UTTERANCE INTERPRETATION AND COGNITIVE MODELS 3

ABSTRACTS

FRIDAY 05/02/2010

THE COGNITIVE DETERMINANTS OF MANIPULATION

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Available accounts of manipulative discourse provide descriptive criteria (e.g. social power, misleading intention, truth-conditional defect, hidden agenda, etc.) whose operational adequacy shows problematic on the explanatory level (see Maillat & Oswald 2009).

This paper argues for a cognitively grounded model based on the assumption that manipulation exploits people's "cognitive optimism" (cf. Sperber *et al*. 1995), which is taken to guide information processing mechanisms in communication. More specifically, we treat manipulative communication as covert attempts to take advantage of cognitive biases which constrain the addressees' interpretation, thereby misleading them into taking interpretative shortcuts.

After having laid the grounds for our model, we proceed to test and illustrate its explanatory scope by first reinterpreting well-known forms of fallacious arguments (e.g. *ad verecundiam* and *ad populum*) as constraints meant to disturb the addressee's critical vigilance. We then illustrate linguistic and argumentative counterparts of instances of cognitive biases which have been tested within the field of cognitive psychology (see Pohl 2004 for an overview). In doing so, we demonstrate the robustness of a pragmatic model which determines how cognitive biases are exploited as interpretative constraints in manipulative communication.

IS THERE SOMETHING THAT IS *SAID* METAPHORICALLY?

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I argue that in ordinary metaphor it is metaphorical, and not literal, meaning that determines an utterance's truth-conditions, thus characterizing what a speaker *said* metaphorically. I develop such an enriched notion of 'saying' by considering evidence from ironic metaphor interpretation. I first discuss four psychological and logical arguments (weak and strong versions) in support of what I call the *metaphor's priority thesis* (i.e. metaphor is/has to be computed before irony), and then provide five further arguments to the conclusion that metaphor is part of truth-conditional content.

    (i)   Empirical evidence shows that metaphors come first in the order of interpretation.

    (ii)   Metaphors embed within logical and propositional attitudes operators.

    (iii)   Metaphors are truth-apt and can be used to make assertions.

    (iv)   We have intuitions about metaphorical content as being part of what speakers communicate directly/explicitly, e.g. in reports of, and responses to metaphorical utterances by echoing the speaker's metaphorical content.

    (v)   We are aware of metaphorical content as output of primary interpretation, but not of the inferential link between literal and metaphorical meanings.

Finally, I discuss two important criteria of embeddability and truth-conditions of ironic metaphors to the conclusion that metaphor is truth-conditional.

PRAGMATIC ABILITY: CONTRIBUTIONS FROM THEORY OF MIND AND LINGUISTIC DEVELOPMENT

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The relationship between language and ToM (the capacity to understand other people's mental states) is debated. Is language pivotal in the development of ToM? Or is ToM a prerequisite for linguistic development? This debate is considered by looking at the developmental relationship between ToM, language and pragmatic ability. Pragmatic ability refers to the capacity to deal with conversational situations that involve an understanding of others and, as such, involves both linguistic ability and an understanding of mental states. What then will contribute most to pragmatic development: ToM or general language? To address this issue, 60 4-year-old children were given ToM, language and pragmatic ability tests. ToM tests consisted of false belief tests; language tests comprised vocabulary and syntax measures. Pragmatic ability was tested by considering children's understanding of indirect requests and their performance on a referential communication task.

Regression analyses demonstrated that ToM does, but general language does not, significantly predict pragmatic ability. This finding suggests that it is not so much a child's linguistic ability that contributes to pragmatic development, but the ability to understand another person's mental states. This then poses a challenge to linguistic determinism accounts that hold that understanding others' mental states is dependent on language.

