



Title	A Procedural View of Metalinguistic Negation
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Citation	OUPEL(Osaka University Papers in English Linguistics). 1995, 2, p. 223-239
Version Type	VoR
URL	https://doi.org/10.18910/72960
rights	
Note	

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A PROCEDURAL VIEW OF METALINGUISTIC NEGATION*

1 INTRODUCTION

This paper reveals new ways in which the CONCEPTUAL/PROCEDURAL dichotomy in semantics proposed by Blakemore (1987) plays a crucial role in linguistic analysis. The conceptual theory deals with the truth-conditional meanings of sentences, while the procedural theory deals with the way sentences should be processed in the mind. We have endeavored to show the utility of this distinction in our previous work on NEGATIVE POLARITY ITEMS (NPIs) like *any* and *ever* (Yoshimura 1992, 1993, 1994). NPIs (*italicized* below) have a restricted distribution; they occur in the scope of a TRIGGER (in **bold**). The trigger may take the form of an explicit negative, as in (1)—whence the name ‘negative polarity items’—or else it may be one of a variety of non-negative expressions like *before* in (2) or *if* in (3):

- (1) Chrysler dealers **don’t** *ever* sell *any* cars *anymore*. (Ladusaw 1980:1)
- (2) John will steal back into the audience **before** *anyone ever* notices his absence.
- (3) **If** I *ever* see *any* of you around here again, I will call the police.

We have proposed that NPIs are subject to two conditions: following Ladusaw (1979, 1980) we presume that NPI triggers are DOWNWARD-ENTAILING (DE) expressions; furthermore, we assume a relevance-theoretic constraint on NPIs to the effect that they must occur in contexts where the clause that contains them contradicts some previously established assumption. We have termed this state of affairs the COGNITIVE STRUCTURE OF NEGATION. Consequently NPIs may be viewed procedurally as warnings to the cognitive processor that contradictions are about to arise and will require non-monotonic resolution.

In this paper, we would like to demonstrate that the distinction between conceptual and procedural semantics provides an exceedingly useful perspective in which to construct an analysis of the phenomenon of METALINGUISTIC NEGA-

*The present paper is based on a presentation made at the International Conference on the Theory of Relevance held in Osaka on May 29, 1993. I owe a debt of gratitude to the many people who offered their comments to me on that occasion. Also several individuals deserve special thanks. First of all this paper would not have been finished without the help of Michael T. Wescoat, who aided in the planning and writing stages of this work. Also I would like to express my appreciation to Ruth M. Kempson and Deirdre Wilson, who very generously took the time to read drafts of this paper and comment on them. Of course, any remaining inadequacies in this work are solely my responsibility.

TION. Just as in the case of NPIs, metalinguistic negation may also be viewed procedurally as a warning to the cognitive processor; however this time the processor is alerted to the existence of a problem in a prior utterance, such as the infelicitous choice of terms in (4):

- (4) The agency [= CIA] doesn't 'whack [= kill] (#*any*) pinko troublemakers'—it neutralizes anti-American influences.

Notice that the negative in (4) does not constitute a denial with regard to the asserted activities of the CIA; rather it admonishes the hearer to camouflage certain statements with acceptable euphemisms. Thus, metalinguistic negation lacks the conceptual or truth-conditional meaning associated with normal, descriptive negation, conveying instead a procedural instruction to examine the metalinguistically negated clause for some contextually determined infelicity. This intuition will be given a relevance-theoretic implementation below.

Example (4) also illustrates a quirk of metalinguistic negation which usually evades explanation: in sharp contrast with descriptive negation, metalinguistic negation does not license NPIs. However, one of the notable features of the analysis we shall propose is that the incompatibility of these two phenomena is an automatic prediction of the approach. The convergence of the analysis of NPIs with that of metalinguistic negation to yield this elusive result lends mutual support for both ideas.

This discussion begins with a review of Blakemore's conceptual/procedural dichotomy in section 2, followed in section 3 by a description of some of the essential points from our prior work on the cognitive structure of negation. With these elements in place, we will proceed in section 4 with a description and analysis of metalinguistic negation. The discussion ends with an explanation of the felicitous interaction of the analyses of the two foregoing phenomena.

