

# A Response to Foster-Cohen & Wong: Appropriate Pragmatic Behaviour

Gerhard Schaden

*To date, the study of pragmatic impairments has had virtually no impact on pragmatic theory or on mainstream pragmatics generally. This is a pity. Linguistic communication typically appears to be a single, seamless process, but it is only when it goes wrong that we tend to have any inkling that it is really a complex of interacting processes. (Perkins, 2007, 8)*

**Abstract** In my comment on Foster-Cohen and Wong (this volume), I focus on how pragmatic impairment and strategies to improve pragmatic behaviour contribute to our understanding of the semantics-pragmatics interface. I argue that the two main points papers like theirs show are the following: first, in studying pragmatics, we cannot purely rely on competence, but we have to take into account performance, that is, actual *behaviour*; second, there is no straightforward subsequence relation between semantics and pragmatics: pragmatics intervenes before and after semantics.

**Key words:** Pragmatic Impairment, Behaviour and Cognition, Semantics-Pragmatics Interface, Gricean Circle, Social Learning

## 1 Introduction

In their contribution to this book, Foster-Cohen and Wong address the issue of how to improve the pragmatic competence of challenged children by addressee-directed strategies, and also, how the difficulties these learners experience can be made sense of in the light of relevance-theoretic pragmatics.

An article with such a perspective may look like an oddity in a collection of papers on the semantics-pragmatics interface. I will argue that this is not so, and that having a look at pragmatic impairment and corrective intervention can enrich our understanding of what pragmatics is, and what the discipline of pragmatics can and should study.

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Gerhard Schaden  
Université de Lille, CNRS, UMR 8163 – STL – Savoirs Textes Langage, F-59000 Lille, France.  
e-mail: gerhard.schaden@univ-lille3.fr

Many linguists dealing with clinical pragmatics (e.g. Perkins, 2007; Cummings, 2014) have noted and deplored the gap between clinical practice and theoretical pragmatics: Theorists generally take little notice of clinical practice, and practitioners exploit pragmatic theories in ways theorists would not readily recognise. Yet, as Lewin's dictum goes, "*there is nothing more practical than a good theory*", and if intervention programs could be based on solid theoretical foundations (as is naturally expected in "ordinary" medical practice), both the domain of corrective intervention and of theoretical linguistics would benefit from the emergence of a positive feedback loop.

## 2 Behaviour and Cognition

Following the seminal paper of Grice (1975), most of contemporary (linguistic) pragmatics frames its basic concern as accounting for inferences a (pragmatically competent) hearer would make when interpreting an utterance in a given context — inferences a (pragmatically competent) speaker expects and takes into account when choosing his utterance. While (neo-/post-) Gricean pragmatics need not necessarily be thought of as a model of *cognition* and the thought processes involved<sup>1</sup>, this interpretation is however quite salient and natural.

There is however a second strand of theoretical pragmatics, namely the speech-act tradition, following Austin (1962). Its basic focus is on speaking *as a form of acting on the environment*, and thus, on *behaviour*. Yet, to the casual observer that I am, there does not seem to have been much new research in this area for a while. As a consequence, if we add to the Gricean focus on inference and the general cognitivist outlook of much of linguistics the decline — which has sometimes been styled *death* — of behaviourism (but see below), the aim of pragmatic remediation seems to be very clear: to improve the pragmatic competence or the pragmatic ability of impaired subjects.

Yet, implicitly, the identification of patients with some sort of 'pragmatic language impairment' relies on a notion of 'appropriate'<sup>2</sup> pragmatic behaviour. Appropriate pragmatic behaviour, in turn, is the fruit of (at least) pragmatic competence and motivation. Even though competence or *ability* is often relied on (see, e.g. Perkins, 2007), I would like to stress motivation here, because competence as such does not guarantee that it translates into behaviour. Note also that the Gricean principle of cooperation presupposes motivation to engage in conversation (or communication more in general).

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<sup>1</sup> See, e.g., Geurts and Rubio-Fernández (to appear). Grice arguably never intended to provide an account of cognitive processes.

<sup>2</sup> I use the term 'appropriate' rather than the more normative 'normal'. Appropriate behaviour depends on the context, and on the agent engaged in the behaviour: in many societies, what is appropriate (or at least tolerated) for some age-class would be strongly inappropriate for other age-groups, and many social categories entail behavioural expectations on how to deal with them.

