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1

Introduction

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A speaker of a language can quickly judge the grammaticality, truth and felicity of a sentence on the basis of his beliefs about what is the case and who is talking. A basic goal of semanticists is to model what we do when we judge a sentence to be *true*. A basic goal of pragmaticists, on the other hand, is to model what we do when we judge a sentence to be *felicitous*. Semanticists and pragmaticists have each proposed explicit formal models of these mental mechanisms. These models map a pair of a sentence and a model-theoretic representation of what we may believe to be the case onto a truth value and a measure of felicity. Semantics and Pragmatics have both established themselves as independent fields in the 1970s and 1980s. During that period, the distribution of labor between semantics and pragmatics was intensively debated. (Davis (1991) and Kasher (1998) have collected much of the relevant literature in useful volumes.) The separation of semantics and pragmatics has made enormous progress possible in both fields. At the same time though, it has had the unfortunate consequence that interconnections between semantics and pragmatics may have not received enough attention. To begin, we briefly survey the main lines of inquiry in semantics and pragmatics that this volume builds on.

For the computation of truth conditions, the dominant view is that this process involves at least three things: One is the structured mental representation of a sentence that syntax provides. The second are the interpretations of the primitive parts of the sentence, which are provided by their lexical entries. The third is the compositional interpretation procedure: A recursive procedure that assigns an interpretation to any sub-structure of the syntactic representation on the basis of the interpretations of the immediate parts of this sub-structure. Recursive application of the interpretation function then successively builds up the

interpretation of larger and larger sub-structures, until the interpretation of the entire sentence results. This view can be attributed to Montague (1974) and Lewis (1970) and has been developed much further since. In the following, we assume the formal model of the interpretation function laid out in the textbook by Heim and Kratzer (1998).

For the computation of felicity conditions, the dominant view distinguishes at least two kinds of felicity conditions: *Presuppositions* (Frege 1879, Strawson 1952) and *Implicatures* (Grice 1989). Here and in the following, we follow Karttunen and Peters (1979), Horn (1990) and others in assuming that Grice's *Conventional Implicatures* are to be identified with presuppositions, and use the term *Implicatures* to exclusively refer to Grice's *Conversational Implicatures*. The mechanisms giving rise to the presuppositions and implicatures of a sentence are also thought to be fundamentally different. We consider first presuppositions, then implicatures.

Presuppositions are represented as felicity conditions in the lexical entries of certain morphemes. The computation of the presuppositions of a sentence proceeds in a compositional fashion analogous to the computation of the sentences truth conditions. Technically, presuppositions can be represented as domain restrictions of the functions that represent the meanings of lexical entries, constituents, and sentences (Blau 1978, Heim 1992). A presupposition failure then arises when the value of a function–argument combination is undefined. For example, the domain of the definite determiner *the* is restricted to properties *P* such that at least one individual has property *P*. Therefore, the sentence (1) leads to a presupposition failure if there are no books.

- (1) I didn't see the books.

Implicatures, on the other hand, are generally held to arise from the interaction of sentence meaning and conditions on felicitous discourse. Grice (1989) proposed one view of the computation of implicatures that continues to be very influential. Consider, for example, the analysis of (2). (2) is true in a situation where I know that the Philharmonic played all Beethoven symphonies this season, however, it is infelicitous because the more informative sentence *The Philharmonic played all symphonies by Beethoven* is also true.

- (2) The Philharmonic played some symphonies by Beethoven this season.

Therefore, (2) implicates that the Philharmonic did not play all nine symphonies by Beethoven this season. Horn (1972) observes that not all sentences that are more informative than what is said are considered for implicature computation. For example, *They played only some Beethoven symphonies this season* is more informative than (2), but (2) does not implicate that they didn't play only some Beethoven symphonies. Horn amends Grice's proposal with a restriction to scalar alternatives; for example, *many* and *all* are scalar alternatives, but not *many* and *only many*. Horn (1989), Gazdar (1979), Hirschberg (1985), Matsumoto (1995), Sauerland (2004) have developed this view further, in particular for the analysis of scalar implicatures.

