

References

- D. Sperber, D. Wilson (1986) *Relevance*, Basil Blackwell
 D. Sperber, D. Wilson (1995) "Preface to the Second Edition" in *Relevance*, second edition, Basil Blackwell.

In: Crocchiola, Mariolina (ed) 1997. *Proceedings of the University of Hertfordshire Relevance Theory Workshop*. Hatfield Press: Peter Thomas & Associates. p. 47-56.

Conceptual and Procedural Encoding: Criteria for the Identification of Linguistically Encoded Procedural Information

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1. Introduction

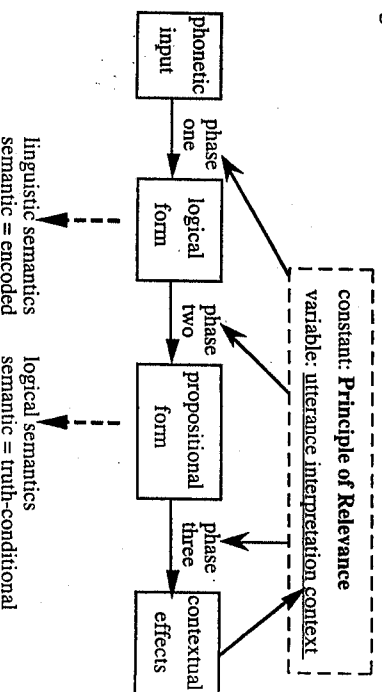
Linguistically encoded conceptual information contributes to the construction of conceptual representations, which form the basis of propositions and higher-level explicatures, whilst linguistically encoded procedural information constrains the inferential interpretation of conceptual representations. Procedural information may constrain the identification of implicatures, higher-level explicatures or the proposition expressed. Suggested exponents of these types of procedural encoding in English include *so*, *after all* (Blakemore 1987, 1988), non-declarative word order and personal pronouns (Wilson and Sperber 1993). In this paper I shall outline the theoretical basis for distinguishing the above types of procedural encoding, and consider descriptive criteria according to which exponents of different types of procedural encoding can be distinguished.

The distinction between conceptual and procedural information is made at the level of linguistic semantics. I shall therefore begin by outlining a three phase model of utterance interpretation within which the distinction between linguistic and logical semantics becomes clear. I shall then move on to suggest ways in which conceptual and procedural encoding can be distinguished, first in the theory, and then in practice.

1.1. A three phase model of utterance interpretation

The utterance interpretation process can be viewed as a three phase process:

Figure 1:



The first phase consists of a modular decoding process which results in a logical form - a well-formed string of concepts in the language of thought. The second and third phases are inferential: phase two involves inferential enrichment, reference assignment and disambiguation and (if successful) results in the identification of a propositional form; phase three takes the propositional form together with propositional attitudes and a context and computes contextual effects.

The model is greatly simplified in that the three phases do not occur in strict sequence, and the whole process is relevance driven, by which I mean that the search for relevance guides the interpretation processes. The Principle of Relevance and the context are crucial at all three phases, although at phase one they only have an inhibitory affect on the decoding process, disposing amongst alternative hypotheses.

1.2. Linguistic and logical semantics

Linguistic semantics concerns what is encoded, whilst logical semantics concerns what is truth-conditional (and truth-conditions are properties of propositions not of expressions). The two are not coextensive, as work on *and* (Carston 1988, 1993) has shown, and as figure 1 makes clear. Linguistic semantic distinctions are manifest as the output of the modular decoding phase (phase 1) but logical semantic distinctions are manifest only once propositions have been recovered (as the output of phase 2).

2. Conceptual and procedural encoding

The distinction between conceptual and procedural encoding is made at the level of linguistic semantics, that is, it is represented in the output of the modular decoding phase of utterance interpretation. I shall discuss how conceptual and procedural encoding can be distinguished, first theoretically and then descriptively.

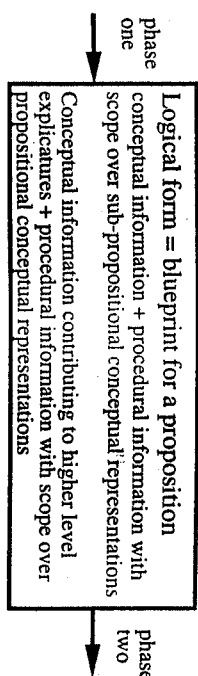
2.1. The conceptual/procedural distinction in the theory

Wilson & Sperber (1993:2) characterise the conceptual/procedural distinction as follows:

"inferential comprehension involves the construction and manipulation of conceptual representations. An utterance can thus be expected to encode two basic types of information: representational and computational, or conceptual and procedural - that is, information about the representations to be manipulated, and information about how to manipulate them."