2 CONCEPTUAL VS. PROCEDURAL SEMANTICS

Using relevance theory, Blakemore (1987) argues that the existence of expressions like *so* and *after all*, which don't represent concepts—i.e., don't contribute to the truth conditional meaning—suggests a non-unitary theory of linguistic semantics. On the one hand, there is an essentially conceptual theory that deals with the way in which elements of linguistic structure map onto traditional truth-conditional meanings; on the other, there is the procedural theory that deals with the way in which elements of linguistic structure constrain the computations that determine utterance interpretation. In other words, the former theory deals with the mental representation of information, while the latter is concerned with the mental processing of information.

The conceptual/procedural dichotomy can be readily appreciated through an examination of the distinction between *and* and *but*. For example, *He is poor but he is honest* has the same truth conditions as *He is poor and he is honest*. Blakemore would attribute this similarity to a shared conceptual-semantic mean-

ing. However, there is a well-known difference between *and* and *but*. Blakemore would analyze it as arising from an additional procedural-semantic component in the meaning of *but*: "the hearer is instructed to process the proposition *but* introduces in a context in which she can derive a proposition logically inconsistent with one assumed to have been derived from the proposition expressed by the utterance of the first clause" (Blakemore 1987:130). For example:

- (5) [A and B are discussing the economic situation and decide that they should consult a specialist in economics.]

A: John is not an economist. (→ We shouldn't consult him.)

B: But he is a businessman. (→ We should consult him.)

Since the implication of B's utterance contradicts that of A's utterance, it is proper to introduce B's utterance with a warning that it is to be processed as an alternative viewpoint, whence the appropriateness of *but*.

Our claim is that NPIs like *ever* and *any* have both conceptual and procedural meanings, just as *but* does: specifically *ever* and *any* require the utterance containing them to be processed in what we shall call the COGNITIVE STRUCTURE OF NEGATION (CSN). This expression designates a mental state in which a proposition is juxtaposed with contradictory assumptions. In other words the cognitive structure of negation is essentially the same cognitive context to which we alluded in the foregoing discussion of *but*. This claim will be explained and motivated in the subsequent sections.

3 THE COGNITIVE STRUCTURE OF NEGATION

Let us next examine the semantics of a representative NPI, *ever* and a representative NPI trigger, *before*. We claim that there are two conditions on NPIs: one is Ladusaw's DE condition, and the other is the need for CSN.

3.1 Two conditions on NPIs in 'Before'-Clauses

The following is a brief review of an analysis of the conditions on NPI usage advanced in previous studies (Yoshimura 1992, 1993, 1994). Readers familiar with research on this phenomenon will note that we do not follow the analysis offered by Linebarger (1980, 1987), which has been the focus of much recent attention in the literature. Our reasons for rejecting Linebarger's approach have already been set forth (Yoshimura 1993, 1994) and will not be repeated here. In the present study, we discuss only the conclusions of our previous research, which were basically that two constraints, one semantic and one pragmatic, were needed to account for the distribution of NPIs.

3.1.1 The Downward-Entailment (DE) Condition. We adopt as our first constraint on NPIs Ladusaw's DE condition (1979, 1980), since it readily captures

the fact that NPIs like *ever* may appear inside but not outside of the scope of triggers like *before* as shown in (6):

- (6) a. I sent a donation **before** I was *ever* asked to.
 b. #I *ever* sent a donation **before** I was asked to.

Ladusaw proposes the following necessary condition on NPIs from the viewpoint of Montague semantics:

- (7) THE DOWNWARD-ENTAILMENT (DE) CONDITION
 a. A negative-polarity item is acceptable only if it is interpreted in the scope of a downward-entailing expression. (Ladusaw 1980:13)
 b. An expression is downward-entailing if and only if it licenses inferences in its scope from supersets to subsets.

