

On the Notion of Contrast in Information Structure and Discourse Structure

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1. Introduction*

The idea of contrast plays an important role in the analysis of information structure and discourse structure. In the literature on information structure, we encounter the concept of contrastive focus and of contrastive topic, and there is also the opinion that focus in general establishes a contrast. In the literature on discourse structure, it is commonly held that there is a discourse relation of contrast which is indicated by, e.g., English *but*. However, these notions of contrast differ considerably with respect to what is meant by their conception of contrast.

Consider the examples in (1)-(7): The example in (1) presents a contrast induced by the connector *but* indicating that the propositions represented by the conjuncts are combined by the discourse relation of contrast. In (2), the conjuncts are connected by *and* establishing a sequence rather than a contrast. Nevertheless, (2) also requires a kind of contrast, which is obvious from the fact that the substitution of *drink* for *beer* would make the coordination unacceptable. The example in (3) presents a dialog, where B corrects the statement made by A indicating that it was Paris instead of London, where John went. The focus on *Paris* is usually called a contrastive focus. The example in (4) expresses a correction similar to the one in (3). In this case, however, the foci are not regarded as contrastive foci.¹

- (1) John is tall, but he's no good at basketball.
- (2) John had a beer/#drink and he also had a martini.
- (3) A: Last week, John went to London.
B: [No,] He went to PARIS.
- (4) John didn't invite SUE but MARY.

The focus in (5) is viewed as an ordinary focus associated with the adverb *only*. The domain of *only* is assumed to be given by a set of alternatives evoked by the focus, i.e. a set of entities the focussed item could be substituted by (including the focussed item). In (5), the set of alternatives may consist of John's colleagues {Sue, Mary, Bill, Peter, ...} excluding, for example, the waitress and the Gauguin on the front wall. Picking one element out of a set of comparable entities is

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¹ Focus is indicated by CAPS or by []_F if necessary to avoid confusion. Also, rising accents and falling accents are indicated only if necessary.

often regarded as establishing a contrast between the one element and the others. From this point of view, the focus in (5) is again contrastive, although it is not a contrastive focus. The same dilemma applies to the parallel foci in (6), which establish a 'symmetric contrast'. Finally, in (7) the subjects of the conjuncts constitute contrastive topics, which is indicated by a rising accent. The conjuncts may be connected by either *and* or *but*, thus inducing either a sequential or a contrastive discourse relation.

(5) John only saw SUE at the dinner party.

(6) An AMERICAN farmer met a CANADIAN farmer.

(7) /JOHN went to \PARIS and/but /MARY went to \LONDON

The confusion in the use of the notion of contrast may, of course, be seen as a matter of infelicitous terminology. On the other hand, the types of contrast demonstrated above seem to be closely related. Moreover, contrast in discourse structure seems to be intertwined with contrast in information structure, cf. (7). This is a good reason to look into these types of contrast more closely. How, for example, does a contrastive focus, as in (3), relate to a focus associated with focus-sensitive adverbs such as *only*, as in (5)? How does the discourse relation of contrast, as given in (1), relate to the discourse relation of sequence given in (2)? What is the difference between a contrastive discourse relation and a corrective one, cf. (1) and (4)? And finally, how does the discourse relation of contrast interact with contrast in information structure?

This paper aims at a clarification of the questions posed above. It does not, however, aim at a unified definition of contrast subsuming the above cases. Instead, I will investigate the phenomena demonstrated in (1)-(7) to find out, why they appear contrastive and determine their similarities and differences. The paper is organized as follows: Section 2 will be concerned with contrast in information structure. First, some basic positions in the literature will be recapitulated. Secondly, we will consider the notion of alternatives and the contrast involved herewith. For reasons that will be explained later, this requires a brief excursion to discourse structure, in particular the topic of parallelism. Thirdly, we will discuss whether contrastive focus actually differs from ordinary focus. Section 3 will be concerned with contrast in discourse structure and its interaction with contrast in information structure. We will first briefly go into the semantics and pragmatics of the connector *but*, comparing the standard analysis, e.g. Lang (1984), with the focus-based analysis proposed in Umbach (to appear). Thereafter the discourse relation of contrast will be compared to the relation of correction. Finally, a picture of the properties creating the contrast in each of these cases will evolve which is surprisingly simple and will hopefully clarify the notion of contrast.

2 Contrast in Information Structure

2.1 Basic positions in the literature

The question of whether there is a contrastive focus separate from ordinary focus dates back to the controversy between Chomsky and Bolinger in the early seventies and has been controversial since then. According to Chomsky (1971), the position of a phrase or sentence accent is

