Pragmatics, point of view and theory of mind
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PRAGMATICS, POINT OF VIEW AND THEORY OF MIND: AN OVERVIEW[1]

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INTRODUCTION

The notion of *point of view* (or *perspective*[2]) can best be understood when there is a difference in beliefs or a difference in attitude towards either a (concrete) object or a proposition. For instance, Joan and May may have different (true) beliefs regarding Aristotle: May believes that he was Alexander's teacher but does not believe that he was Plato's pupil; on the other hand, Joan believes that he was Plato's pupil but does not believe that he was Alexander's teacher. Joan and May have different beliefs about Aristotle. Equally, one of them might have a true belief while the other has a false belief: for instance, May believes that he was Alexander's teacher while Joan believes that he was Nero's teacher. Again, they have different points of view about Aristotle. Note that in this specific instance (as in the preceding), May and Joan do not only differ in the content of their respective beliefs. They also, *ipso facto*, differ in their propositional attitudes toward the same propositions:

    (1)   Aristotle was Alexander's teacher.

    (2)   Aristotle was Plato's pupil.

    (3)   Aristotle was Nero's teacher.

May believes (1) and disbelieves both (2) and (3), while Joan believes (2) and (3) and disbelieves (1). Equally, May and Joan may differ not only in their beliefs or opinions, but also in their feelings and desires. For instance May could loathe the color red while Joan loves it. And May could love the color blue while Joan loathes it. Hence, if they go shopping together, giving their different color preferences, one could predict more or less precisely what each will end up with at the end of the day in terms of e.g. clothes or shoes.

This, then, is just one use of point of view: making sense of what people do or even, in the most productive cases, predicting what they will do. This, at any rate, is exactly what the *intentional stance* says it is useful for. The intentional stance (see Dennett 1987) is the way of making sense of others' behavior through two basic principles:

      Others are rational individuals;

      They have mental states, such as beliefs, desires, etc.

The intentional stance, as noted by Dennett, is widely applied in everyday life to make sense of what other people, animals and even artifacts do. It rests on a more general human cognitive ability, which, in turn, has been called *theory of mind*, i.e. the ability to assign to others' mental states.

It is probably relevant at this stage to point out that the canonic experimental test for theory of mind rest on the ability to attribute to others false belief[3]. This presumably should make it clear that theory of mind crucially involves not only reasoning about mental states, but also the ability of adopting someone else's point of view. This ability, I should point out, is not only important in interpreting others' behavior, it also is important in interpreting others'

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[1] This paper is dedicated to the memory of my brother, Dominique Reboul (1960-2002).

[2] Some people may want to make a distinction between point of view and perspective. Not being able to see a difference, I will take the two terms as synonymous: hence, everything I say about point of view may be taken to refer to perspective and *vice versa*.

[3] The standard test involves two characters, Sally and Ann. Sally has a marble. She puts it in a box and leaves the room. While she is absent, Ann takes the marble and puts it in her basket. Sally comes back and the subjects are aked: "Where will Sally look for the marble?".

communicative behavior. An important point is whether or not it is important in making sense of others' linguistic communicative behavior and this is where pragmatics comes in. This depends largely — though not entirely, see below section "Contemporary pragmatics" —on how transparent or conventionalized one takes linguistic communication to be.

A simple informal way of defining pragmatics is to say that it answers to the following division of labor among language sciences: whereas linguistics (covering phonology, syntax and semantics) deals with language itself, pragmatics deals with language use and, notably, language use in communication. A common fallacy is to think that pragmatics developed from the American philosophical school of *pragmatism*, which originated at the end of the XIXth century with William James, Charles Peirce[4] and John Dewey. In fact, as will be seen in the next section, this is incorrect and, though there were some precursors, pragmatics in the modern sense developed in the 1950s and from philosophy of language. If anything, its foundations are to be found in the later Wittgenstein and, more precisely, in the notion of *language games*.

Regarding the division of labor between linguistics and pragmatics, it may be useful to point out that though linguistics is concerned with the *sentence* — a theoretical abstraction —, pragmatics is concerned with the *utterance* — a linguistic sequence actually produced in a given situation.

The organization of the present paper will begin with a brief history of pragmatics at its beginning through an exposition of Austin's, Searle's and Grice's works. This will be followed by a brief summing up, outlining the relations between pragmatics and theory of mind. More contemporary theories, which might be dubbed neo- and post-Gricean, will then be described and their view of the relation between pragmatics and theory of mind will be discussed. In conclusion, I will take the example of the choice and interpretation of referring expressions as the ground for a discussion of theory of mind role in linguistic communication addressed by contemporary pragmatics.

A BRIEF HISTORY OF PRAGMATICS

Pragmatics can be said to begin with the William James Lectures given by the British philosopher John Austin at Harvard in 1955 and posthumously published as *How to do things with words* (Austin, 1962). Though there were a few precursors (see Reinach, 1983, and Gardiner, 1989, Austin's lectures introduced the notion of *speech act*, which was then widely adopted by both linguists and ordinary language philosophers. Very roughly, Austin was writing against the background of a philosophical approach to language which was only concerned with affirmative sentences uniformly considered as describing reality and as such susceptible to truth-evaluation (e.g. Frege's and Russell's work). In opposition to this view, which he called the *descriptive illusion*, Austin pointed out that there are two types of affirmative sentences: some of them, which actually describe reality, e.g. "The cat is on the mat", were called *constative* and can meaningfully be evaluated for truth-value, while others, which are used to perform diverse acts, such as order, promise, baptism, etc., e.g. "I promise that I will come tomorrow", were called *performative*, can not be meaningfully evaluated for truth-value and are instead susceptible of *felicity*. This was the view developed in the first William James lectures, but it evolved in the next ones to the point were all utterances were corresponding to speech acts of three different kinds: a *locutionary* act, corresponding to the very production of the utterance; an *illocutionary* act, corresponding to the act performed *in* the production of the utterance, e.g. an order, a promise, etc.; a *perlocutionary* act, performed *by* the production of the utterance, e.g. persuasion. This had the consequence that the division between constatives and performatives disappeared: all utterances, as long as they

