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***Let's assume it is both conceptual and procedural...***

**A hypothesis about the information encoded by verbs of cognitive attitude**

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## **Abstract**

*Is it possible to say that certain lexical items encode both conceptual and procedural information? Verbs of cognitive attitude like the verb assume lexicalize the interplay of epistemic and evidential qualifications of states of affairs.*

*For this reason, they play a crucial role in communication: they help the hearer recover the speaker's attitudes towards the proposition expressed and the correct explicature of an utterance (Ifantidou 2001). They furthermore guide the hearer in assigning an "existential status" to the information that is communicated, so that he can steadily store it in his representation database and use it as a premise in reasoning.*

*Since the assignment of an epistemic and evidential status to the information retrieved through whatever means, including communication, is a fundamental cognitive operation, it could be hypothesized that verbs of cognitive attitude not only encode conceptual information, but procedural information as well.*

**Keywords:** *verbs of cognitive attitude, conceptual information, procedural information, epistemicity, evidentiality.*

## **Resumen**

*¿Sería posible decir que algunos lexemas codifican tanto una información conceptual como procedimental? Verbos de actitud cognitiva como "assume" lexicalizan la interacción entre la evaluación epistémica y evidencial de un conjunto de circunstancias.*

*De ahí su papel fundamental en la comunicación; por una parte permiten que el oyente recupere la actitud del hablante hacia la proposición expresada y, por otra, aclaran su declaración. Además, guían al oyente en la atribución de un "status existencial" a la información que se comunica, así que él puede almacenarla en su base de datos representativa y explotarla como premisa para otros razonamientos*

*Puesto que la atribución de un status epistémico y evidencial a la información recibida a través de un medio cualquiera, incluso la comunicación, corresponde a una operación cognitiva fundamental, se puede decir que los verbos de actitud cognitiva transmiten no sólo información de tipo conceptual sino también procedimental.*

## **1. INTRODUCTION**

Verbs of cognitive attitude lexicalise the interplay of two fundamental conceptual domains, epistemicity and evidentiality, and the modulation of their complex internal structure. They therefore play a fundamental role in communication, in that they help the hearer to recover the speaker's attitudes towards the proposition expressed and the correct explicature of an utterance (Ifantidou 2001). They also guide the hearer to assign an "existential status" to the information which is communicated, so that he can store it in his representation database and use it as a premise in reasoning.

Since the assignment of an epistemic and evidential status to the information retrieved through whatever means, including communication, is a fundamental cognitive operation, it could be hypothesized that verbs of cognitive attitude not only encode conceptual information, but procedural information as well (Sperber & Wilson 1986/95; Blakemore 1987). This hypothesis can be illustrated through the analysis of the English verb of cognitive attitude *assume*.

## 2. EVIDENTIALITY AND EPISTEMICITY: TWO FUNDAMENTAL CONCEPTUAL DIMENSIONS

Evidentiality and epistemicity are fundamental conceptual dimensions, which can be linguistically encoded through different means. These conceptual dimensions are plausibly universal semantic dimensions and such universality can be traced back to the general make up of the human cognitive apparatus and to the fundamental role that they play in cognition.

The human mind entertains conceptual representations in a sort of database from which to draw for inferential labor (Sperber 1997), so, information needs to be integrated in this database to be treated as premise in inferential processes. In order to be “stored”, it needs to be steady, that is, its “existential” status needs to be assessed. It is, therefore, reasonable to hypothesize that every piece of information presented to our mind needs to be epistemically qualified in order to receive such an “existential status” and that, since communication can play the same role as perception in belief fixation, when we communicate verbally, our mind tries to assess the status of the information gathered as soon as possible, comparing assumptions about a state of affairs to whatever information about the world is available and considered relevant to such state of affairs.

Generally, in order to assign an epistemic status to an object or event, we need to carry out a “verification process” on contextual cues, that is, on a validation context (Bertuccelli Papi 1987), which, in communication, also includes the speaker’s intentions and attitudes. These latter are a true source of meaning and, cognitive attitudes in particular, are most likely one of the first things that the hearer checks in order to assign to the interlocutor the role of reliable source or the reverse and to come to treat information as data.