determined by syntax following the Nuclear Stress Rule.² Thus the position of ordinary focus (though not its domain) is determined by syntax. If there is a (nuclear) accent in a position other than the one predicted by the Nuclear Stress Rule, it indicates a contrastive (or expressive) focus, for example "*John is neither EASY to please, nor EAGER to please, nor CERTAIN to please ...*" (Chomsky 1971, 205). Ordinary focus as well as contrastive focus is interpreted as representing the part of the sentence which forms the assertion, whereas the rest of the sentence is presupposed. Contrary to Chomsky, Bolinger (1972) claims, first, that the position of the nuclear accent is not determined by syntax, i.e. a focus can occur in any position, and secondly, that there are no contrastive foci in addition to ordinary ones. Following Bolinger, the position of the nuclear accent is governed by the 'semantic weight' of the elements in an utterance relative to each other. For example, the different positions of the accents in "*I have a POINT to make*" vs. "*I have a point to EMPHASIZE*" are explained by the fact that *make* is easily predictable in combination with *point* whereas *emphasize* is less predictable in this combination. Where contrast is concerned, Bolinger admits that we often experience a focus as establishing a contrast. But he doesn't see a way of defining contrastive focus because any focus is ultimately contrastive: "...in a broad sense every semantic peak is contrastive. Clearly in "*Let's have a PICNIC*", coming as a suggestion out of the blue, there is no specific contrast with *dinner party*, but there is a contrast between picnicking and anything else the group might do. As the alternatives are narrowed down, we get closer to what we think of as contrastive accent." (Bolinger 1961, 87).

In opposition to Chomsky and Bolinger, Chafe (1976) claims that a focus can, but need not, be contrastive, regardless of its position in the sentence. Consider, for example, the sentence "*RONALD made the hamburgers.*" In the non-contrastive case, e.g. if it is an answer to the question "*Who made the hamburgers?*", the focus indicates that the referent is novel, or newly activated. In the contrastive case, the speaker assumes that the hearer has a limited number of candidates in mind, and maybe even believes that a candidate different from Ronald made the hamburgers. The speaker then tells the hearer that it was Ronald and nobody else, who made the hamburgers, i.e. "I believe that you believe that someone made the hamburgers, that you have a limited set of candidates (perhaps one) in mind as that someone, and I am telling you that the someone is Ronald rather than one of the others." (Chafe 1976, 33). Thus, according to Chafe contrastiveness is characterized by the fact that the number of candidates is limited and the sentence corrects an explicit or implicit assumption made by the hearer, whereas sentences supplying new information allude to an unlimited set of possibilities.

In the sequel the accounts on focus concentrated on either matters of syntax or semantics. The syntactic approaches mostly maintain the distinction between two kinds of foci (e.g. Rochemont 1986, Kiss 1998, Steube 2001), while the semantic ones aim at a unified semantic interpretation of focus (e.g. Rooth 1992, Krifka 1993). Kíss (1998), for example, claims that there is a contrastive focus to be distinguished from ordinary focus because the former has syntactic and semantic properties the latter does not share.³ She centres on Hungarian and English. In Hungarian, if the focussed item is moved into a preverbal position, it has to be interpreted as

²According to the Nuclear Stress Rule, in English declarative sentences the nuclear stress has to be on the rightmost word that can carry an accent.

³In Kiss (1998), contrastive focus is called *identificational focus* and ordinary focus is called *informational focus*.

being exhaustive. Similarly, in English a focus occurring in an it-cleft has to be interpreted as being exhaustive, e.g. "*It was a HAT that Mary picked for herself.*" Following Kiss, such foci are contrastive (identificational). They present "a subset of the set of contextually or situationally given elements for which the predicate phrase can potentially hold; it is identified as the exhaustive subset of this set for which the predicate actually holds." (Kiss1998, 245). As compared to this, ordinary (informational) focus does not involve movement and does not express exhaustive identification of an element (or subset) of a given set of candidates. It rather introduces new, non-presupposed information. Hence, a contrastive focus differs from an ordinary one because it occupies a specific sentence position (in Hungarian and English) and because it has to be interpreted as exhaustive identification. To comply with exhaustiveness, additive focus-sensitive adverbs, such as *also*, must not combine with a contrastive focus, which is confirmed by the data (??"*It was also a HAT that Mary picked for herself*"). However, exclusive adverbs such as *only* do combine with a contrastive focus ("*It was only a HAT that Mary picked for herself*") and, moreover, do not appear redundant, although at first sight an exclusive adverb should be redundant when combined with an exhaustive focus. We will come back to this problem in section 2.3.

The semantic approaches, e.g. Rooth (1992) and Krifka (1993), are based on the idea that a focus always evokes a set of alternatives. The set of alternatives is a subset of the elements of the corresponding type including the focussed item and at least one additional element. It may be exploited in various ways, e.g. as the quantificational domain of focus-sensitive adverbs. For example, "*John only introduced SUE to Mary*" is interpreted as "John introduced Sue to Mary and he did not introduce any other person out of the set of alternatives triggered by *SUE* to Mary." The set of alternatives is not assumed to be limited (because it is unclear what 'limited' should mean in formal terms), but it is taken for granted that the set of alternatives has to be constrained by the context in some way. Still, the question of how to find appropriate constraints is an open issue. According to these approaches there is no contrastive focus to be separated from the ordinary one. Instead, focus is viewed as uniformly conveying a contrast between the actual element in focus and the potential alternatives. Note, however, that although focus is "restrictive", there is no exhaustiveness condition. That is to say, although the set of alternatives has to comprise at least one element distinct from the focussed one, the alternatives distinct from the focussed one need not make the proposition false when substituted for the focussed one. Focus on one alternative does not entail that the proposition is false with respect to the rest of the alternatives.

