

A Discourse-Semantic Account of Topic and Comment

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Abstract

It is argued that the topic-comment distinction is semantic and not pragmatic. It must therefore be accounted for in semantic theory. This paper presents a principled account of topic-comment modulation in terms of *Discourse Semantics* (Seuren 1985, 1994).

1 The topic-comment problem

The topic-comment problem dates back to about 1850, when mainly German philosophers and philologists discovered that the traditional Aristotelian definition of a proposition as consisting of a subject term and a predicate (a proposition consists of a predicate that assigns a property to a given entity, denoted by the subject term), if applied to sentences in discourse, often assigns subject and predicate status to sentence constituents that are not the grammatical subject and predicate. This led to a long-lasting and widespread debate about distinctions between logical, psychological and grammatical subjects and predicates, a debate which ended inconclusively about 1930 as a result of empirical and definitional uncertainties and confusions (see Seuren 1998:120-33).

Nowadays, this debate has been largely forgotten. The only result still known, and in some circles actively studied, is the topic-comment distinction. Around 1930 it was proposed, mainly by the Czech scholar Vilém Mathesius (Mathesius 1928, 1939), to introduce a new terminology for the distinction between on the one hand that which is given in a particular discourse and about which a question has arisen, and, on the other, that which is said in the way of new information. Mathesius felt that it is confusing to speak here of subject and predicate, as had been the custom. The terminology most commonly used nowadays, in the wake of Mathesius's innovations, is 'topic' for the Aristotelian subject term, and 'comment' for the Aristotelian predicate. Yet great unclarity has existed since then about the nature, structure and the empirical basis of the topic-comment distinction.

Besides the methodological problem of what data can be adduced to confirm or disconfirm any theory of topic and comment, two main problems present themselves in this context. First there is the *grammatical*

problem: more often than not the grammatical structure of a sentence fails to reflect its topic-comment structure as it results from and fits into on-going discourse. If we accept the reality of topic-comment structure, the grammatical problem consists in locating it in the grammatical structure of sentences, where it seems to be only weakly represented by means of word order and intonation.

Then, there is the *semantic problem*. This consists, first, in separating in a consistent and principled way the purely truth-conditional contents of a sentence from what is expressed by its discourse-dependent topic-comment structure. Secondly, and especially for discourse semantics, it has to be specified in what way the topic-comment modulation is to be expressed in discourse representations. In this paper we shall address the latter, semantic problem, neglecting the grammatical problem.

2 Discourse Semantics

Recent developments in semantics, in particular those related to the discourse-dependent, incremental character of linguistic comprehension and the realisation that semantic theory has no choice but to be an investigation of cognition, have created a context in which the topic-comment problem may be brought nearer to a solution. In this paper I shall present an outline program for an integrated account of topic-comment structure and truth-conditional content in terms of incremental or discourse semantics.

Discourse Semantics is motivated mainly by phenomena of anaphora and of presupposition, which have both proved indigestible to the logic-based and non-cognitive forms of model-theoretic formal semantics that were current till recently; see (Seuren 1998:388-404) for a detailed account.

The principle of Discourse Semantics (Seuren 1985) is fairly simple. It aims at implementing the notion that each new sentence in a running discourse adds information to a given information store, called 'discourse domain' (DD), built up for the purpose of the discourse at hand as a result of earlier uttered sentences and supported by available general and situational knowledge. The meaning of a sentence S is seen as the potential of S to add new information to any given DD and thus update it. In other words, the meaning of S is a function from DDs to DDs. The new information actually added by an uttered sentence S to the given DD is called the *increment* brought about by S, or *i*(S).

Discourse Semantics must specify the format and structure of DDs, as well as the computational method that will produce an increment from a

sentence, i.e., produce $i(S)$ from S . A central principle of Discourse Semantics is that the input to the incrementation function is not the surface structure of any given S but its so-called ‘deep structure’, which is at the same time its semantic analysis or SA. The grammar of the language in question defines the (transformational) relationship between the surface structure and the SA of each S (see Seuren 1996).

