UCL Working Papers in Linguistics 9 (1997)

Relevance-theoretic pragmatics and modularity[*]

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Abstract

An interesting issue for any mentalist approach to pragmatics is whether the utterance comprehension system is an autonomous processor within the overall cognitive system or consists of processes carried out by an unencapsulated central inferencing system. Two approaches to pragmatics which claim to involve modular subsystems in utterance understanding are discussed (Barton's contextual submodules and Kasher's pragmatic competence systems) and their modularity claims are found to be unwarranted. Then, a recent shift within relevance theory towards a modular view of pragmatics is outlined; some of the evidence supporting it, some of the questions it raises and some of its implications are discussed.

1 Background

The essential background to the cognitive approaches to pragmatics considered in this paper is provided by the Chomskyan and the Fodorian views of the mind. Both believe that the mind is, at least partly, composed of distinct, special-purpose, autonomous systems rather than being an homogenous general intelligence and both take strongly nativist views on the development of these systems in the individual. The key Chomskyan concept here is 'competence', in particular **linguistic** competence, which is conceived of as an autonomous and internally modular system of knowledge, which grows in the mind of every mentally intact human being. More directly, the cognitive account of pragmatics is situated within the Fodorian view of mental architecture as partly modular and partly non-modular. According to this view, modular mechanisms are responsible for processing perceptual input, including linguistic input, and probably

[*]This paper is a development of a talk given at the *Topika* workshop in Thessaloniki in November 1995. I am very grateful to Ianthi Tsimpli and Melita Stavrou who made it possible for me to attend the workshop and who ensured that it was a very enjoyable experience.

for some types of motor output as well. They are dedicated, algorithmic, automatic systems. Fodor (1983) gives a cluster of properties which are typical of modular systems; two crucial ones are **domain-specificity** and **informational encapsulation**. That is, a modular system is activated by a particular narrow stimulus domain and, in its quick determinate analysis of the stimulus, it does not, and cannot, take account of (possibly very relevant) information from a range of sources external to itself, including higher level beliefs, expectations, and wishes currently being entertained in the wider cognitive system. The other half of Fodor's thesis is that the central systems, broadly characterised as involved in belief-fixation (including keeping as accurate and up-to-date a representation of the world as possible, making decisions and plans, speculative and imaginative thinking), are non-modular. That is, they are domain-neutral and informationally UNencapsulated, there being no limit in principle to the sources of and types of information they might consult. Both halves of Fodor's view have met with considerable criticism. As regards the second part, there are many who believe the central systems are far more structured than Fodor thinks (see some of the peer commentary accompanying Fodor (1985)'s precis of the modularity view; see also Schwartz & Schwartz (1984), Cosmides & Tooby (1987, 1994), Sperber (1994b, 1996)). Even Fodor himself has entertained the idea of a central systems module for the 'theory of mind' (see Fodor (1992)). That is the capacity to attribute mental states of several orders of complexity to other human beings and to use these to explain and predict behaviour, another ability that seems to simply grow in the minds of intact human beings. The importance of this and its connection with pragmatics is discussed in the final section.

Chomsky has suggested that, in addition to the perceptual systems and the principles of grammar, there are a great many other competence systems in the mind: mathematical, musical, moral, scientific hypothesis building, etc, including 'pragmatic competence', as we shall see. However, his concept of modular competence systems is importantly different from Fodor's concept, which is resolutely functional and architectural. Fodor is concerned with the actual performance or processing systems of the mind and in this regard his use of an analogy with **bodily organs** is perhaps more apt than Chomsky's use of it to discuss knowledge systems. It is important to keep these two concepts distinct — autonomous competence systems and modular mechanisms — since, even if it turns out to be the case that the one is always accompanied by the other, this will be a matter of empirical fact rather than of conceptual necessity. There is a role for both concepts in a complete account of the mind: for instance, there may be many discrete domains of knowledge, only some of which get their own architectural unit, that is, are subserved

by their own specialist mechanism. A modular mechanism dealing in domain x will doubtless contain its own database (knowledge system) for x, but there could be a knowledge system for x which is not subserved by its own modular architectural unit. In considering the principles and processes involved in utterance interpretation it will be of interest to bear in mind this distinction between a particular knowledge or stimulus domain, on the one hand, and a chunk of largely self-contained dedicated cognitive structure, on the other.

2 Pragmatics from the relevance theory perspective

One of the motivations behind the cognitive inferential approach to pragmatics was a reaction to views such as the following:

> [linguistics is] the science of language [that] investigates the makeup of *verbal messages* and of *their underlying code*; ... linguistics may be briefly defined as an inquiry into the communication of verbal messages.
>
> Jakobson (1970, 3)

This is the view that an account of verbal communication is going to consist entirely of an exposition of the **code** or **codes** speakers and hearers employ. It is certainly true that the **grammar** can be viewed as a code, pairing up phonetic representations with semantic representations, so there is an essential stage of decoding involved in understanding an utterance, but the **pragmatic** work of utterance interpretation cannot be viewed in this way.

The standard relevance theory view of utterance interpretation is that it is merely a special case of the sort of information processing that we are doing all the time in our attempts to understand phenomena in the world. When I infer that Mrs Smith is late for an appointment on the basis of seeing her running down the road or when I infer that my husband is at home on the basis of seeing a light in the window I am not using any code; I'm using certain items of general and idiosyncratic knowledge which become accessible to me on the basis of a certain input stimulus. The basic idea of Sperber & Wilson (1986, 1995) is that cognitive activity quite generally is geared towards achieving *cognitive effects*; that is, towards processing information which will connect up with our existing representations of the world in ways that extend and deepen our understanding of the

world. It is also geared towards keeping *processing costs* down; that is, to allocating our limited attentional and inferential resources in an efficient way. This is expressed in the *Cognitive Principle of Relevance*: Human cognition is geared to the maximisation of relevance (i.e. to achieving as many cognitive effects as possible for as little cognitive effort as possible).

The interpretation of utterances is a particular case of this sort of cognitive activity. Utterances are a special sort of stimulus in two respects. First, they are *ostensive*: they make an overt demand on the hearer's attention, hence on his processing resources, and thereby create an expectation that they will achieve a certain level of relevance, known as 'optimal relevance'. So an addressee of an utterance looks for an interpretation of it which has two properties: (a) it achieves enough cognitive effects to be worth his attention; and (b) it puts him no gratuitous processing effort in achieving those effects. The *Communicative Principle of Relevance* says: Every act of ostensive communication communicates a presumption of its own optimal relevance (i.e. a presumption that it will yield an adequate range of cognitive effects for no unjustified cognitive effort). This applies to all ostensive stimuli, so to pointing and to certain sorts of meaningful facial expressions, as well as to verbal utterances.