Therefore, the aim of therapeutic intervention is not merely to create (or improve) pragmatic ability; in order to be successful, it has to improve — and thus to modify — pragmatic *behaviour*. This makes an uneasy fit with the Gricean tradition and its various descendants. It simply is not that obvious how Gricean maxims or a general principle of relevance could straightforwardly translate into an intervention program.

This is not to belittle the importance of cognition — complex social behaviour probably requires elaborate cognitive processes — but what needs to be the focus of intervention is the application of these processes. Indeed, behaviour and cognition should not be seen as competing, and studying one while totally neglecting the other is not likely to be a winning strategy. Yet, it is certainly not an accident that — at least for the domain of autism — the standard approach to remediation in communication (namely *Applied Behaviour Analysis - Verbal Behaviour*, or ABA-VB, which has been integrated into many contemporary therapy programs) is based on Skinner (1957), and therefore, firmly behaviourist in perspective and practice. While teaching the finer points of pragmatic behaviour may not be the main strength of the ABA-VB approach, its success in improving language capacities in autists deserves (theoretical and practical) attention.

Now, what is appropriate pragmatic behaviour? The category of *Social (Pragmatic) Communication Disorder* in the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (henceforth DSM 5) strongly suggests that this is a kind of social behaviour, and social behaviour in Humans is notoriously complex. We certainly should not expect to see a clear-cut, and generally accepted definition any time soon. Yet, there are questions that can be meaningfully asked, and that can contribute to our understanding of pragmatic behaviour.

- how dependent on linguistic and cultural factors is (appropriate) pragmatic behaviour?
  - what is the relation between linguistic competence and appropriate pragmatic behaviour?
  - how independent from cultural factors is pragmatic behaviour?
- how can appropriate pragmatic behaviour be taught?
  - which capacities underly appropriate pragmatic behaviour, and how can they be taught?
  - is there a hierarchy of capacities and behaviours that need to be acquired, and in which order do they depend on one another?
- how did pragmatic behaviour arise and spread in our species?
  - is this something that is linked to the rise and spread of our faculty of language?
  - if there is a link, how did these factors interact in the history of our lineage?

I will not be able to answer these questions — and some may well be beyond what can be investigated at present —, but I will try to show how these issues are related, and point out at least directions in which answers could be found.

### 3 Pragmatic Behaviour and the Semantics-Pragmatics Interface

The semantics-pragmatics interface is generally framed as the relation and the interaction between i) language as a (rule-governed) computational system; and ii) communication, the function that this computational system is probably ultimately designed for. Linguists try to figure out what elements of meaning belong to the rule-governed system, and what is added to that meaning when meaning-carrying elements are used in a given context by (neurotypical) human agents.

An important observation by Foster-Cohen and Wong (this volume) is that pragmatics does not only depend on the (cognitive and other) resources of an agent — that is, what they call with Perkins (2007) the ‘intrapersonal domain’ — but that the *interpersonal* domain (that is, the social relation between agents) is crucial in communication. While this assumption is implicit (even though generally neglected) in run-of-the-mill (post-)Gricean pragmatics, it is at the heart of game-theoretic approaches to pragmatics (see Benz et al., 2006), and also of therapeutic intervention. The focus of the contribution of Foster-Cohen and Wong is not restricted to the pragmatic behaviour of the (pragmatically atypical) learner, but also investigates what people interacting with them can and should do in order to improve their verbal communication.

Where does the importance of the interpersonal realm come from? Success and failure of communication crucially depend on the “weakest link” engaged in it (this is a point elaborated upon in Cloud (2015), and see also section 5). Assuming a one-to-one situation, if one of two persons fails to pay attention, fails to speak, fails to draw the appropriate inferences, or fails in another way, communication will fail as well, no matter what the other will do.<sup>3</sup> By its very nature, communication is a collaborative endeavour, and presupposes in all participants the willingness to engage in it.

This fact places special responsibility on the communicatively more robust and able agent in the conversation: if the other participant does not have at his disposal (for whatever reason) all the resources necessary for entertaining a standard conversation, he needs to adapt even more as with neurotypical subjects in order to make the communication successful. Since emotional regulation depends to a large degree on successful communication, it is extremely important to establish and maintain it. And while most people naturally and appropriately adapt their speech if it is directed towards small children, older children and adults having a speech delay require the same kind of exaggerated, and highly emotionally charged kind of speech (see Foster-Cohen and Wong, this volume).