Interpreting focus as evoking a set of alternatives raises the question of how to account for the intuitive idea that a focus in most cases presents new information. This problem led to "two-dimensional" approaches which integrate the notion of theme and rheme (or topic and comment) on the one hand, and focus and background on the other hand. The idea of integrating the two dimensions is put forward in, e.g., Vallduví and Vilkkuna (1998) and Steedman (2000). Vallduví and Vilkkuna distinguish between *rheme* and *kontrast*.⁴ They take the rheme to contain the novel part of the sentence, i.e. its update-potential, while the theme marks the element to which the novel information has to be attached. Their notion of *kontrast* corresponds to Rooth's notion of focus in that it evokes a set of alternatives, but is further subdivided into several types of focus, one of them being an exhaustive focus. Thus, according to Vallduví and Vilkkuna, first, the rheme

⁴"kontrast" is written this way to avoid confusion with a general notion of contrast.

has to be distinguished from the focus, the rheme providing new information and the focus evoking a set of alternatives, and secondly, there is a subtype of focus which is characterized by exhaustiveness.

The last of the basic positions on contrast to be mentioned here is Molnár's (2001) concept of contrast as an autonomous packaging phenomenon. Using cross-linguistic data (e.g. from Hungarian, Finnish, Italian and English) she demonstrates that contrast is marked in many languages. Her notion of contrast is similar to Vallduví and Vilkuna's 'kontrast' in triggering a set of alternatives, and is further specified along three dimensions: (i) all-exclusion vs. some-exclusion, where all-exclusion corresponds to exhaustiveness and some-exclusion requires at least one element to be excluded; (ii) openness vs. closedness of the set of alternatives, where the set of alternatives is closed, if the elements are explicitly or implicitly given by the context; (iii) occurrence in the theme or in the rheme of the sentence. In addition to the contrastive types resulting from these classifications there is a regular (informational) focus similar to the one proposed in Kiss (1998).

Summarizing the positions sketched above, we find two concepts of contrast in information structure. According to the first, contrast results from exhaustiveness, i.e. the focussed element is the only one which achieves a true proposition when combined with the background. According to the second, contrast results from the mere existence of alternatives. These concepts are clearly compatible, they just have to be distinguished. Still, we should have another look at the two concepts to clarify the nature of contrast in each of them.

2.2 Contrast due to similarity plus dissimilarity

A vital question concerning the set of alternatives triggered by a focus is the question of how it is made up and which constraints have to be satisfied. Intuitively, the set of alternatives comprises all entities which could be substituted for the focussed item. Thus, first of all, alternatives have to be of the appropriate type. For example, in (8) the alternatives evoked by the focus on *Sue* have to be individuals. But we clearly don't want to include any individual.⁵ In (8), the verb provides an additional restriction. Due to its selectional restrictions, the set of alternatives can be narrowed down to objects that can be seen. Still, this includes, e.g., the hostess, the waitress and the Gauguin on the front wall of the dining room. Imagine a context where John is looking for his colleagues and Sue is one of them. Then, intuitively, the set of alternatives should be confined to John's colleagues {Sue, Mary, Bill, Peter, ...}.

(8) John only saw SUE at the dinner party.

Restricting the alternative set triggered by the focus on *Sue* to the set of John's colleagues is clearly a matter of pragmatics. Let us nevertheless look for some semantic cues which might help to achieve a solution. For this reason we will make a brief excursion to the topic of coordination. Following Lang (1984, 1991) coordination of phrases as well as sentences, be it by *and* or *but* etc., requires the conjuncts to be parallel with respect to syntax, semantics, and prosody. Here,

⁵Note that, from a technical point of view, the set of individuals comprises any entity in the universe, including my computer, this paper, the constitution of the EU etc.

we are mainly concerned with semantic parallelism, which imposes two conditions: First, coordinated elements have to be semantically independent, neither of them subsuming the other, and secondly, there has to be a "common integrator", i.e. a concept subsuming both conjuncts. This is demonstrated in (9): In (a) semantic independence is violated because the meaning of *drink* subsumes the meaning of *martini*. Therefore, (9a) will be unacceptable unless the hearer takes *martini* not to be included in the meaning of *drink*. In (b) the need for a common integrator leads to the interpretation of *port* as being a drink, excluding the interpretation as a harbour.

- (9) a. # John had a drink, and/but Mary had a martini.
 b. John bought the beer, and/but Mary bought the port.

Note that these effects also occur when we consider the alternatives evoked by focus. (10a) is again unacceptable unless *martini* is something other than a drink, and (10b) makes the interpretation of *port* as a harbour unlikely.

- (10) a. # John only paid for the DRINKS, not for the MARTINI.
 b. John only paid for the BEER, not for the PORT.