Ladusaw's DE condition correctly predicts the acceptability of NPIs in (1)–(3) as in (8)–(10):¹

- (8) a. Mary **isn't** a man. →
 b. Mary **isn't** a father. [$\Rightarrow$ *not* is DE.]
 c. Chrysler dealers **don't** *ever* sell *any* cars *anymore*. [= (1)]
 (9) a. They run away **before** men come. →
 b. They run away **before** fathers come. [$\Rightarrow$ *before* is DE.]
 c. John will steal back into the audience **before** *anyone ever* notices his absence. [= (2)]
 (10) a. **If** a man comes, we will be saved. →
 b. **If** a father comes, we will be saved. [$\Rightarrow$ *if* is DE.]
 c. **If** I *ever* see *any* of you around here again, I will call the police. [= (3)]

Note that the denotation of *father* is a subset of that of *man*. If a sentence containing the word *man* entails a sentence identical to the first except for the substitution of *father* for *man*, then *man/father* is in the scope of a DE expression. The NPIs in the (c) sentences of (8)–(10) are acceptable, since *not*, *before*, and *if* are DE expressions, as shown by the entailment from each (a) sentence to the corresponding (b) form.

However, Ladusaw proposes the DE requirement only as a partial condition on NPI acceptability. He cannot explain cases in which NPIs are unacceptable, even though they occur in the scope of a DE expression, as in (11)–(13):

- (11) #He brushed his teeth **before** he *ever* went to bed.
 (12) #John was a respected businessman **before** he killed *any* homeless people.
 (13) #**If** he *ever* takes *any* medicine, he will feel better.

¹For more detailed information about DE-ness and its relation to NPI licensing, see Yoshimura (1993) and the references cited therein.

This theory requires some further condition to filter the set of NPI usages which pass the DE condition down to the set actually allowable as English utterances. We shall claim that this condition is the need for the CSN.

3.1.2 *The Need for a Contrastive Assumption.* When we consider sentences including *ever*, one characteristic comes to dominate our attention: its pragmatic function.

(14) I lost my ticket **before** I (*ever*) got to the station.

Sentences like (14) have the same truth conditions with or without *ever*. This fact suggests that *ever* in the scope of *before* fulfills some pragmatic function. We claim that it is to intensify order-of-event readings.

Observe the following detective-story-like exchange:

(15) Suspect: I met her and decided to accompany her here.

Detective: According to the station master, you had already purchased a ticket the day before. **So I submit that you were coming here before you *ever* met her!**

The last sentence in (15), which is a typical usage of *ever*, is a statement which intensifies the temporal sequence of two events. The testimony of informants to the effect that utterances with *ever* are more appropriate than ones without it in contexts where one intends to intensify the temporal sequence of events suggests that *ever* plays a role as an intensifier of the trigger *before*.

Now, for *ever* to be put to use as an order-of-events intensifier, there must be some reasonable doubt about the sequence in which the described events occurred. In other words, for *ever* to be used felicitously there must be some accessible, contrasting assumption about the stated order of events. Consider (16)–(18):

(16) #He brushed his teeth **before** he *ever* went to bed. [= (11)]

(17) #He was quite a playboy **before** he *ever* got married.

(18) #Jane took it down **before** she *ever* forgot it.

All of the above seem inappropriate, because the contrastive assumptions ‘brushing one’s teeth after going to bed,’ ‘becoming a playboy after getting married,’ and ‘taking it down after forgetting it’ are usually hard to access, because they run counter to normal experience.

We can test the accuracy of the above explanation by altering the surrounding discourse context. Reconsider (16) inserted into the following discourse fragment:

(19) The accused’s alibi depends on the preposterous claim that he brushed his teeth while in bed; however, the eye-witness testimony of the butler proves that **he brushed his teeth before he *ever* went to bed.**

The contrastive assumption 'brushing one's teeth after going to bed' has been introduced by brute force, and this is enough to render (16) natural. Similar observations hold for (17):

(20) A: Isn't it funny that he became such a playboy only after getting married?!

B: You've got it all wrong: **he was quite a playboy before he *ever* got married.**

Once the unusual idea of becoming a playboy only after getting married is established in the discourse, (17) comes to be quite acceptable. As for (18), it is probably irreparable, due to the apparent practical impossibility of taking something down that one has forgotten. The state of affairs seen in the foregoing data is just as is expected on our analysis and therefore supports the supposition that the occurrence of *ever* is dependent on the availability of a contrastive assumption.