Attitudes need to be always taken into account by human beings involved in a communicative event (Bertuccelli Papi 1998, 2000; Cappelli 2005). In order to retrieve the speaker’s intended meaning, the hearer must, in fact, resolve linguistic underdeterminacies at both explicit and implicit levels (Wilson and Sperber 2004, Carston 2002, Ifantidou 2001). He must decode and pragmatically enrich the utterance’s logical form so as to retrieve higher-level explicatures (Ifantidou 2001, Sperber and Wilson 1986/95).

Belief attitudes, both intuitive and reflective ones (Sperber 1997), positioning the speaker as regard to the existential status of the information that he communicates, must plausibly be retrieved as soon as possible. Explicit markers of the speaker’s cognitive attitude have, therefore, the very important function of providing this information and reducing the inferential work necessary for hearers to retrieve higher-level explicatures.

Evidential and epistemic evaluations have a complex nature. Verbs of cognitive attitude permit to lexicalize their modulations, encoding information about both dimensions at the same time.

Thus, in line with Bertuccelli Papi's (2000) definition of attitudes as being relational, having an object, intensity and a structure, epistemic evaluation is seen as involving an evaluator and a state of affairs and, therefore, as developing along two different but overlapping and interacting dimensions: the evaluator's commitment and the likelihood of the state of affairs. In other words, an evaluator can be more or less certain that a state of affairs holds or doesn't hold.

In order to assign an epistemic value to an object or an event, the evaluator goes through a "verification process" within the "validation context", that is, he performs an evaluative operation over the available evidence (Bertuccelli Papi 1987). Evidentiality is here considered to involve reference to "more or less objective or subjective evidence", that is, to perceptual, cognitive or affective evidence (Cappelli 2005).

The choice of the speaker to use a specific cognitive verb, with few exceptions, is taken to follow from the need to lexicalize the various combinations and modulations of these complementary dimensions.

### 3. CONCEPTUAL OR PROCEDURAL INFORMATION?

Ifantidou (2001) demonstrates that, depending on their syntactic realization (i.e. integrated in the sentence or parentheticals), verbs of cognitive attitude can have a truth-conditional or a non-truth-conditional meaning and that there is no strict correspondence between truth-conditionality and the encoding of conceptual and procedural information (Blakemore 1987, Sperber and Wilson 1986/95). Ifantidou does not go as far as to say that verbs of cognitive attitude have a procedural meaning, even if she mentions both conceptual meaning and procedural functions, leaving open the possibility that they encode both types of information. Thus, the question is whether it is possible to say that verbs of cognitive attitude encode both concepts and procedures.

#### *3.1 The conceptual information encoded by assume*

Let's consider the verb *to assume* in its construal as a verb of cognitive attitude<sup>1</sup>. In general, the descriptive occurrences<sup>2</sup> tend to preserve more of the full meaning potential of the verb, which is somewhat bleached in the performative occurrences.

Wordnet defines *assume* as “take to be the case or to be true; accept without verification or proof”, emphasizing the epistemic dimension and the absence of evidential information. The verb always seems to indicate that the subject accepts as true or highly probable the state of affairs expressed by *p*. The verb, though, *does* encode evidential information, even if such reference does not deal with the type of evidence, but with the verification process.

In order to assign this positive value in the epistemic scale the evaluator does not go through such a process. The occurrences of the verb show that the evaluator skips it and reaches a conclusion either on the basis of encyclopedic knowledge or of commonplace premises, which create certain common expectations about particular states of affairs. Thus, in (1):

1. I was the inevitable, anonymous receptionist you meet when you walk into almost any large building. You say hello to her, *you assume* she has been reading your mail or listening in to your private telephone calls (actually I never did either), and you tell her when you do not wish to be disturbed.

*Part of the furniture. Falk M. (1991), London: Bellew Publishing Company Ltd*

the evaluating subject is described as committed to his epistemic evaluation, which assigns an epistemic value “very high probability” to a state of affairs. Thus, people consider as highly probable and therefore generally true that a secretary reads email or listens to private conversations, even though this is only an unverified commonplace belief. This evaluation relies, therefore, on evidence that is not contextually available or made available: it is provided by the encyclopedic knowledge of the subject.

Co-occurring semantic elements evoking a general, non-specific and rather typical situation support and reinforce this analysis. Thus, the sentence preceding the occurrence of the verb (*I was the inevitable, anonymous receptionist [...]*) creates the typical atmosphere of “any large building”, which is populated with the *inevitable, anonymous* receptionist, inevitably typified with certain inevitable characteristics.