Let us now consider Autism Spectrum Disorder (ASD).<sup>4</sup> Individuals with ASD are known as a population to have difficulties with (at least some subdomains of<sup>5</sup>)

<sup>3</sup> Teaching provides a sometimes sobering illustration of this fact.

<sup>4</sup> Apart from its intrinsic interest, I happen to be more acquainted with ASD than with other disorders entailing some form of pragmatic impairment.

<sup>5</sup> In some subdomains, e.g., scalar implicatures, they seem to be indistinguishable from the general population (see, e.g. Chevallier et al., 2010).

pragmatics. On the other hand, this is not the only difficulty with language they have: a considerable proportion of persons with ASD never acquire functional language at all,<sup>6</sup> and delayed language acquisition was listed in DSM IV as one diagnostic criterion for ASD (which does not apply to Asperger syndrome, included in DSM V in ASD, and no longer an independent category). From this, a basic subdivision of the population with ASD emerges: verbal vs. non-verbal autists.<sup>7</sup> While autism cannot be treated as a single block, and the question of the impact of associated impairments (or comorbidities) is certainly important, a question worth being asked is whether (and how) the difficulties in the ‘standard use’ of language (i.e., pragmatic impairments) are related to the general delay — and sometimes: complete lack — of acquisition of language. Following Tomasello (2000) and his *Social-Pragmatic Theory of Word Learning*, I will try to justify below why one might think of language acquisition (and specifically: lexical acquisition) as a problem involving pragmatic skills, or, put differently, why deficits in social communication and social interaction might entail difficulties in lexical acquisition.<sup>8</sup> But let me first briefly justify why I think that this issue is an interesting theoretical problem to investigate to begin with.

A central claim of Chomskyan linguistics is that the language capacity is a specific organ — or put differently, a Fodorian module — and that it is divorced from other cognitive domains, e.g., general intelligence (but see the discussion in Perkins (2007, 33–50) on this issue). Furthermore, in their discussion of language acquisition, generative linguists focus on the “poverty of the stimulus” with respect to syntax. While determining the correct word order for one’s mother tongue is arguably hard, it is a well defined problem.<sup>9</sup>

The inference of word meaning in one’s L1, however, is not well defined. As Clark (2009, 123) or Smith et al. (2011, 480f.) recognise, it corresponds to Quinean radical translation (see Quine, 1960). Here, meaning needs to be inferred from (patterns of) behaviour, giving rise to in principle unlimited referential uncertainty. Quine’s argument goes as follows: a native informant whose language a linguist is studying utters “*gavagai*”, while pointing to a rabbit that runs by. After some time and enquiry, the linguist is reasonably sure that the stimulus ‘rabbit running by’

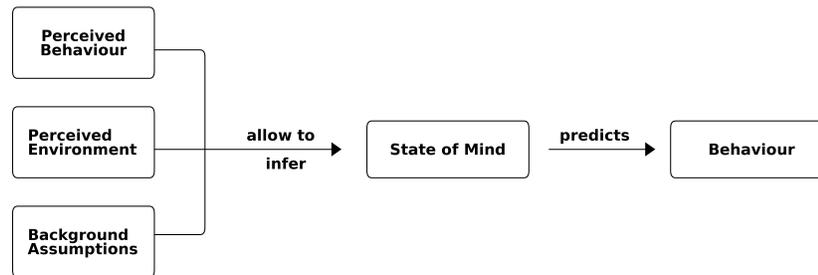
<sup>6</sup> The proportion of non-verbal autists varies according to source, and to what is to count as “non-verbal”; Wan et al. (2011, 1) mention that “[u]p to 25% of individuals with ASD lack the ability to communicate with others using speech sounds”; Cummings (2014, 37) reports that “[a]pproximately 50% of individuals with autistic disorder do not develop functional speech”.

<sup>7</sup> Once again, this classification focuses on *behaviour*: one cannot take it for granted that a person who is not *using* language (in a neurotypical way or not at all) has not acquired language. A non-verbal autist might in principle have acquired normal comprehension capabilities, and simply not be interested in using them in production tasks.