The examples in (10) show that the set of alternatives evoked by a focus has to comply with both semantic independence and the common integrator requirement. This is no surprise if we take into account that coordinated elements have to be alternatives with respect to each other (cf. Schwabe 2000, Hartmann 2000). But it makes clear that Lang's coordination conditions are first and foremost conditions on the set of alternatives, and apply to coordination because coordinated elements establish mutual alternatives. The requirement of semantic independence also accounts for a problem observed in Krifka (1993): Suppose, the focus is on a coordinated phrase, e.g. *John only kissed [Mary and Sue]_F*. This sentence does not entail that John didn't kiss Mary and didn't kiss Sue. Hence, either the singular entities Mary and Sue are excluded from the set of alternatives constituting the domain of *only*, or the meaning of *only* has to be modified such that it does not filter out any element ranking lower than the focussed item (where the set of alternatives is assumed to be partially ordered). Krifka opts for the second solution (cf. Krifka 1993, p. 272). But if we opt for the semantic independence constraint, the singular entities Mary and Sue cannot even be considered to be alternatives with respect to *Mary and Sue*, because they would be subsumed by the latter.⁶

For the semantic independence constraint, a formal reconstruction seems straightforward (although one has to be careful when switching between sorts and individuals). The common integrator requirement, however, is much more complex because in principle a common integrator always exists.⁷ Take the example in (9b) and assume that *port* is interpreted as *harbour*. This interpretation requires a far more general common integrator, which although unlikely is not ruled out, e.g. *things to buy on a nice Monday morning*. Nevertheless, there may be cues within the preceding discourse which can be exploited. For example, in the case of definite noun phrases carrying a focus, the bridging antecedent imposes a strict limitation on the set of alternatives. Consider (11). The definite NP *the LEADER* needs a bridging antecedent to achieve uniqueness. Let us assume that the antecedent is given by *the research team*. Then *the*

⁶ Semantic independence, however, has to be modified if scalar alternatives are taken into account.

⁷ Assuming a sortal hierarchy, the top node would always qualify for a common integrator.

leader is interpreted as *the unique member of the research team who is its leader*. Note, furthermore, that (11) is true, even if Ben talked to someone in addition to the leader, provided he/she is not a team member. Hence the set of alternatives triggered by *the LEADER* is clearly limited to include only members of the previously mentioned team.

- (11) (The research team arrived at the base camp late at night.)
Ben only talked to the LEADER.

The fact that the set of alternatives triggered by a definite noun phrase is restricted by its bridging antecedent is discussed in detail in Umbach (2003). The bridging antecedent (more precisely, the elements that are related to the bridging antecedent in the same way as the referent of the definite) can be conceived of as the common integrator, i.e. in the case of (11) *the members of the research team*. Being anaphorically related to a bridging antecedent yields a clear limitation of the set of alternatives. This result, however, is confined to definite NPs. Future research on anaphoric relations might reveal similar restrictions for other kinds of phrases.

Coming back to the notion of contrast, we can conclude that the alternatives triggered by a focus have to be comparable to each other. Comparability, as is well-known, presupposes both similarity and dissimilarity. Dissimilarity is provided by the semantic independence constraint. Similarity is provided by the common integrator requirement. Viewing comparability, i.e. similarity plus dissimilarity, as a type of contrast, any focus is contrastive simply because it triggers a set of alternatives. This is the notion of contrast employed in Rooth (1992) and in Vallduví and Vilkuna (1998).

2.3 Contrast due to exclusion

The question of whether there is a particular kind of focus expressing exhaustiveness is controversial up to now. Note, first, that any focus, especially if it is a narrow one, may give the impression that by picking out one alternative the rest is implicitly excluded. This effect is due to the Gricean maxim of maximality licensing the hearer to assume that the speaker doesn't withhold relevant information. Thus, the focus on *hamburgers* in "*Ronald made the HAMBURGERS*" gives the impression that Ronald did not make the salad and the French fries etc. This is, however, a mere implicature which can be cancelled, which is evident from the fact that the sentence could be continued by "... *and he made the salad, [too]*" without raising a contradiction. Moreover, if focus were always exhaustive, then additive adverbs, such as *also*, would be impossible, because they would lead to a contradiction.

On the other hand, there are cases where focus is clearly exhaustive, for example Hungarian preverbal focus and English it-clefts, as is convincingly argued by Kiss (1998). Another clear cut case of exhaustiveness is given in corrections in dialogs, e.g. (12). If the focus on *Ronald* were not exhaustive, there would be no reason to interpret B's utterance as a correction. It's the exhaustiveness of the focus which implies that, according to B, Anna did not make the hamburgers.

- (12) (A: Mary made the salad, and Anna made the hamburgers.)
B: RONALD made the hamburgers.

In addition to explicit corrections such as (12) there are cases which come close to a correction, although the proposition to be corrected is not expressed explicitly. Consider the statement in (13). Intuitively, it corrects the implicit expectation that someone other than Ronald went shopping. If we assume that the focus on *Ronald* is exhaustive, the sentence entails that no element of the alternative set except Ronald went shopping. The impression of a correction can then be explained by the general tendency of negation to trigger the expectation that the corresponding affirmative proposition holds (cf. Givón 1978, see also section 3.1).

- (13) (Things have changed at the Miller family.)
Tonight, RONALD went shopping.

Thus it seems reasonable to assume that, under certain conditions, a focus has to be interpreted as being exhaustive, i.e. that there is a contrastive focus in the sense of Chafe (1976) and Kíss (1998), in addition to the regular one. This raises the question of how to recognize such foci. It has been claimed that contrastive foci differ in prosody from regular ones (e.g. Pierrehumbert and Hirschberg 1990). This claim has been challenged by various subsequent investigations. According to Krahmer and Swerts (2001) the intonational contour of the accents is the same, but if presented in the context of the remaining sentence, an accent corresponding to a contrastive focus is perceived as being more prominent. Their observation is in accordance with the results in Wagner (1999), who pointed out that contrastive foci relate to a specific prosodic pattern characterized by, e.g., postfocal deaccenting. The question of whether there is a prosodic difference cannot be regarded as being settled. But note that a contrastive focus need not be indicated by a particular prosody, but may also be induced by structural features, as in the case of English it-clefts, or by a particular discourse structure, as in (12), or by the context in general.

