Context and Discourse

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Abstract

Current theories of context see context as composed of information that is localizable to individual utterances. Current theories of discourse grant that discourses have important global properties that are not so localizable. In this paper, I argue that context, even narrowly construed as whatever combines with a sentence to determine truth conditions, must have a discourse-global component. I identify a context-dependence phenomenon related to the linguistic concepts of topic and focus, isolate the pertinent feature of context, and show that this feature must be discourse-global in nature. I thus argue that context is as complicated as an entire discourse.

The notion of context, as it appears in everyday parlance, is extraordinarily plastic. We appeal to context, for instance, when we explain the referents of indexicals and demonstratives in reported speech, as in 'In that context, when he said 'that woman' he meant Monica'. A somewhat broader notion of context appears to be at work when we appeal to context to accuse someone of

misrepresenting a claim, as in 'That was taken out of context'. Perhaps an even broader one is used to explain why something like the humor of an utterance is missing, as in 'It was funny in context. You had to be there'.

This paper will investigate the nature of context. Rather than attempt to examine the whole range of what might be called context, it will be useful to narrow our focus. One role of context is to combine with a sentence to determine what proposition is expressed by an utterance of that sentence. You and I both say 'I am here', and context determines what proposition each of us expresses. To further narrow the focus, I shall take the notion of proposition expressed to be something like Grice's notion of 'what is said' (Grice, 1969), to exclude what is implicated, or other pragmatic effects dependent on the proposition expressed. This is not to say that what has been excluded is unimportant, but merely to focus on one particular aspect of context. To narrow the focus still further, I shall ignore any features of propositions beyond their truth conditions, without meaning to prejudice the matter of whether there are any such features. Context, as I shall discuss it here, is whatever satisfies the relation:

sentence + context $\longrightarrow$ truth conditions.[1]

To focus on context as whatever satisfies this relation is to focus on what we might expect to be the simpler aspects of context. If we were to study whatever satisfies the relation:

sentence + context $\longrightarrow$ humor,

we might expect something very complex, which could involve many utterances in a conversation, how they were said, why they were said, how they relate to one another, and perhaps much more. In contrast, when we look at the case on which I propose to focus, we might expect something much neater, involving few if any of these difficult conversational features. In this paper, I shall argue that even for the case of context as it affects truth conditions, this is not so. Even in this case, context has important features that cannot be separated from the entirety of the discourse in which an utterance occurs. In the end, I shall suggest that even for the relation *sentence + context*

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[1]I am borrowing the idea of identifying context as whatever satisfies the appropriate schema from Stanley and Szabó (2000).

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$\longrightarrow$ *truth conditions*, context is as complicated as an entire discourse; specifically, as complicated as a feature of a discourse as a whole that constrains whether or not the discourse is coherent.

1.   Philosophical Theories of Context

In arguing for my position, I shall be trying to address, in a small way, the question of the nature of context in general: the question of what sort of thing a context is. This is a familiar kind of metaphysical question philosophers ask; little different from the question that has been asked about, say, the nature of propositions. Such questions are always very difficult to address entirely in the abstract. To give mine some more substance, in what follows I shall pay attention to what fixes the context of a given utterance; in particular what about *discourse* fixes it. The strategy is to read off of this something about what context must be like. I shall identify a feature of context by looking at what fixes it. This is the same sort of maneuver one makes in trying to uncover the nature of propositions by studying what speakers may believe, for instance.

This maneuver is always delicate, and invites a couple of confusions. First, though I shall look closely at some linguistic data, the philosophical question with which I am concerned must be distinguished from the purely *descriptive* questions that are the primary focus of linguistics. The two are not wholly independent. One cannot give an adequate philosophical theory of context without taking into account the way context in fact works in natural language. Yet an accurate description of the ways certain sentences depend on context is not guaranteed to shed much light on the basic nature of context. Philosophical questions tend to demand something beyond merely descriptive answers. Second, the question I shall address is the one of the nature of context, not of how speakers *recognize* the contexts in which they find themselves. Confusion is especially invited here by my strategy of looking at how context is fixed. What fixes a context must not be confused with how speakers may figure out what context they are in. My ultimate goal is to address the *constitutivity* question, not the question of description or application.