<sup>8</sup> Another precautionary note: I do not wish to claim that social communication and pragmatic abilities are the only factors delaying language acquisition. For instance, it has been noticed that the auditory processing of speech sounds in individuals with ASD differs from their neurotypical counterparts (see Haesen et al., 2010). This is likely to interfere with language acquisition. Nevertheless, I will argue below that specific features and difficulties of autistic behaviour in communication are likely to impact lexical acquisition.

<sup>9</sup> While we do not (yet) know how the learning of word order by a child actually works, one can construct mathematical proofs of specific learning strategies and their success on given types of input strings. For a presentation, see Lappin and Clark (2011).

prompts the (verbal) reaction “*gavagai*”. But there is no guarantee that the meaning of this utterance is ‘rabbit’; it might just as well be ‘rabbit-stage’, or ‘animal’, etc. Readers may feel uncomfortable with the behaviourist phrasing of Quine’s argument. However, it is necessary to preserve it, because what makes the problem hard according to Quine is precisely the fact that what one might call ‘mind-reading’ fully depends on the interpretation of behavioural clues in a given context. So, even if one completely agrees with Dennett’s intentional stance, one cannot just eliminate behaviour and its interpretation from the picture<sup>10</sup> — which is what I have tried to illustrate in the diagram in figure 1.



**Fig. 1** Mind-Reading as Inference from Behaviour in Context

Yet, sure enough, neurotypical learners do not seem overly impressed by these difficulties, and acquire their L1’s vocabulary on target — just as they acquire their L1’s word order. But is it that individuals with ASD fail to perceive — either totally, or with the same velocity as neurotypical learners — the cross-situational regularities in the signals they are exposed to? There is at least anecdotal evidence for troubles of finding the right level of generality in the acquisition of concepts and vocabulary in (verbal) children with ASD.<sup>11</sup> It is often assumed that word-learning presupposes constraints in the learner (such as whole-object bias, etc., see the discussion in Clark (2009, 123–26)), but it is not clear (at least to the author of these lines) whether these constraints should be seen as something like innate biases, or whether they should be conceived of as learned expectations based on rational conversational interaction (and thus be basically pragmatic in nature).

<sup>10</sup> Unfortunately, the direct observation of mind-states of other persons (and even of one’s owns) is not an obvious task, even given modern (medical and other) machinery. From an engineering point of view, what currently seems to work best are techniques using massive amounts of data on behaviour for statistical prediction. And while Facebook or Google do not have mind-reading engines, if they send you ads for divorce lawyers, you better start to worry.

<sup>11</sup> See de Clercq (2002) for a wealth of highly enjoyable observations with respect to this issue. Unfortunately, this book does not seem to be available in English. Controlled experiments have given rise to hypotheses applying ToM-deficit theories to lexical acquisition as well. However, Perkins et al. (2006) failed to ascertain inappropriateness of *vocabulary* use in *verbal* autists. As these authors discuss, this might be an artifact of their way of encoding and exploiting their data.

Let us go back to the issue of why the acquisition of vocabulary might be ‘pragmatic’ in any sense of this term. Of course, this depends on the issue as to what exactly should be the domain of pragmatics. Should we take it to be exclusively a device to reinforce natural language semantics, or should it be defined more generally as “(the study of) the use of linguistic and nonlinguistic capacities for the purpose of communication”, as suggested by Perkins (2007, 10). Recent studies have made it quite clear that pragmatic processes are involved in the *establishment* of truth-conditions for at least some utterances, and do not only concern their *strengthening*. This issue has been labeled the ‘Gricean circle’ by Levinson (2000), and it makes the more ancient vision of pragmatics as intervening strictly after semantic processing has established truth-conditions untenable.<sup>12</sup>

There are two ways of arguing for the inclusion of lexical acquisition in pragmatics: first, some investigations on lexical acquisition (e.g. Katsos and Wilson, 2014) have stressed the similarities between core-pragmatic processes such as implicatures, and the inference of meaning for unknown words in a given context. However, most of these studies focus on the acquisition of new words once a basic linguistic system has already been acquired.