Discourse Semantics in its present form is strictly ‘object-oriented’. The DDs are organised in such a way that they consist of ‘addresses’ that represent (individual or complex) entities. The addresses contain, and are thus characterised by, the predicates that have been assigned to the entities represented by them during the discourse. To give a simple example, if there is a new sentence:

(1) Ann sold the car

there must already be addresses for Ann and the car, say a_1 and a_2 , respectively. (New addresses are introduced by means of existential statements: ‘There was a person called “Ann”’; ‘There was a car’.) In the current form of Discourse Semantics the addresses look as follows:

(2) a. a_1 : called “Ann”(a)
 b. a_2 : car(a)

Now it is the function of the definite determiners in the SA of (1) (i.e., the zero determiner and the article *the*) to select the addresses characterised by the predicates of the definite NPs concerned, i.e., *called “Ann”* and *car*, respectively. That done, the predicate *sell* is added to the two addresses in the appropriate way:

(3) a. a_1 : called “Ann”(a) | sell(a, a_2)
 b. a_2 : car(a) | sell(a_1 ,a)

(The vertical bar ‘|’ preceding the new increment ‘closes’ the open address. Open addresses correspond to existential sentences and thus have a truth value; closed addresses designate entities. For (3b), the closure bar serves to distinguish $i(\text{there was a car that Ann sold})$, which is an open address without closure bar, from $i(\text{there was a car. Ann sold it})$, i.e., (3b), which does have the closure bar.)

More machinery is needed, of course, for a more complete treatment. Tense and other operators must be dealt with, as well as quantification and other complex issues (see Seuren 1994). This, however, is less relevant here. What is relevant here is that the incrementation procedure as just sketched

takes as input a syntactically defined SA of the sentence without any topic-comment modulation. The question is: is this correct, and if not, what should be done about it?

3 The dynamics of discourse

Here we must answer two questions. First, what is the nature and central role of topic-comment modulation (TCM)? Then, is TCM a merely pragmatic phenomenon, or does it have to be accounted for in semantics?

We will start with the first of these two questions. It seems that the normal progress of discourse is driven by a 'game' of questions and answers. This insight goes back to some late 19th century participants in the Subject-Predicate debate referred to at the outset of Section 1, in particular (Lipps 1893) and (Stout 1896). In modern times it has been revived, notably in (Seuren 1985:297-304) and (Van Kuppevelt 1991). (The question-answer 'game' may be opened by what in the theatre is called a *feeder*, an utterance meant to set a discourse in motion without there being any anticipation of a question arising in the audience's mind.) The questions are usually not made explicit. Sometimes they are, as when a speaker says:

- (4) Some time before World War I the Titanic sank.
 When did the Titanic sink? It sank in 1912.

But normally the question is left out, as the speaker anticipates the listener's query. We then speak of an implicit question, to which the following assertion (which may be a new sentence or part of an ongoing sentence) is an answer. A less solicitous speaker might have said (5a) or even (5b):

- (5) a. Some time before World War I the Titanic sank. It sank in 1912.
 b. Some time before World War I, in 1912, the Titanic sank.

Note that the underlying 'entity' of the proposition expressed as 'It sank in 1912', or simply as 'in 1912', is *the time of sinking of the Titanic*. (We shall not go into the philosophical question of what kind of 'entity' this is, but simply accept the reification procedure underlying expressions such as *the time of sinking*.) The property assigned to this reified 'entity' is that it was in 1912.

Let us now consider again the example of sentence (1) above. Suppose sentence (1) is uttered in a context where the (implicit or explicit) question is 'Who sold the car?' Then the answer is the cleft sentence 'It is Ann who sold the car', or the pseudocleft 'Who sold the car was Ann'. According to

(Seuren 1996:310-23) this is realised at the level of SA as (6), which is input to the incrementation procedure:

(6) the x[x sold the car] SP_{ind} Ann

i.e., ‘the specification of the x such that x sold the car is Ann’ (more is said about the predicate SP_{ind} below). Now the subject term is ‘the x[x sold the car]’, and ‘ SP_{ind} Ann’ is the predicate. Sentence (1) then has the TCM represented in (6), and will be accented by means of an intonational peak on the grammatical subject term *Ann*, which is the predicate in its SA (6).

According to (Seuren, l.c.), the structure of the TCM (6) runs parallel to the underlying grammatical structure of the question to which it is an answer:

(7) the x[x sold the car] SP_{ind} WHO?

The TCM (6) merely provides the value *Ann* for the open place ‘WHO?’ which indicates that a value is required in this position (see below).

We now define the *topic* of a sentence as: *that element in a situation whose specific identity is open to question*. The comment then provides the answer by specifying the element in question. Below we shall translate this into the language of mathematical functions, and say that the comment provides the value for an argument in a function, while the topic states the function and the argument.