Second, utterances do employ a **code**, a linguistic system, which directs and constrains the inferential processing of the hearer. This coded element is obviously hugely enabling; it allows us to achieve a degree of explicitness, clarity, detail and abstractness not possible in non-verbal communication. But it falls very far short of encoding the intended message, the speaker's meaning, as can be demonstrated in many ways. The great extent of this underdeterminacy of communicated meaning by encoded meaning is a major theme of Carston (forthcoming). Here I'll give just one simple example, with two possible, though very different, interpretations shown in (a) and (b); the second line of each is a possible implicature:

(1) It's cold.
   a. The weather in London is cold now (mid-December 1996).
      You should bring warm clothes with you.
   b. The latest novel by Martin Amis is written in a detached unemotional style.
      You won't enjoy it.

Pragmatic tasks required for the understanding of (1) include disambiguation of the concept encoded by 'cold', assignment of a referent to 'it', supplying of place and time constituents, and derivation of various implicatures of the utterance regarding which

there is a certain indeterminacy. Further interpretive work would be required by metaphorical uses of the lexical item 'cold' and by echoic uses of the word to express either agreement with or dissociation from someone else's view that something, say the weather or the novel, has the property of being cold in some sense or other. So it is evident that there is a vast range of interpretive possibilities and that the encoded content of the utterance plays just a tiny, albeit crucial, role in constraining the interpretation the hearer arrives at by processing it in accordance with his bid for an interpretation consistent with the presumption of its optimal relevance.

It seems, then, pretty clear that situating our account of utterance interpretation within the Fodorian view of mind yields the immediate conclusion that the pragmatic aspect of utterance interpretation is non-modular; that it is just one case of central systems inferential processes of belief-fixing. Pragmatic processing can call on any background information imaginable, from any source (perception, memory, earlier discourse), so it is informationally UNencapsulated; it involves a considerable degree of indeterminacy and its conclusions are defeasible, so it is quite different from the mandatory determinate procedures of modules. One might note in passing that it could, however, be deemed *domain-specific*: its proprietary stimulus domain is ostensive stimuli, that is, stimuli that come backed by a particular type of nested intention, known as the communicative intention (an intention to inform someone of one's intention to inform them of something). This observation, however, might simply be taken as an endorsement of Fodor (1983)'s point that, although domain-specificity is a necessary property of a mental module, it is not sufficient.

That pragmatic processing is not modular has been the standard position within relevance theory for some time: 'There are no special-purpose pragmatic principles, maxims, strategies or rules; pragmatics is simply the domain in which grammar, logic and memory interact.' (Wilson & Sperber 1986, 67). The assumption here is that **to call a system modular is to assume it involves a code**; they are explicit on this point: 'Here, we will simply assume that there is a necessary connection between the modularity of the linguistic system and the fact that it incorporates a grammar or code. The claim that pragmatics is a module is thus essentially equivalent to the claim that there is a pragmatic code.' (Wilson & Sperber 1986, 69). This is a very reasonable assumption on the basis of the possibilities so far canvassed; I don't think there is any problem in extending it to all of Fodor's modular input systems (though Wilson & Sperber do not explore this). There may be various perceptual codes; for instance, a code for perceiving three-dimensional objects, a human-face decoding mechanism, a human-voice decoding

mechanism, a spatial orientation code, etc. Fodor himself tends to refer to the various perceptual modules as 'inferential' mechanisms (rather than 'decoding' mechanisms), but what he seems to intend to reflect by this is the fact that, given a certain input representation, some procedure or other within the perceptual system transforms it into some higher level representation and this process usually involves a considerable enrichment of the information contained within the input representation. In other words, what he is getting at is that perception involves informational elaboration; the input system is computational and is furnished with a system of proprietary principles which enable it to draw rich conclusions from relatively impoverished input. I think that what Sperber & Wilson are getting at with their distinction between decoding and inferencing is the difference between a deterministic or algorithmic procedure (given a particular input *i* you inevitably get a particular output *j*), on the one hand, and the kind of nondeterministic, open-ended processes, characteristic of interpretation (there is no fixed input-output mapping), on the other hand. However, at the end of the paper I'll briefly discuss some recent developments in their thinking which entail abandoning the idea that there is a necessary connection between a module and a code.

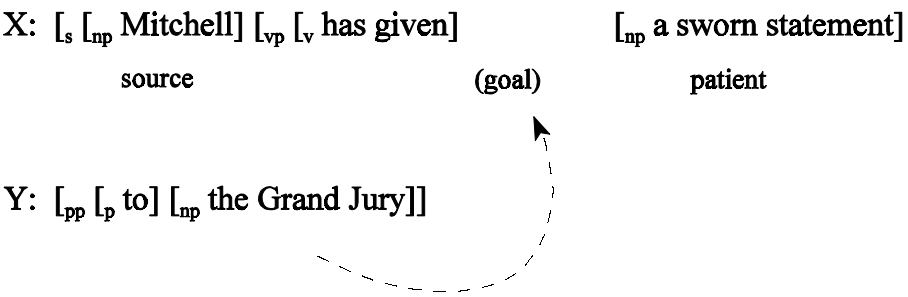
Let us look now at a couple of other views on the nature of pragmatics, views within a broadly cognitive/mentalist framework which, however, take some, at least, of the subject matter of pragmatics to be modular. In looking at these I'll be concerned with two main areas of data: (i) phrasal or lexical utterances, which by virtue of being subsentential, would seem to require pragmatic inference in the recovery of the proposition expressed by the speaker; (ii) illocutionary speech acts, which have been considered by most people to be THE subject matter of pragmatics.

3 Contextual 'modules' and subsentential utterances

Barton (1989, 1990) believes there are two quite distinct types of subsentential utterances, which differ in the inferential processes, and thus the modules, that are involved in interpreting them. The first type is exemplified in (2) and the second type in (4):

(2) X: Mitchell has given a sworn statement, hasn't he?
Y: Yes, sir, to the Grand Jury.

(3)



(Barton 1989, 5)

(4) X: *The Times* gave it only a tiny mention on the back page.
Y: Typical.