3.2 *Parallelism with Explicit Negation*

The contrastive assumption required by *ever* in the scope of *before* is parallel to the one required by explicit negative sentences. Givón (1978:109) claims that "... negatives are uttered in a context where corresponding affirmatives have already been discussed, or else where the speaker assumes the hearer's belief in—and thus familiarity with—the corresponding affirmative." Consider (21) and (22), where the (a) and (b) paraphrases represent the literal and metaphorical readings respectively:

- | | | |
|-------------------------|------------------------------------|-------------------|
| (21) John is a fox. | a. 'John is a canine fox.' | <i>False</i> |
| | b. 'John is a cunning person.' | <i>True/False</i> |
| (22) John is not a fox. | a. 'John is not a canine fox.' | <i>True</i> |
| | b. 'John is not a cunning person.' | <i>True/False</i> |

Where the referent of *John* is known to be a human being, (21a) is certainly false, while (22a) is true. In contrast, human beings either may or may not be cunning, so the truth values of the (b) sentences above could go either way. What is significant here is the fact that, while (22) is definitely true on the literal reading, it is infelicitous from a pragmatic point of view. Givón's foregoing claim readily explains this state of affairs: for a negative proposition like (22a) to be appropriate, the affirmative in (21a) must have been previously stated or assumed. However, we can scarcely expect (21a) to be true. In contrast, (22) is pragmatically felicitous on the metaphorical reading, because the corresponding affirmative, (21b), is plausible as a prior assumption.

In Givón's terminology, the pre-existing assumption of an affirmative constitutes a GROUND on which the corresponding negative may be superimposed as a FIGURE. We will call this mental structure the cognitive structure of nega-

tion. Notice that this is exactly what we need in processing utterances including NPIs. In order to establish this line of thought on a firmer theoretical foundation, we turn next to an attempt to define the above mental structure from the relevance-theoretic point of view.

3.3 *Definition of the Cognitive Structure of Negation*

Here, we would like to show that the figure/ground mental structure described by Givón, which we shall call CSN, is characterized by a contradiction which leads to a cancellation of an existing assumption. Furthermore, we shall see that the word *but* plays a role as a marker of CSN.

Let us first consider some basic notions from relevance theory. Sperber and Wilson claim that the intention of speakers is to modify the COGNITIVE ENVIRONMENT of hearers, i.e., their representation of the world. The cognitive environment consists of a collection of logical forms representing ASSUMPTIONS, each associated with a confidence rating. Modifications to the cognitive environment in the form of deletions or additions of logical forms or alterations of confidence ratings are called CONTEXTUAL EFFECTS and result from the interaction of new information with existing assumptions. This interaction can take three forms; (a) combining with the context to yield contextual implications; (b) strengthening existing assumptions; or (c) contradicting and eliminating existing assumptions. The third, (c), is the mental process which is relevant in negation.

The interaction of new and old information is mediated by the CENTRAL SYSTEM, comparable to the processor of a computer. The central system's job is to compare new logical forms delivered to it from the aural, visual, tactile, and other input systems with the logical forms already contained in the cognitive environment. The goal is to modify the cognitive environment in such a way as to fill it with logical forms representing the most trustworthy assumptions available, while maintaining consistency, in the sense of preventing the cognitive environment from ever containing two logical forms that contradict each other.

Sperber and Wilson further claim that hearers process utterances to achieve optimal RELEVANCE. Relevance is a function of contextual effects and the PROCESSING EFFORT which is needed to produce them. Other things being equal, the more contextual effects the information has, the more relevant it is; and the more processing effort it requires, the less relevant it becomes.

To the foregoing system we add our own bit of special nomenclature. It is convenient to have a concept representing a state of the cognitive system at a particular point in time; to this end we define a COGNITIVE STRUCTURE to be a pair (φ, E) where φ is the proposition most recently input to the central system, and E is the set of assumptions currently stored in the cognitive environment.

With this brief review in hand, let us attempt to situate Givón's figure and ground within relevance theory. The figure should probably be identified with the logical form being processed in the central system at any given time. The ground would correspondingly be the cognitive environment.

[A and B are discussing the economic situation and decide that they should consult a specialist in economics.]

A:	John is not an economist.	PREMISE
	If John isn't an economist, then we shouldn't consult him [=John].	PREMISE
	We shouldn't consult John.	CONTEXTUAL IMPLICATION
B:	But he is a businessman.	PREMISE
	If John is a businessman, then we should consult him [=John].	PREMISE
	We should consult John.	CONTEXTUAL IMPLICATION

Figure 1: Blakemore's Analysis of *But*

The figure and ground discussed by Givón would then be a cognitive structure where the cognitive environment contains a logical form that contradicts a newly input assumption in the central system, as in (23):

- (23) THE COGNITIVE STRUCTURE OF NEGATION (CSN)
 $(\varphi, \{\dots, \psi, \dots\})$ where the logical forms φ and ψ lead to a contradiction.