Let us finally compare (14a) and (b). (14a) is identical to the example in (13), where we assume the focus to be contrastive. Thus it is interpreted as being exhaustive implying that none of the relevant alternatives apart from Ronald himself went shopping. At first sight, this appears equivalent to the statement in (14b), since both sentences convey the information: Ronald went shopping and nobody else did.

- (14) (Things have changed at the Miller family.)
a. Tonight, RONALD went shopping.
b. Tonight, only RONALD went shopping.

However, (14a) and (b) are clearly not equivalent. To illustrate the difference let us see how things might have been at the Miller family in the old days. (14a) comes with the implicit assumption that before things changed someone other than Ronald did the shopping, say his wife Rosa. That is, there is a presupposition that someone did the shopping and the sentence asserts that this someone is Ronald.⁸ As compared to this, (14b) conveys the idea that in the old days

⁸ The presupposition may be strengthened such that there is exactly one individual who did the shopping thus accounting for the exhaustiveness of the focus. There are two caveats: First, the individual may be a group (A: "*Rosa and Mary went shopping.*" B: "*No, RONALD went shopping.*"), which requires a modified notion of semantic independence. Secondly, (14a) can be continued by "... *and, luckily, he was accompanied by Lily*" provided Lily is not a member of the set of alternatives under discussion. But if it was Lily who did the shopping before, this continuation would not be felicitous, cf. "???" (*In the old days it was Lily, who did the shopping. But things have changed at the Miller family.*) *Tonight, RONALD went shopping, and, luckily, he was accompanied by Lily.*"

Ronald went shopping together with, e.g., Rosa, whereas nowadays he has to do the shopping on his own. Thus in (14b) it is presupposed that Ronald went shopping and the assertion consists in the proposition that no one out of the relevant set of alternatives went shopping, too.⁹ The different presuppositions also account for the fact that *only* is not redundant even if it is combined with a clear case of a contrastive focus, e.g., in an it-cleft (cf. Kiss' example in section 2.1). If, for example, A says "*Ronald and Rosa went shopping*" and B responds "*No, it was only RONALD, who went shopping*" it is irrelevant whether the focus on *RONALD* in B's answer is contrastive or not, because in any case Rosa will be excluded. Still, *only* is not redundant, since it requires the substituted item (i.e. *Ronald and Rosa*) to include the focussed item.

The comparison between contrastive, i.e. exhaustive, focus and *only*-phrases shows that we have to distinguish two varieties of exclusion coming with different presuppositions. The contrastive focus variety excludes the possibility that someone instead of the focussed item makes the proposition true, whereas the *only* variety excludes the possibility that someone in addition to the focussed item makes the proposition true. This difference will be important when comparing the discourse relations CONTRAST and CORRECTION in the next section.

In conclusion, a focus may under certain conditions imply exhaustiveness, i.e. be a contrastive focus in the sense of Chafe and Kiss. But note that a contrastive focus triggers a set of alternatives exactly like ordinary foci. As argued in section 2.2 alternatives require contrast in the sense of similarity and dissimilarity. Thus a contrastive focus combines contrast in the sense of similarity and dissimilarity and, in addition, contrast due to exclusion. This view on focus and contrastive focus, respectively, can easily be embedded in a two-dimensional model of information structure as suggested in Vallduví and Vilkuna (1998) (cf. section 2.1).

3 Contrast in Discourse Structure

3.1 The discourse relation CONTRAST

The discourse relation CONTRAST plays an important role in any relation-based theory of discourse coherence, for example Rhetorical Structure Theory (Mann and Thompson 1988) and Segmented Discourse Representation Theory (Asher 1993). The prototypical marker of the CONTRAST relation is the connector *but* (German *aber*, Dutch *maar* etc.) and the discussion in this section will be confined to CONTRAST induced by *but*. The semantics and pragmatics of *but* have been a topic of continuing interest since Lakoff's (1971) paper distinguishing between a "semantic opposition" use (*John is tall, but Bill is short*) and a "denial-of-expectation" use (*John is tall, but he's no good at basketball*). In the recent literature, it is commonly held that the meaning of *but* always conveys a denial-of-expectation (cf. e.g. Lang 1984, Foolen 1991, Winter and Rimon 1994). In particular, it is assumed that the second conjunct of a *but*-sentence triggers an inference which contradicts a default inference resulting from the first conjunct. In (15a), for

⁹ This corresponds to the interpretation of *only* suggested in Horn (1969), who claims that (i) "*Only Muriel voted for Harry*" presupposes that Muriel voted for Harry and asserts that no one distinct from Muriel voted for Harry. Horn's (1969) analysis has been challenged since then by various authors including Horn himself. Atlas (1991), for example, proposed to interpret (i) as "Exactly one person voted for Harry, and no one other than Muriel voted for Harry." Note that Atlas' interpretation comes very close to the above analysis of the contrastive focus, where it is presupposed that exactly one person went shopping and asserted that Ronald went shopping. Therefore Atlas' analysis cannot account for the intuitive difference between contrastive, i.e. exhaustive, focus and *only*-phrases, and thus cannot be adequate.

example, the second conjunct implies that Paul didn't go to a restaurant, which contradicts the default inference that, if Paul is hungry, he goes to a restaurant. In case the second conjunct directly contradicts the default inference from the first conjunct, the use of *but* is referred to as a *concession*, cf. (15b).