Second, one can have a look at the underlying mechanisms involved in lexical acquisition, and try to determine on that base whether the procedure is pragmatic or not. In order to do that, we need to define the task of learning a word in one’s L1. One proposal is the following: given the utterance of a linguistic signal  $\Sigma$  by a cooperative speaker  $S$  in a series of given contexts  $\Gamma$ , we need to infer the meaning of  $\Sigma$  the speaker intended by uttering  $\Sigma$ .<sup>13</sup> So, it is basically a task of inference of meaning given a linguistic signal. If the signal  $\Sigma$  had a conventional meaning attached to it, and if we were talking about one context rather than a series, this would be a textbook example of pragmatic inference. However, it happens that (for the learner) there is no conventional meaning attached to the signal, and that the problem is too complicated to be dealt with in a single context (even allowing for a radically simplified, artificial environment, containing only one entity outside of speaker and hearer). Will this alter in a profound way the task of inference itself?

In order to answer that question, let us consider what kind of clues an infant can exploit in order to figure out the meaning of a word, and what kinds of prerequisites are needed, at least at the initial stages, before enough words are mastered in order to enable guessing based on what is already known.

Joint attention is one necessary prerequisite discussed by Tomasello (2000). Even if communication is performed by the speaker in a very ostensive manner, if the would-be learner does not (or cannot) track what the speaker might be focussing on, inference concerning the link between sound and objects is likely to be unsuccessful, even if such inference is attempted (which cannot be taken for granted). A

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<sup>12</sup> The metaphor of a circle is possibly not the best; instead of evoking the vicious circle, it might be better to consider it to be a (virtuous) spiral, one type of meaning leading to discovering even more meaning.

<sup>13</sup> I would prefer to state this more precisely in a referential way, or containing *conceptual grounding* (see, e.g., Steels, 2008), as the inference of the entity (or class of entities) the speaker intended to refer to.

naturalistic environment is full of entities a speaker might refer to, and if attention is not tracked, there is no guarantee whatsoever that the entity referred to is even in the perceptual space of the learner. The speaker's vocalisations may therefore appear to be random, and as a consequence be judged to be uninformative. For a rational agent, such a conclusion would entail the end of any attempt to learn the putative linguistic code. One basic behavioural competence in order to establish joint attention is gaze-following. This is unfortunately an area where persons with ASD are known to perform poorly, and which often has to be taught explicitly.<sup>14</sup> Infants with ASD, at 18 month of age, do not display age-typical pointing, gaze-monitoring nor pretend play, which taken together are markers that can be used for the detection of autism (see Baron-Cohen et al., 1996).

But even assuming that a learner successfully tracks what the conversation partner is attending to, the problem of radical translation still stands (Quine did not assume that the field linguist had any trouble identifying what his informant was pointing to). Clearly, the learner needs to figure out what is *salient* in a given context, and must be able to reidentify objects across differing contexts. It remains a difficult problem, and it is likely that a learner needs to exploit all available resources in order to figure that out.

So, word learning is a problem of inference, requiring like 'standard' pragmatic cases a certain degree of cooperation, joint attention, and determining what the speaker meant by uttering. Therefore, it seems that this is a legitimate kind of pragmatic inference, at least if one wants to grant a not too restrictive definition of the domain of pragmatics.

#### **4 Teaching Pragmatic Skills and Appropriate Pragmatic Behaviour**

Since I am hardly an expert on speech and language intervention, my notes on this point will remain short (and will possibly be stating the obvious). This reflects my personal shortcomings, not the intrinsic interest of the subject. In many disciplines (e.g., medicine), being able to modify and improve an entity is the ultimate proof that the intervention is based on sound principles and a correct understanding of that entity. I will make two points in this section: first, that there are different levels in pragmatic intervention, which entail different kinds of dependencies between natural language semantics and pragmatics. Second, that pragmatics can and should gain insight from disciplines working on learning, but which are at the fringes of the average pragmatician's attention space. I will cite here examples from robotic learning and behaviourist psychology.

Pragmatic intervention in impaired populations may have multiple goals, which may or may not presuppose grammatical language. First, establishing communication for basic and elementary needs (getting food or drinks, removing pain, etc.)