This is a fundamental question for the philosophy of language, but it is also one with which philosophers quite generally need to be concerned. More and more, the notion of context has become a part of the philosopher's toolkit, and not just the philosopher of language. For instance,

so-called 'contextualist solutions' to a great range of problems have been considered. Many of these proposals rely heavily on linguistic examples for their support and to lend intuitive plausibility. Even so, as one might expect with such difficult problems as skepticism, we encounter in these areas conflicting or unclear judgments and intuitions. Hence, a complete defense of such an application of context will have to rely not just on some intuitions about special cases, but on a philosophically substantial theory of the nature of context, which can be used to adjudicate conflicting judgments. I shall offer here a contribution to this theory.

With the nature of the question at hand in mind, let us see what can be said to answer it. There are two leading ideas about the nature of context, which appear in various forms in the literature. I shall sketch relatively straightforward forms of each, ignoring for discussion purposes some sophisticated modifications that have been proposed over the years.

The first is what I shall call the index theory of context. This theory takes as its starting place some common descriptive assumptions. It is assumed that for each sentence, there is a suitable structure which is a preliminary semantic representation of the sentence, appropriate for semantic interpretation. I shall follow the practice of calling this the sentence's *logical form* (LF), though the details of current theories of LF will not be at issue here. Constituents of LFs are assigned *semantic values*, and up to effects of context, truth conditions are determined compositionally from semantic values. It is further assumed that context affects truth conditions in a specific way. Some semantic values may have parameters, and context sets the values of these parameters.[2] For example, the semantic value of the indexical *I* may simply be a parameter, which is set by context to be the speaker of an utterance. In more formal treatments, this approach often takes context to be a primitive *c*, and assumes that for each parameter in a semantic value that needs to be set by context, there is an appropriate function $f(c)$ whose value sets that parameter.[3]

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[2]It is not crucial to the view that parameters only be associated with lexical items. For example, it may be argued that genitive constructions introduce parameters, to account for the context-dependence of the possession relation. What is important to the view is that contextual parameters are *sentence-internal*: they are introduced by the semantic values associated with either lexical items or other constituents at LF.

[3]An early proposal along these lines may be found in Cresswell (1973). This approach is taken in the textbook of Chierchia and McConnell-Ginet (1990).

As it stands, this is little more than some formalisms for describing effects of context. As such, it is beyond reproach. But as a philosophical theory of the nature of context, it is a non-starter. Context is the unanalyzed thing which provides whatever our descriptive efforts require. We know no more of context than that it does whatever it does. This cannot fail to be true, but cannot shed any light on the basic nature of context.

There is a way to turn this formalism into a substantial philosophical theory. Observe that, according to the assumptions made, the basic function of context is to set parameters. The most direct way to explain this is to see contexts as bundles of parameter values. According to this view a context is an *index*: a tuple of features that are the values of specific parameters. Each index looks something like a tuple:

$$\langle \text{speaker}, \text{hearer}, \text{location}, \text{demonstrated object}, \text{quantifier domain}, \dots \rangle.$$

Let us call the theory which says contexts are indices the *index theory of context*.

Much of the philosophical content of the index theory must come from an elaboration of what the coordinates of an index should be. One approach is something like this. Utterances are events. As such, they have some characteristic features: they have agents and patients, they occur in specific places at specific times, and those places and times contain prominent objects. Among the characteristic features of utterance events are some that are linguistically efficacious. An index is a representation of those features. For example, any utterance event has a speaker, and that is something our language is set up to exploit by having the term *I*. Hence an index has a parameter for speaker, and the semantic value of *I* is set to it.[4]

I have been rather loose about nature of the 'characteristic features' of utterance events. Intuitively, who is speaking is one, whereas that a bit of dust is moving on the other side of the

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[4]The index theory grew out of work in intensional logic by Montague (1968), and was developed by Lewis (1970) and Kaplan (1989b). Not all of them specifically articulate the index theory as a philosophical position like the one I have sketched, but I do think that many philosophers took their work as having philosophical import. The criticism of Lewis in Cresswell (1973), basically that Lewis's indices must be open-ended or absurdly long, is most effective if taken as directed against a philosophically explanatory theory. The idea that parameter setting is the basic notion for the theory of context can be found in Kaplan (1989a). Kaplan (1989b) has stressed that a context is not to be identified with an utterance event, but rather thought of as a collection of information that might be provided by such an event.

galaxy is not one. But it is not quite right to suppose that the characteristic features are restricted by what is near to the speaker in space and time. If we are looking up to the night sky, and you say 'That is a star', it appears that we include among the prominent objects something which is very far away and may no longer even exist. However, I shall not attempt to spell out the view further here, as it is already enough to provide some indication of how the index theory might give a philosophically substantial account of context.