- (15) a. Paul was hungry, but the restaurants were closed.
 b. It is raining, but we are going to go for a walk.

Different from the standard approaches, in Umbach (to appear) an analysis is proposed which is not based on the denial of an expectation. Instead, it starts from two observations which have not been taken into account before. First, *but* is focus-sensitive. This is evident when you compare (16a) and (b), which present second conjuncts of a *but*-coordination. In (a) the verb phrase is focussed, whereas in (b) the subject is focussed. Depending on the focus in the second conjunct we expect different contrasts: In (a), washing the dishes has to be contrasted with some other activity, whereas in (b) Bill has to be contrasted with a different person.

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

Secondly, *but*-sentences are severely restricted when answering questions. Consider the example in (17). If the question in (a) is answered by confirming both conjuncts, the use of *but* instead of *and* is unacceptable, cf. (c). If the answer denies both conjuncts, *but* is equally unacceptable, cf. (d). If, however, one part of the question is confirmed and the other part is denied, the use of *but* is perfect (and the use of *and* would at least be marked), cf. (e)-(g). Denial, by the way, does not hinge on the presence of an explicit negation, cf. (f).

- (17) a. Adam: Did John clean up his room and wash the dishes?
 b. Ben: _[yes] John cleaned up his room and _[yes] he washed the dishes.
 c. # _[yes] John cleaned up his room, but _[yes] he washed the dishes.
 d. # _[no] John didn't clean up his room, but _[no] he didn't wash the dishes.
 e. _[yes] John cleaned up his room, but _[no] he didn't wash the dishes.
 f. _[yes] John cleaned up his room, but _[no] he skipped the washing-up.
 g. _[no] John didn't clean up his room, but _[yes] he did the washing-up.

From (16) it has to be concluded that the contrast evoked by *but* relates to the alternatives evoked by the focus of the second conjunct. This suggests an analysis based on the alternatives. Taking Lang's (1984) coordination constraints into account, this doesn't come as a surprise and may also apply to *and*. From (17) it has to be concluded that, if a *but*-sentence is an appropriate answer to a question relating to both conjuncts, one conjunct has to be a confirmation and the other one has to be a denial. This characteristic clearly separates *but* from *and*. We will refer to it as the *confirm+deny* condition on *but*-sentences.

To make use of the *confirm+deny* condition beyond direct question-answer pairs, it is assumed that any sentence in a coherent discourse constitutes the answer to an explicit or implicit question (cf. e.g. Roberts 1998). In Roberts' model the implicit questions form a hierarchy where the top node represents the topic of the overall discourse and the pre-terminal questions represent the immediate topic under discussion. The pre-terminal questions have to correspond to the alternative meaning of the utterance, that is, they are trivially given by substituting the focus of

the utterance by a *wh*-constituent. We will slightly extend this idea to account for the *confirm+deny* condition. Due to the *confirm+deny* condition the (implicit) question a *but*-sentence responds to has to be such that it is answered by "yes, ... *but no* ..." (to simplify the discussion, the reversed sequence will be neglected). For example, the implicit question corresponding to (18a) will be reconstructed as shown in (b).

- (18) a. John SLEPT but Bill DIDN'T.
 b. What did John do? and did Bill do that, too?

Based on the *confirm+deny* condition the meaning of *but* can be characterized as being "anti-additive": In the conjunct introduced by *but*, first, an alternative is added to those under discussion and, secondly, this alternative results in a false proposition when combined with the background, therefore requiring negation (cf. also Sæbø 2002 who presents an idea very much in line with this analysis). This is not to be misunderstood as a claim that *but* introduces a negation in addition to the conjunction (*but* is not a NAND!). Instead, it requires the alternative in the second conjunct to be excluded (with respect to the common background), and if there is no explicit negation, the hearer has to reconstruct the appropriate alternative, as in the case of (17f).

In excluding an alternative, *but* is closely related to the adverb *only*. Compare (19) and (20). In the (a)-versions, the alternatives presented in the *but*-conjuncts are excluded via negation (which is obligatory, cf. 17). In the corresponding (b)-versions the exclusion of alternatives is achieved by using *only*. The (a)-versions and the (b)-versions are nearly equivalent. They differ in two respects: First, in the case of *only* there may be more than one excluded alternative, whereas in the case of *but* there is exactly one excluded alternative. Secondly, in the case of *only* the alternatives under discussion need not be given explicitly, whereas in the case of *but* the alternative is presented in the second conjunct. Note that in the case of *only* as well as in the case of *but* the excluded alternative(s) could have been the case in addition to the focussed one (cf. the discussion of 14b above).

- (19) a. John cleaned up the ROOM, but he didn't wash the DISHES.
 b. John only cleaned up the ROOM (he did not also wash the dishes).
- (20) a. John SLEPT but Bill DIDN'T.
 b. Only JOHN slept (Bill did not also sleep).