For the conceptual information it encodes, *assume* tends to occur in antagonistic contexts and it allows the speaker to convey a sense of “reproach” towards the attitude of

those who *assume that p*. The choice of the verb *assume* seems to indicate that an evaluator underestimates certain facts or that he does not think about them carefully, so that he ends up providing an evaluation which is too simplistic and even false.

In descriptive uses, the lack of a proper verification process can create a sort of counterfactual effect due to the fallacy of the reasoning. This is exemplified by (2), where the combination of *assume* and *delusion* supports the irony of the whole passage, as it underlines the clash between high commitment towards *p* and the mistaken judgment deriving from the use of *p* as a premise for inference:

2. There are, however, some men who *assume* that a single mother must be looking for a husband. They are husbands, ergo, she is looking for them. Working on this delusion, they then feel either excited and act like silly children or confused and act like silly children.

*The Economist Newspaper Ltd, London (1991-19-19).*

The adverbs co-occurring with *assume* in the BNC reinforce the hypothesis about the conceptual information encoded in the verb. Some adverbs refer to the fact that the evaluation encoded is based on clichés and commonplace beliefs, etc. (e.g. *typically, customarily, traditionally, ordinarily*, etc.); or they deal with the correctness or the warrantability of the evaluation or the reverse (e.g. *correctly, reasonably, wrongly, mistakenly, simplistically*, etc.). Some comment on the evaluator (e.g. *foolishly, naively*) or relate to the absence of the verification process (e.g. *simplistically, automatically* and *lightly*). Other adverbs such as *casually, unconsciously, cheerfully* and *gaily* plausibly relate to the fact that evaluation based on general knowledge and largely shared belief result in fast automatic inferences and evaluations (Recanati 2003).

In truly performative uses, which are generally not modified by an adverb, as well as in some uses in scientific texts, the verb loses some of the conceptual information encoded in the examples indicated above. The epistemic dimension tends to be more prominent and the evidential information and some of the effects it produces are “bleached”. Thus, the vaguely counterfactual or critical dimensions are generally not construed.

This probably depends on genre: many performative occurrences of *assume* are retrieved in scientific texts, which are in principle based on carefully assessed reasoning and argumentations. Moreover, those effects arise only in antagonistic contexts, which are not common when the speaker is the only bearer of a certain cognitive attitude.

It is reasonable to hypothesize that it is the reference to a fallacy in the evidential qualification that reduces this semantic dimension in favor of the epistemic dimension<sup>3</sup>. Thus, in (3) and (4), *assume* seems to encode solely the speaker's epistemic stance:

3. Now *I assume that* Mother Nature will age me along with everyone else. But every time I see a new line on my face, I'm also hysterically thinking it's all over.'

*The Face. London: Nick Logan, 1990*

4. Most of you, *I assume*, already know what Viz is about. But in the event you washed ashore even more recently than I, you'll be delighted to know that Viz is about farts, tits and gonads.

*Esquire. London: The National Magazine Company Ltd (1991-04)*

When *assume* is used in its performative qualificational meaning, it seems to have as its most important function that of assigning to *p* the status of valid premise in reasoning. The evidential component of its meaning potential, even if present, is less prominent: the focus is on the evaluator's inferential work.

The evidential information lexicalised by the verb produces a peculiar effect as far as information structure is concerned: *assume* seems to function as an "information backgrounding device". Since the subject seems to indicate that the epistemic qualification of *p* is made on the basis of "some sort of evidence", which however does not really matter at that point of the argumentation, the premise itself, which is nonetheless used as a valid premise, seems to be treated as not very important. This allows the speaker to put the state of affairs qualified by *assume* in the background and to focus on the information which follows. Thus, *assume* often co-occurs with the conjunction *but*: it introduces the "debatable" assumption and *but* brings the focus on the valid conclusion of the evaluating subject which opposes the false premise and takes force in the comparison.

The fact that *assume* can be used to "create" a valid premise for inference can also explain the high frequency in the imperative mood, which explicitly invites the hearer to perform a cognitive operation. With *let's assume/assume* the hearer is invited to consider a fictional state of affairs as true, and, at the same time, to avoid evaluating whether or not this is actually possible and its implications. The speaker is asking the hearer to suspend his evaluations and just take a state of affairs for granted, concentrating on the rest of the argumentation.