The other prominent approach to context is the *presupposition theory of context*, originating primarily in work of Stalnaker (1974, 1978, 1998), and subsequently developed in many ways.[5] This theory identifies a propositional attitude of *presupposing* or taking to be common ground in a conversation. The context of an utterance is the collection of propositions presupposed by participants in the conversation at the point of utterance. This is an intentional theory of context: context is a species of content. As a philosophical theory, the presupposition theory is very elegant. It obviously has a direct answer to the question of what context is. It also has an answer to the question of how context works. The expression *I* winds up referring to the speaker because it will be common ground among participants in a conversation who is speaking at a given time, and that *I* picks out that person.

In many ways these theories are quite different. Perhaps most importantly, the presupposition theory makes context basically the same as content; the index theory does not. But I would like to focus on the ways in which, in spite of their differences, they may be seen as having features in common. Fundamentally, both theories see context as a sort of *information*. This is clear for the presupposition theory, where the presupposed propositions provide the information. It is also the case for the index theory, where the items that comprise an index, together with their coordinate positions, precisely provide information that fixes the values of parameters.

Once we understand indices in the way I have suggested, we can see a couple of other proposals in the literature as variants of the index theory, including the idea that contexts are *situations* (Barwise and Perry, 1983) or *centered worlds* (Lewis, 1979a). In reply to Cresswell, Lewis (1980) offers an account of context based on centered worlds that endorses the key features of the index theory as the sort of philosophical position I have sketched here.

[5]Much of the subsequent development derives from Heim (1982) and Kamp (1984). A survey of some more recent developments is given in van Eijck and Kamp (1997).

2. Discourse

There is a further point of similarity between the two theories of context, more difficult to pin down but fundamental to the thesis I wish to advance. Both take a basically similar stance on the relation between context and discourse. It is that stance I shall contest.

In its inception, context appears to be an utterance-specific notion. Philosophers of language since Frege have generally taken the sentence to be the basic unit of linguistic meaning, and the utterance to be the basic unit for expressing propositions. Insofar as we are concerned only with propositions expressed, this could appear to indicate that for our purposes a discourse may be treated as nothing but a sequence of unconnected utterances. Not to say there is nothing that connects the utterances of some discourses, but as each utterance expresses a proposition, it does so as a self-standing unit, more or less independently of other utterances which surround it. This seems to suggest that context—whatever combines with a sentence to determine what proposition is expressed by an utterance—is likewise specific to an utterance and more or less unconnected with the discourse in which the utterance occurs.

It is easy to overstate the utterance-specific picture of context. There are, of course, some fairly obvious ways in which discourse can affect context, and both theories of context we have discussed can easily make room for some aspects of discourse. The presupposition theory is even designed to do so. Yet I shall argue that they do so in a way that leaves the picture of context as utterance-specific intact in a significant way. It is this picture that that I shall challenge. Though I shall not in any way challenge the basic units of meaning and expression, I maintain that the role of discourse in context is much more thoroughgoing than our theories anticipate. There are genuine features of discourse, not reducible to features of individual utterances, that affect even the truth conditions of individual utterances. To see what this amounts to, we first need to investigate how these theories make room for discourse.

It is not hard to find examples of contextual effects of an utterance that are determined by other utterances. Discourse anaphora provides lots of them. To take a simple example, consider a sequence of utterances:

(1)   Feininger was a painter. He taught at the Bauhaus.

Context must provide the referent of *he* in the second utterance. As loose as we have been about features of utterance events, we might say that Feininger himself is a feature of the second utterance event. But this misses the relevant point. It is something about the *first* utterance of *Feininger*, over and above any features of the second utterance, that makes the referent of *he* in the second what it is.

Both theories of context handle this sort of case relatively easily, simply by keeping a running record of information about prior utterances in a discourse. So, for instance, we could supplement an index to include a list of salient discourse referents, which would expand as the discourse progresses. The utterance of *Feininger* adds the person as one of those discourse referents, which is then used to set the value of *he*. One of the basic ideas of the presupposition theory is that contexts are continually updated by new presuppositions as a discourse progresses. In our example, we could expect the presuppositions to include the fact that Feininger had been mentioned in the discourse, and as a result could be the referent of an anaphoric occurrence of *he*.

Both theories can extend context from features of individual utterances to those of discourse, by keeping a running record of information from individual utterances, either from their contents or from features of the utterance events themselves. Both theories can implement the idea of a *conversational record* (Lewis, 1979b). As such, however, both theories still reflect in an important way the idea that context is somehow utterance-specific. Though they have been extended to allow for a running record of pieces of information from many utterances, each piece of information in the record is still specific to an individual utterance. In (1), the reference of *he* is fixed by information from the prior utterance, but the information needed is provided entirely by that utterance.