To systematize this idea, *but*-sentences are classified as *simple* or *double* contrast. In the simple contrast cases there is one pair of contrasted alternatives, which are either predicates or individuals or propositions, cf. (21a-c). The double contrast cases comprise two pairs of alternatives, as in (22a, b). In the simple contrast cases either there is an explicit negation or it has to be inferred from a complementary predicate, as in (17f). Note that in (21b) explicit negation is obligatory, since for individuals there is no complement. In the double contrast cases the denial appears as an entailment. (22a) and (b), for example, clearly entail that John did not wash the dishes.

- (21) a. John cleaned up the ROOM, but he didn't wash the DISHES.¹⁰

¹⁰The foci indicated in (21) and (22) involve different forms of accents (rising, falling). But since this topic is highly complex and of no relevance for the above argument, the form of the accents has been neglected. Also, additional

- b. JOHN cleaned up the room, but BILL didn't.
 - c. [It was raining]_F but [Bill went for a walk.]_F
- (22)
- a. JOHN cleaned up the ROOM, but BILL did the DISHES.
 - b. JOHN cleaned up the ROOM, but it was BILL who did the DISHES.

The focus-based analysis sketched above differs from standard accounts in that it does not appeal to an expectation which is denied by the use of *but*. Still, it is well-known that negated sentences have a general tendency to trigger the expectation that the corresponding affirmative proposition holds (cf. Givón 1978). According to the *confirm+deny* condition any *but*-sentence involves an (explicit or implicit) negation. This is the reason why a *but*-sentence may trigger a denial-of-expectation, for example, in the case of (21a) the expectation that, if John cleaned up the room, he also did the washing-up. Thus the idea that there is an expectation denied by the use of *but* is confirmed after all. This is, however, a general implicature of negation, not specific for the use of *but*. (For a comprehensive discussion of the focus-based analysis cf. Umbach to appear.)

Coming back to the question of contrast, the above analysis suggests that the discourse relation of CONTRAST as induced by *but* consists in introducing an additional alternative which is excluded with respect to the common background. Being based on alternatives, CONTRAST first requires the similarity plus dissimilarity type of contrast which is also required in *and*-sentences. What distinguishes a *but*-sentence from a mere *and*-sentence is the requirement of a denial. Thus the discourse relation of CONTRAST combines contrast in the sense of similarity plus dissimilarity with contrast resulting from exclusion.

Let us compare this result to the definition of CONTRAST in Mann and Thompson (1988) and in Asher (1993). According to Mann and Thompson, CONTRAST is a multi-nuclear rhetorical relation with no more than two nuclei such that the situations presented in these two nuclei are (a) comprehended as the same in many respects, (b) comprehended as differing in a few respects, and (c) compared with respect to one or more of these differences. Note that this is precisely the concept of contrast we attributed to the notion of alternatives, i.e. similarity plus dissimilarity, which is a prerequisite for both *but*- and *and*-sentences. Hence the definition of Mann and Thompson fails to capture the characteristics of CONTRAST as compared to SEQUENCE (induced by *and*). According to Asher (1993) CONTRAST involves pairs of structurally similar but semantically dissimilar objects, whereas PARALLELISM (induced by *and*) requires structurally and semantically similar objects. Semantic (dis)similarity is given by linguistic and common world knowledge. Again, the definition of CONTRAST corresponds to the similarity plus dissimilarity concept of contrast and misses the fact that even in a mere *and*-conjunct the elements have to be semantically similar and dissimilar.

3.2 Comparing Contrast and Correction

Let us finally compare the discourse relations CONTRAST and CORRECTION. In German correction has to be expressed by *sondern* instead of *aber*. In English both contrast and correction can be

accents, e.g. on the negation, are neglected.

expressed by *but*. However, in the corrective use of *but* the conjuncts have to be non-sentential constituents, i.e. predicates or nominal phrases etc. (note that the non-sentential conjuncts cannot be regarded as resulting from ellipsis, since the negation in the first clause does not extend to the second one, cf. Quirk et al. 1985). In both English and German, the first conjunct has to be negated, cf. (23a, b). Accordingly, (23c) does not express a correction but a contrast, and (23d) is ungrammatical.

- (23) a. Bill didn't eat the apple but the banana.
 b. Bill hat nicht den Apfel, sondern die Banane gegessen.
 c. Bill ate the apple but not the banana.
 d. *Bill hat den Apfel, sondern nicht die Banane gegessen.

In the corrective use of *but*, both conjuncts have to be focussed and the focussed elements establish alternatives with respect to each other. Since the negation of the first conjunct is obligatory, the first alternative is denied with respect to the background of the sentence. Thus, as in the contrastive cases, there is a denial excluding one of the alternatives. In fact, the contrast in (24a) and the correction in (25a) express the same assertion: John didn't go to Berlin, and he did go to Paris. However, the corrective use of *but* clearly differs from the contrastive use with respect to the implicit question it responds to, compare (24b) and (25b). Note that (25a) is no acceptable answer to (24b).¹¹ Along with the different questions there are different expectations to be denied. The contrast induces the expectation that, John went to Berlin and to Paris, whereas the correction induces the expectation that John went to Berlin.¹²

- (24) a. John didn't go to Berlin but he went to Paris.
 b. Did John go to Berlin and also to Paris?
 c. John might have gone to Berlin, in addition to Paris.
- (25) a. John didn't go to Berlin but to Paris.
 b. Did John go to Berlin?
 c. He might have gone to Berlin instead of Paris.