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[4] Peirce's philosophy, which addressed more directly the question of communication and language, is in fact a precursor of *semiotics*, rather than of pragmatics.

corresponded to the production of a grammatical sentence, were *ipso facto* performing an illocutionary act of one kind or another. Thus, all utterances, as performances of illocutionary acts, could be evaluated as successful or not, i.e. could be evaluated in terms of their *felicity*. However, truth-evaluation comes back in, given that the content of the utterance can be evaluated for truth-value: for instance, an order can be evaluated as true if the content of the order had been realized by the addressee. This indeed was Austin's motivation for discarding the constative/performative distinction: both constatives and performatives can be evaluated both in terms of felicity and in terms of truth-value. This led to the establishment of rather tentative felicity conditions, specific to different types of illocutionary acts. That, then, was the situation that Austin left behind him on his death in 1960.

We will now leave chronology aside to go directly to Searle's work as it was a direct continuation of Austin's. Searle (1969), building on Austin's suggestions, distinguished inside a given utterance between the propositional content and the illocutionary force. The propositional content is what can be evaluated for truth-value, while the illocutionary force corresponds to the type of illocutionary act accomplished in the utterance. For instance, in example (4), *I order* is the marker of illocutionary force, while *you shut the door* is the marker of propositional content:

  (4) I order that you shut the door.

Searle developed a more formal taxonomy of illocutionary acts and gave more detailed felicity conditions for some types of illocutionary acts. He rejected the tripartite distinction between locutionary, illocutionary and perlocutionary acts in favor of a simple bipartition between locutionary and illocutionary acts, giving pride of place to illocutionary acts, which are the main speech acts. He also, as we will now see, recasted the contribution of Paul Grice to make it fit in his own highly conventionalist view of linguistic communication and illocutionary acts.

Grice, another English philosopher, introduced the notion of *non-natural meaning* or *meaning$_{nn}$* (see Grice, 1957). He distinguished natural meaning, for instance a natural phenomenon (e.g. spots in an eruptive illness or smoke) indicating that something is the case (e.g. one's having an eruptive illness or the presence of fire) and non-natural meaning which is typically involved in a communicative process[5] and depends on the intention of the communicator. More precisely, Grice defined non-natural meaning as due to the intention of the speaker to produce a belief in the hearer through the hearer's recognition of the speaker's intention. It is important to note that while natural meaning is *factive* (i.e. if it is true that there are eruptive spots, it is true that the affected patient has an eruptive illness), non-natural meaning is not. In other words, it is subject to misunderstandings due to differing points of view. Grice also made an important contribution to the analysis of conversation (see Grice, 1975), introducing the *principle of cooperation*, according to which people involved in a conversation respect a set of maxims, the *conversational maxims*, enjoining the speaker to be co-operative, brief, informative and relevant. Finally he pointed out that linguistic communication could not be reduced to understanding the sentence corresponding to the utterance. One should take into account not only what is explicitly communicated in the utterance, but also what is implicitly communicated. Grice noted that some things are implicitly communicated without, strictly speaking, being logically implied. These specific implicitly but not logically communicated propositions, he called *implicatures*. He distinguished two types of implicatures, *conventional implicatures*, lexically triggered and difficult if not impossible to deny (they are not defeasible), and *conversational implicatures*,

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[5] This is of course not the case in natural meaning, which arises independently of a communicative process and where no intention is involved.

which are not lexically triggered but are produced through the exploitation of the *conversational maxims* and which are defeasible. Examples of the first would be utterances such as "Bush struggled to impose the war in Irak to the UN" implicating that Bush had difficulties to impose the war in Irak to the UN[6]. Examples of the second would be utterances such as "Anne has four children", implicating "Anne has exactly/at most four children". Thus, it can be said that, though speech acts theory had introduced the notion of *intention* in linguistic communication (one of the felicity conditions on all types of illocutionary acts has to do with the sincerity of the speaker regarding his desire, belief, etc. all of which can be related to intention), Grice put the notion of intention squarely at the center of linguistic communication both through his definition of non-natural meaning and through the idea that linguistic communication, being largely implicit, could not be accounted for in terms of *convention*.

Going back to Searle, who worked on speech acts after Grice's paper on non-natural meaning (see Grice, 1957), Searle (1969) recast the notion of non-natural meaning to make it fit in his highly conventionalist account of speech acts, introducing in the speaker's intention the idea that the speaker intended that his intention to communicate such and such a content be recognized through the (conventional and linguistic) rules regulating the meaning of the utterance. This (mis)reading was rightly rejected later on by Grice (1989) who insisted that Searle had misunderstood him.

Thus, the beginnings of pragmatics introduced the ideas that utterances are acts and should be considered as such and not as somehow outside of reality and describing it. It also claimed that linguistic communication cannot be entirely conventional but does depend on a (non-conventional) recognition of intentions, i.e. of mental states. This is where pragmatics and theory of mind meet.