We can go still further in making room for discourse. Consider a more complicated example:

(2)   A group of artists met a group of critics. The critics liked some of their paintings. All were recent works.

Context sets the domain of the quantifier *all* to be the paintings of the artists which are liked by the critics. It is the discourse that sets this domain, but not any one utterance of it. Nonetheless, each utterance makes a distinct contribution. The first utterance provides a collection of artists

and a collection of critics, and the second uses these to pick out the collection of paintings of the artists liked by the critics. Again, it should be possible to accommodate this sort of case within either theory. The presupposition theory may not need any modification at all. Speakers may be expected to extract from the first two utterances in the discourse enough information to presuppose that the paintings form an available domain of quantification. In the index theory, we may suppose that the first utterance adds to the index two domains: the artists and the critics. The second utterance then induces an *operation* on these to add the domain of painting to the index as well.

In this example, the domain of the quantifier is fixed contextually by information derived from several utterances. But still, each utterance makes a distinct contribution, and the domain is set by combining these contributions. Generalizing on these sorts of examples, the following picture emerges. Context somehow keeps a running record of information, where the basic pieces of information are derived from individual utterances. The record may also contain further pieces of information derived from the basic ones by some operations, but ultimately the source of anything in the context is information entirely encapsulated by individual utterances. Let us say this picture makes context *utterance-localizable*. Utterance-localizability does not require that context be entirely utterance-specific, but it does require context to be composed of basic components, each of which is utterance-specific, and whatever may be derived from them. It thereby captures what might be viable of the picture of context as utterance-specific.

Though the theories of context we have considered can make considerable room for discourse, they still make context utterance-localizable. This is most clear for the index theory. As I described it, a coordinate of an index corresponds to a feature of an utterance event. Different coordinates may come from different utterance events, but each is entirely specific to some utterance. I suggested this might be generalized to allow for coordinates that result from operations on other coordinates, but the basic kind of information the index theory envisages is still provided by features of individual utterance events.

The presupposition theory is likewise normally understood as utterance-localizable, though the situation is somewhat more complicated. First, there is one proviso to localizability that must be noted. The presupposition theory allows an initial context to contain all sorts of

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common-ground propositions, which may not have anything to do with the current discourse. In saying the presupposition theory is utterance-localizable, we should be careful to say only that according to it, the way discourse affects context is utterance-localizable. As it is often understood, the theory holds that the information added to a context by discourse is precisely the proposition expressed by an utterance in that context. As such, the theory is clearly utterance-localizable in that this information is entirely specific to the utterance that expresses it. In a more liberal form, the theory can also add to a context information about the making of an utterance, such as what words were used. Again, all this information is entirely encapsulated by individual utterances, so we have localizability.[6]

Both of the leading theories of context, as they are normally understood, see context as utterance-localizable. I shall argue below that a much more substantial role for discourse in context is required. (I shall defer until Section (7), after this argument has been presented, the question of whether we can modify either of these theories to make room for the non-localizable feature of context I shall identify.) Yet we have seen that both theories already can go some ways towards allowing discourse a place in context. What more could be required? To see what a more thoroughgoing role for discourse might amount to, we must pause for a moment to consider some important features of discourse.

Discourses cannot be adequately described simply as linear sequences of utterances. There are several reasons for this. Of course, discourses that are conversations involve a sometimes complex structure of turn-taking. But even for monologue, there is a growing consensus that there are interesting structural properties to be found. Discourses naturally come in segments. This is reflected in the paragraphs and sections of written texts, but may also be found in many sorts of spoken discourse. There is furthermore good reason to believe that the segments of a discourse are organized into a hierarchical structure. Of most importance to what follows is the fact that there are non-trivial properties of discourse that apply to higher-level segments, including an

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[6]The presentation of Stalnaker (1978) discusses only updating by the content of an utterance. That of Stalnaker (1998) adds the fact that the utterance was made. As the Introduction to Stalnaker (1999) makes clear, this is not the most wide reading possible of the presupposition theory, but I believe it is the way the theory is usually understood.

entire discourse itself. Among these are properties that play an important role in determining whether and to what degree a discourse is coherent.[7]

Discourse is not a very well-understood phenomenon, and there is plenty of room for philosophical objection to the currently available theories of it. I do not want to endorse them so much as use them to illustrate my point about the relation of discourse to context. So rather than pursue their details, let us examine a short example. Consider:

(3)   It will be seen, however, that the principle of perfect equality, already referred to, is rigorously maintained. Note-row music is entirely 'democratic'.