(adapted from Barton 1989, 3)

The utterances of interest here are those of Y in each case; in (2) this is the prepositional phrase utterance 'to the grand jury', in (4) it is the lexical utterance consisting of the adjective 'typical'. Barton proposes that the first case is properly linguistic and involves what she calls a 'discourse inference'. The operation of Discourse Inference creates a representation that consists of what she calls 'an elaborated structure of linguistic context'; in the case of (2), this involves filling the empty slot **(goal)** in the semantic (logical form) representation of the preceding utterance. The arrow here represents the inferred match between the independent constituent utterance (the PP) and the discourse function slot within that representation of previous linguistic context. She does this for a range of other examples, most plausibly phrasal answers to immediately preceding questions.

The second sort of case is dealt with by a distinct system or, as she calls it submodule, which involves a different inferential procedure, the operation of Cooperative Inference. Her overall model is shown in Figure 1 (page 36): note that each of these components has not only its own inference type, but also a distinct condition of acceptability for the resulting representation, a *plausibility criterion* for the submodule of linguistic context and a *relevance criterion* for the submodule of conversational context. This model reflects a fairly widespread conviction that the subject matter of pragmatics should be split into 'linguistic pragmatics' and 'central pragmatics'. We can reject the second of these as being a module in any interesting use of that concept; here the term seems to be

employed merely to mark a distinction between it and the operations of the discourse inference system. This is clearly just the sort of central systems inference discussed above; the arrows on the right hand side represent the points at which background knowledge enters the system and it is clear that for the second 'submodule' it is intrinsically involved in the inferential process. For the example in (4), the utterance 'typical', the interpretation involves background knowledge about the newspaper *The Times*, perhaps concerning its political sympathies or its attitude to some artistic enterprise, etc. In Barton's view it gives rise to a cooperative relevance-based **implicature** along the lines of 'It is typical of *The Times* to give only a tiny mention to the demonstration against nuclear testing'. Here I will set aside the problems raised by (i) conceiving of this as an implicature (what then is the proposition explicitly expressed?) and (ii) Barton's underdeveloped relevance-based criterion. We can see this as simply one of myriad cases of non-modular relevance-driven pragmatic inferences which contribute to the recovery of the proposition expressed by the utterance.

What about the 'submodule of *linguistic* context' though? This is partially autonomous, i.e. restricted in its access to outside information (general knowledge), which may only come into the picture at the final stage where the acceptability of the result of discourse inference is checked against a criterion of plausibility; that is, of likelihood of being true given the way the world is. But this is no good as we quickly see by considering an example like (5).

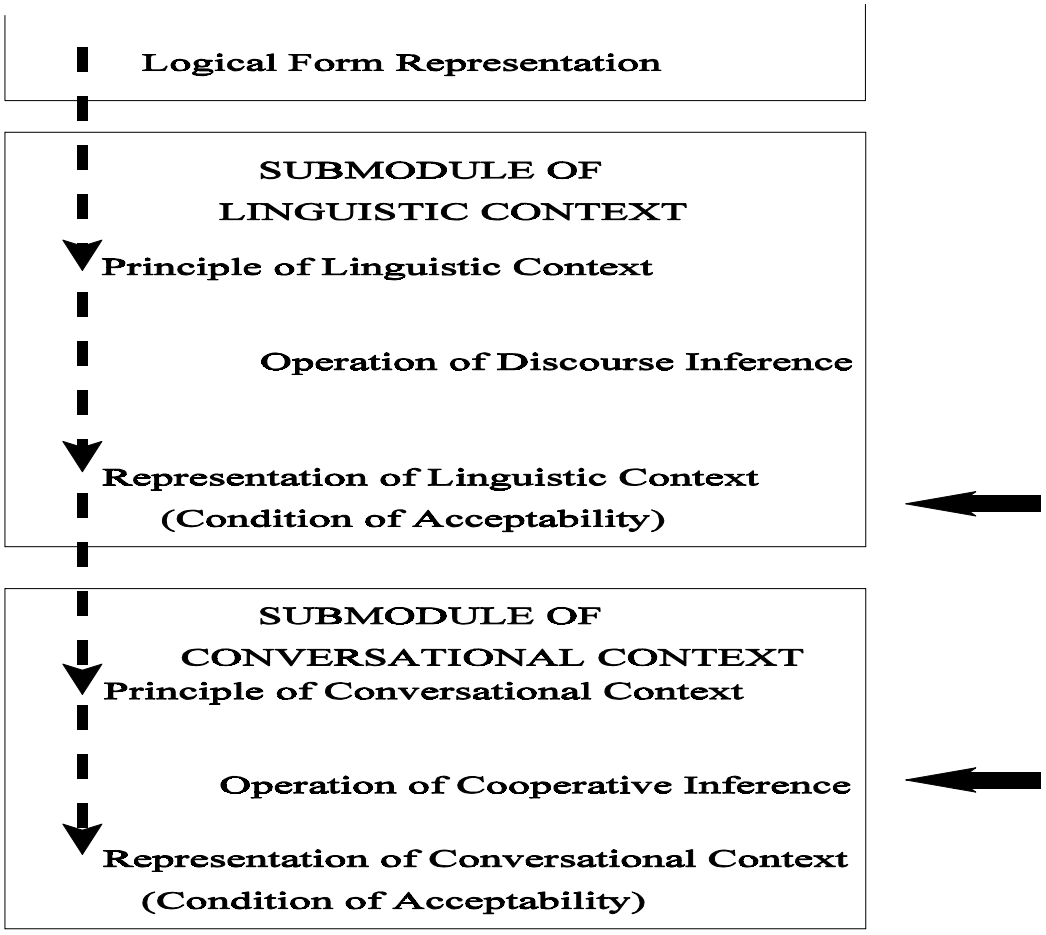


Figure 1. Partially modular pragmatic model (from Barton 1989: 4).

(5) X: Did John tell you that he's leaving?
Y: Yes, on Monday.
a. John told Y on Monday that he's leaving.
b. John told Y that he's [leaving on Monday].

Here the PP utterance 'on Monday' could be taken to have either of two discourse functions in an elaboration of the linguistic context provided by the preceding utterance, and there is no reason to suppose that either is more plausible than the other. It is no more likely to be true that John spoke to Y on Monday or that John intends to leave on

Monday. Of course, one of these might be considerably more relevant than the other, might give rise to more cognitive effects than the other without causing undue processing effort, but that is quite distinct from anything that a plausibility criterion can predict.