In the literature cited above, the three components of sentence interpretation have been considered separately. This separation is justified on theoretical and methodological grounds and has made substantial progress in all three areas possible. However, the separate treatment of the truth conditions, implicatures, and presuppositions, while it was important to make progress, bears certain risks because of the narrow view adopted: It may overlook important interactions between the three components. Furthermore, it may induce researchers to focus on phenomena that fit neatly into one of the three components. This reasoning provides the motivation for the present volume: The contributions concern, on the one hand, empirical phenomena that do not fit neatly into one of the three components and, on the other hand, the interaction of the three components. Specifically, three of the contributions (those by Eckardt, Fox, and Percus) focus on the question of which component should best provide the explanation for a specific empirical phenomenon. Questions of this type are pertinent to the other chapters too, but the other chapters concern directly the interaction between the different components. Two of them concern the interaction between implicatures and truth conditions (those of Krifka and Spector). Three other chapters focus on the interaction between presuppositions and truth conditions (those by Beck, Jäger, and Schlenker).

Percus reconsiders the analysis of restrictions on the use of individual level predicates. As is well known, many examples that contain both a temporal adverbial and an individual level predicate are judged ungrammatical, as is illustrated by (3).

(3) *Ingrid was always Swedish.

Percus establishes a parallel between (3) and sentences like (4), which have the same relevant properties and same status but become acceptable if used under suitable pragmatic conditions.

- (4) (*)The student who finished first was always Swedish.

If, for example, (4) is uttered in a situation in which a number of exams are held during the past week, and different people finish first each time, the speaker can successfully use that sentence to inform the audience of the nationality of the winners. (4) crucially shows that these restrictions on the use of individual level predicates have pragmatic, rather than grammatical origin (pace Kratzer 1995).

To identify these pragmatic factors, Percus considers pairs of situations tied to examples like (4). One member of each pair renders the sentence fully acceptable while in the other the sentence gets a much worse status. Examining the relations within these pairs of situations Percus concludes that the status of sentences containing individual level predicates and temporal quantifiers depend on two additional factors: (i) the time intervals that context makes salient and (ii) what the parties to conversation think is being taken for granted. He argues that given standard assumptions about (ii) if the truth of a quantified statement is implied by a variant of it which involves a subset of the time intervals the original involves the original sentence is predicted to sound bizarre. This idea is made precise by establishing a general pragmatic principle which precludes the usage of otherwise legitimate logical forms and is tested in examining related phenomena.

Percus's contribution targets mainly the division of labor between grammar and pragmatics but it also gives an intriguing twist to the study of the interaction between sentence meaning and conditions on felicitous discourse. As he notes, the principle he argues for, has a very specific status among other familiar pragmatic principles since it involves comparison among propositions that are equally informative. It would fall therefore into the Gricean category of Manner, however, unlike other Manner maxims Percus principle does not apply to a surface form.

Both *Eckardt's* and *Fox's* chapters concern the free choice effect with disjunction. The basic problem discovered by Kamp (1973) is that (5a) and (5b) are perceived to be equivalent, but this is not predicted on the basis of the standard logical meanings of permissive modality, conjunction, and disjunction.

- (5) a. You may have coffee or tea.
b. You may have coffee and you may have tea.

Recent work on the topic has therefore claimed that the standard logical meanings of permissive modality and disjunction are not correct for

natural language (Zimmermann 2000 and others). But this conclusion is challenged by Eckardt's and Fox's chapters. Both chapters independently make the novel observation that plural indefinites also give rise to something akin to a freechoice effect in examples like (6).

- (6) a. Some linguists were having coffee or tea.
 b. Some linguists were having coffee and some linguists were having tea.

Such examples show that the free choice effect should not be analyzed as tied to an analysis of the interaction of disjunction and existential modality. Fox strengthens this point further by showing that the logical duals of existential quantification and disjunction give rise to the same effect if negated. All these facts argue for an analysis based on the pragmatics of existentials and disjunction. Specifically what Eckardt and Fox both pursue is an analysis of the free choice effect as a conversational implicature.

However, the two chapters pursue two different lines of analysis from this point on. *Eckardt* pursues the intuition that the implicature leading from (6a) to (6b) has the same basis as that from (7) to (6b). The core of her proposal is the claim that (6a) involves distributive quantification over a specific set of linguists. This predicts that the indefinites should behave like the plural definite or universal in (7).

- (7) The/All linguists were having coffee or tea.

Eckardt then goes on to extend this account to other cases of free choice effects.

Fox's contribution presents in detail the conflict between the free choice effect and the neo-Gricean approach to scalar implicatures. The neo-Gricean account in the version developed by Sauerland (2004), as Fox shows, predicts that (8) should be an implicature of (5a), but this would contradict (5b).

- (8) The speaker is not sure whether you may have coffee and the speaker is not sure whether you may have tea.