TAKING STOCK

Pragmatics and theory of mind in the first stage

One can see the early history of pragmatics as a continuous endeavor to integrate language, and most notably language use, in action, i.e. to consider language use as a behavior on a par with any other kind of public behavior. What this means, basically, is that language use, i.e. the production and interpretation of utterances, works at least in part as any kind of behavior and is thus susceptible to the interpretive processes dedicated to the explanation and prediction of behavior of any kind. In other words, one can apply to language use, or linguistic behavior, the *intentional stance* (see Dennett, 1987). I will have more to say about theory of mind later on, but for now I would like to explain shortly why and how pragmatics, in its initial Austinian, Gricean and Searlian form, is related to theory of mind. As long as language was considered as a tool, albeit imperfect, to describe reality, there was (apparently) no need for a theory of mind or for the intentional stance: the only thing to do was to decode linguistic meaning (which was conventionally determined), extract it from the sentence and evaluate the truth value of the proposition expressed. The advent of speech acts theory did nothing against the conventionalist, encoding-decoding view of linguistic communication, but by introducing the notion that utterances were acts, it integrated linguistic behavior in the general range of behavior. The idea was that linguistic behavior, just as non-linguistic behavior, was intentional in the vernacular sense, i.e. the speaker had the intention to perform this specific illocutionary act with this specific propositional content. However, no sophisticated interpretive process was needed because the intention of the speaker could be determined, more or less transparently through linguistic conventions: the process was still a

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[6] Note that the sentence is neutral as to whether he succeeded or not.

simple encoding-decoding one. With Grice, a new and very decisive step was made: linguistic communication was not transparent anymore and linguistic meaning, as a part of non-natural meaning, was not a matter of encoding and decoding but a matter of sophisticated inference. Though Grice's work preceded the contemporary literature on theory of mind, there does seem to be a strong appeal not only to the intentional stance, but to sophisticated reasoning guided by theory of mind (including perspective taking) in the interpretation of utterances. Once linguistic conventions are put aside, what remains is the attribution of mental states and that is exactly what theory of mind is supposed to allow. Thus pragmatics in its first stage (roughly from the 1950s when Austin and Grice gave the William James lectures to the beginning of the 1980s) certainly justifies the hypothesis of a strong reliance of the interpretation processes of utterances on theory of mind.

A rejoinder: Glüer & Pagin's paper

In a recent paper, Glüer and Pagin (2003, 23) have attacked the Gricean definition of non-natural meaning, on the grounds that it "appeal[s] to higher-order thoughts: thoughts about thoughts". This, according to them, should entail that only people who have a theory of mind (involving the subject thoughts about other people's thoughts) can access linguistic meaning, i.e. only people with a functioning theory of mind can learn a language. This suggests to them that counterexamples to Grice's definition would be people who could learn to speak and understand a language but which are to all purposes disabled relative to theory of mind in that they are either deprived of theory of mind or have a highly dysfunctional theory of mind. Relying on experimental work on autistic people, they point out that some autistic people[7] do learn to communicate linguistically even though they share the general autistic characteristic of an impoverished or inexistent theory of mind. Hence, Glüer and Pagin claim, mastery of the linguistic system does not rest on theory of mind and Grice's theory of non-natural meaning cannot be accepted.

I will come back to Glüer and Pagin's paper below (see section "Experimental evidence"), but I will briefly comment on the basis of Glüer and Pagin's criticism. As was pointed by Avramides (1989), Grice's view on non-natural meaning can be interpreted in either *reductive* or *reciprocal* terms: on a reductive view, Grice's definition reduces the notion of meaning to the notion of intention and claims that there is nothing in the notion of meaning which cannot be better explained by the notion of (speaker's) intention; on a reciprocal view, all that Grice claims is that the two notions of meaning and intention are complementary, which means that though neither is reducible to the other, each can shed light on the other. It should be clear that it is only the reductive interpretation of Grice's notion of non-natural meaning that falls under Glüer and Pagin's criticism. The reciprocal reading cannot be touched by it as it does not claim that meaning is reducible to intention[8].

CONTEMPORARY PRAGMATICS

Contemporary pragmatics has followed in Grice's footsteps rather than concentrating on speech acts theory. Thus, though a considerable amount of pragmatics up to the 1980s was dedicated to speech acts theory, it is now a rather minor part of contemporary work in pragmatics.

There are two main trends in contemporary pragmatics: what could be called *neo-Gricean pragmatics*, which is mainly concerned with the establishment of the right interpretation of Grice's works, and what could be called *post-Gricean pragmatics*, whose main concern is not

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[7] Usually called *high-functioning*, for that reason.
[8] It should however be noted that Grice is usually interpreted in reductive rather than reciprocal terms (see, e.g. Bach, 1999).

so much the interpretation of Grice's thought than the development of pragmatic studies, building on part of Grice's contribution and rejecting the rest.

Neo-Gricean pragmatics

Grice's work has inspired quite a few philosophers, but I will mainly concerned here with the work of Steven Levinson (see Levinson, 2000), a linguist. Levinson's contribution to contemporary pragmatics centers on the notion of conversational implicature. He claims that though some conversational implicatures are "nonce" in the sense that they arise once and have to be inferentially computed, other are in fact lexically triggered though they can still be distinguished from conventional implicatures by the fact that they remain defeasible. These lexically triggered conversational implicatures are called *Generalized Conversational Implicatures* or *GCIs* for short. The idea is that some lexical items are integrated in either *contrast sets* or *Horn scales* and that the choice of a given item from contrast sets or Horn scales automatically triggers the implicature that the speaker could not have chosen another item from the same set or scale. Thus, (5) implicates (6) and (7) implicates (8):

    (5)   The flag is white.

    (6)   The flag is not white and red/The flag is only white.

    (7)   Some of the students came.

    (8)   Not all of the students came.