Finally, compare the counterfactual statements in (24c) and (25c). In the contrastive case the counterfactual is such that both alternatives (*go-to-Berlin*, *go-to-Paris*) are the case, whereas in

¹¹This may be more evident in German than in English, since in German the difference between contrast and correction is lexically marked:

- A: Ist John nach Berlin und auch nach Paris gefahren?
 B: John ist nicht nach Berlin gefahren, aber nach Paris.
 B': # John ist nicht nach Berlin gefahren, sondern nach Paris.

¹²The question put in (24b) is such that the answer in (24a) constitutes a *no-yes* sequence. Of course, (24a) can also be interpreted as a *yes-no* sequence, thus responding to "*Did John neither go to Berlin nor to Paris?*" On this interpretation the expectation will be that John didn't go to Berlin and didn't go to Paris either, which is intuitively more adequate. Moreover, if we choose the *yes-no* sequence, the counterfactual will be "*John might not have gone either to Berlin or to Paris*" instead of (24c). On the assumption that the counterfactual together with the actual statement describe the presuppositions of a statement, this version of the counterfactual results in the presupposition that John didn't go to Berlin (which is trivial if we assume successive update, as in Heim 1983). As compared to this the counterfactual corresponding to the *no-yes* sequence in (24c) results in the presupposition that John went to Paris, which seems plainly wrong. So there are good reasons to assume that the *confirm+deny* condition actually imposes a *yes-no* sequence even if there is an explicit negation in the first conjunct. Still, (24b, c) will be kept for ease of argumentation.

the assertion *go-to-Berlin* is denied. Hence the contexts licencing (24a) have to be such that either *go-to-Berlin* and *go-to-Paris* are true, or only *go-to-Paris* is true. As compared to this, in the corrective case the counterfactual is such that *go-to-Berlin* is true and *go-to-Paris* is false, whereas in the assertion the opposite is expressed. Thus the contexts licencing (25a) have to be such that either *go-to-Berlin* is true and *go-to-Paris* is false, or it is the other way around.

The comparison of the discourse relations of contrast and correction leads us back to the comparison of exclusion via contrastive focus and exclusion via *only* in section 2.3. Consider the examples in (26) and (27). (26) presents two variants of correction. In (a) A's claim is corrected by B's claim, where the focus expresses exhaustiveness, i.e. the cinema was the only place Ronald went to. In (b) there is a single utterance involving a correction expressed by *but*. (Strictly speaking, (26b) is no correction, because the fact to be corrected is denied in the first conjunct; this is the reason why the discourse relation of correction need not involve revision.) Both correction variants express that Ronald went to the cinema instead of going to the opera, but they employ different means, i.e. a contrastive focus in (a), and the correction use of *but* in (b), respectively. Similarly, the statements in (27) both express that Ronald did not go to another place in addition to the cinema, where the (b)-variant in addition reveals the identity of the place Ronald did not go to. The examples in (26) and (27) demonstrate that the discourse relations of contrast and correction differ from each other in the same way a contrastive focus differs from an *only*-phrase, i.e. exclusion of additional elements vs. exclusion by substitution.

- (26) a. (A: Yesterday, Ronald went to the opera.)
B: Ronald went to the CINEMA.
b. Yesterday, Ronald did not go to the OPERA but to the CINEMA.
- (27) a. In Paris, Ronald only went to the CINEMA.
b. In Paris, Ronald went to the CINEMA, but he didn't go to the OPERA.

Conclusion

Although at first sight it seems that the notion of contrast in information structure and discourse structure is arbitrarily ambiguous, a closer look reveals a surprisingly systematic picture. First, we isolated contrast in the sense of similarity plus dissimilarity, which is a prerequisite for alternatives. This type of contrast is the source of the contrastiveness of focus in general. Since conjuncts constitute mutual alternatives, it is a prerequisite for any type of coordination, e.g. by *and* or *but*.

Secondly, we considered contrastive focus. Since a contrastive focus triggers a set of alternatives, exactly like a regular focus, it involves the similarity plus dissimilarity type of contrast. Due to the exhaustiveness of the focussed item, a contrastive focus moreover involves contrast due to exclusion. Comparing contrastive focus to *only*-phrases, it turned out that there are two varieties of exclusion: A contrastive focus excludes the possibility that some other item instead of the focussed item makes the proposition true, whereas the *only*-phrase excludes the possibility that some item in addition to the focussed one makes the proposition true.

Finally, we looked into the type of contrast realized by the discourse relations CONTRAST and CORRECTION. Both make use of the alternatives established in the conjuncts, thereby requiring

the similarity plus dissimilarity type of contrast. Moreover, both indicate the exclusion of one of the alternatives. But they differ in exactly the same way an *only*-phrase differs from a contrastive focus: While the CONTRAST relation excludes the possibility that the second alternative is true in addition to the first one, the CORRECTION relation excludes the possibility that the first alternative applies instead of the second one.

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