The first point is that these two allegedly distinct systems should in fact be subject to the same criterion of acceptability: an appropriately developed relevance criterion, such as that provided by Relevance Theory. As for an 'operation of discourse inference' this too is subsumed by an appropriately developed relevance-based pragmatics. The crucial feature of the definition of optimal relevance for this sort of case is the minimising of processing effort. It follows from this that the first material to be recovered and tested for adequacy in developing a full propositional form for the subsentential utterance will be the **most accessible representation** which is of the appropriate form. In example (2), and in question-answer pairs generally, the most accessible material of the right shape is the semantic representation of the previous utterance (the question), into which the semantic representation (conceptual content) of the PP fits satisfactorily.

Recently, Stainton (1994) has given a relevance-theoretic account of the interpretation of *discourse-initial* subsentential utterances such as that in (6a) to communicate, for instance, the proposition in (6b):

(6) a. John's father.
b. The man near the door is John Wilson's father.

Stainton shows how in an appropriate context this may have a satisfactory range of effects and cost the hearer less processing effort than a fully sentential utterance used to communicate the same proposition. All of Barton's cases can be accounted for along the same lines, her examples of so-called 'discourse inference' being distinguished only by the fact that the most accessible propositional schema into which the fragment can slot is the one provided by the immediately preceding utterance. In other words, there is a unitary (non-modular) account here, similar to the unitary account given by Kempson (1986) for seemingly disparate cases of anaphora, some of which take their antecedent from immediately prior (and so highly accessible) linguistic content, others from extralinguistic contextual assumptions. I conclude that there is no evidence from the interpretation of subsentential utterances that there is any special module for cases of discourse inference as opposed to those involving wider contextual inference.

4 Pragmatic knowledge systems

Let's move on now to the ideas of Asa Kasher, who is explicitly attempting to place pragmatics within Chomsky's research programme by building on a few scattered remarks of Chomsky's on 'pragmatic competence', mostly in *Rules and Representations* (1980), though restated more recently in Chomsky (1992). In discussing the components of the mental state of 'knowing a language' Chomsky (1980, 54-59, 224-225) distinguishes the following:

(i) *grammatical competence* (knowledge of form and meaning; the computational aspect of language)
(ii) *conceptual capacity* ('which permits us to perceive, and categorize, and symbolize, maybe even to reason in an elementary way')
(iii) *pragmatic competence* (knowledge of the conditions for appropriate use, of how to use grammatical and conceptual resources to achieve certain ends or purposes).

The view of pragmatics here is of a 'competence'; that is, of a knowledge system rather than a performance system. Pragmatics is a component of the ideal speaker-hearer's knowledge of language, 'namely that part which governs use, that is to say, appropriateness relations between sentences and contexts of their use.' (Kasher 1991b, 385). He also refers, however, to Fodorian modularity and claims that certain components of pragmatic knowledge are modular (submodules of the language module) in that (architectural) sense of the word 'module', while others are aspects of a non-modular central system, governed by very general principles of rational cognitive activity. (See Sinclair (1995) for a discussion of the tension in Kasher's account between his strong adherence to a competence approach to pragmatics and his use of a version of Fodorian modularity.) Here is his classification of 'types of pragmatic knowledge' and his assessment of their modular status (from Kasher 1991b, 390-91):

a. **Core pragmatics**: *knowledge* of basic speech act types, e.g. assertion, question, command. This is a sub-module of the language module (linguistic pragmatics).

b. **Amplified core pragmatics**: *knowledge* of non-basic speech act types, e.g. acquitting, congratulating, admitting. This is part of the non-modular central systems.

c. **Talk-in-interaction pragmatics**: *knowledge* of conversational behaviour, e.g. turn-taking, sequencing, repair. This is a distinct module.

d. **Central pragmatics**: *knowledge* which involves application of general cognitive principles and general knowledge, e.g. generation of conversational implicatures, indirectness, aspects of style, politeness. This is part of (non-modular) central systems.

e. **Interface pragmatics**: *knowledge* which involves integration of data from the language module and other sources (e.g. perceptual), e.g. assigning referents to indexical expressions. This is part of non-modular central systems.

I propose to ignore (c), since I know little about it and, although Kasher mentions this 'talk-in-interaction' as a candidate module in several papers, he himself says nothing more about it. He does not indicate where he locates it in his overall Chomskyan/Fodorian view of the mind. My guess is that such knowledge of how to manage the practical side of having a conversation is part of (or a consequence of) some broader central knowledge system concerning effective interaction with other human beings and not a module in the Fodorian sense at all. Alternating turns with one's fellow participants and repairing performances that one recognises as not accurately reflecting one's intentions are features of a great many social activities, perhaps the consequence of some underlying system(s) of social competence.

We can also set aside (d), Kasher's 'central pragmatics', since this is clearly a conception of pragmatics which is in line with the relevance-theoretic account I outlined above: it is informationally UNencapsulated and involves general cognitive principles. Kasher claims that the principles and strategies that guide these central pragmatic processes are those that govern rational intentional action quite generally. An example of such a principle is his 'principle of the effective means': 'Given a desired end, one is to choose that action which most effectively, and at least cost, attains that end, *ceteris paribus*' (Kasher 1982, 32). The Gricean maxims are shown to follow from, and be justified by, this principle. According to Kasher, the assumption that acts of speaking, like all intentional actions, are governed by this principle, underlies the derivation of all cases of conversational implicature, including those arising from non-literal uses of language. On the basis of these considerations, he is inclined to see this type of pragmatic knowledge as falling within a theory of general intentional action, hence as not involving an autonomous system. However, he occasionally allows for the possibility that there

might have evolved 'a special pragmatic interaction device' within the central systems, which is responsible for inferring implicatures and indirect speech acts (Kasher 1991b, 392). This passing speculation is interesting here because it is exactly the idea that has just begun to be explored within Relevance Theory, as I shall outline in sections 5 and 6.

Briefly, let's consider category (e), interface pragmatics, and, in particular, the issue of whether there are any grounds for separating it off as a type of pragmatic knowledge which is distinct from 'central pragmatics'. It is knowledge which involves integration of data from the language module and from other sources; Kasher singles out, in particular, knowledge from perceptual channels. The pragmatic task he standardly gives by way of exemplification here is that of 'assigning referents to indexical expressions', for instance, the assigning of a referent to the pronoun in an utterance of '*She* is happy'. He says that indexical terms play the pragmatic role of 'referential schemes' and that while *the study of such schemes is part of the study of the pragmatic aspects of language*, the study of the ways in which such schemes are supplemented by devices for determining intended reference falls outside the study of language itself. He suggests that the term 'peri-pragmatics' be used for the latter kind of study, while the former one falls within the confines of pragmatics proper (where pragmatics is taken to be a component of linguistic knowledge) (see Kasher 1991c, 571).