The cognitive structure schema in (23) is what we have already referred to as the cognitive structure of negation (CSN). What we previously called the contrastive assumption corresponds to ψ or else to some implicatum thereof. For the case that Givón discusses, φ in the schema above would be the logical form of a negated sentence, perhaps, though not necessarily, $\neg\psi$.

Next, we will now see that CSN is useful beyond the analysis of overt negation. For instance, CSN is important for Blakemore's analysis of *but*, as set forth in the very beginning of this paper. Recall example (5), elaborated in figure 1: Let us assume that after A's utterance the logical form corresponding to its contextual implication *We shouldn't consult him* comes to be in the cognitive environment of both the speaker and hearer. Now consider A's cognitive structure after B's utterance.

- (24) (John is a businessman, $\{\dots, \text{We shouldn't consult John}, \dots\}$)
 $\Downarrow$
 (We should consult John, $\{\dots, \text{We shouldn't consult John}, \dots\}$)

Given the contextual implications of B's utterance, we see that the current contents of the central system, taken together with an entry in the cognitive environment, leads to a contradiction, viz. 'We should consult John, and we should not consult John.' Thus, if we restate Blakemore's generalization in our own terms, *but* is acceptable only if the proposition it introduces is processed in CSN. With the connection between *but* and CSN established, we may interpret this word as

an indicator of CSN, and thereby construct semantic tests.

Let us now restate our second condition in terms of CSN:

(25) THE COGNITIVE STRUCTURE OF NEGATION (CSN) CONDITION

An NPI is acceptable only if the proposition expressed by the utterance containing it is processed in the cognitive structure of negation.

Since *but* and NPIs are assumed to imply that the proposition in question is processed in CSN, we have an opportunity to check a prediction. If a proposition is not processed in CSN, then neither *but* nor NPIs should be acceptable. This is exactly what we find:

- (26) a. John says that he finished washing up before retiring for the night.
 (#*But*) **he brushed his teeth before he (#ever) went to bed.**
- b. John says that he finished washing up while in bed. *But he brushed his teeth before he ever went to bed.* [cf. (11)]
- (27) a. We hope for his recovery. (#*But*) **if he (#ever) takes (#any) medicine, he will feel better.**
- b. We wish him only pain and suffering. *But if he ever takes any medicine, he will feel better.* [cf. (13)]
- (28) a. I hear you often come around here. (#*But*) **if you (#ever) come this way, be sure to visit me.**
- b. I know you rarely come around here. *But if you ever come this way, be sure to visit me.*

In this section we have sought a concrete definition for our second condition on NPIs. We found a useful foundation in the notion of CSN and observed that this approach led to convergence with analyses of negation and *but*.

4 METALINGUISTIC NEGATION

Now let us turn to an examination of the problem of metalinguistic negation from the perspective of procedural semantics. In fact, we shall propose that the conceptual semantic contribution of utterances featuring metalinguistic negation is empty and that their meaning amounts to a procedural instruction to the cognitive processor. After setting forth this analysis, we shall provide motivation for it by demonstrating that one of its automatic consequences is an explanation of unacceptability of NPIs in the scope of metalinguistic negation, a long-standing problem for most approaches.

4.1 The Basic Phenomena of Metalinguistic Negation

Horn (1985) proposes a dichotomy of descriptive negation and metalinguistic negation as an example of pragmatic ambiguity and claims that '[examples of

metalinguistic negation] all involve the same extended use of negation as a way for speakers to announce their unwillingness to assert something in a given way, or to accept another's assertion of it in that way. . . [Negation] can be a descriptive truth-functional operator, taking a proposition *p* into a proposition *not-p*, or a metalinguistic operator which can be glossed "I object to *u*," where *u* is crucially a linguistic utterance rather than an abstract proposition' (1985:135–136). In Horn's terminology, metalinguistic negation denies the assertability of some previous utterance.

We will review the basic phenomena that constitute metalinguistic negation and demonstrate that NPIs fail to occur in this environment.