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<sup>14</sup> See Peláez (2009).

reduces frustration, and improves the quality of life of all involved. If a person's communication repertoire is restricted to tantrums and (self-)aggression, this is an enormously important step. Such pragmatic behaviour does not presuppose functional language, and may not even require basic vocabulary skills (if augmented communication systems, such as picture exchange systems, are used). However, for a second step, augmented communication systems quickly reach their limits: if pragmatically impaired people are to vocally understand linguistic instructions of type *you cannot do that, because otherwise,  $\phi$* , they need to understand natural language up to some degree; and if they want to communicate more complex needs (eventually engaging in a verbal argument with someone), this will have to involve functional (though not necessarily grammatical) language.<sup>15</sup> Without at least some capacity to exhibit public reasoning, a person is unlikely to be considered an autonomous subject by the ones deciding on their fate (such as social workers, judges, etc.). Third, social and affective bonding in humans largely takes place by means of conversation (which is to some degree the human equivalent of social grooming). So, small talk is also an important pragmatic behaviour to acquire in order to fully participate in the social fabric, including friendships and romantic love. The stakes of pragmatic interventions are therefore high. Ideally and in time, an intervention would attain the ultimate goal and make the pragmatically impaired undistinguishable from their neurotypical peers. Unfortunately, this will often be impossible to achieve.

Notice, however, that this list shows that pragmatic intervention cannot just wait for functional semantics to arise, and then take over the torch from there. Communication and appropriate pragmatic behaviour have to be trained from the beginning for functional and grammatical speech to arise.

In the end, one could hope that theoretical pragmatics will provide the same basis for corrective interventions in communication as physics or chemistry provide today for medicine. In the meantime, in developing intervention techniques for pragmatics, it is more important to be methodologically opportunistic, and to draw on research and best practices established in possibly exotic places. I will dwell on two domains that are of interest: first, research on robotics, and second, research in the behaviourist tradition of psychology.

Let us start with first and second person pronouns (*I* and *you*). Typically developing children figure out without much problems that *I* refers to the speaker (whoever that may be), and that *you* refers to the hearer. Yet, among blind and autistic children, pronoun inversion is relatively frequent (see Gold, 2008, and references therein): they use *you* to refer to themselves, and *I* to refer to their addressee. In his thesis on autonomous learning robots, Gold explored the idea that observing the interaction between two other agents (other than the learner) was critical for correctly acquiring such pronouns, and that it is not in a context of one-to-one interaction (which is typical for therapeutic intervention) that these are most efficiently learned. The reason is that, in one-to-one interaction, the normal linguistic behaviour of speakers

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<sup>15</sup> Notice that in most of the dialogues transcribed by Foster-Cohen and Wong (this volume), grammaticality is marginal, and enforcing grammaticality does not appear to be the primary goal of intervention.

is consistent with the hypothesis that *you* behaves like a proper name for the learner, and *I* like the proper name of the person interacting with him.

The second interesting field of study is behaviourism. While the general impression in linguistics is that behaviorism has completely fallen into oblivion after Chomsky's review of Skinner (1957) (see Chomsky, 1959), *Verbal Behavior* has become in the last 15 years the basis for one of the most successful intervention techniques in getting communication up and running for children with ASD. Within Applied Behaviour Analysis, there has been an important work on prerequisites of language (joint attention, social referencing, turn-taking, etc., and also *their* prerequisites), that can be exploited (see Rehfeldt and Barnes-Holmes, 2009, and references therein). One of the findings in Foster-Cohen and Wong (this volume), namely that asking questions is not an intervention technique that improves pragmatic behaviour, is not particularly surprising in the light of research in ABA, showing that questions are experienced as aversives — in other words: as punishments — by at least younger children and people with autism (see Heal et al., 2009; Heal and Hanley, 2011; Peters, 2012).

Skinner's classification of verbal operants into *mands* (demands), *tacts* ( $\approx$  descriptions) and *intraverbals* (verbal behaviour having as antecedent another verbal behaviour) is an original classification of speech acts, based on their function. Skinner has shown furthermore that these different types are functionally independent, meaning that if someone can felicitously ask for chocolate by uttering *chocolate* (that is: mand for chocolate), that person may still fail to describe chocolate by the word *chocolate* (which would be a tact).

Finally, there is an off-shoot of behaviourist psychology which tries to address some issues raised by Chomsky (1959) on Skinner (1957), namely *Relational Frame Theory* (see Hayes et al., 2001; Törneke, 2010). While this certainly will not revolutionise our current approaches to syntax or phonology, it contains ideas that may be of interest for disciplines studying meaning and its acquisition in natural language.