As will be realized after a moment's thought, each statement of the formula being possible at twelve pitch-levels, there are, in all, forty-eight forms of it available.

These are two adjacent paragraphs from the middle of an encyclopedia entry (Scholes, 1955, p. 698). Most people, I have observed, find them substantially incoherent when presented in isolation from the text from which they were drawn. Part of the difficulty in interpreting them is due to the presence of specific expressions that rely on omitted parts of the text for their interpretation, such as *the formula*. Those with some background knowledge of the subject-matter of the text find the paragraphs much easier to understand, but even an expert in the subject found them only marginally coherent.

The sorts of features of discourse that will be important are the ones that relate to why this piece of text, as presented, is so hard to understand, even putting aside the problems of interpreting specific expressions and of the need for some background knowledge. It is reasonably clear that the two paragraphs mark out two distinct segments of the discourse. (It is much more clear if you have the information, either from background knowledge or from prior text, that the 'principle of perfect equality' is an aspect of 'note-row music'.) But it is left unclear how the two segments relate, either to each other, or to the rest of the discourse in which they

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[7]Turn-taking is the domain of conversational analysis. See Levinson (1983) for a useful survey. Discourse segmentation is investigated in Grosz and Sidner (1986). Structural properties of discourse have been investigated by Hobbs (1985), Mann and Thompson (1988), and Polanyi (1988), with an eye towards natural language processing issues. Other approaches include those of cognitive psychology, such as van Dijk and Kintsch (1983).

might appear. (This was unclear even to the expert, who recognized the principle of perfect equality and the formula as issues related to the subject of twelve-tone composition, but did not see the relevance of the number of forms.)

Much of the information lacking is not background information about the subject-matter (especially for the expert). Rather, it is something about the organization of the entire text from which these paragraphs were drawn. In fact, from the rest of the text it may be seen that these two segments do not stand in any particularly important discourse relation to each other within the full discourse. Rather, what is important is how they both relate to the next-highest segment of the text, which discusses freedom and variety in the application of 'the formula'. In particular, they give specifics about freedom of pitch in the application of the formula. Thus, they both stand in something like the *elaboration* relation (Hobbs, 1985) to the next-highest segment. That segment, in turn, is part of a contrasting pair of segments, the other discussing rigidity in the application of the formula. The text has still higher-level segments as well. At the top-level, it is an entry in a music encyclopedia entitled 'Note-Row', which discusses Schönberg's system of twelve-tone composition. It gives a summary of this system, concentrating on the role of 'the formula'. It then offers the contrastive segments about constraint and freedom in the application of the formula. After that, it provides a critical assessment, and concludes with a list of composers who used the system through the late 1940s.

The information involved here is not background knowledge. One could know a great deal about a subject and not understand how a particular text on it is organized. Rather, it is information about the structure of a discourse as a whole, and how that structure allows the discourse and its parts to organize in such a way as to accomplish whatever it is trying to do. Below, I shall concentrate on a particular aspect of the structure of a discourse as a whole, which does not necessarily rely on segmentation, but is important to the *coherence* of a discourse.

For the moment, what I wish to stress is how non-localizable this sort of information about a discourse normally is. There is often no single utterance in a discourse that states, even indirectly, how the discourse is segmented, or how the segments are organized, or how this organization and other features of the discourse combine to produce a coherent text that serves the purposes intended for the discourse. Nor is there usually anything else about the making of any single

utterance that encapsulates this kind of information. Let us call this sort of feature of discourse *discourse-global*.

We now have, at least in rough and ready terms, a distinction between utterance-localizable and discourse-global aspects of discourse. The basic idea is relatively straightforward: it is the difference between information only carried by a discourse as a whole, or its segments, versus information carried by individual utterances within the discourse. The structural properties of large-scale segments of discourse are just the sort of thing we do not expect to be utterance-localizable.

What is the relation between discourse-global and utterance-localizable features of discourse? I described context as utterance-localizable if it is derived from distinct pieces of localized information that may be scattered throughout a discourse. Are the sorts of high-level structural properties of discourse I dubbed discourse-global likewise so derived? They may be, if we state enough in the discourse. Some encyclopedia articles, for instance, will state explicitly the topic of the article and how it is organized. Indeed, we should hardly think we had information at all if we could not produce a proposition that states it. But discourse-global information is not generally so derivable. There is no reason to expect that any combination of features of utterances taken in isolation will provide information about how the segments of a discourse relate to one another, or what makes the discourse coherent. We see this in example (3).