4.1.1 Pronunciation Correction. One common type of metalinguistic negation concerns phonetic representation and inflectional morphology, as in (29):

- (29) A: You [mĩʔənɨjd] to solve some of the problems yesterday, didn't you?
 B: I *didn't* [mĩʔənɨj] to solve some of the problems—I [mænɨjd] to solve some of the problems. [adaptation of Horn's (18a) (1985:132)]

A related use of negation is found in the French example (30), where the ungrammatical gender and the woeful accent are brought within the scope of negation:

- (30) A: Esker too ah coo-pay luh vee-and?
 B: Non, je n'ai pas 'coo-pay luh vee-and'—J'ai coupé la viande.
 (Horn 1985:133)

NPIs are not compatible with this type of negation as shown in (31):

- (31) A: You [mĩʔənɨjd] to solve some of the problems yesterday, didn't you?
 B: I *didn't* [mĩʔənɨj] to solve {some/#any} of the problems—I [mænɨjd] to solve some of the problems.

4.1.2 Register or Style Correction. Another type of metalinguistic negation concerns register and style, as in the following examples:

- (32) A: The agency whacks pinko troublemakers.
 B: The agency doesn't 'whack pinko troublemakers'—it neutralizes anti-American influences. [cf. (4)]
 (33) Johnny: Grandma is feeling lousy.
 Mother: Grandma isn't 'feeling lousy,' Johnny, she's indisposed.
 (Horn 1985:133)

This type of metalinguistic negation doesn't allow NPIs to appear in its scope, either, as shown in (34):

- (34) The agency doesn't 'whack (#any) pinko troublemakers'—it neutralizes anti-American influences. [= (4)]

(35) A: You resemble him. You are his daughter, aren't you?
 B: I'm not his daughter—he's my father. (Wilson 1975:152)

(36) For a pessimist like him, the glass isn't half full—it's half empty.
 (Horn 1985:133)

(37) #I'm not his daughter *at all*—he's my father.

²For precise definitions, see Linebarger's immediate scope constraint (1987:338) and her negative implicature theory (ibid.:346).

- | | |
|---|------------|
| (40) $\neg$ TRUE(I managed to solve some of the problems) | [cf. (29)] |
| (41) $\neg$ TRUE(The agency 'whacks pinko troublemakers') | [cf. (32)] |
| (42) $\neg$ TRUE(I am his daughter) | [cf. (35)] |

For (40)–(42) to obtain, the parenthesized formula must in each case be false. However, in (29), it is true that the speaker managed to solve some problems; in (32), it is true that the agency kills pinko troublemakers; finally, in (35), it is true that the speaker is the daughter of the referent of *his*. These examples drive home the point that metalinguistic negation does not invert truth values.

The previous assertion leaves us with the responsibility of explaining (38), where the truth values are indeed inverted; e.g., in (38a) the referent of *she* does not help. We claim that the forms in (38) are not in fact examples of metalinguistic negation. Rather they are echoic responses that employ descriptive negation. However, NPIs are generally licensed by descriptive negation. The reason that they are not acceptable in (38) stems from the fact that the NPIs lie in the portions of the utterance which are presumed to be literally carried over into the echoic responses from the original affirmative utterances. Unfortunately, such simple affirmative sentences cannot support NPIs, so native speakers readily perceive that there can be no well-formed prior utterance for the forms in (38) to echo, whence their unacceptability.

To the best of our knowledge, there is no analysis which has succeeded in explaining the failure of NPIs in the scope of metalinguistic negation. In the following sections, we will provide a procedural analysis of metalinguistic negation and show that it correctly predicts the incompatibility of NPIs with metalinguistic negation.

4.3 A Procedural Semantic Analysis

The foregoing observations revealed that metalinguistic negation doesn't affect truth-conditional meanings. This suggests that metalinguistic negation shouldn't have a conceptual meaning but rather only a procedural one. Furthermore, we would like to propose that metalinguistic negation warns the cognitive processor that the pre-negation utterance is somehow problematic and instructs the hearer to search for a means of appropriately modifying the cognitive environment. Therefore metalinguistic negation can be formalized as in (43):

- (43) METALINGUISTIC NEGATION
 $(\emptyset, \{\dots\})$
 The pre-negation utterance (i.e., the form the utterance would assume, if it were not negated) is problematic, so search for a means of appropriately modifying the cognitive environment.