SATURDAY 06/02/2010

IDENTITY IN DEVELOPMENT AND IN THE BRAIN

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We used discourse referents (DRs) as a model for intentional objects and the anchoring of DRs to external objects to explain children's peculiar problems with alternative naming tasks (Perner, Rendl & Garnham, 2007). The explanatory feature of the analysis consists of the claim that young children cannot explicitly represent two different objects of thought having the same external referent. From this analysis it followed that children should have problems understanding identity statements. I give an update on our original data. Many 3- to 4- year old children find it difficult to answer the question, e.g., "Who is Susi's mother?" right after being told, "Susi's mother is the teacher," when they have no such problems answering, "What is Susi's mother?" after being told, "Susi's mother is a teacher." Moreover, correct answers to the Who-question are related to the ability to understand false beliefs, and identity problems activate part of the brain regions associated with theory of mind.

Perner, J., Rendl, B., & Garnham, A. (2007). "Objects of desire, thought, and reality: Problems of anchoring discourse referents in development." Mind & Language, 22, 475–513.

VERY EARLY COMPREHENSION OF DISCOURSE PARTICLES

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This study addresses the question how and when children learn to deal with the presupposed content of an utterance. Discourse particles such as *again*, *only* and *too* are particularly interesting for such an investigation, because in many languages children seem to master their use extremely early (see, for instance, Nederstigt, 2003 for a corpus study on the production of German *auch*, and the literature findings mentioned therein on other languages). So far, the developmental literature on discourse particles has mainly been directed towards children's understanding of expressions like *too* (and its German and Dutch counterparts) in contexts where its focus (on the subject or object of the action) is ambiguous (e.g., see Berger et al., 2007; Bergsma, 2006; Hüttner, et al., 2004). These studies are concerned with relatively old children (typically 4-to-10-year-olds) and tend to show that while children's production of discourse particles is proficient from very early on, their understanding lags behind until school age (see also Paterson et al., 2003).

The aim of this work is to establish whether very young children are able to draw the presuppositional inferences associated with the expressions *too* and *again* ('*auch*' and '*nochmal*' in German). From the age of two children, are proficient in their use of these expressions, but it is not clear that they fully appreciate their semantic and pragmatic import. To investigate this, three experiments were conducted with German children of two age groups: 2,5-year-olds and 3-year-olds.

In the first experiment, twenty-one 2,5-year-olds played with one type of game (e.g., a puzzle), while an experimenter, acting as a playmate, played with another one (e.g., a xylophone). A second experimenter, acting as a playmaster, would subsequently tell the child she could "play with the game *again*" or "play with the game, *too*". Hence, the discourse particle (*auch* or *nochmal*) was the only cue given to the child to assign the correct referent to the game she must play (either the puzzle she played with before, or the xylophone the playmate experimenter played before). While children encountered no problems during familiarisation trials, they performed at chance during test trials. The results suggest that even though children produce the particles *auch* and *nochmal*, they do not comprehend the pragmatic inferences associated to them. However, the cognitive demands of the task – over and above the linguistic features – may have produced these results.

Experiment 2 addressed some design issues which might account for the results of the first experiment. This time, twelve 2,5-year-olds and twelve 3-year-olds were tested in the following setting: they played with a toy, while an experimenter played with a different one (e.g., a toy frog and a toy boat). After both of them returned their toys to another experimenter – the playmaster – the 1st experimenter asked to "have the toy *again*" or to "have the toy, *too*". The playmaster, in turn, asked the child to hand it to the 1st experimenter. As with Experiment 1, the child could only rely on the discourse particle to choose the correct toy, and hand the 1st experimenter the one he

had asked for. The results for both age groups were not different from chance, suggesting that
₁again, children could not fully comprehend the meaning of these discourse particles. Nor were there any differences in the performance of the two age groups. However, a major factor in children's responses may have been that they had to deal with real people's wishes. Indeed, children sometimes had very strong expectations on the toy their playmate experimenter would want to play with. Such preferences on their part would, of course, interfere with the aim of the study.