The implicature in (6) is triggered by the lexical item *white* in (5) which belongs to the contrast set of colors. That contrast set can be expressed as *<white, red, blue, green, black, etc.>*. The choice of *white* instead of *white and red/blue/green/*etc. implicates that the flag is white to the exception of any other color. In a similar but not identical way, the implicature in (8) is triggered by the quantifier *some* which belongs to the Horn scale *<all, many, some>*. In a Horn scale, every item implies all of the items on its right and every item implicates the negation of all of the items on its left, which explains why (7) implicates (8). Rather than making the hearer go through the whole inferential process based on the implicit comparison between what the speaker actually said and what he or she might have said using other items in the contrast set or in the Horn scale, Levinson proposes that the implicature is grammaticalized, i.e. it is automatically triggered by any item[9] in a contrast set or Horn scale at a subsentential (local) level.

Thus, Levinson reduces the role of inferential processes potentially linked to theory of mind to those conversational implicatures which are not generalized. If indeed some conversational implicatures are generalized, this is a significant reduction.

Post-Gricean pragmatics

By post-Gricean pragmatics, I will mainly mean Relevance Theory as proposed by Sperber and Wilson (1986 and 1995). By contrast with neo-Gricean pragmatics, which does not explicitly resort to cognitive sciences, post-Gricean pragmatics squarely installs pragmatics as a cognitive science. Sperber and Wilson, drawing their inspiration from Fodor's modularity theory (see Fodor, 1983), see the division of labor in language sciences as deriving from a cognitive distinction between what can be treated by specialized modules (phonology, syntax and semantics) and what must be treated at a cognitively higher level by the (non-specialized) central system of thought. They borrow from Grice the notion of *semantic underdetermination*, i.e. the idea that strictly linguistic interpretation processes are not sufficient to determine what is linguistically communicated. Though linguistic conventions

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[9] Excluding the left most in a Horn scale.

have a role to play, that role is exhausted in the coding-encoding processes which go on in the linguistic module but which do not yield a complete interpretation of the utterance and, most commonly, are not even enough to establish what is explicitly communicated[10]. More is needed and the role of pragmatics is precisely to describe the interpretive processes that lead from the linguistic interpretation to the complete pragmatic interpretation of the utterance, establishing both what is explicitly and what is implicitly communicated.

The interpretation process begins in the linguistic module which takes as input the (transduced) acoustic form of the utterance and which yields the logical form of the utterance, a structured sequence of concepts. The central system then proceeds with the pragmatic interpretation which is a non-demonstrative inferential process taking as its premise both the logical form of the utterance and propositions in the context. Each utterance is interpreted relative to a context and each context is determined partly on the basis of the concepts in the logical form and is specific to the utterance currently processed. It is formed by propositions that the hearer believes to be true. These propositions can be drawn from three sources: the interpretation of recent utterances; the perception of the physical environment in which the communication takes place; encyclopedic knowledge drawn from long term memory and accessed through the concepts in the logical form of the utterance. Propositions in the context are limited as to their number and selection operates on the basis of the principle of relevance. The principle of relevance is a general cognitive principle that regulates cognitive mechanisms on the basis of economy: the cognitive gains of a given cognitive operation must balance the cognitive costs of the operation. In its communicative version, the principle of relevance says that each utterance, being intentionally produced in a communicative episode, transmits the guarantee of its own optimal relevance, i.e. the guarantee that its cognitive effects will balance its cognitive costs.

The logical form of a utterance can be wholly propositional, if it can be evaluated in terms of truth-value or less than wholly propositional if it does not allow a truth-evaluation. In the second case, the pragmatic interpretive processes have to complete the logical form to transform it in a wholly propositional form. This may entail disambiguation or reference attribution, among other things, including illocutionary force. The pragmatic processes also produce implicitly communicated propositions, such as implicatures. They are inferential processes, operating through standard logical operations, e.g. *modus ponens* from the premises which are both the logical form of the utterance and the propositions in the context. Pragmatic processes, apart from the completion of logical form when it is necessary, yield three types of cognitive effects: new implications; a reevaluation of the confidence with which a preexisting proposition is entertained; the eradication of the less-well entrenched proposition in a case of contradiction.

Just as Grice based his view of meaning on the notion of intention, Sperber and Wilson see linguistic communication as triggered by a double intention, an *informative intention*, according to which the speaker intends to make manifest to his hearer an information or a set of information and a *communicative intention* according to which the speaker intends that the hearer recognize his informative intention. Thus, though the strong self-referentiality of the Gricean intention as described in the definition of non-natural meaning is abandoned, Sperber and Wilson still defend a double intention in linguistic communication and, what is more, defend a view of linguistic communication as semantically underdetermined. Finally, and to contrast post-Gricean with neo-Gricean views, Relevance Theory rejects the idea that there are Generalized Conversational Implicatures: according to it, conversational implicatures are always nonce, produced by a specific inferential process at a global, sentential level. This,

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[10] Up to a point, one might say that Relevance Theory rests on a reciprocal rather than reductive interpretation of Grice.

however, was only the first step in Relevance Theory, a step in which, according to Sperber and Wilson (1987, 699), it was considered that "communication exploits the well-known ability of humans to attribute intentions to each other". What is more, "comprehension is defined as a process of identifying the speaker's informative intention" (*Ibid.*, 705). Finally, pragmatics "involves only the application of nonspecialised inference rules" (*Idem*).Thus, in its first version, Relevance Theory, though more moderate than the reductive interpretation of Grice's work, seemed to preserve a strong link between pragmatics and theory of mind.