The symbol $\emptyset$ represents an empty explicatum, because metalinguistic negation doesn't convey anything on the conceptual-semantic level. Rather its semantic content is to be found solely on the procedural-semantic level. We represent the

procedural-semantic content with an instruction written out below the foregoing cognitive structure. No details of the contents of the cognitive environment are depicted in (43), because we assume that they are not directly involved in the determination of meaning here. In sum, metalinguistic negation is simply an invitation to the hearer to perform an abduction to discover what aspect of a linguistic form is deemed inappropriate.

We are considering here inferences based on the form of an utterance, which I take to be uncontroversially allowable under relevance theory. There can be little doubt, that upon hearing an utterance, one generally retains at least temporarily the knowledge that the utterance was delivered in a particular form. This is one of the inevitable cognitive effects of a speech event, though it is most often not the primary cognitive effect that the speaker wishes to bring about in the hearer. Nonetheless, assumptions about utterance form are surely available for inference. Also one's knowledge about one's language—e.g., about the connotations of a given word—are also undeniably accessible and applicable to the inference task to which metalinguistic negation gives rise.

Let us consider the procedural instruction in (43). Its form is purposefully vague, because we feel it has to be in order to fit the variety of interpretations that are admitted by metalinguistic negation. When the procedural instruction in (43) asserts that the pre-negation utterance is 'problematic,' a variety of defects may be at issue. For instance, the form *I'm not his daughter* in (35) points out an unfortunate social attitude, implying that daughters are not to be identified as derivatives of their fathers. Also, the form *Grandma isn't feeling lousy* in (33) points out a sociolinguistic infelicity.

The procedural instruction in (43) is also vague about how the cognitive environment is to be modified. However, this reflects the fact that the search for appropriate modifications is in many cases open-ended and non-deterministic. Take the form *I'm not his daughter* in (35). The interpretation whereby this indicates that the hearer's identity should not be established derivatively on the basis of her father is only one possibility. Another might be that the individual in question doesn't deserve to be called one's 'father.' In most cases of metalinguistic negation that are cited in the literature, the interpretation does not become clear until a follow-up comment is provided, such as *He's my father* in (35).

As for how one actually modifies the cognitive environment, the procedure may take several forms, of which two are (a) searching for a more relevant substitute, e.g., *He is my father* in (35), and (b) searching for reasons why the previous utterance was problematic, e.g., the conclusion in (32) that terms like *whack* and *pinko* are too provocative for CIA agents to risk using.

Let us try to figure out what is happening when we process an utterance featuring metalinguistic negation, such as (32) or (35). Figure 2 shows the processing procedure for (32), repeated here:

- (44) A: The agency whacks pinko troublemakers.
 B: The agency doesn't 'whack pinko troublemakers'—it neutralizes anti-American influences. [=(32)]

A's utterance:

"The agency whacks pinko troublemakers."

↓

B's 1st clause:

$(\emptyset, \{\dots, \text{The agency whacks pinko troublemakers} = \varphi, \dots\})$

(Metalinguistic Negation) The pre-negation utterance is problematic, so search for a means of appropriately modifying the cognitive environment.

[*The hearer begins to search for an appropriate modification to the cognitive environment.*]

↓

B's 2nd clause:

(it neutralizes anti-American influences, $\{\dots, \varphi, \dots\}$)

↓

(CIA agents must watch their mouths, $\{\dots, \varphi, \dots\}$)

Figure 2: Processing of Metalinguistic Negation for (32)

The various cognitive structures seen in figure 2 are representations of successive states in the central system of interlocutor A. Let us assume that A's initial utterance represents an assumption that is stored in A's cognitive environment. Thus, when B's first clause is uttered, that assumption—to which we bind the variable φ for convenience of representation—is indeed present in A's cognitive environment, as depicted in the first cognitive structure. In accordance with the present analysis, the first clause of B's utterance, which bears metalinguistic negation, enters A's central system with an empty conceptual content, represented as $\emptyset$, and with the instruction labeled 'metalinguistic negation' in figure 2. Then the second clause of B's utterance enters the central system and highlights the problematic area. A comparison of *whacks pinko troublemakers* with *neutralizes anti-American influences* eventually leads to the realization that CIA agents must watch their mouths. This implicatum is depicted in the final cognitive structure, which represents the moment when the central system reaches this conclusion. Notice that φ —the assumption 'The agency whacks pinko troublemakers' is *still* present in A's cognitive environment. This is because metalinguistic negation does not 'refute' as does descriptive negation; rather it merely invites the sort of abduction based on utterance form that we just described.