As a result, an entirely new paradigm was designed for a third experiment using toy animals and puppets rather than real persons. Twenty-four 3-year-olds and twenty-four 2,5-year-olds participated in this study. Children were presented with two toy characters, one of which performed an action (e.g., dance, jump, clap). The child then heard either the phrase, "Anna wants to dance, *too*," or "Anna wants to dance *again*", where, crucially, the name "Anna" hadn't been used before. The child was then asked to help Anna perform the action. Thus, in order to assign the correct referent to "Anna", pick up the right puppet and make her dance, for instance, the child had to make an inference based on the presupposition carried by either *too* or *again*. Each child had three trials with *auch* and three with *nochmal* each one of them involving a different pair of puppets (e.g., little girl as above, elephants, dogs, cats). The performance of 3-year-olds was above chance level for both *auch* and *nochmal*, while 2,5-year-olds responded randomly. These findings tentatively support a developmental pattern where 3-year-olds – but not 2,5 year-olds – understand the presuppositions linked to discourse particles.

I will present the findings of these experiments and discuss the implications they have for the early understanding of presuppositions. Overall, these data suggest a much earlier comprehension of discourse particles than previously established.

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3-YEAR-OLD CHILDREN COMPREHEND RELEVANCE IMPLICATURES

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Consider a child holding a packet of biscuits asking her mother:

(I)   "May I eat these biscuits?" And the mother answers:

(i)   "We are having lunch in a couple of minutes."

The utterance in (i) is a typical one that requires a relevance implicature, since the mother's reply to the child's question at first seems irrelevant as it does not convey the appropriate information (yes or no) required by the child.

Previous studies on relevance implicatures found that children must be at least 6 to 7 years old to derive the appropriate inference (Bucciarelli et.al., 2003; de Villiers et.al., 2009; Verbuk, 2009). However, a problem with these findings is that these studies measured children's comprehension of utterances as in (i) by quite complex methods.

We therefore conducted a study on relevance implicature comprehension in sixteen 2.10-3.2-year-old children using a simple object-selection task.

Our results suggest that 3-year-old children are able to draw Relevance Implicatures. In order to understand the meaning of utterances apart from what is actually said, they rely on early acquired intention-reading abilities (as used for understanding non-verbal communication and early word learning).

WORKING MEMORY IN QUANTIFIER VERIFICATION

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We examined the role of working memory engagement in quantifiers comprehension. We based our predictions on a computational model according to which every natural language quantifier is associated with the minimal automata recognizing whether the quantifier sentence is true in a given situation. The empirical data obtained so far support the assumption that the difficulty of mental processing of quantifiers depends on the complexity of the corresponding minimal automata. This complexity can be explained, among others, by a difference in needed memory resources. In the present study we assessed how subjects are judging the truth-value of statements containing different natural language quantifiers with additional memory load. The experiment consisted of two combined tasks: sentence verification and digits memorization. Our results revealed that the difficulty of quantifiers (measured with accuracy and reaction time) increased as follows: numerical quantifiers of small rank, parity and numerical quantifieers of high rank (the same level), and proportional quantifiers. The results agree with predictions drawn from the automata-theoretic model.

SUNDAY 07/02/2010

THE INTERPRETATION OF RELATIVE ADJECTIVES BY ADULTS AND YOUNG CHILDREN

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The interpretation of the Dutch relative adjectives *groot* 'big' and *klein* 'small' by adults and toddlers (2- and 3-year-olds) was investigated in two off-line experiments and one on-line experiment. The same basic procedure – a scalar judgment task – was used across the three experiments. The subjects were presented with series of same-kind objects incrementally increasing/decreasing in size and were asked to point to the big/small ones. The results show that adults actively exploit a category-specific reference point located around the midpoint of a series in their scalar judgments. Unlike adults, toddlers do not rely on the class-specific reference point in the middle of a scale. Rather, their scalar judgments hinge on the category-independent endpoints. Further, the eye-tracking data in this study show that children acquire positive adjectives before their negative counterparts. Taken together, the findings suggest that the development of relative adjectives involves a transition from two distinct reference points at the extremes of the scale to one reference point in the middle of the scale, which is a pre-requisite to the understanding of polarity.

