$ , i.e. the conjunction as a whole must argue in the same direction as  $q$  (roughly:  $q$  “wins” the argument)

The strength condition captures the difference between (28-a) and (28-b).

- (28) Should we buy this ring?
- It’s nice but expensive.
  - It’s expensive but nice.

The question (28) sets the buying of the ring as the argumentative goal of the answer. In (28-a), the second conjunct is understood as being stronger, i.e. the ring should not be bought because it’s expensive ; whereas in (28-b), it’s the niceness that is understood to prevail in favour of the buying.

### 3.2.3 Shortcomings

As such, standard argumentation approaches cannot deal with the examples we have seen so far. Among their defects are the following:

- Information structure is not taken into account in the description of *but*. This means that the predictions for (8) are independent of its information structure, whereas we observed that its felicity varied according to the informational status of the quantifiers.
- As stated, the strength condition has a dubious interpretation in the “semantic opposition” cases. For example in (29), there is no obvious way to tell why and for which conclusion is *Ritchie plays the guitar* a better argument than *Lemmy plays the bass*.

- (29) Lemmy plays the bass, but Ritchie the guitar.

- The strength condition is contradictory with the orientation condition in some cases (cf. van Rooij (2004) in the case that  $p \vDash q$ )

## 3.3 Detailed Proposal

Our proposal will integrate the best aspects of both Umbach’s proposal and the argumentation theory. What we are looking for is a description of *but* that:

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<sup>5</sup>We consider that  $H$  is fixed as the argumentative goal of the first conjunct. If  $H$  is taken as the goal of the second conjunct, then the first one argues for  $\neg H$  which means that the ordering must be reversed in all formulas.

- Keeps the sensitivity to information structure, without deriving the faulty inferences of the denial condition.
- Relies on an argumentative framework, because it accounts well for concessive readings and ensures the link with the world-knowledge of the participants.
- Keeps an asymmetric constraint similar to the strength condition: by itself, the orientation condition is symmetric and cannot account for the asymmetry of the examples we have observed<sup>6</sup>.

Our solution is thus to reformulate the strength constraint by including our observations about weak items in focus.

We describe the meaning of  $\langle BG_1, F_1 \rangle$  but  $\langle BG_2, F_2 \rangle$  as such:

**Assertion:**  $p = (BG_1)F_1$  and  $q = (BG_2)F_2$

**Orientation Condition:**  $p$  and  $q$  must have opposite argumentative orientation:  
 $r_H(q) < 0 < r_H(p)$

**New Strength Condition:** the proposition obtained by substituting foci in the first conjunct must be stronger than  $p$  or than  $\neg p$ :

- let  $q' = (BG_1)F_2$
- then  $r_H(q') \notin ]r_H(\neg p), r_H(p)[$

The new strength condition is illustrated on Fig. 1: the relevance of the constructed  $q'$  can appear anywhere, except in the gray zone.



Figure 1: Compared Strengths

In the case of all-focus utterances we have  $q' = q$  and the situation is analogous to the one usually postulated in argumentative frameworks, i.e.  $q$  can only be on the left side zone in Fig. 1 since  $q$  and  $p$  must have opposite argumentative orientations.

### 3.3.1 Applications

We now show how to apply our proposal to the more characteristic examples we have seen so far.

<sup>6</sup>It is also worthwhile noting that a strength condition for adversatives is independently assumed in some works, e.g. in Jasinkaja and Zeevat (2009)

**Non-felicitousness:** First, we check that (9-b) (repeated in (30-b)) is predicted to be anomalous.

- (30) a. How many questions did Lemmy and Ritchie answer each?  
 b. # $[Lemmy]_{CT}$  answered  $[all\ the\ questions]_F$  but  $[Ritchie]_{CT}$   $[some\ of\ them]_F$ .  
 =(9-b)

With the previous notations we have:

- $p = Lemmy\ answered\ all\ the\ questions$
- $q' = Lemmy\ answered\ some\ of\ the\ questions$
- Usually, scalar items such as the quantifiers  $\langle all, some \rangle$  form scales<sup>7</sup>, i.e.  $r_H(q') \in [0, r_H(p)]$
- Since  $r_H(q')$  is in the forbidden range of value, we correctly predict the non-felicitousness of (30-b).

**Quantifiers as Contrastive Topics** Now, (10-b) is shown to be felicitous.

- (31) a. Who answered all the questions and who answered some of them?  
 b.  $[Lemmy]_F$  answered  $[all\ the\ questions]_{CT}$  but  $[Ritchie]_F$   $[some\ of\ them]_{CT}$ .  
 =(10-b)

We have

- $p = Lemmy\ answered\ all\ the\ questions$
- $q' = Ritchie\ answered\ all\ the\ questions$
- Here  $p$  and  $q'$  do not stand in a systematic argumentative relation. Their actual ranking depends on the context of utterance. Since the context in (31-a) is neutral, nothing prevents the accommodation of the proper relation between the propositions and the utterance is understood as felicitous.

**Non-scalar items** Let's now look at what our analysis predict for utterances without scalar items such as (32-b).

- (32) a. What do Lemmy and Ritchie play?  
 b.  $[Lemmy]_{CT}$  plays  $[the\ bass]_F$ , but  $[Ritchie]_{CT}$   $[the\ guitar]_F$ .

The analysis gives:

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<sup>7</sup>An emphasis on *usually* is mandatory: it is not always true that quantifiers form scale, although the proper contexts can be hard to build. See (Winterstein, 2008) for an example.

- $p = \textit{Lemmy plays the bass}$
- $q' = \textit{Lemmy plays the guitar}$

As in (31-b),  $p$  and  $q'$  do not stand in any systematic argumentative relation. There are two options for their relative ranking, which roughly correspond to how one understands the relation between *playing the bass* and *playing the guitar*: it can either be the case that the second is better than the first or it can be that it is opposed to it. We can speculate on the kind of goal  $H$  that each ranking could correspond to:

- If  $r_H(p) < r_H(q')$ , then the argumentative goal  $H$  would be akin to *Lemmy's a better musician than Ritchie*, and the whole coordination argues against this goal: because he plays the guitar, it's Ritchie who is the best musician of the two.
- If  $r_H(q') < r_H(\neg p)$ , the argumentative goal  $H$  would be akin to *Lemmy and Ritchie both play the bass*. The first conjunct gives a partial argument for such a goal, and the second one denies it.

This speculation on argumentative goals is only valid when no particular goal is explicit in the discourse, or when *but* is used in a discourse that does not require its presence. In (32-a), the use of *but* is not called for by the form of the question: the use of *and* would have felt more natural. If the speaker of (32-b) elected to use *but*, it must be because he has his own agenda, and wishes to convey more than a plain answer to (32-a). We hypothesize that the two interpretations of (32-b) we have given do cover the range of possibilities to explain the use of *but* in (32-b).

## 4 Conclusion

In this work we have argued for a unified semantics for the adversative connective *but*. Our proposal relied on previous approaches: one based on the notion of semantic contrast and the other based on argumentation theory. We described *but* as being sensitive to two different dimensions of discourse: argumentation and information structure, and blind to the exhaustive interpretation of its conjuncts.

## Acknowledgements

I deeply thank Jacques Jayez, Pascal Amsili, Jean-Marie Marandin and Benjamin Spector for their help and comments on this work. It goes without saying that all errors and mistakes remain my own property.

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