The second version of Relevance Theory may have its origin in a paper by Sperber (1994), in which he distinguishes three strategies for interpretation in which different degrees of theory of mind and metarepresentation are involved. In Relevance Theory, according to him, there are two ways in which the speaker may be led to misunderstanding, i.e. to a failure to recover the speaker's informative intention: the speaker may be incompetent, leading the hearer astray as far as pragmatic processes go; the speaker may be less than benevolent, i.e. he or she may intentionally try to deceive the hearer. The three interpretive strategies are the following:

> *Naïve optimism*: the hearer considers the speaker both competent and benevolent. The hearer will adopt the first interpretation consistent with the Principle of Relevance. Fairly minimal theory of mind is necessary in naïve optimism.
> *Cautious optimism*: the hearer considers the speaker to be benevolent, but not necessarily competent. The hearer will not adopt the first interpretation consistent with the Principle of Relevance but will select one that is also consistent with what he or she believes he or she knows about the speaker. More theory of mind is needed.
> *Sophisticated understanding*: the speaker is assumed to be neither benevolent nor competent. The hearer will not adopt the first interpretation which is consistent with both the Principle of relevance and what he or she assumes he or she knows about the speaker. The hearer will choose an interpretation consistent with the principle of relevance but checked and counter-checked with what he or she, on the basis of theory of mind and the intentional stance, can deduce about the (possibly devious) intentions of the speaker relative to both the states of mind he wants to induce in the speaker and the type of behavior the speaker may adopt as a consequence[11].

A first (apparent) departure from Relevance Theory in its first state is that under naïve optimism, very little if any theory of mind is really needed. And naïve optimism is presumably what we, possibly excluding paranoid patients, apply in everyday communication unless we have strong reasons to resort to cautious optimism or sophisticated understanding[12]. The next step was taken by Sperber and Wilson (2002), when they rejected the idea that pragmatic processes are only general purpose mechanisms and argued for a dedicated comprehension module, which, though it would involve metarepresentational principles would have evolved specifically for the interpretation of linguistic communication, complementing the linguistic (phonology, syntax, semantic) module. This last step clearly contradicted one of the tenets of the first version of relevance, according to which pragmatic interpretation relied on general, non-specific, cognitive mechanisms.

TAKING STOCK: CONTEMPORARY PRAGMATICS AND THEORY OF MIND

The relation between pragmatics and theory of mind is quite different depending on whether it is seen from the vantage point of neo-Gricean or of post-Gricean pragmatics. According to neo-Gricean pragmatics, though some conversational implicatures are nonce and are not

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[11] A good example of applying a naïve strategy when sophisticated understanding might have saved the day is Othello's treatment of Iago's communicative behavior, see Reboul, 2001.

[12] Presumably, we do resort to sophisticated understanding regarding political speech or sales communication or in some charged situations such as exams or job interviews. But that is hardly the major part of linguistic communication.

linguistically triggered, these non-generalized conversational implicatures are not the object of pragmatic analysis. Pragmatic analysis is limited to those pragmatic processes that are linguistically triggered. Thus, though neo-Griceans would presumably recognize that some implicatures are obtained through inferential processes relying on theory of mind, they have nothing to say about either those implicatures or those processes.

On the other hand, post-Gricean pragmatics, with its insistence on the semantic underdetermination of linguistic communication, as well as its claim that linguistic communication is based on a double intention, seems the ideal candidate for the assertion of a strong link between pragmatic communication and theory of mind. However, though this is clearly the case for the first version of Relevance Theory, it is less clear that it is the case for its second version, especially once the severance of pragmatics and theory of mind was accomplished by postulating a distinct module for the understanding of linguistic communication. Before I turn to a general summing up and conclusion, I would like to get a short look at experimental evidence.

Experimental evidence

Let us begin with the difference between Levinson on the one hand and Sperber and Wilson on the other. Here the difference is centered on the existence or inexistence of generalized conversational implicatures. Though experimental evidence is still fragmentary and concerns mainly GCIs triggered by contrast sets, it seems to favor Sperber and Wilson's view rather than Levinson (see Reboul in press). This, however, leaves intact the possibility of GCIs triggered by Horn scales. To be quite candid, though contrast sets seem rather ungainly monsters from a linguistic point of view (it is far from clear which words should or not belong to a given contrast set), Horn scales are clearly much better candidates to be linguistic (lexical) phenomena and as such much more defendable as possible triggers for GCIs. I will leave the question there though it should be noted that the rest of the difference between GCI theory and Relevance Theory is a mere matter of terminology, regarding what should be understood as resorting to pragmatics.

Let us go back to Glüer and Pagin, who used experimental evidence regarding autism and autistic speakers to criticize Gricean positions regarding linguistic meaning. Their paper raises the more general issue of the relations between language and communication, strictly linguistic abilities and communicative abilities, of their similarities or distinctiveness and of their priority in time. In other words, what comes (or came) first, language or communication? The question may be asked at two levels: at the level of language acquisition and at the level of the emergence of language.

In both cases, it seems obvious that communication comes first: after all, non-linguistic animals, which are the overwhelming majority, do manage to communicate, in however rudimentary a fashion; similarly, pre-linguistic infants seem to do pretty well at getting their meanings across. So it seems that communication comes first. The question now is: does that mean that theory of mind comes first? This is a highly difficult question: regarding the non-linguistic animals of today, it seems clear that the overwhelming majority communicates without theory of mind[13]. What is more, it seems that even the chimpanzee, our nearest relative in both evolutionary and genetic terms, may not have a theory of mind (see Povinelli

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[13] However much one may be tempted to attribute to one's pet cat or dog the ability to attribute to one thoughts, beliefs or feelings, it is extremely unlikely that anything as sophisticated as theory of mind, even in a very downgraded version, exists in one's cat or dog. Note that this does not mean that the animal does not have a mind or feelings of its own: it merely means that it does not make any sense to attribute sophisticated metarepresentations, using human concepts, to it.