## 5 The Evolution of Conventional Meaning and Pragmatic Behaviour

The last point that I will address (albeit very briefly) is the evolution of human pragmatic behaviour.

We are alone among apes to have our specific kind of pragmatic ability and behaviour. However, behaviour is not the only property differentiating us from our cousins: even our body shows physical modifications whose aim seems to be to facilitate aspects of pragmatic behaviour. Our sclera is white, which makes gaze tracking easier, compared to the black sclera of chimps. We also happen to be the species with the by far most complex *conventional* communication system, namely natural language (see Cloud, 2015, 113ff.). The question is whether these two properties setting us apart are somehow related.

Cloud (2015) argues that a conventional system of communication has to be established in a way that involves the same processes as pragmatic inference (this is consistent with the *Social-Pragmatic Theory of Word Learning* of Tomasello (2000), and also with Lewis (1969)), and that therefore, our species-typic pragmatic behaviour is what permitted the evolution of natural language as we know it. The crucial problem to be overcome was — according to Cloud — the issue of collaboration in communication. The problem is the following: in order to heed the (e.g.) warning-cries of (possibly another) species, one simply has to be alert to the co-occurrence patterns between the cry and the presence of a predator. An animal having learned to heed such warning cries does not incur fitness costs from other animals not paying attention to it (on the contrary, it might actually benefit from the existence of non-reacting conspecifics). However, in order to maintain a conventional communication system and achieve success in communication, *all* partners have to be engaged, and cooperate. But there is in principle no need for both to invest the same amount of energy in communicating. So, in an evolutionary context, there would be a tendency to free-ride on communicative effort, because the one investing less would have the same benefits, but less costs — which would give (everything else being equal) the less invested communicators a selective advantage. On the long run, this process would end up destroying the conventional communication system. Cooperation would therefore be necessary for establishing and maintaining conventional communication systems — a theme with a familiar, Gricean ring to it — and human societies are less competitive and more cooperative than chimp-societies. There are convincing arguments for this fascinating story (for which I refer the reader to Cloud (2015)). Yet, there seem to be arguments from certain cases of pragmatic impairment that seem to militate against the hypothesis that the evolution of semantics presupposed pragmatics.

In some cases, there seems to be a striking dissociation between the conventional linguistic system and pragmatic behaviour. In conditions such as Asperger syndrome, the conventional linguistic system seems to be completely intact, while the pragmatic behaviour can be inappropriate; in other cases, e.g. after strokes, patients can exhibit a strongly affected linguistic system, while their communicative ability is by and large preserved (as discussed in Perkins, 2007, 9f.).<sup>16</sup> The difficulty is to know how such an argument should be evaluated in a discussion on the inter-weaved (or separate) nature of semantics and pragmatics. First of all, it is difficult to know what conclusions one should draw from people having lost a capacity they once had. Second, it is likely that pragmatic behaviour and capacity has several aspects that differ in complexity. Word learning might simply be easier than more complicated types of pragmatic inferencing because one only has to track what a speaker is ostensibly referring to — without the need to engage in counterfactual reasoning about possible alternative utterances the speaker did not use. The need to integrate extra-contextual world-knowledge may be lower. Finally, some compensatory strategies may fare better for some tasks than for others.

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<sup>16</sup> Similarly, neurotypical pre-linguistic infants do communicate efficiently with their environment.

Be that as it may: the question of whether our specific social and pragmatic behaviour is causally linked to the emergence of our faculty of language is one of the great mysteries in linguistics, psychology and biology, but one which — to use Steven Pinker’s expression — might be upgraded to a problem in the years to come.

## 6 Conclusion

In my response to Foster-Cohen and Wong (this volume), I have tried to link their paper to the general issue of the semantics-pragmatics interface. Two recurring themes have structured this contribution: first, there is no clear-cut way in which pragmatics would come after semantics, and that the Gricean circle is even active in word-learning; second, that pragmatics needs to be seen as behaviour as well, and not only as competence.

Studies on pragmatic impairment and corrective intervention (as the one by Foster-Cohen and Wong) provide a vantage point making these issues particularly clear, and are thus directly relevant to the theoretical enterprise of investigating the semantics-pragmatics interface. On the other hand, they also invite us to make theoretical research relevant to issues of corrective pragmatic intervention. The difficulties may seem overwhelming, but the societal benefits would be great, as well.

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