Fox develops a new account for scalar implicatures that does not derive them in the same way as other conversational implicatures. Rather, Fox argues that scalar implicature computation must precede the computation of other conversational implicatures and therefore places them in

the compositional semantic system (cf. Chierchia 2004). Fox shows then that free choice effects can be derived in this architecture on the basis of a novel proposal for exhaustification that can apply recursively. In example (6a), exhaustification at the second level involves a comparison among the three propositions in (9).

- (9) a. You may have tea or coffee but not both.
 b. You may have tea but no coffee.
 c. You may have coffee but no tea.

Because (9a) is entailed by (9b) and (9c), Fox predicts as the result of the second level of exhaustification the free choice effect: You may have tea or coffee, but not both, and neither tea nor coffee is forbidden.

The chapter by *Spector* is one of the two that concerns the interaction between implicatures and truth conditions. His chapter also presents a second application of Fox's idea to apply exhaustification recursively; namely, to plural noun phrases. Plural noun phrases in many cases require plural reference, but there are exceptions as recently summarized by *Sauerland et al.* (2005). *Spector* asks whether the plurality requirement of plural noun phrases is part of the truth conditions, presuppositions or an implicature, arguing in favor of the latter. Strong initial support for the implicature analysis is provided by the observation that in the scope of negation the plurality requirement does not apply. This is illustrated by the fact that (10b) does not express the negation of (10a).

- (10) a. The homework contains difficult problems.
 b. The homework doesn't contain difficult problems.

The difference between (10a) and (10b) follows if we assume that the plural does not exclude singular reference. Outside the scope of negation, however, use of the plural implicates that the uniqueness implication of the singular would have been too strong. The result is a plurality implicature. This effect has been observed in previous work in semantics, but all previous attempts of explaining it have been unsatisfactory as *Spector* argues. The difficulty arises from the assumed logical relation of singular and plural sentences: The implicature analysis assumes that the singular example (11a) entails the plural example (10a) as long as implicatures are put aside. But, then the negated plural example (10b) is predicted to entail the negated singular example (11b). The standard implicature analysis predicts therefore that there should be a clear difference in interpretation between (10b) and (11b). However,

the two sentences are more or less equivalent – Spector derives what difference there exists in the final section of his chapter.

- (11) a. The homework contains a difficult problem.
 b. The homework doesn't contain any difficult problem.

Spector elegantly solves this problem by applying the idea of recursive exhaustification from Fox's chapter. On Spector's proposal, the first level of exhaustification only compares the plural (10a) to the proposition expressed by (12a) which is equivalent to (10a). At the second level, however, (10a) is compared to (12b), which is the *exhaustified* version of (12a), and since (12b) entails (10a), the plurality implicature is predicted. For the negated plural in (10b), however, this line of argumentation does not go through since the negation of (12b) is not the exhaustified version of (12a). In this way, Spector provides an nice account of the plurality requirement of the plural.

- (12) a. The homework contains at least one difficult problem.
 b. The homework contains exactly one difficult problem.

The chapter by *Krifka* discusses another case where the application of negation does not lead to the logical inverse. Consider (13):

- (13) a. John is happy.
 b. John is not unhappy.

Contrary to expectation, the double negative in (13b) is not synonymous with the positive predicate in (13a). *Krifka* offers a solution to this puzzle by appealing to a process of pragmatic strengthening within an epistemic theory of vagueness (cf. Williamson 1994). This process involves an intricate interplay of a number of pragmatic principles which are applied in the use of negated antonyms.

The final three chapters concern presuppositions and their relation to truth conditions. *Beck* focuses on an observation due to Soames (1989) and Heim (1992) that presuppositions triggered by *again* are tied to an anaphoric element. Speakers relate Heim's (14a), for example, but not (14b) to an inference that John's birthday precedes in time Mary's birthday.

- (14) a. We will have pizza on John's birthday, so we shouldn't have pizza again on Mary's birthday.

- b. We will have pizza on John's birthday, so we shouldn't have pizza on Mary's birthday.

It is clear that *again* triggers a presupposition that there is some time interval preceding Mary's birthday in which we have already had pizza. But among the many possible previous pizza-eating occasions only one is relevant: that which involves John's birthday, hence the inference pattern. This intuition points to the fact that the presuppositions of *again* in (14) involve a specific time period. Beck takes this fact to suggest that *again* must be related to an anaphoric temporal element for which the assignment gives John's birthday as a value that satisfies the presuppositions of *again*. In other words, this temporal element has the properties a free variable in (14).