2000). This leaves us with human beings or their hominid predecessors. The development of a theory of mind in children is well-documented (see e.g. Baron-Cohen 1995 for a good synthesis) as is their language acquisition and it seems clear that precursors of a theory of mind, such shared attention and the attribution of agency, are more or less in place at the beginning of language acquisition[14]. It has been claimed by e.g. Bloom (2000), that the way children acquire the use of words is through a sophisticated use of theory of mind. This is just the hypothesis that is contradicted by autistic speakers, Glüer and Pagin claim. This is hardly the place for a detailed debate but a few remarks may be in order. First of all, Bloom (2000) anticipated such criticisms and pointed out, rightly, that autistic speakers do not acquire language in the usual way and according to the usual calendar. Their language acquisition is usually long delayed and often relies on heavy remedial work by speech therapists. What is more, their use of language in communication (both in production and in comprehension) is never quite normal and the abnormality cannot be explained by their possible mental deficits. Thus, though autists may acquire language, both their acquisition and their use of language is so peculiar that it can hardly be taken as evidence in any discussion on the usual language acquisition processes. Basically, I think that Bloom's rejection of Blüer and Pagin's criticism is right on this point, but in all fairness it should be said that though autistic people may have different acquisition processes regarding language, this is not the case of another population that is commonly regarded as deficient in theory of mind, though usually to a lesser degree. Asperger Syndrome patients have social difficulties very similar to autistic patients, though they have normal or high IQ and their language acquisition proceeds fairly normally[15]. However, just as autistic speakers, they evidence difficulties in language use and, what is more, similar difficulties.

Could one make sense of that using Sperber's distinction between three understanding strategies? Well, the answer seems to be positive. It is clear that theory of mind is not completely in place by twelve months. For instance, the test for a complete theory of mind, the false belief test, is usually passed by four years of age, but most three years old fail it. Though the false belief test is not, strictly speaking, a test of linguistic communication, it seems clear that the abilities it tests are at least at the level of complexity of cautious optimism, if not at that of sophisticated understanding. By contrast, the theory of mind abilities which are in place at twelve months are at the level of naïve optimism: infants rely on the hypothesis that adults and older children around are both benevolent and competent communicators. One could suppose that Asperger Syndrome patients have reached that level of theory of mind by the age of twelve months, though the development of a full theory of mind does not proceed normally. This could explain both their fairly normal language acquisition and their rather limited talents in linguistic communication. This would mean that Glüer and Pagin's criticism of Gricean theories, understood reductively, is right: one does not need full theory of mind abilities to acquire a language (as evidenced by Asperger syndrome patients), though if the acquisition of language is to proceed normally, a modicum of theory of mind is necessary (as evidenced by autistic speakers), and Bloom is right there. Again, Bloom is partly right: language acquisition does proceed through theory of mind, though not through a fully developed theory of mind. The theory of mind in question is at the level of naïve optimism: it does not have to go through sophisticated third-level or higher metarepresentation. Indeed, it needs very little metarepresentation.

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[14] Strictly speaking, phonological aspects of language acquisition may emerge earlier, but the crucial step which is the acquisition of meaning, of language as a symbolic system, the part of language acquisition most relevant to the present debate, begins around twelve months of age.

[15] This indeed is one of the things that differentiate them from high-functioning autistic people (see Joliffe & Baron-Cohen, 1999, Heavey *et al.*, 2000).

Let us now go to the emergence of language. Does it make sense to consider — as it is generally done in the literature on the subject (see, e.g. Givon and Malle, 2002) — that theory of mind (and more generally clearly Gricean communication processes) emerged before language and made the emergence of language possible? From the fact that language acquisition, when it proceeds normally, seems conditioned by a modicum of theory of mind, is it legitimate to infer that a full theory of mind emerged before language and was a necessary (though possibly not a sufficient) condition of the emergence of language? Well, straightforwardly, the fact that language acquisition only needs a modicum of theory of mind makes it at most legitimate to think that language emergence only needs a modicum of theory of mind and not a full one. What is more, some hypotheses seem to link the development of a full theory of mind with the acquisition of language in the sense that linguistic development and theory of mind are up to a point "co-acquired": to develop a full theory of mind, one seems to need language and explicit linguistic discussion of states of mind. Experimental work on this question is still going on and it is doubtful whether a full agreement will be reached, but the link between language and developing full theory of mind seems fairly robust though whether purely syntactic factors, mainly semantic factors or both are engaged is a matter for debate (see Yun Chin and Bernard-Opitz, 2000, de Villiers and Pyers, 2002, Ruffman *et al.* 2003, among others).

Interestingly, the ability to pass the false belief test of theory of mind precedes the ability to pass tests relative to opaque contexts. *Opaque contexts*, which have been the object of many philosophical discussions from Frege to Kripke and later, are directly related to the question of point of view. Going back to Joan and May (see "Introduction"), they had different propositional attitudes regarding the three propositions below:

(9) Aristotle was Alexander's teacher.

(10) Aristotle was Plato's pupil.

(11) Aristotle was Nero's teacher.

May believed (9) but did not believe (10) or (11). Her first two beliefs can be expressed as follows:

(12) May believes that Aristotle was Alexander's teacher.

(13) May does not believe that Aristotle was Plato's pupil.

Passing the opaque context test is being able to deduce from (12) and (13) that though (10) is true, (14) is not:

(14) May believes that Plato's pupil was Alexander's teacher.

By contrast, from (9) and (10), the inference to (15) is perfectly legitimate:

(15) Plato's pupil (one of them) was Alexander's teacher.