It thus makes sense to propose a separate structural analysis for the *genesis* of a proposition, as opposed to its actual truth-conditional *substance*. The process of genesis, i.e., the progress from what has been established in the discourse to what is added as new information, produces the TCM-structure, which contains, besides the truth-conditional substance, also some information about the process that gave rise to the proposition in question.

At this point we need some terminology. Let us call a merely truth-conditionally presented proposition a *flat proposition* (fprop), while its topic-comment modulated variants, each representing a particular history of its genesis, will be called *modulated propositions* (modprop). A flat proposition is like a picture: it represents a mere state of affairs, and cannot express anything like the topicalisation found in TCM-structures. A modprop thus consists of an fprop plus a topicalisation. Its expression at SA-level is a TCM-structure as exemplified in (6).

A TCM-structure like (6) conveys all the information conveyed by the corresponding flat proposition, i.e., (3a,b). In addition, however, it conveys information about the genesis of the flat proposition in the actual discourse

or context in which it occurred. It does so by specifying the identity of the element that was the object of querying, i.e., the person called *Ann*.

4 Is TCM pragmatic or semantic?

Now we come to the second question: is TCM merely pragmatic or semantic in nature? Standard model-theoretic formal semantics, which maintains that semantics should deal with truth-conditional contents only, has always considered topicalisation phenomena non-truth-conditional, and therefore non-semantic. As a result they were relegated to pragmatics, the study of the paraphenomena of usage. In our terminology this means that model-theoretic semantics deals merely with flat propositions. The same goes for existing forms of Discourse Semantics, which so far merely processes flat propositions.

This restriction to fprops, however, is unwarranted. Certain predicates take clausal embeddings where the TCM-structure is essential for truth or falsity. It is perfectly possible, for example, for each of (8a,b,c) to be true while the remaining two are false:

- (8)
- a. John was surprised that ANN had sold the car
(he thought Ann was not a good saleswoman)
 - b. John was surprised that Ann had sold the CAR
(he thought Ann was too attached to it to sell it)
 - c. John was surprised that Ann had SOLD the car
(she normally gave away things)

This would not be possible if the *that*-clauses in (8a-c) were semantically equivalent. The conclusion is, therefore, that TCM does contribute to sentence meaning. This being so, Discourse Semantics must account for TCM, which means that the incrementation procedure must take the modulated proposition, not just the flat proposition, as input and deliver an increment value that reflects topicalisation. (A different argument for the semantic nature of TCM, based on the impossibility of negating cleft-sentences with loss of presupposition, is given in (Seuren 1985:300)).

Truth-conditional differences like those in (8) occur with predicates where expectation patterns play a role, as with *be surprised* or *expect*, or some form of evaluation, as with *good* or *bad*. A sentence like (9) is thus fully consistent:

- (9) It is fortunate that it was ANN who sold the car, but unfortunate that it was the CAR that was sold.

Further classes of cases may of course be found. Note, however, that not all predicates that take intensional embedding allow for such truth-conditional differences. Consider (10a,b):

- (10) a. John believes that ANN sold the car
 b. believes that Ann sold the CAR

Now it does not seem possible for the one to be true while the other is false. Yet they are felt to differ in meaning, an intuition which is reinforced by the observation that both (10a) and (10b) are ambiguous as to the scope of the topicalisation. (10a) can be analysed as either (11a) or (11b). (Note that (11a) may take on a metalinguistic interpretation in the sense of (Horn 1985) when (10a) is used to correct a previous speaker.)

- (11) a. the x[John believes that x sold the car] SP_{ind} Ann
 b. John believes that the x[x sold the car] SP_{ind} Ann

Analogously for (10b), and, for that matter, for (8a-c). We therefore conclude that TCM must be expressed in the incrementation value of a sentence, which means that we need the corresponding modprop as the $i(S)$ value of a sentence S . Even so, however, we also need as $i(S)$ the flat proposition. This is because the topicalisation element in a modulated proposition is superfluous, and therefore undesirable, in a purely extensional calculus of the truth value of any given proposition. A truth theory that takes an $i(S)$ as input and delivers a truth value with regard to any given situation can do with the flat proposition, without any TCM. (One should not be confused by examples such as those given in (8), where the modulation is inside an intensional context: for the truth calculus this means that it is wrapped up, in a Frege-like fashion, as the $i(S)$ of the embedded *that*-clause.)