The parallel between this anaphoric element and natural language variables like pronouns, restrictions on quantifier domains and traces is not accidental: Beck proposes that *again* comes with a lexical entry which specifies that its most internal argument is that anaphoric element, represented as a temporal variable. She further argues that like other variables, it is discernable in syntax and comes in the same varieties: it can be free, bound, or involve a complex structure. Beck tracks original examples of each kind addressing in most detail the interaction of *again* with quantifiers and the resulting anaphoric presuppositions. It is shown that the proposed logical forms lead to definedness and truth conditions that are in concord with speakers' intuitions. The chapter concludes with an extension of the proposal to the anaphoric presuppositions of *too* and *also*.

Jäger's chapter is concerned with the analysis of specific indefinites. The topic is familiar from the numerous discussions in the literature of their notorious scopal properties. Unlike other quantified expressions, specific indefinites can escape scope islands:

- (15) a. If most experiments succeed, John will be happy.
 b. If an experiment succeeds, John will be happy.

Jäger proposes a theory of specific indefinites from which these properties naturally follow while he avoids the pitfalls of other influential proposals. His theory is a synergy of ideas from DRT, the choice function approach, and theories that associate specificity with presuppositions. Indefinites are proposed to be analyzed as partial variables: local assignments determine the value of the variable which, however, comes with definedness conditions and only if these are fulfilled the indefinite can refer. Since

indefinites are translated as variables, they can be bound by existential closure which can apply at every sentential level thus providing for the observed scopal freedom of specific indefinites.

The core proposal in the chapter follows a trend in the literature to view specificity as a kind of presupposition phenomenon. Furthermore, it is extended to suggest that in general presuppositions are restrictions on partial variables. This view elegantly accounts for presupposition projection and accommodation. Specific indefinites are treated on a par with standard presupposition triggers but, in addition, they are subject to the Novelty Condition (Heim 1982).

Schlenker's contribution is concerned with basic issues of presupposition triggering and presupposition projection. He does not accept the notion of presupposition as basic, but seeks to derive it from general pragmatic principles. Specifically, Schlenker proposes a new pragmatic principle, *Be Articulate*, that constrains the use of lexical items that express more than one separate truth-conditional contribution simultaneously. Namely, *Be Articulate* requires that only one of these components of the meaning must introduce new information. He shows that this straightforwardly derives the principles of presupposition projection: For example, assume that *to stop Q-ing* expresses two separate truth-conditional contributions: not doing Q and having done Q in the past. Then the use of *stop* in (16) satisfies *Be Articulate* when either one of the contributions of *to stop smoking* is part of the common ground.

(16) Sue stopped smoking.

If the sentential context in which *stop* occurs, however, establishes that one of the contributions of *stop* is redundant, nothing is required of the common ground. This provides an explanation for examples of presupposition filtering like (17a). Schlenker's account, furthermore, straightforwardly extends to examples like (17b), where it is the other contribution of *stop* that is redundant.

- (17) a. If Sue ever smoked, she has stopped smoking.
 b. If Sue isn't smoking, she has stopped smoking.

The work presented in this volume is one of the results of a research network on Semantics and Pragmatics called the *Semantiknetzwerk*. The network has been funded by the German research council DFG (grants SA 925/2-1 and SA 925/2-2, principal investigator Uli Sauerland), and we are very grateful for this financial support. The support has allowed

us to hold five meetings up to now with a sixth meeting planned for September 2006. Four of the meetings were held in Berlin at the Centre for General Linguistics, and one was held in Nijmegen, Holland. Many of the chapters contained in this volume have been presented and discussed at one of the five meetings. In addition to the authors and editors of the present volume, the following researchers took part in these meetings regularly: Richard Breheny Irene Heim, Graham Katz, Cecile Meier, Doris Penka, and Ede Zimmermann. Furthermore the following researchers took place in some of the meetings: Bridget Copley, Cornelia Endriss, Bart Geurts, Beáta Gyuris, Andreas Haida, Elke Kasimir, Jason Mattausch, Robert van Rooij, Katrin Schulz, Magdalena Schwager, Yael Sharvit, Arnim von Stechow, Kazuko Yatsushiro, and several others. We would like to thank all participants for making the meetings of the Semantiknetzwerk a lively and stimulating forum for the discussion and exchange of ideas leading to this book and several other publications.

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