This is because (9) is a *transparent context*, where substitution *salva veritate* of co-referential expressions (here "Aristotle" and "Plato's pupil") is possible, while (12) is an *opaque context*, where substitution *saliva veritate* of co-referential expressions is not possible. In other words, substituting "Plato's pupil" to "Aristotle" in (12) changes the truth-value of the whole sentence. Now, it seems that five years old children pass the opaque context test —they will assent to (12) and (13), but reject (14)–, while younger children will assent to all three propositions[16]. This result, from several different experiments (see, e.g. Kamawar and Olson, 2000, Robinson and Apperly, 2001), seems to indicate that there is a one year lag between

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[16] The actual test does not rely on arcane knowledge about philosophers and kings, but the principle is exactly similar.

false belief acquisition and opaque context acquisition. It should also be noted that false belief remains easier, i.e. the rate of correct answer is still higher at five for false belief than it is for opaque context. The explanation of that result is far from straightforward[17], given that passing false belief seems to involve being able to hold different representations of the same object and that the same thing is involved in passing opaque contexts. Explanations often rely on the fact that in false belief, the representation is incorrect, while in opaque contexts, both representations are correct (and compatible) though partial. This is presumably correct but it is hard to see why it should explain that false belief is easier than opaque context. After all, passing the false belief test involves attributing a false belief, while passing the opaque context test involves attributing partial knowledge. Invoking a reality principle will not help here in as much as reality may make knowledge available (hence partial knowledge should be more sophisticated to predict than complete knowledge) but it certainly does not make false facts available (hence false beliefs should be more sophisticated to predict than partial knowledge). In other words, the hierarchy of complexity should be: total knowledge < partial knowledge < false belief. What tests of false belief and opaque context seem to show is that it is: total knowledge < false belief < partial knowledge. I have no convincing explanation for that phenomenon and have seen none in the literature. I leave the matter to the reader's ingenuity.

Let us come back to the chronology of language and theory of mind acquisition. The following table can be proposed:

Age	Language acquisition	ToM acquisition
From birth to 9 months		ID and EDD[18]
9 months to 18 months	Going from 6 words to 40[19]	SAM[20]
24 months	311 words	Development of TOM
30 months	574 words	Development of TOM
48 months	Development of vocabulary	False belief test
60 months	Development of vocabulary	Opaque context test

At the age of five years, children can be said to have some mastery of both theory of mind and point of view, which of course does not mean that their ability in both domains will not develop in time.

What does this tell us about pragmatics? Basic pragmatics (or in Sperber's term, the pragmatic module) is presumably quite sufficient for naïve optimism and may well be operational from a very early age, developing at the same time as the early stages of theory of mind (ID, EDD and SAM). A full theory of mind is not necessary for naïve optimism, but does develop in tandem with the acquisition of some sophisticated syntax (tensed complements) and the vocabulary for complex concepts (relative to mental states) which culminates in the passing of the opaque context test. One could say that passing the false belief test is necessary for cautious optimism while passing the opaque context test is necessary to sophisticated understanding. This is of course speculative but makes sense none the less. It is a fair bet that playgroung strategies do not get very sophisticated in preschoolers. Where does all of this leave the link between pragmatics and point of view? Well, to come back to Asperger syndrome patients, let us suppose that the explanation given above of their language acquisition and of the peculiarities of their language use is right: in other words,

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[17] By contrast, all adults answer correctly opaque context tests.

[18] ID is the detector of intentionality (linked to agency). EDD is the detector of eye direction.

[19] The numbers are means. Children's individual performances depend on parents' vocabulary and on parent-infant interactions.

[20] SAM is the shared attention mechanism.

they have the premises of a theory of mind, but they never acquire the full thing[21]. If the pragmatic module is enough for naïve optimism and if naïve optimism is enough to acquire language, that explains why their language acquisition is fairly normal. However, they still exhibit peculiarities in language use. This would mean that the pragmatic module is not enough to account for language use in its entirety. Something else would be needed which might well be a full complement of theory of mind.

It should be noted that this does not contradict the idea of a fairly simple module of comprehension dedicated to linguistic communication, but it contradicts the idea (which, to be fair, was not proposed by Sperber and Wilson 2002) that it would be enough to account for normal language use. I would like to say that it might not be quite enough to account for some fairly commonplace (though presumably rather sophisticated) instances of language use: I mean the choice and interpretation of referring expressions. It is fairly clear that the choice of a referring expression cannot be done only on the basis of what the speaker knows if he or she is a competent communicator: unless the speaker is being less than benevolent and incompetent, he will choose his or her referring expressions relative to what he or she knows or believes his or her hearer to know or believe about the intended referent. This means having at least a second-order representation. And that, on the interpretation side, is at the level of either cautious optimism or sophisticated understanding. That is, it presupposes success at the false belief test as well, possibly, as at the opaque context test. In other words, something as commonplace as the use of referring expressions[22] may well be a fairly sophisticated exercise in theory of mind. This also explains why misunderstandings occur fairly frequently in the understanding of referring expressions. It could be objected here that the notion of a pragmatic module would explain such misunderstandings. Though that is true, it would not explain the success of most referring expressions.

CONCLUSION

My (tentative) conclusion is that pragmatics needs both the notions of point of view and of theory of mind. Though linguistic communication may often enough proceed at a fairly low level of sophistication, relying on the pragmatic module and operating on the basis of naïve optimism, it at least occasionally involves fairly sophisticated processes which involve perspective taking and operate at more sophisticated or even very sophisticated level of theory of mind. This may be the case not only in face to face communication, but in delayed communication, as for instance in reading a book: some novelists (think of Henry James in *What Maisie knew*) involve their readers in sophisticated mind reading which can be and presumably is in sophisticated readers taken at a higher level where the reader questions the intentions of the writer regarding the states of mind, beliefs and expectations, even feelings, he or she wanted to induce in the reader's mind. Such sophisticated mind-reading involved in linguistic communication may be more commonplace than is generally believed and though we may be content to toddle along most of the time, we may still need some mental sophistication from time to time. Indeed, a good example is given by Heavey *et al.* (2000) who used TV commercials to test the performance of adult Asperger Syndrome patients, autists and control participants in theory of mind. The commercials, taken from regular TV, were certainly not anything out of the ordinary, but they still were difficult if not impossible to understand for Asperger Syndrome and autistic patients.