Conceptual representations can be either propositional - providing the input to phase three of utterance interpretation and thereby giving rise to contextual effects, or sub-propositional - providing the input to phase two of utterance interpretation and giving rise to propositions. These are represented in the language of thought as follows:

Figure 2:



Distinctions made at the level of linguistic semantics must be represented in the language of thought. If, as I have claimed, the conceptual/procedural distinction is a feature of linguistic semantics, then it must be represented somehow in the language of thought (*pace* Groetssema 1992:220). Since both conceptual and procedural information is represented in the language of thought, it is possible that a single expression might encode both conceptual and procedural information. For this reason, in the representations of the linguistic semantic content of expressions below (figures 3 and 4), the possibility of both conceptual and procedural information being encoded is indicated.

Procedural encoding at phase three and at phase two are distinguished in the theory as follows.

2.1.1. Procedural encoding at phase three

Procedural information with scope over propositional conceptual representations functions at phase three. An example of procedural encoding at phase three is the discourse connective *so*:

Figure 3:

SO	
Conceptual information:	Procedural information: Scope - (propositional form) - (propositional attitude) Inferentially connected with a mutually manifest assumption

Other examples of procedural encoding at phase three constrain higher level explicatures rather than implicatures. Examples of this sort of procedural encoding include non-indicative word order in English or interrogative particles such as *je* in Kiswahili, which guide as to the way in which a proposition is intended to achieve adequate contextual effects by constraining the propositional attitude associated with a propositional form. These all reduce the processing effort required of an addressee at phase three of utterance interpretation.

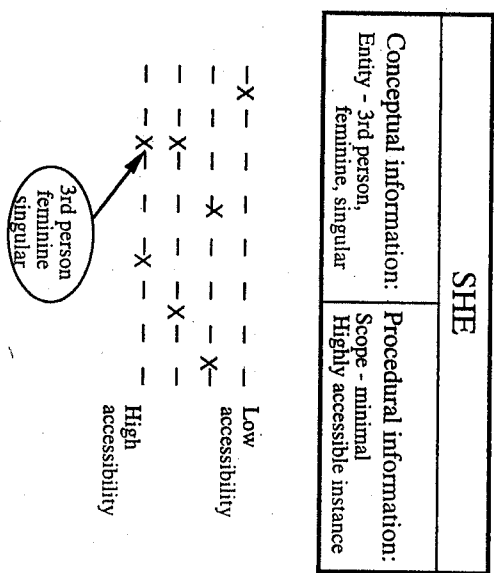
2.1.2. Procedural encoding at phase two

Procedural information with scope over sub-propositional conceptual representations constrains the proposition expressed and therefore functions at phase two. An example of procedural encoding at phase two is pronouns.

What is the conceptual representation whose interpretation the procedural information encoded by a pronoun constrains? It is not a mental representation of the discourse entity referred to, since, firstly, the addressee only knows what this is since the pronoun has done its work, and secondly, all referring expressions 'call up' some mental representation, but we don't want to say that every referring expression is procedural. Instead, I suggest that the conceptual representation whose interpretation a pronoun constrains is a representation of the conceptual information encoded by that same pronoun.

The procedural information encoded by all personal pronouns is the same, and consists of an instruction to look for a highly accessible referent, rather than a referent of relatively low accessibility. The notion of accessibility I have taken from Ariel (1988, 1990, 1991, 1994). Figure 4 illustrates the conceptual and procedural information encoded by *she*, and the function of this information in the identification of an intended discourse referent.

Figure 4:

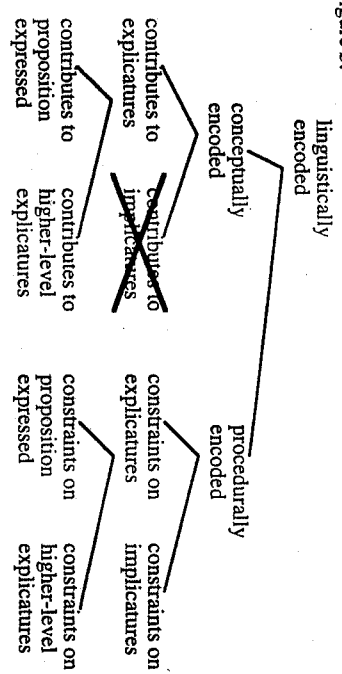


Pronouns reflect and exploit the relative mental accessibility of discourse referents so as to reduce processing effort, not only at phase two, but also at phase one, where their frequency of mention and phonologically and semantically reduced nature make them easy to decode.