But is the difference then simply a matter of the extreme nature of discourse-global features? Does information taken from *all* the utterances in a discourse suffice to derive the discourse-global features? In a sense, of course, it must, as all the utterances of a discourse taken together simply are the discourse. But in the end, I shall suggest this is not the right way to look at the matter. I shall suggest that discourse-global information really has a different source than utterance-localizable information, and is not generally to be found if we simply construe a discourse as a sequence of utterances. To substantiate this, I shall have to argue that we cannot generally extract discourse-global features from combinations of features of individual utterances without already relying on discourse-global information. I shall return to this in Section (7), after the relevant global feature has been spelled out.

Reflecting on the idea that a context contains information that may be localizable but scattered throughout a discourse, it is natural to say that utterance-localizability comes in degrees. The more widely scattered the information, the lower the degree. I have been urging the view that discourse-global features are not merely at the extremum (the minimum!) of utterance-localizability degree. Rather, they are of a different kind altogether.

My primary point in this paper is to argue that context, even understood narrowly as what combines with a sentence to determine truth conditions, has discourse-global features. I shall thus take issue with the general idea that context is utterance-localizable. To say that context has discourse-global features is not to deny that it is individual utterances that express propositions. Rather, it is to say something about the kind of information that comprises a context. The context of an individual utterance, I claim, may contain distinctly discourse-global information. Hence, the context of each utterance may be as complicated as the whole discourse in which the utterance appears.

The argument for this thesis requires a certain amount of machinery. It begins with an idea from linguistics, very roughly (and somewhat inaccurately), that utterances are sometimes organized in terms of what they are about (topic) and in what way they provide information about it (focus). I shall argue that the way topic and focus relate to the proposition expressed by an utterance reveals an aspect of context, and that aspect must be discourse-global. The remainder of the paper is organized as follows. In Section (3), I present some examples based on topic and focus, and argue that they do indeed show us something about context. In Section (4), I show that these examples all point to a single phenomenon: a discourse-based notion of topic. I go on to show in Section (5) that this is a discourse-global notion, and I argue specifically that it indicates a discourse-global feature of *context* in Section (6). Finally, in Section (7), I consider how best to make sense of the feature of context identified. I argue that it should not be thought of as simply the extremum of utterance-localizability degree; rather it is fundamentally discourse-global. I also return to the question of whether and how the theories of context we have considered might be modified to account for such a discourse-global feature of context.

3. Some Problem Cases for Theories of Context

I shall argue for a non-utterance-localizable, discourse-global aspect of context by way of some problematic examples. In this section, I shall present the examples, and argue that they do in fact show us something about context. In the subsequent sections, I shall attempt to uncover what underlies the examples, and then to argue that it is indeed a discourse-global aspect of context.

The examples I have in mind come in two sorts. First, some variants on examples due to Strawson (1964). Let us suppose we are in a modern art gallery, where it is common ground that there are no paintings by old masters, nor has anyone involved been talking about old masters in prior conversation. There are no old masters salient in any way. Suppose also that there is a Feininger painting prominently displayed in the gallery. Now suppose the curator walks in, does not point at any painting in particular, and says, 'out of the blue':

(4)   !That old master is obscuring my view of the Feininger.

Due to reference failure, there is a strong inclination to say no proposition is expressed, and that the utterance is neither true nor false. At least, it suffers from a grave semantic defect. (I shall mark such defect by '!', without taking a stand on whether it represents failure to express a proposition or some other failure.)

On the other hand, suppose a workman is putting up a sign in the gallery. The sign is perfectly placed so as not to obscure any painting. Suppose the curator walks in, again not pointing at any painting in particular, and says:

(5)   That sign has to be moved. It is obscuring that old master.

The workman has a valid grievance. His work was incorrectly criticized. But then, we seem to conclude, the second claim the curator makes is *false*.[8]

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[8]Strawson's original example (Strawson, 1964, p. 112) was:

(i)   a.   !The king of France visited the exhibition yesterday.

        b.   The exhibition was visited yesterday by the king of France.

This has something to do with syntax. We get a similar effect by varying the syntax used in (4). Suppose in the same 'out of the blue' setting, the curator says:

(6)   My view of the Feininger is obscured by that old master.

There is again a strong inclination to say the claim is simply false. However, it is not just a matter of syntax. Asking a question can have the same effect:

(7)   Q: Is anything obscuring your view of the Feininger?
        A: That old master is obscuring my view of the Feininger.