The proliferation of terminology for allegedly different kinds of pragmatics ('central', 'peri-', 'interface', 'proper', etc.) is not helpful. It is similar to, but considerably less constrained than, the tendency in formal semantics to use the terms 'indexical semantics' and 'pragmatics' interchangeably, and to assume that the pragmatic aspects of what is 'said' (which include reference assignment) call on a quite different notion of non-linguistic context from that involved in deriving implicature (for discussion, see Carston forthcoming, chapters 2 and 3). What seems to lie behind this special semantic/pragmatic status given to indexicals is the fact that they explicitly call for a contextual contribution in order to achieve particularity of reference. I think the cognitive processing approach of relevance theory brings a welcome clarity here. Indexical terms, like all linguistic forms, encode some sort of meaning, a 'referential scheme' in Kasher's terms, and the study of this falls squarely within the field of 'linguistic semantics', as does an account of the meaning of any other lexical item. This encoding indicates the necessity of a contextual contribution and, as with all contextual contributions to utterance meaning, its derivation is guided by general pragmatic principles (the communicative principle of relevance or, for Kasher, the principle of effective means). In short, a semantic/pragmatic

distinction, construed as correlating with two distinct types of cognitive process, namely decoding and inference, shows that the ability to integrate information from different sources in determining indexical reference, like the ability to derive conversational implicatures, is a function of central pragmatics. It need not be categorised as belonging to some distinct pragmatic knowledge system (a mysterious 'interface' or 'peri-pragmatic' system).

Kasher might also have considered here a range of linguistic expressions which do not contribute to the propositional content of an utterance, but rather seem to play an essential role in pragmatic inferencing. I am thinking of what are sometimes called 'discourse connectives', such elements as 'but', 'moreover', 'however' and 'anyway'. Although they are often talked of as pragmatic aspects of the linguistic system, they clearly encode some meaning and characterising that meaning falls within a general account of linguistic semantics. What they seem to do, in broad terms, is give the hearer a processing instruction, an indication of the way that the propositional content of the utterance is to be connected to the context. To specify what this instruction (or constraint) is in each case just is to give its semantics. As in the case of the indexicals, this meaning indicates to the hearer the nature of some pragmatic inferential work that he must do in order to arrive at a complete understanding of the utterance. For instance, the pronoun 'she' indicates that he must identify a singular female referent in the context; 'but' indicates that he must infer, from the proposition that follows it, a proposition which conflicts with a salient contextual assumption. Within relevance theory, encodings that have this feature of directing pragmatic inference are said to be 'procedural'; this is to distinguish them from the more prevalent conceptual (descriptive) encodings, typical of nouns, verbs and adjectives. (For detailed discussion of the conceptual/procedural distinction see Blakemore 1987, 1990 and 1992, and Wilson & Sperber 1993). It may be that what Kasher is construing as 'pragmatics proper', that is, pragmatics as a subsystem of knowledge of language, turns out to be just this procedural (that is, pragmatic inference constraining) subpart of linguistic semantics.

Finally, I turn to speech acts and Kasher's division of them into those that constitute (i) core pragmatics, a module within the linguistic system, and those that belong to (ii) amplified core pragmatics, which is part of the non-modular central systems. It is the issue of the alleged modularity of the system of basic speech acts which is of primary interest here, since the rest are assumed to belong with general and cultural knowledge. There is a question about the borderline between the basic and the non-basic speech acts. Non-basic speech acts clearly include institutional acts such as naming a ship, sentencing a criminal, laying a bet; that is, social acts which depend on a great deal of (non-

linguistic) institutional knowledge. Other cases are less obviously assigned to one or the other category, for instance, advising, promising, warning. Kasher generally assumes, however, that the basic speech acts are assertion, command and question, the rest being non-basic.

The core linguistic pragmatic module is claimed to give the rules governing the three basic speech acts. In support of viewing this as a module of linguistic knowledge, Kasher (1994) makes the following points:

(i) it has a particular proprietary domain, consisting of several autonomous systems of rules that are constitutive rather than regulative (see Searle 1969, pp. 33-37)
(ii) the rules for these basic speech acts constitute a system of knowledge of language use, as distinct from knowledge of social institutions which employ language to perform certain acts
(iii) they are identifiable by aspects of linguistic form (syntax and intonation).

As far as I can see, there are two ways of construing the claim that there is a module which deals in basic speech acts. The first, which is suggested by Kasher's point (iii) above, is that they are encoded by features of the language system. This is, however, much too strong a claim. Consider the 'imperative' mood as the syntactic feature which encodes the speech act of 'command'. It is clear from the examples in (7), all of which employ the imperative mood, that many speech acts other than command or order can be communicated by the imperative:

(7)	a.	Leave immediately.	(order/command)
	b.	(Please) don't hurt me.	(request/plea)
	c.	Take a number 3 bus.	(advice)
	d.	Finish up the cake, then.	(permission)
	e.	Have a nice day.	(good wishes)
	f.	Go on. Hit me.	(dares)
	g.	Please don't rain.	(audience-less cases)

The relevance theory view of the imperative is that it encodes two features: *desirability* and *potentiality*. So any imperative sentence encodes that the state of affairs it describes is both desirable and potential. There are several variables or parameters left open by the semantics and which have to be fixed by context: to whom is the state of affairs

desirable? and to what degree is it desirable? The fixing of these, together with the immediate accessibility of various other contextual assumptions, will determine whether we have a command, a request, a plea, advice, permission, etc. For instance, commands and requests involve describing a state of affairs as *desirable to the speaker* and they are distinguished from each other by the power relations between the speaker and hearer; advice and permission both involve describing a state of affairs as *desirable to the hearer* and they are distinguished from each other by the social roles of the speaker and hearer. In short, the linguistic system gives a very weak semantics for the imperative — it does not encode any particular speech act — and the various different speech acts that can be communicated by using the imperative are pragmatically determined, by the central systems relevance-driven inference system. (See Wilson & Sperber (1988), Clark (1991) and Rouchota (1994) for further discussion of this approach.) If Kasher is assuming that the imperative encodes the speech act of command he must show how all these other speech acts, permission and advice, for instance, are pragmatically derived from an encoded command. His talk of 'amplifications' of basic speech acts suggests that he thinks this is possible, but he has not begun to give an account. I very much doubt that it can be done: permitting, pleading, advising, expressing good wishes, etc, are not amplifications of an act of commanding; in fact they have features which are directly at odds with features of a felicitous command, as we saw above.