2.2. Distinguishing types of procedural information descriptively

I shall now discuss ways in which different types of procedural encoding can be distinguished from each other and from their conceptual counterparts, not just theoretically but descriptively. The different types of linguistically communicated information involved are given in figure 5:

Figure 5:



(adapted from Wilson & Sperber 1993: 3)

3.2.1. Constraints on implicatures

There is no category of linguistically encoded information which contributes to implicatures. Derride Wilson (p.c. 16/6/94) has stated that, although this category was left open, perhaps nothing fits in it. She has suggested that we might want to claim that, in Gricean terms, (1):

- (1) John isn't here yet.
conventionally implicates (2):
- (2) John is expected.
or that (3):
- (3) I didn't manage to finish the paper.
conventionally implicates (4):
- (4) I tried to finish the paper.

If this is so, words like *yet* and *manage* could be characterised as carrying conceptually encoded implicatures (either implicated premises or implicated conclusions). However, to claim that there are words that regularly carry a class of conceptually encoded implications is contradictory. Unless a clear distinction can be drawn between "regularly carrying" and "encoding" no clear distinction can be made between implicatures and explicatures. In Relevance Theory, "explicit" is a degree term: the greater the amount of

decoding involved in interpretation, the more explicit an explicature; the greater the degree of inference involved, the less explicit. This suggests that (2) and (4) should be treated as explicatures derived from utterances of (1) and (3) respectively, through a combination of inference and decoding (of *yet* and *manage* respectively). Even if the degree of decoding required were minimal in comparison to the amount of inference, these would still be cases of explicit communication. I conclude, therefore, that the category of conceptually encoded information which contributes to implicatures is logically impossible.

Procedural encoding like *so*, which encodes a constraint on implicatures does, however, contrast with conceptual encoding, such as *therefore*, which contributes to explicatures. For example, *therefore* only connects stretches of text - uttered or written; unlike *so*, it cannot occur discourse initially to establish a connection with an assumption which has not been given linguistic expression:

- (5) So, you've spent all your money.
 (6) ? Therefore, you've spent all your money.
 (Blakemore 1988 (13) & (14))

This suggests that *therefore* connects the representations of two simple propositions giving rise to the representation of a single compound proposition.

Further differences arise from the fact that *therefore* forms part of the representation of a compound proposition whereas *so* does not. We would expect that to a certain extent, the characterisation of *so* as encoding procedural information with scope over propositional conceptual representations will be reflected in the surface structure realisation of *so*. We do, in fact, find that discourse connectives are parenthetical. In contrast, the incorporation of *therefore* into a representation of a compound proposition is reflected in its greater syntactic flexibility within a clause:

- (7) a. She's your teacher. Therefore you must respect her.
 b. She's your teacher. So you must respect her.
 c. She's your teacher. You must therefore/*so respect her.
 d. She's your teacher. You must respect her therefore/*so.

2.2.2. Constraints on higher-level explicatures

In contrast to exponents of procedural encoding constraining higher-level explicatures, such as non-declarative word order in English and the *je* interrogative marker in Kiswahili, Wilson & Sperber (1993:16-19) posit a class of conceptually encoded expressions which contribute to higher-level explicatures; these include illocutionary adverbials such as *seriously*, *frankly* and *confidentially*, and attitudinal adverbials such as *unfortunately*:

- (8) a. Seriously, I can't help you.
 b. Frankly, I can't help you.
 c. Confidentially, I can't help you.
 d. Unfortunately, I can't help you. (Wilson & Sperber, 1993: (18))

Whereas exponents of procedural encoding constraining higher level explicatures contribute to the truth conditions of neither the associated proposition nor of the propositional attitude, the higher-level explicatures to which illocutionary and attitudinal adverbials contribute are "conceptual representations, capable of entailing and contradicting each other and representing determinate states of affairs. Though true or false in their own right, they do not generally contribute to the truth conditions of their associated utterances." (Wilson & Sperber 1993:16)

These conceptual expressions are preserved in indirect reported speech, unlike interrogative word order in most dialects of English and interrogative expressions in many other languages such as *je* in Kiswahili. Propositional attitudes associated with syntactic mood and interrogative particles, like *je* in Kiswahili, do not simply reduce the addressee's processing load, they also instruct the addressee to act in a particular way - to provide information, obey an instruction, etc. Such speech acts are not performed when the content of an utterance is being recounted at a later time, so we would not necessarily expect procedural constraints on higher-level explicatures to be preserved in indirect reported speech. This is, in fact, what we often find: expressions which encode constraints on higher level explicatures are not preserved in reported speech in many languages:

- (9) Je, u-ta-kwenda soko-ni?
 Je, you FUT go market LOCATIVE
 Are you going to the market?
 (19) Aliniuliza kama ni-ta-kwenda soko-ni.
 He asked me if I FUT go market LOCATIVE
 He asked me if I was going to the market.