As summarized in figure 3, the instance of metalinguistic negation in (35), repeated below, will be processed in the same way:

(45) A: You resemble him. You must be his daughter.

B: I'm not his daughter—he's my father.

[=(35)]

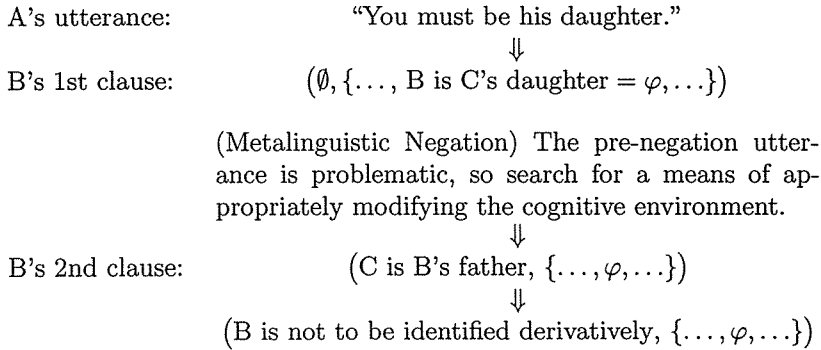


Figure 3: Processing of Metalinguistic Negation for (35)

As before the cognitive structures in figure 3 depict successive states of A's central system during the processing of B's replies. A's original utterance is written out at the top of the figure, and we assume that A is committed to the truth the assumption 'B is C's daughter,' which basically represents A's assertion, after pronominal resolution. The subsequent line in the figure shows this assumption contained in A's cognitive environment at the time at which the reply featuring metalinguistic negation is undergoing processing. Example (45) is a case where the hearer probably doesn't know what to do about the instruction provided by the metalinguistic negation, and the problem is not resolved until another, explanatory utterance is provided. At the stage where the first clause of B's utterance is being processed, the space of possible problems which A must search through is open-ended, but she continues the processing based on abduction. Soon after the latter part of B's utterance is provided, A understands the point which B regards as a problem. However, at no time throughout this procedure does A ever abandon the assumption φ , 'B is C's daughter,' since that is not purpose of the metalinguistic negation.

Let us conclude this section by stressing the two most essential points about this analysis of metalinguistic negation. First, since metalinguistic negation doesn't affect truth conditional meanings, we presume that utterances featuring it have an empty conceptual-theoretic content. The other point is that metalinguistic negation carries a procedural-theoretic content consisting of a warning that the pre-negation utterance is problematic and that the cognitive processor must take some action. In the following section we shall see that the first of these points explains the incompatibility of NPIs with metalinguistic negation.

4.4 CSN and a Solution to the NPI Problem in Metalinguistic Negation

The foregoing analysis of metalinguistic negation interacts with our conditions on NPI occurrence to predict automatically that the two phenomena are incom-

patible. Recall that NPIs may occur only in cases of CSN, where the conceptual content of the NPI-bearing clause gives rise to a contradiction with the contents of the cognitive environment. Now, given that the lack of any effect on truth conditions in the case of metalinguistic negation led us to conclude that the conceptual content of such utterances was null, it follows straightforwardly that the sort of contradiction that constitutes CSN simply cannot arise. Hence, metalinguistic negation cannot provide an environment in which it is possible for NPIs to occur. Since the problematic incompatibility of NPIs and metalinguistic negation is predicted without the need for any additional stipulations, this constitutes motivation for the present approach.

5 CONCLUSION

In this paper we have examined the conceptual/procedural dichotomy in semantics and shown that it lends itself to the analysis of constraints on NPIs and also to the explanation of metalinguistic negation. We are encouraged to think that this approach to the two problems is on the right track by the observation that the previously problematic fact that the two phenomena are incompatible was predicted automatically. In conclusion, the apparent success of this analysis underscores yet again the utility of positing a procedural level in the semantics.

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