Given this double need, we face the task of developing a theory that has both modulated and flat propositions as $i(S)$ for any given topic-comment modulated sentence in a discourse. The question is now how best to do that.

We must realise first that a modprop carries an availability presupposition (see Seuren 1985:297-8 for comment). Thus, (6) presupposes that someone sold the car. In the theory of Discourse Semantics, presuppositions are by definition incremented before their carrier sentences. Therefore, in this case, the sentence *Someone sold the car* must be incremented first. Given (2a,b), and well before (3a,b), a new address is thus added, standing for the SA of *Someone sold the car*:

- (12) $a_3 : \text{sell}(a, a_2)$

and the a_2 -address is updated as:

$$(13) \quad a_2 : \text{car}(a) \mid \text{sell}(a_3, a)$$

The new a_3 -address (12) makes it possible for later reference to be made to 'the car-seller'. The address (13) is thus to be read as: 'There was a car. Someone sold it'. Various cognitive factors may now prompt the question 'Who is/was the car-seller?', corresponding to the SA-structure (7) given above. This question we consider incremented as follows:

$$(14) \quad a_3 : \text{sell}(a, a_2) \mid SP_{ind}(a, ?)$$

where SP_{ind} is a predicate specifying the identity of the individual 'a' in 'sell (a, a_1)'. The question mark indicates that the value sought is not yet provided. It causes the processing machinery to be (partially) suspended until the value is provided (much in the way the machinery is (partially) suspended after the introduction of the disjunctive or-operator, which asks for a choice to be made between the two disjuncts). Now let the value be *Ann*. Then the answer to the question is *The one who sold the car is/was Ann* or *ANN sold the car*, incremented as:

$$(15) \quad a_3 : \text{sell}(a, a_2) \mid SP_{ind}(a, a_1)$$

The increment ' $SP_{ind}(a, a_1)$ ' is the DD-realisation of the modulated structure (6). It is this kind of increment that serves as the extension of the sentential object term under predicates like *be surprised*, as exemplified in (8) above.

At this point the DD is 'flattened'. We assume that now, i.e., after an incrementation specifying the identity of an address under the predicate SP_{ind} , the two addresses involved are conflated, all information being united under the address that serves as the identification value, in this case a_1 . As a result of this flattening operation, the a_3 -address disappears, and the result is as shown in (3a,b) above, which contains only 'flat' information and is thus fit as input for the truth calculus.

It thus makes sense to distinguish three stages in the process of linguistic comprehension and interpretation:

- the IS (information structure) stage, which operates with modprops;
- the DS (discourse-semantic) stage, which processes the incoming TCM-structure, first as a modprop then as an fprop;
- the TC (truth calculus) stage, which computes the truth value of a given DD-incremented fprop with regard to a given verification domain ('world').

Logic as standardly conceived of plays no part in this. Logical semantics consists in establishing a relation of truth or falsity directly between given linguistic structures (sentences) on the one hand and any 'world' on the

other. Logical semantics would thus be representable in Figure 1 below as a base line connecting ‘uttered sentence’ with ‘world’. But, as was correctly pointed out in (Ogden & Richards 1923:11) in connection with the famous semiotic triangle, that cannot be a causal and must therefore be a merely ‘imputed relation’. Therefore, if we are to reconstruct the *causal* machinery enabling humans to reach conclusions about truth or falsity we must restrict ourselves to the *causal* relations between the uttered sentence and the cognitive DD on the one hand, and between the DD and the world on the other, leaving out the base line.

The analysis given above can be represented schematically as Figure 1. The reader will notice that this is a further refinement of the semiotic triangle presented in (Ogden & Richards 1923:11) just mentioned. Ogden & Richards conflated speaker and hearer into one, both representing the ‘thought’ component expressed in and retrieved from the linguistic sign. If we project the Speaker of Figure 1 onto the Hearer, conflating Expression and Comprehension, accept the ‘imputed’ logical base line and sharpen the top side of the trapezoid into an angle we have, in effect, Ogden & Richards’ triangle again.