In the Kiswahili examples we find that the interrogative marker *je* is not preserved in indirect reported speech, and neither is interrogative mood preserved in the English translation.

In contrast, procedural encoding which constrains implicatures may be preserved in indirect reported speech:

- (11) They said she was my teacher so I must respect her.
 (12) a. Mary told Peter seriously that she couldn't help him.
 b. Mary said frankly to Peter that she couldn't help him.
 c. Mary informed Peter confidentially that she couldn't help him.
 (Wilson & Sperber 1993 (19))

Attitudinal adverbials continue to contribute to higher-level explicatures:

- (12) d. Mary told Peter that, unfortunately, she couldn't help him.
 Illocutionary and attitudinal adverbials are also semantically complex in comparison to procedural illocutionary force indicators. The distinction

- Groefsema, M. (1992) *Processing for Relevance: A pragmatically based account of how we process natural language*. PhD thesis, University College London.
- Groefsema, M. (1995) *Can, may, must and should: A Relevance theoretic account*. *Journal of Linguistics*, 31: 53-79.
- Hopper, P. J. and Traugott, E. C. (1993) *Grammaticalization*. Cambridge: C.U.P.
- Kempson, R. M. (ed.) (1988) *Mental Representations: The interface between language and reality*. Cambridge: C.U.P.
- Klinge, A. (1993) The English modal auxiliaries: from lexical semantics to utterance interpretation. *Journal of Linguistics*, 29: 315-357
- Wilson, D. & Sperber, D. (1993) Linguistic form and relevance. *Lingua*, 90: 1-25

Concepts and Word Meaning¹

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1. Introduction

Sperber & Wilson (1986) propose that the meaning of a word is a concept. A concept in their view is a psychological object consisting of a label or address, which performs two different and complementary functions:

1. It may appear as a constituent of a logical form.
2. It appears as an address in memory, a heading under which different types of information can be stored and retrieved.

Concepts have different entries for the different types of information:

The logical entry for a concept consists of a set of deductive rules which apply to logical forms of which that concept is a constituent. The encyclopaedic entry contains information about the extension and/or denotation of the concept... The lexical entry contains information about the natural language counterpart of the concept: the word or phrase of natural language which expresses it. ... information about its syntactic category membership and co-occurrence possibilities, phonological structure and so on. (Sperber & Wilson, 1986: 86, 90).

For Sperber & Wilson the distinction between logical and encyclopaedic entries is crucial. The information in the logical entry of a concept represents the logical properties of that concept. The information in the encyclopaedic entry represents our knowledge of the events, objects and properties which instantiate the concept. The information in logical entries is computational in that it consists of a set of deductive rules, while the information in the encyclopaedic entries is representational, in that it consists of a set of assumptions which may undergo deductive rules. So, the concept AND will have a logical entry which contains the deductive rules in (1):

- (1) And-elimination
(a) Input: (P and Q)
Output: P

- (b) Input: (P and Q)
Output: Q (op. cit.: 86).

And a concept ORCHID may have an encyclopaedic entry as in (2):

- (2) Orchids are rare flowers. (op. cit.: 82).

Sperber & Wilson go one step further and propose that not only concepts such as AND and OR have logical entries, but also that concepts such as GIRAFFE, MOTHER and YELLOW have logical properties which are encoded as

¹ With thanks to Begonia Vicente for many fruitful discussions about meaning and concepts.

between procedural constraints on higher-level explicatures and conceptual contributions to higher-level explicatures in English with respect to semantic complexity is illustrated in (13):

- (13)
- a. Seriously, are you leaving?
 - b. She asked me seriously whether I was leaving.
 - c. She asked me to tell her seriously whether I was leaving.
(Wilson & Sperber 1993 (20))

Wilson & Sperber (1993:18) point out that if (13a) is interpreted as a request to tell, *seriously* is ambiguous in that it can modify either the requesting or the telling; these alternative interpretations are reflected in (13b) and (13c) respectively. Wilson & Sperber (1993:18) conclude: "It is not obvious how this ambiguity could be handled in procedural terms." The theoretical characterisation of procedural encoding at phase three provided in section 2.1 suggests why it is not obvious how this ambiguity could be handled in procedural terms. Given that procedural encoding gives rise to logical selection frames providing information about the manipulation of conceptual representations within their scope, it is necessary for the extent of that scope to be specified (either within the logical selection frame itself or by associated syntactic or intonational information). Hence, all procedural encoding must specify, (a) information about the manipulation of any conceptual representation(s) within its scope, and (b) the precise extent of that scope, including the nature of the conceptual representation about which information is provided. Neither the illocutionary adverbials themselves nor any associated syntactic or intonational information specify (b) and hence any attempt to characterise them in procedural terms will encounter problems.