Pragmatics cannot ignore theory of mind if it aims at understanding communicative processes. It can not ignore point of view and perspective either.

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[21] Though many manage to pass false belief test, they usually do so much later than normal children and are not able to pass higher order test (see Joliffe and Baron-Cohen, 1999, Heavey *et al.*, 2000).

[22] It should be noted that most utterances contain at least one referring expression.

REFERENCES

J. Austin (1962) *How to do things with words*, Oxford, Clarendon.

Avramides, A. (1989) *Meaning and Mind: An Examination of a Gricean Account of Meaning*, Cambridge, MA, The MIT Press.

Bach, K. (1999) Grice, H. Paul, in Wilson, R.A. & Keil, F.C. (eds)☐*The MIT Encyclopedia of the Cognitive Sciences*, Cambridge, MA, The MIT Press, pp. 358-360.

Baron-Cohen, S. (1995) *Mindblindness. An essay on autism and theory of mind*, Cambridge, MA, The MIT Press.

Bloom, P. (2000) *How Children Learn the Meanings of Words*, Cambridge, MA, The MIT Press.

D. Dennett (1987) *The intentional stance*, Cambridge, MA, The MIT Press.

De Villiers, J.G. and Pyers, J.E. (2002), Complements to cognition: a longitudinal study of the relationship between complex syntax and false-belief understanding, *Cognitive Development* 17, 1037-1060.

J. Fodor (1983) *The modularity of mind*: *An essay on faculty psychology*, Cambridge, MA, The MIT Press.

Gardiner, A.H. (1989) *Langage et actes de langage: Aux sources de la pragmatique*, Lille, Presses Universitaires de Lille.

Givon, T. and Malle, B.F. (eds) (2002) *The Evolution of Language out of Pre-language*, Amsterdam, John Benjamins Publishing Company.

Glüer, K. & Pagin, P. (2003) Meaning theory and autistic speakers, *Mind and Language* 18/1, pp. 23-51.

P. Grice (1957) Meaning, *Philosophical Review* 66, pp. 377-388.

Grice, P. (1975) Logic and conversation, in Cole, P. & Morgan, J.L. (eds), *Syntax and Semantics 3: Speech Acts*, New York, Academic Press, pp. 41-58.

P. Grice (1989) *Studies in the way of words*, Cambridge, MA, Harvard University Press.

Heavey, L., Phillips, W., Baron-Cohen, S. and Rutter, M. (2000) The Awkward Moment Test: A Naturalistic Measure of Social Understanding in Autism, *Journal of Autism and Developmental Disorders* 30/3, pp. 225-236.

Joliffe, T. and Baron-Cohen, S. (1999) The Strange Stories Test: A Replication with High-Functioning Adults with Autism and Asperger Syndrom, *Journal of Autism and Developmental Disorders* 29/5, pp. 395-406.

Kamavar, D. and Olson, D.R. (2000), Children's Representational Theory of Language: Problems of Opaque Contexts, *Cognitive Development* 14, pp. 531-548.

Levinson, S. (2000) *Presumptive meaning: The Theory of Generalized Conversational Implicature*, Cambridge, MA, the MIT Press.

Povinelli, D. (2000) *Folk Physics for Apes*, Oxford, Oxford University Press.

Reboul, A. (2001) Semantic transparency, semantic opacity, states of affairs, mental states and speech acts, in Anolli, L. & Ceciri, R. (eds), *Say not to say: new perspectives in miscommunication*. Milan, IOS Press, pp. 46-71.

Reboul, A. (in press) Conversational implicatures: nonce or generalized?, in Noveck, I. & Sperber, D. (eds), *Towards Experimental Pragmatics*, Londres, Palgrave Press.

Reinach, A. (1983) The a priori foundations of the civil law, *Aletheia 3*, pp. 1-142.

Robinson, E.J. and Apperly, I.A. (2001) Children's difficulties with partial representations in ambiguous messages and referentially opaque contexts, *Cognitive Development* 16, pp. 595-615.

Ruffman, T., Slade, L., Rowlandson, K., Rumsey, C. and Garnham, A. (2003) How language relates to belief, desire and emotion understanding, *Cognitive Development* 18, pp. 139-158.

J.R. Searle (1969) *Speech Acts*, Cambridge, Cambridge University Press.

Sperber, D. (1994) Understanding verbal understanding, in Khalfa, J. (ed.), *What is intelligence?*, Cambridge, Cambridge University Press, pp. 179-198.

Sperber, D. and Wilson, D. (1986), *Relevance: Communication and Cognition*, Oxford, Basil Blackwell. 2nd edition 1995.

Sperber, D. and Wilson, R. (1987) Precis of *Relevance: Communication and Cognition*, *Behavioural and Brain Sciences* 10, pp. 697-754.

Sperber, D. and Wilson, D. (2002) Pragmatics, modularity and mind reading, *Mind and Language* 17, pp. 3-23.

Yun Chin, H. and Bernard-Opitz, V. (2000) Teaching Conversational Skills to Children with Autism: Effect on the Development of a Theory of Mind, *Journal of Autism and Developmental Disorders* 30/6, pp. 569-583.