Again, it seems that the answer is simply false.

We may immediately observe that these examples *prima facie* indicate something about *context*. (4) and (7) appear to involve the same sentence having different status for truth value on different occasions of utterance. Hence, there must be a difference in context between the utterances.[9]

Intuitions about these examples are quite weak. As Strawson did, we might attempt to bolster the intuitions behind these judgments of truth value in the following way. For (4), we can describe what is attempted in making the utterance as attempting to say of an object—that old master—that it is some way—obscuring the view. There is no such object, so the attempt fails, and we get a semantic defect. For example (5), on the other hand, the correct description of the attempt is saying of the sign that it is some way—obscuring a particular object. There is no such object, so it is not obscuring anything, and the claim is false. Likewise, for (7), the correct description appears to be that the question is answered by saying that among things obscuring the view is a particular object—that old master. There is no such object, hence the claim is again false.

This is a significant departure from the position he held in Strawson (1950). I think the judgments Strawson would have are a little more natural in my variants, which also manage to avoid the issue of whether descriptions are referring expressions.

[9]As an anonymous referee pointed out, there are some differences between the sentences in (4) and (7-A). They differ phonologically, as in (7-A) nuclear stress falls on *master*. This only matters if it is taken to indicate a difference that appears at LF and can affect truth conditions. Accepting this is basically to jump to a later point in my argument. We will have to reach a similar conclusion about the syntactic difference between (4) and (6).

Nonetheless, it must be granted that my examples are difficult. Judgments about them are rarely strong, and are hard to separate from theories surrounding them. Fortunately, there is another class of examples that are intuitively clearer, and I shall argue, point to the same underlying issue. They make use of the phenomenon of focus. It is well-known, to linguists if not to philosophers, that certain features of sentences, often marked prosodically, can affect the truth conditions of utterances. A standard example from Rooth (1985, 1992) is:

(8)   a.   John only introduced BILL to Sue.

         b.   John only introduced Bill to SUE.

(Capitals indicate stress.) Suppose we are at a party, and John introduces Bill and Tom to Sue, and makes no other introductions. In this case, uttering (8-a) says something false, while uttering (8-b) says something true.

This example will not quite give us the sort of case we need, but a slight modification will. Consider:

(9)   John only INTRODUCED Bill to Sue.

We need a great deal of contextual information to figure out if this is true or false. Suppose John did introduce them. Suppose further that their relationship was for a long time rocky. They are now getting married, but only after the intervention of various friends and therapists. John did not do any of these things. But perhaps feeling guilty for abandoning his friends, John has been instrumental in the production of the wedding reception. He convinced Bill to hire the band Sue likes, passed information along from one to the other, prevented them from fighting over the menu, and so on.

Suppose we are at Bill and Sue's wedding. Consider two settings in which an utterance of (9) might take place. First:

(10)   Bill and Sue met at that party where John introduced them. But their relationship was rocky, and so many people got involved. I would have thought John would have been one of them, but John only INTRODUCED Bill to Sue.

In this case, the last claim, an utterance of (9), is true. On the other hand, suppose the conversation is more like:

(11)   Bill and Sue met at that party where John introduced them. But their relationship was rocky, and so many people got involved. Lucky they did though. It was a lovely wedding, and the reception is great. I don't know how they managed to agree on a band. There must have been even more people involved for that. Strange about John, though. John only INTRODUCED Bill to Sue. After that, he hasn't been of much help.

In this case, the claim, still an utterance of (9), is false.

As with the reference failure examples, these cases must tell us something about context. We have the same sentence differing in truth value on two occasions of utterance. There must be a difference in context to account for this.

For both sorts of examples, we can give a rough description of what the difference in context must be, by appealing to some notion of *topic*: what we are talking about. Strawson's original explanations of the reference failure cases make use of a notion like this. In (4) we are attempting to talk about a particular painting. There is no such object, and the utterance is therefore problematic. On the other hand, in (5), we are talking about a sign. As a result, the utterance winds up false.

Something similar can be said about the two contexts ((10) and (11)) for (9). In the first, we are talking about Bill and Sue's relationship, whereas in the second we are talking about the series of events from their meeting to the wedding reception. This is a very general sense of topic. It is not just that we are talking about Bill and Sue, which holds in both, but that we are talking about a certain organization of events that took place in their lives.