3.2.3 Constraints on propositions

What distinguishes expressions which encode procedural information which constrains the proposition expressed from expressions which encode conceptual information which contributes to a proposition?

If we look at personal pronouns we see that the procedural information which they encode is common to the grammatical class of pronouns as a whole, whilst the conceptual information they encode differs from pronoun to pronoun. Cross-linguistically, we find that pronouns tend to form a closed class of expressions, to be semantically quite uninformative, phonologically reduced, syntactically restricted in terms of movement, and in some languages, are morphologically bound - all features of grammaticization (cf. Hopper & Traugott 1993, Bybee *et al* 1994).

My hypothesis is that procedural encoding at phase two is linked to grammaticization. Grammatical classes include pronouns, determiners and demonstratives, and modality, tense and aspect markers.

In the case of pronouns, the same procedural information is common to all pronouns and is therefore a feature of the grammatical class as a whole, so one question to be answered concerns whether procedural information at phase two can be encoded by individual exponents of a grammatical class in addition to grammatical classes *per se*. In cases where the grammatical class consists of a binary opposition of marked versus zero, for example the past versus non-past distinction in English, where a grammatical class consists of

only one overt member, the question of whether procedural information is encoded by individual exponents of a grammatical class or by the class itself is unanswerable.

An answer to this question might be found in the English modal auxiliaries, since these do not consist of a binary opposition of marked versus unmarked. However, the English modal auxiliaries present a number of problems. The English modal auxiliaries are only part way grammaticized - sharing some features with lexical verbs and being a 'fuzzy-edged' syntactic/semantic class (for instance, there are the semi-modals, *need* and *dare*). Moreover, there are significant differences concerning the semantic characterisation of the modals, even within the relevance theoretic framework: for example, according to Klinge (1993) the modals share the semantic field of potentiality and individually specify the nature of that potential with respect to the realisation of situations, whereas in Groefsema (1995) *can*, *may*, *must* and *should* are characterised as encoding information concerning the relation between propositions and assumptions in the utterance interpretation context. Despite these differences, however, Klinge (1993) explicitly characterises the modal auxiliaries as exponents of procedural encoding and Groefsema (1995), whilst not overtly addressing the conceptual/procedural distinction, also suggests a procedural analysis.

Further work clearly needs to be done before the link between procedural encoding and grammaticization can be clarified. To this end I am investigating the Kiswahili MTA system, which consists of a number of highly grammaticized markers (they are clicitized, phonologically and semantically reduced, often obligatory etc.). If any of these grammatical markers share a common procedural core, it is extremely abstract: the procedural information encoded by a given Kiswahili MTA marker is distinct, suggesting that it is a property of that marker rather than of a grammatical class. This, however, is yet another story, and this paper must end on a promissory note.

References

- Ariel, M. (1988) Referring and accessibility. *Journal of Linguistics* 24:65-87
 Ariel, M. (1990) *Accessing NP antecedents*. London: Routledge
 Ariel, M. (1991) The function of accessibility in a theory of grammar. *Journal of Pragmatics*, 16: 443-463
 Ariel, M. (1994) Interpreting anaphoric expressions: a cognitive versus a pragmatic approach. *Journal of Linguistics*, 30: 3-42
 Blakemore, D. (1987) *Semantic Constraints on Relevance*. Oxford: Blackwell
 Blakemore, D. (1988) "So" as a constraint on relevance. In R.M. Kempson (ed.) *Mental Representations: The interface between language and reality*. Cambridge: C.U.P.
 Bybee, J. L., Perkins, R. D. and Pagliuca, W. (1994) *The Evolution of Grammar: Tense, Aspect and Modality in the Languages of the World*. Chicago/London: University of Chicago Press.
 Carston, R. (1988) Implicature, explicature and truth-theoretic semantics. In R. M. Kempson (ed.) *Mental Representations: The interface between language and reality*. Cambridge: C.U.P.
 Carston, R. (1993) Conjunction, explanation and relevance. *Lingua*, 90: 27-48.