However, there is another way of construing the basic speech act module and it may be this that Kasher has in mind. On this conception, assertions, commands and questions are not actually encoded by the moods or by any other linguistic feature; rather, the output of some semantic analysis, such as the one I've just given for imperatives perhaps, is fed into a distinct 'speech act module' consisting of sets of constitutive rules, such as the set given in (8) for 'command':

(8)

Propositional content:	Future act A of H.
Preparatory conditions:	a. H is able to do A.
	b. S believes H is able to do A.
	c. S must be in a position of authority over H.
Sincerity condition:	S wants H to do A.
Essential condition:	Counts as an attempt to get H to do A.

(from Searle 1969, 66)

Perhaps the idea is that, in its comprehension function, the module checks whether or not an utterance of an imperative conforms to these felicity conditions and is thus a *bona fide*

command; if it doesn't, it is sent off to the general knowledge systems where it may be found to be one of the non-basic speech acts. But if that is the function of this core system it is, clearly, not informationally encapsulated since it requires access to information concerning whether the hearer is able to perform the act (of, say 'leaving immediately'), whether the speaker is in a position of authority over the hearer and whether the speaker wants the hearer to perform the act. Non-literal uses ('yes, go on, spill red wine all over my carpet') cause additional problems since while they don't meet the felicity conditions it would not be correct to assign them to some other non-basic speech act. So at least in the case of the alleged basic speech act of command I find no case for treating it as belonging to a modular subsystem of knowledge of language; I believe, though it remains to be done, that the same points can be made about assertions and questions.

Sinclair (1995) discusses Kasher's two linguistic pragmatic modules (the 'basic speech acts' module and the 'talk-in-interaction' module); she is doubtful that he is able to show in either case that the knowledge involved is purely linguistic or that it is modular in anything like Fodor's sense. In the rest of this paper I assume, contra Kasher, that pragmatics is entirely a function of the central systems, but consider the idea that it is, nonetheless, a modular system and that central systems more generally might also be modular.

5 Central systems and modularity

Fodor (1983, 1985) takes the position that the study of the central systems is a pretty hopeless endeavour, given their unencapsulated (nonmodular) nature. Attempts within artificial intelligence to model the way in which humans fix and revise beliefs have repeatedly come up against the seemingly intractable 'frame problem'; this is the problem of isolating any principle(s) which can account for how we decide which subset of our vast store of information to consult (and update) when interpreting some new information and adding it to our existing representation of the world (see Pylyshyn (1987)).

Sperber & Wilson (1986, 1995) take issue with Fodor's pessimistic view and suggest that an investigation of the pragmatic processes of utterance interpretation is tractable and that it might shed light on central systems processes more generally. They point out that pragmatic processes are very fast, they are spontaneous (apparently mandatory) and

the stimuli they deal with come from a helpful source (speakers generally want their communicative intentions to be recognised and shape their utterances and other ostensive acts accordingly); these factors make utterance understanding a feasible object of study. Nonetheless, since the function of pragmatic processing is a kind of rational belief-fixing, it is, in principle, unencapsulated, from which its nonmodularity would seem to follow.

Based on essentially the same observations as Sperber & Wilson, Marslen-Wilson & Tyler (1987) take a rather different position against Fodor. They point out that, on grounds of such properties of domain-specificity, mandatoriness and speed, the discontinuity that Fodor's modularity thesis predicts between logical form (the output representation of the processes of the language module) and a full discourse representation (disambiguated, reference assigned, unexpressed content recovered) simply does not exist. In their view, the set of processes which map the acoustic representation of speech onto a full discourse representation (or model) are all of a piece: domain-specific, fast, mandatory and, crucially, UNencapsulated, hence not modular. Information of all sorts (phonetic, lexical, syntactic, semantic, general knowledge) interacts freely, as and when it can; there is no language module. A huge programme of psycholinguistic experimentation, in which Marslen-Wilson & Tyler are key participants, is underway to try to settle the extent to which, if at all, such processes as word recognition and initial syntactic analysis can be affected by 'higher' level conceptual (semantic/pragmatic) information. I cannot pursue this here. The question I want to consider a little further requires taking a different perspective. Suppose that, *pace* Marslen-Wilson & Tyler, these apparently perceptual processes of sentence recognition **are** modular, as Fodor maintains, then what are we to make of the fact that pragmatic/interpretive inferences seem to have many of the same processing properties?

In very recent work, Sperber and Wilson have begun to explore a different way of viewing these module-like characteristics of pragmatics, namely the idea that they might be taken as evidence that utterances (and ostensive stimuli more generally) are in fact processed by a dedicated mental inferencing system, that is, a module. Before discussing this still embryonic idea in a little more detail we need to take a step back and look at the broader picture of the mind that Sperber (1994b, 1996) proposes. He suggests that central thought processes are quite generally modular, that thought can be accounted for by a large network of conceptual modules whose domains crosscut those of the peripheral perception modules; there must, of course, be myriad intricate connections or pathways between such micro-modules. So, for instance, you might have a conceptual module for CAT; this module would receive and process information about cats via the visual, auditory, tactile, olfactory and linguistic modules. As well as storing newly received

CAT information, it might send on representations to other conceptual modules, say a more general ANIMAL concept module. While some conceptual modules might receive all their input from perceptual modules, others might get some from perception and some from other conceptual modules, and still others might be fed entirely by conceptual modules. For instance, if there is a faculty of moral judgment, it might well take as its input the output from several inferential conceptual modules.

Sperber (1994b) employs evolutionary and ethological arguments, such as those advanced by Cosmides & Tooby (1987, 1994), in support of the view that human cognition is generally modular. Natural selection is a piecemeal process, each adaptation providing a solution to a specific problem posed by the environment. According to Cosmides & Tooby (1987, 294-299), the cognitive programmes (or Darwinian algorithms) which have been selected must be specialized and domain-specific; they point out that domain-general, content-independent inferential mechanisms are, in effect, trial-and-error systems, and so cannot promote the overall fitness of the species. Fodor himself assumes that modular organisation is evolutionarily prior to the nonmodular central systems. He talks of the general problem-solving or belief-fixation systems as being a relatively late phylogenetic achievement, involving 'gradually freeing certain sorts of problem-solving systems from the constraints under which the input analyzers labor' (Fodor 1983, 43). The problem with this, Sperber argues, is that there simply is no plausible evolutionary explanation to back the idea that somewhere along the line a DEmodularisation adaptation was selected.