ADJECTIVAL VERSUS NOMINAL CATEGORIZATION PROCESSES

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The huge literature concerning learning of artificially construed categories often appears to contain inconsistent results. However, Ashby and Maddox (2005) show that a consistent picture is revealed when studies are divided by category type. Classification in 'rule-based categories' depends on a single dimension or a simple enough conjunction or disjunction of dimensions. Conversely, in 'similarity-based categories' information about instances' degrees in multiple dimensions is integrated, typically by averaging. In accordance, rule vs. similarity tasks have different neural and developmental correlates. Based on these findings, I propose that adjectives and nouns cluster with these two category types, i.e. they typically trigger processing by two different cognitive systems. To support this proposal, I present links between findings pertaining to artificial rule- vs. similarity-based categories and a variety of corresponding developmental, neural and distributional findings pertaining to adjectives vs. nouns.

CANCELLABILITY AS A GRADABLE NOTION: EVIDENCE FROM IRONIC MEANING INTERPRETATION

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This paper discusses the hypothesis that cancellability is not necessarily a binary feature, able to draw clear-cut distinctions within the areas of semantics and pragmatics but, instead, it could be considered as a graded notion. The cancellability test (which has been used as a common test for implicatures – e.g. Recanati 1989) is applied to different manifestations of the phenomenon of irony. The experimental observation that acceptability judgments for the cancellation of different ironic meanings are placed in a continuum between "fully acceptable" and "unacceptable", leads us to seek the answers in two basic questions: (a) what are the cognitive factors that influence the degree of cancellability of an ironic interpretation? and (b) what are the implications of the recognition of a non-binary character of cancellability?

We begin by detecting the rather problematic character of the criterion of cancellability back to its first definition by Grice, who had to distinguish between "explicit" and "contextual" cancellability (Grice 1989:44). The first notion refers to the explicit cancellation of a potential implicature of an utterance in the context of that utterance, while the second notion refers to the possibility of existence of some (imaginary) context where a potential implicature of an utterance would not arise. We argue that the second notion seems too vague, while, at the same time, the first relies on a specific sense of "context", which needs to be better defined. Thus, out first step is to attempt a unification of the two different notions, in order to have a more concise definition of the term.

Focusing on the phenomenon of irony, we define it in a way that reconciles previous linguistic approaches, which have been attributing the phenomenon to various factors such as "indirect negation" (Giora 1995), "echoic mention" (Wilson and Sperber 1992), "inappropriateness" (Attardo 2000), or "pretence" (Clark and Gerrig 1984), by proposing two necessary preconditions: contrast and unexpectedness. By examining a collection of ironic utterances and respective responses to irony, which come from all possible contextual environments both natural (natural dialogue recordings, radio/tv talk shows) and constructed (literature/comedies/cartoons), we note the variable degrees of "success" of ironic interaction, degrees that seem to be linked to the many different methods (devices) that one can use in order to be ironic (for example, by overstatement or by making an absurd statement in response to a serious question). It is observed that each different ironic device is based on a different level of meaning (re)construction, a sub-propositional and a propositional one, within which further distinctions can be made depending on what kind of information each ironic device is eliciting (general world knowledge assumptions, specific information about the speaker, contextual factors and logical operations such as inference, presupposition etc.).

The above observations are used as the basis for experimental testing of the hypothesis that the cancellation of ironic meaning is judged for its acceptability by the speakers, depending on what device is employed for the creation of the ironic effect. It is shown that ironies produced by the same device and eliciting similar kind of assumptions tend to be equally easy to be cancelled and, what is more important, that speakers tend to avoid extreme judgments of acceptability of the cancellation of a meaning, preferring to create a comparative scale of "more acceptable" / "less acceptable" (and, therefore, "more cancellable" / "less cancellable" respectively).