### 3.2 *Conceptual information alone or procedural information as well?*

Are these effects possible only in virtue of the conceptual information encoded by the verb or is this truly procedural information? The theoretical considerations and the analysis of the data allow us to consider this as a concrete possibility.

These verbs encode procedural information in the sense that they help the hearer retrieve the higher-level explicatures and save him some processing effort (Ifantidou 2001). This could happen only when their attitude is not the default one, which, in line with Grice's Maxim of Quality, can be easily inferred in the absence of explicit indicators. Sometimes, though, we make explicit even our "default knowledge attitude" and we tend to explicit our cognitive attitudes in argumentative texts and in antagonistic contexts, where we hope to change the hearer's assumptions relative to a state of affairs.

When a speaker utters a sentence of the type  $p$ , the hearer evaluates various contextual factors in order to assess the existential status of this communicated information and store it in his "belief box". Part of this assessment, as we said, consists in retrieving the speaker's attitude towards  $p$ , and if the speaker has a positive evidential-epistemic attitude towards  $p$ , and the hearer considers him reliable, he can trust him and acquire information from his words and contextually check whether  $p$  is the case.

If, however, the speaker chooses to encode his evidential-epistemic attitude with a verb of cognitive attitude, he explicitly signals that he is not certain that  $p$  is the case, but that in virtue of the evidence he has, he is willing to commit himself to a certain extent that  $p$  is more or less likely. In other words, verbs of cognitive attitude conceptually encode the speaker's evaluation that he doesn't know that  $p$  is actually the case, but that he has a preferred hypothesis: he doesn't know if  $p$  is true but he knows that  $p$  is possible.

Following Bertuccelli Papi's (1987), we can say that verbs of cognitive attitude substitute the subjective viewpoint for the contextual viewpoint and signal that the hearer must carry out the verification process on his own, since he cannot rely on the speaker's knowledge. Verbs of cognitive attitude activate in the hearer a search in memory for old information that can validate or refute the speaker's conclusion and force the hearer to search for new evidence and to carry out an evaluation process comparing contextual information and the speaker's viewpoint. They function as indicators of relevance, forcing the hearer to evaluate  $p$  as a conclusion drawn by the speaker that does not have an objective validity.

Shifting the attention to the plausibility of the subjective inference, they force the hearer to evaluate the evidence for such inference.

Providing a preferred reading, these verbs seem to indicate the way in which the inferential process should go, and in certain cases, (e.g. with verbs like *assume* or *suppose*) the verb seems to force the hearer to interpret what precedes as a valid premise for *p*, which is presented as a conclusion from such a premise. This is probably true for all of these verbs, and it is why they are used in argumentation.

Thus, although the evidential-epistemic meaning is conceptual in nature, the shift in perspective and the activation for the search of premises guiding contextual implications and supporting the conclusion of *p* from preceding *q*, *z*, *x* etc. seems to be procedural.

#### 4. CONCLUSION

Despite the fact that there are few lexical studies that allow for the possibility that some lexical items encode both conceptual and procedural meaning, verbs of cognitive attitude seem to be good candidates for such an analysis. Even if encoding conceptual information relative to the evidential and epistemic attitudes of the speaker, they also seem to encode very important procedural information guiding interpretation and instructing the hearer on the path to follow in order to assign a steady existential status to information obtained via communication.

Far from being a conclusive analysis, this paper aims at presenting a possible path of research which can help cast some more light on the meaning and functions of this fundamental class of lexical items. Given the universality of the conceptual dimensions lexicalized and the fundamental nature of the cognitive processes they favor, we can reasonably hypothesize that the analysis can be applied across languages.

<sup>1</sup> This brief overview of the conceptual information encoded by *assume* is based on the corpus study of over 7000 occurrences of the verb retrieved from the BNC and analyzed during my PhD research work.

<sup>2</sup> See Nuyts (2001) for the distinction between descriptive and performative construal of the metal predicates.

<sup>3</sup> This “bleach” effect is common to almost all verbs of cognitive attitudes when co-occurring with the first person in the simple present tense (Thompson and Mulac 1991).

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