If we bow, then, to the evolutionary plausibility arguments and accept that human cognition is thoroughly modular, the big question is how to reconcile **informational encapsulation** and **informational integration**. On the one hand, informational encapsulation is generally taken to be the essential property of a modular processor, and, on the other, human cognition is undoubtedly capable of integrating a great wealth of disparate information, of making new connections among thoughts and analogising across domains. Sperber's response to this is that an organism with the sort of complex, interconnected, multi-level network of conceptual modules that he envisages would be capable of extremely fine-grained responses. His idea is that while any particular conceptual module can perform inferences only on its own concept, a piece of information, in the form of a structured string of concepts, can be passed from module to module until all concepts in the string have been processed, so that the ultimate effect is one of integration of the work of each of the relevant modules.

This is a provocative thesis whose details have yet to be worked out. It is not obvious

that the Sperberian concept of modularity is quite the same as the Fodorian. Is 'the modularity of mind' as conceived by Sperber any longer an architectural thesis? Conceptual modules don't pass the 'cognitive impenetrability' test, the test standardly used to distinguish between architectural constraints, which are not affected by changes in the subject's beliefs or goals, and other cognitive regularities, that arise from habit and learning, which can be caused to change their tack by changes in the subject's beliefs and goals (see Pylyshyn (1991)). It is interesting to note, in this regard, a shift in the favoured physical analogy, from Fodor's mental 'organs' to mental 'enzymes': conceptual modules are autonomous computational devices which work 'on representations in which the right concept occurs, just as digestive enzymes work on food in which the right molecule occurs' (Sperber 1994b, 48). So they are certainly domain-specific (there could hardly be a more delimited domain of operation than a single concept), but the distinction between, on the one hand, domain-specific competences and, on the other, encapsulated, hard-wired processors seems to have been lost. This is not to say that the view is wrong; it may be that we have to rethink the concept of module and allow for a kind of continuum, from peripheral perceptual systems, which are rigidly encapsulated (not diverted from registering what is out there), through a hierarchy of conceptual modules, with the property of encapsulation diminishing progressively at each level as the interconnections among domain-specific processors increase.

Focusing particularly on theory of mind processes, Smith & Tsimpli (1996) have argued for a distinction between Fodorian modules, with their characteristic array of properties, and what they call 'quasi-modules'. Quasi-modules are domain-specific, fast and mandatory, but are not informationally encapsulated in any interesting sense and their vocabulary is conceptual rather than perceptual. Whether this turns out to be the right distinction or not, it does seem that the recognition of domain-specific conceptual subsystems within the central systems calls for a conception of autonomous processors which departs significantly from the conception which is appropriate when considering perceptual input modules.

6 An ostensive-inferential communication module?

It is not obvious that the possibility of a pragmatics module depends on this thesis of all-out modularity; whether it does or not, let's briefly consider it as a distinct and separable idea. Consider (yet again) the three properties which are generally taken to be essential to a mental module: domain-specificity, informational encapsulation and genetic

specification. As I pointed out in the first section, pragmatic inference is domain-specific: it is activated just by ostensive stimuli, that is, stimuli that come backed by a particular type of complex intention on the part of the producer of the stimuli, the intention to make it mutually apparent that he/she has the intention to transmit information to the receiver. Furthermore, pragmatic inference is constrained by its own proprietary principle, the *communicative* principle of relevance. (Note that the *cognitive* principle of relevance, on the other hand, is about as domain-general as anything can be).

It is a well-known fact that there are perceptual (visual, auditory, kinaesthetic) and linguistic illusions, illusions that are not dispelled by salient knowledge of the facts of the matter. This has been taken as strong evidence for the encapsulation, hence the modularity, of the perceptual systems and the language processor (see Fodor 1983, Carston 1996). In this regard, Wilson (1996) has made the following very interesting claim: there are pragmatic illusions. She gives the example in (9):

(9) No head injury is too trivial to ignore.

(10) a. No head injury is too trivial to attend to.
a'. All head injuries should be attended to.
b. Head injuries are generally a serious matter and should not be ignored.

We understand (9) as meaning something like (10a) or (10a'), arguably on the basis of the highly salient assumption in (10b); this understanding is, in fact, the opposite of what the semantics of the sentence in (9) gives us, which is, paraphrasing, we won't find a head injury whose degree of trivialness calls for any response other than ignoring it (that is, we can ignore all head injuries). The rigidity of this example is striking; even after having carefully worked out (by some general problem-solving process) what it actually means, renewed confrontation with it inevitably gives the mistaken (but natural, plausible, relevant) interpretation. Exactly what is going on here, though, is far from clear; to accept it as clear evidence of the encapsulation of the pragmatics system we would need to be sure that the source of this illusion really is pragmatic and not some mishap at an earlier parsing stage, perhaps to do with the build-up of negations. We would want to know what analysis of this sentence is given by the language module and passed on to the pragmatic interpreter. In addition, we would like to find other cases of such persistent misinterpretation, since most instances of pragmatic garden-pathing are

sorted out quite quickly by subsequent processing in the pragmatic system itself.[1] A different sort of question, relevant to the general Sperberian modularity view, arises here too: what system of thought is it that works out the facts of the matter in the case of example (9), that is, discerns that there is an illusion here? It is some slower, more reflective problem-solving system, which appears to have just those nonmodular properties Fodor ascribes to the central systems. Where, then, does it fit in a wholly modular view of the mind?

Finally, let's consider the third main property of modules: their innate specification. From this follows what Fodor describes as a 'characteristic pace and sequencing' in the development of the capacity, a phenomenon well attested in children's acquisition of their native language. Is there any evidence for such an unfolding of the pragmatic ability to communicate ostensively and to interpret ostensive stimuli? There is some suggestive data on preverbal communicative gestures (for example, Bretherton (1991)) and, in particular, on the emergence of children's ability to recognise and interpret ostensive stimuli such as pointing (for instance, Baron-Cohen (1991); it seems that there is a fairly fixed developmental progression, from looking at the pointer (the finger) rather than at the thing pointed at, to an understanding of proto-imperative pointing (that is, pointing in order to get another person to obtain an object), to proto-declarative pointing (that is, pointing in order to comment or remark on the world to another person).