In the last section of the paper, the implications of the findings are discussed in relation to the "what is said" / "what is implicated" distinction. The fact that the criterion of cancellability, which seems to work very well in cases such as the recognition of presuppositions, may exhibit some "flaws" when it comes to more complex pragmatic phenomena such as irony, is one more indication that the boundaries between the "purely semantic" and the pragmatic meaning remain fuzzy. It is finally argued that the recognition of pragmatic phenomena such as irony, which can be considered to belong to a "higher level" of communication (as the theories of irony as metarepresentation suggest, e.g. Curcó 2000) demands some complex mental processes which combine more cognitive capacities than just the linguistic faculty.

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WHY 'SYMMETRY' IS NOT A PROBLEM FOR A GRICEAN THEORY OF SCALAR IMPLICATURE

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Neo-Gricean accounts of scalar implicatures often proceed in roughly the following way : the scalar implicature associated with an utterance, if any, is generated by negating logical stronger alternatives from some set of propositions which are related to the original utterance in some appropriate way. Fox (2007) and Katzir (2007) discuss several ways to make this idea precise, showing that they are either non-explanatory or that they encounter a new problem, dubbed "symmetry". The symmetry problem is essentially that non-stipulative versions of the neo-Gricean account predict too many scalar implicatures, and do not explain why some exist and others do not. Katzir (2007) uses this fact as a crucial plank in his argument for a specialized grammatical module which is supposed to generate only the correct scalar alternatives. I show that, although the argument is correct against the theories under consideration, it does not support Katzir's proposal: an alternative account exists which is explanatory and does not encounter the symmetry problem. I argue in addition that this alternative has better empirical coverage than Katzir's theory, and is preferable on methodological grounds.

Neo-Griceans explain scalar implicatures as a two-step process. I say: "My brother Barry likes some kinds of fish". Step 1: You think, "This is compatible with the claim that Barry likes *all* kinds of fish. But if the speaker could have said *that*, he would have; so I can conclude that he was not in a position to say that Barry likes all kinds of fish". Step 2: You consider further: "The speaker is in a good position to know about his brother's culinary preferences. If Barry liked all kinds of fish, he would know. So, it must be that Barry does not like all kinds of fish".

Fox and Katzir note, however, that *Barry likes all kinds of fish* is not the only alternative about which the interpreter could reason. There are many propositions which are logically stronger than *Barry likes some kinds of fish*, but give incorrect results when plugged into the schema above. If the only constraint on what counts as a relevant alternative utterance is logical strength, than neo-Gricean reasoning does not explain why the interpreter should choose to reason about the stronger alternative *Barry likes all kinds of fish* as opposed, say, to the alternative *Barry likes some but not all kinds of fish*. But if the latter is chosen, we predict an incorrect result: the scalar implicature generated by this reasoning process would be *Barry likes some kinds of fish, and it's not the case that he likes some but not all kinds*. But this is logically equivalent to *Barry likes all kinds of fish*, and so *some* should implicate *all* rather than *not all* if this alternative is allowed.

Katzir (2007) uses this problem as an argument for a mechanism which generates scalar alternatives on the basis of the syntactic structure of the uttered sentence: roughly, an alternative for sentence *S* may be no more complex than *S* according to a particular definition of complexity. Katzir's theory has good empirical coverage (though I will eventually argue that it is not enough). However, Katzir's theory is not a truly Gricean theory of scalar implicature. For Grice, implicatures are generated by asking why the speaker *did something* –in this case, saying *S* – rather than *doing something else* –saying S', or remaining silent, or going to a movie, for example.

Scalar implicatures, on this way of thinking, are just a class of implicatures which happen to arise more often than others implicatures as a consequence of the logical relations between certain words. Il a Gricean theory, then, there can be no issue of a grammatical mechanism "generating" alternatives: the alternatives of speaker A's uttering *S* in some context are just all the actions that A could reasonably have taken instead, and implicatures are generated by reasoning about A's motivations for choosing to utter *S* rather than performing these alternative actions. Note that it is also true of the neo-Gricean theories that Katzir is arguing against. While Katzir's arguments regarding symmetry are correct against a theory using, e.g., Horn scales, this type of theory constitutes a partial grammaticization of scalar implicature.