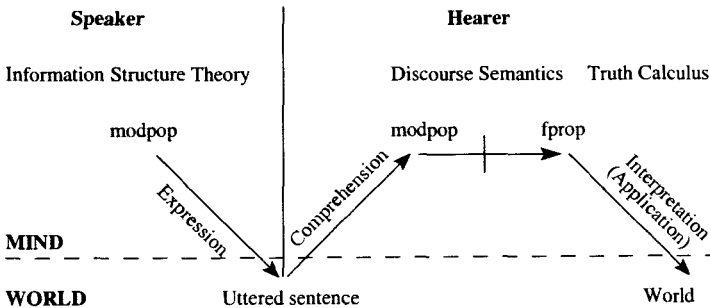


Fig. 1: *Discourse-semantic layout of speech process*

5 The comment-predicate SP_x

We will finally say a few words about the specific nature of TCM, in particular about the predicate SP_x , even if it must be admitted that this whole area is fraught with problems, most of which elude our powers of analysis. With this proviso, we posit that all cleft and pseudocleft sentences, and hence all TCM-structures of the type exemplified in (6), are characterised

by the main predicate SP_x , normally realised as the verb *be*. The specific use of this predicate is to specify values for function arguments. Thus, for example, the TCM-structure (16a), which may be regarded as an answer to the question (16b):

- (16) a. the X[Bert sold X] SP_{cat} a car
 [=Bert sold a car]
 b. the X[Bert sold X] SP_{cat} WHAT?
 [=What did Bert sell?]

provides an answer to the question what category the thing is that Bert bought. We may regard (16a) as providing the value for the discourse-determined situation at hand in the function 'what Bert sold' (cp. Scharten 1997:63). The variable x in SP_x is here filled in by *cat*, which makes it clear that what is asked for is not the identification of an individual, as in (6), but of a category of individuals. (The capital variable X ranges over sets. Likewise, the increment value of (16a,b) will necessitate a higher order notation, involving sets of individuals. But we shall leave this technical detail out of account here.)

Besides SP_{ind} and SP_{cat} we also have SP_{val} , which specifies the value of a function other than from situations to individuals or categories. For example, a sentence like (17a), with the SA (17b), specifies the temperature of the room in question, and (18a,b) specifies the cardinality of the set of John's children:

- (17) a. The temperature of the room is twelve degrees
 b. the x[the temperature of the room is x] SP_{val} twelve degrees
 (18) a. John has four children / The number of John's children is four
 b. the x[the cardinality of the set of John's children is x] SP_{val} four

(17) involves a function from rooms to temperature values, or, alternatively, a function from moments of time to temperature values (as in *The temperature of the room is now twelve degrees*). (18) involves a function from sets to cardinality values. In similar fashion cases can be analysed involving functions for names, telephone numbers, dates, etc.

As argued in (Seuren 1993) and (Scharten 1997), this shows the semantic, non-pragmatic, character of number specifications. In both the semantic and the pragmatic literature, sentences like (18a) are analysed as existentially quantified, and are accordingly taken to mean 'John has *at least* four children'. The much more obvious reading in which a value is assigned to the cardinality function for the set of John's children is entirely neglected,

owing no doubt to the general neglect of parameters and value assignments in standard formal semantics.

One notes that (17a) and (18a) are both analysed as if they were TCM-structures: the (b)-structures are entirely analogous to structures like (6) or (16a,b) above, but for the *SP*-predicate, which is *SP_{ind}* and *SP_{cat}* in (6) and (16a,b), respectively, but *SP_{val}* in (17b) and (18b). And it does indeed appear that (17a) and (18a) do not easily allow for TCM in the form of a cleft construction, with the value specified ('twelve degrees', 'four') as predicate/comment. The cleft sentences in (19) are definitely uneasy. With accentual peaks the sentences are clearly better, but then they invite a metalinguistic interpretation involving a correction of what has been said before:

- (19) a. ? * It is twelve degrees that the temperature of the room is / The temperature of the room is TWÉLVE degrees (not thirteen, as you said)
 b. ? * It is four children that John has / The number of John's children is FÓUR (not five, as you said)

In general it must be observed that, but for a few notable exceptions, existing grammatical as well as formal semantic theories almost totally neglect constructions involving the assignment of values to given parameters. This means that the whole area of measurable gradable adjectives like *broad*, *deep*, *high*, *heavy*, *far*, *hot*, *old*, etc., along with measure predicates like *weigh*, *cost*, *span*, *contain*, etc., has been left virtually untouched, which is a serious handicap for the study of topic-comment structure.

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