Work of this sort, as the titles of Bretherton's and Baron-Cohen's articles indicate, is generally conducted within a wider research programme whose aim is to chart the stages in children's development of a mature theory of mind; that is, the capacity of all normal adults to attribute mental states of several orders of complexity to others, including beliefs which are at odds with their own beliefs about their world (see Leslie (1987), Leslie & Happe (1989), the papers in Astington, Harris & Olson (1988) and in Whiten (1991)). Note that this is an ability that both Leslie (1987) and Fodor (1992) take to be modular; if so, it is a *central systems module*, a view which is, of course, endorsed by Sperber (1994b). It has been shown that before the age of around three and a half, children are unable to attribute false beliefs to others; they assume that other people have access to exactly the same contextual information they have themselves. Older children

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[1]Convincing examples seem hard to come by. The following, suggested to me by George Powell, is promising: 'I miss not being in Leeds'. This is standardly interpreted as 'I miss being in Leeds', though a moment or two of thought (of a reflective, problem-solving sort) shows it does not mean this. Again, negation seems to play an important role. Some further brief discussion of 'verbal illusions' can be found in Manktelow & Over (1990, 43-45).

are able to take account of differences in other people's access to information, to attribute correctly false beliefs and to give others the information they need in order to understand a situation or to perform a task. These abilities are, of course, intrinsically involved in ostensive communication and interpretation; it seems reasonable to assume that this sort of communication is either dependent on, or a subpart of, the functioning of the theory of mind module.

That the connection between the capacity for ostensive-inferential behaviour and the theory of mind is of this intrinsic nature is supported by some recent work of Bezuidenhout & Sroda (1995); they tested children's ability on a particular pragmatic task, namely reference assignment. Their results correlated with the well attested facts mentioned above concerning the ability to attribute false beliefs. That is, before age three and a half, children playing with a ball obey the request 'Put the ball in *the box*' by putting it into whichever of two boxes is the more salient to them, even when this is a box that the experimenter (who made the request) could not have intended because it is clearly not visible to her. Soon after the age of three and a half, they put the ball in the box which is less salient to them, but which is the only one the experimenter could have intended, given her knowledge of the room. In other words, they are now taking account of the differences in the information available to themselves and to the experimenter, and recognising correctly her intentional state, despite a disparity between it and their own perspective on the situation.

Sperber (1994a) makes the interesting suggestion that children start out by using a simple strategy (naive optimism) in understanding utterances, which is to choose the first interpretation that is relevant enough to them; they assume the speaker is both competent (in the sense of knowing what they themselves know and taking account of that knowledge) and benevolent (that is, has no deceptive intent). They progress to a more complicated strategy (cautious optimism), which is to choose the first interpretation which the speaker might reasonably have expected to be relevant enough to them (even if it is, in fact, not); here they are no longer assuming speaker competence but continue to assume speaker benevolence. Adults are capable of employing a third, more sophisticated, strategy, according to which they choose the first interpretation that the speaker might reasonably have expected to *seem* relevant enough to them (even if it is, in fact, not and the speaker knows it is not); here neither competence nor benevolence is assumed. Without spelling out the details, it should be clear that these strategies require of their users the ability to manipulate increasingly higher order representations of mental states. Given an input utterance 'I am unwell' and using the first strategy, the

pragmatic system would arrive at the conclusion 'X intends me to believe she is unwell'. However, the conclusion reached on the basis of the third strategy could be 'X intends me to believe that she intends me to believe that she is unwell' and will involve the manipulation of higher order metarepresentations as the premises leading to this conclusion (for instance, 'she doesn't know that I know that she doesn't want to go to the Jones's party'). It would be of great interest to try to discern the developmental stages at which humans become capable of these increasingly more demanding interpretive strategies and to compare their emergence with stages in the development of the theory of mind capacity more generally. To conclude this section, there is some evidence (and suggestions for developing further evidence) that the pragmatic capacity follows a characteristic developmental pattern, as we would expect if it is indeed the case that pragmatics (ostension interpretation) is a modular system.

As with any new and interesting idea, many questions are provoked. What exactly is the relation between the pragmatics module and the theory of mind or metapsychological system? After all, the ability to attribute beliefs, intentions, motives, etc, has a considerably broader domain than ostensive stimuli; it is activated by any observed behaviour in which mental states play a causal role. Is the ostension processor, then, a submodule of the mental state attribution module or somehow parasitic on it? There are questions too about its relation to the language module, such as how they are connected, the interface between them, and whether or not all linguistic stimuli necessarily activate the ostension module. And there are questions about the flow of information between the conceptual modules (those mental enzymes), on the one hand, and the ostension module or the more general theory of mind module, on the other.

Finally, it has to be emphasised that the move to a modular view of pragmatics should not be read as a retreat to the code-model view of communication, that is, to the clearly false view that the speaker's thoughts are encoded into an utterance and replicated in the hearer by decoding processes. Nor should it be taken to entail, or even to suggest, the view that there is a pragmatic component (or components) to the language faculty, consisting of systems of rules. While this code view is perhaps implicit in Kasher's dogged attempts to apply the Chomskyan concept of competence to pragmatics, it is quite explicit in recent developments in so-called 'GCI'-theory (where GCI stands for generalized conversational implicature) in which it is proposed that the use of particular lexical items is governed by default inference rules which go through unless blocked by salient contextual assumptions (Levinson forthcoming). For instance, while the quantifier 'some of the x' does not entail 'not all of the x' it does often gives rise to an inference to that effect, which is explained on this approach by a default inference rule attached to the

lexical item 'some'. Like Kasher's view, this one plainly entails subdivision of the domain of pragmatics, since no system of default rules (or rules of any sort) can account for the acutely context-sensitive phenomenon of particularized conversational implicature. This is not at all what Sperber and Wilson have in mind in their shift to a modular view of pragmatics. On the one hand, they are not proposing that pragmatics involves rule-systems (codes) and, on the other hand, their characterisation of pragmatics remains a general one: all conversational implicatures (which, anyway, are not discretely divisible into generalized and particularized varieties) are accounted for by the same communicative principle, as are other pragmatic processes such as reference assignment, disambiguation and various enrichments and loosenings of linguistically encoded concepts. What has been dropped is the earlier assumption of a necessary connection between codes and modules; the ostension processor, perhaps along with a constellation of other central thought systems, is a conceptual inferential module.

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