What would an honest-to-goodness Gricean theory look like, and how would it avoid the symmetry problem? Theories which are faithful to Grice take the concepts of rational decision and action seriously. I present a stripped-down version of such a theory which is related to both optimality-theoretic and game-theoretic accounts but remains close to Grice's formulation. The inspiration comes from the following. In many cases – e.g., in the choice between "some" and "some but not all" – there is a conflict between the demands of Quantity 1 ("Say enough") and Manner ("Be brief"). How do speakers choose which maxim to honor and which to violate?

A quick look at several English-language corpora shows that "some" is nearly 400 times as common as "some but not all". While some instances of "some" are irrelevant (e.g., when there is no fixed quantity at issue of which "all" could be asserted), this is surely not enough to account for the massive difference in frequency. In addition, the vast majority of hits for "some but not all" are from a small set of particular context: news reporting, legal contexts, or academic articles. This distribution suggests that *some but not all* is licensed in contexts which demand unusual explicitness. This demand may trump the need to be brief: in public debates and legal contexts, where a speaker may later be held to account, the benefits of specificity often outweigh the negative aspects of prolixity. There are also contexts in which the relation between the utterance and the interpreter's prior expectations can make it necessary to be more explicit than normal:

(1) *Pfitzer Catches Flak for Giving Drug Discounts to Some But Not All Filipinos*. (blog headline)

(2) *Fish oil protects against some but not all types of fatty liver*. (nature.com)

These sentences occur in contexts in which the clause *but not all* is crucial to the intended interpretation and deserves highlighting. Pfitzer claimed falsely that they were giving discounts to all Filipinos. Fish oil has been seen as a panacea for liver problems and (3b) is the title of a paper showing that it is not as effective as is believed. In both cases, using "some" might be taken to be compatible with the previous "all" – claims which the authors are refuting. Verbosity is warranted.

To explain this, we can think of speakers as *ranking maxims* in making decisions about which utterances to use (and which non-linguistic actions to take as well, as Grice emphasizes). In a demanding or high-stakes context in which "some but not all" is known to be true, a speaker may well rank Quantity above Manner, with the result that "some but not all" is preferred to "some". Otherwise, with the ranking Manner > Quantity, "some" is preferred to "some but not all". Note, however, that if the speaker

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knows that "all" is true, then either ranking will prefer "all" to "some", because Quantity, prefers "all" and Manner is indifferent (both expressions are equally brief).

On this account, implicatures arise when the listener is able to work backward to his decision process from the actual utterance and the contextually appropriate ranking of maxims to the situation in which the speaker must have found himself. Since both rankings of Manner and Quantity prefer "all", there is no situation in which the speaker knows "all" to be the case and yet would prefer "some". Thus, given that "some" was uttered, the listener can infer that the speaker does not know that "all" is true. This is the desired implicature (modulo strengthening). However, the unwanted ("symmetric") implicature does not arise in this framework: a speaker using "some" will never be taken to implicate "all", because there is no situation, and no ranking of the maxims, in which "all" is true and yet the optimal decision for the speaker is to say "some". (That is, there is no path backwards through the decision tree from "some" to **all**). Thus, the symmetry problem does not arise. The explanation also generalizes to the other cases that Fox and Katzir discuss.

In the remainder of the paper I present a series of examples which show that this approach captures several types of scalar implicature which Katzir cannot, and that it yields a ready account of a type of example (due to Matsumoto 1995) which Katzir can explain only by stipulation. The conclusion is that the preset theory does not encounter the symmetry problem, is more explanatory and has better empirical coverage that Katzir's, and ties in closely with a very general theory of rational decision and action. This is enough reason, I think, to stick with Grice.

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