So, there is some *prima facie* reason to think that something like this notion of topic is an aspect of context. It is not something that either theory of context we have considered will accommodate easily. Clearly the index theory has trouble with it. It is hard to see what sort of parameter should be set by a topic feature of an utterance event, and much more difficult to see what features of utterance events set this parameter. The presupposition theory is likewise hard-pressed to account for it. It is difficult to see how the sorts of propositions we expect to be

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presupposed, either the contents of utterances or descriptions of utterance events, could explain the behavior of such pairs as (4)/(7) and (10)/(11).

Of course, we would like to say that speakers presuppose *what they are talking about*. But to say so, we have to say what this information is, and how it can wind up in a context. I shall ague below that once we get a clearer understanding of the relevant aspect of topic, we will see it not to be utterance-localizable. The discourse-global nature of the notion of topic that concerns us is brought out by the examples involving (9). The difference between the two contexts for (9) cannot be explained by saying *who* we are talking about, but only by noting how in each we are talking about different structures of events related to Bill and Sue. No one utterance in either discourse (10) or (11) fixes this structure, nor is it simply accumulated from each of the utterances in them separately. Rather, it is the way the utterances are organized as a whole which provides the needed contextual information. This is precisely the mark of discourse-global information.

4.   Focus and Topic

We have now seen two examples of philosophical theories of context. Both imply that context is utterance-localizable. We have also seen two sorts of examples, which pose a problem for either of our sample theories. I suggested that there is some *prima facie* reason to think they point to a discourse-global aspect of context, related to the notion of topic or aboutness.

To argue that these *prima facie* conclusions are correct, it will be necessary to look more closely at the phenomena that underly the examples I presented, and hence to look more closely at the linguistics of topic and focus. In this section, I shall concentrate on focus, and argue that the focus examples rely on a topic-based contextual effect. I should stress that my primary interests remain philosophical, not descriptive, so I shall delve into the linguistics only far enough to get a working picture of the sorts of things going on in the examples I have presented.

Focus may be marked in a number of ways. The examples above involve a particular pitch accent.[10] Focus can also be marked syntactically. Compare:

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[10]The relation between between prosody and focus has been discussed by a number of authors, including Bolinger (1972), Jackendoff (1972), Pierrehumbert and Hirschberg (1990), and Ladd (1996).

(12) a. John introduced Bill to SUE.

  b. It is Sue to whom John introduced Bill.

Both place focus on *Sue*. It is a common practice among linguists to take focused constituents to be marked at the appropriate level of representation, and in particular to have a focus feature $[\alpha]_F$ at LF.

   The intuitive picture of the semantic effect of focus is that it sets up a contrast class. When we say:

(13)   John introduced Bill to [Sue]$_F$.

we indicate that he introduced him to Sue as opposed to Mary, Jane, or Sally.

   This idea has been worked out formally as the *alternative semantics* for focus (Rooth, 1985, 1992).[11] There are different formulations of the theory available, but here is a relatively simple version of some of its ideas. Associated with a focused constituent (indeed with all constituents) is an alternative set: the domain of semantic values corresponding to the type of the constituent. We have:

(14) a. $[\![\text{Sue}]\!]^f = \{\text{Sue, Mary, Jane, Sally}, \ldots\} = E$ (the set of individuals).

  b. $[\![\text{introduced}]\!]^f = \{x \text{ told } y \text{ to avoid } z, x \text{ gossiped to } y \text{ about } z, \ldots\}$ (the set of triadic relations).

Compositional rules tell us that:

(15) $[\![\text{ John introduced Bill to [Sue]}_F \,]\!]^f = \{[\![\text{John introduced Bill to } x]\!] \mid x \in E (= [\![\text{Sue}]\!]^f)\}$.

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[11]I believe this theory has gained wide acceptance among linguists. It works out formally an extremely natural explanation of what is happening in cases of focus, which is what we need for our purposes here. When it comes to the linguistic details, Rooth's theory does have competitors, such as structured proposition theories (e.g. Krifka, 1993) and movement theories (see von Stechow, 1991).

   Important early work on focus was done by the Prague School (e.g. Firbas, 1964; Daneš, 1968). Much of the current discussion of focus stems from Chomsky (1971) and Jackendoff (1972), but also the work of one philosopher, Dretske (1972).

The alternative set for a sentence is the set of propositions resulting from replacing the focused constituent of the sentence with each member of its alternative set.

One way focus can affect truth conditions is through the presence of so-called focus-sensitive particles, like *only*. Recall our assessment of (8-b). At a party, John introduced Bill and Tom to Sue, but to no one else. Then *John only introduced Bill to* [*Sue*]$_F$ is true. Why? Because among the alternatives ⟦John introduced Bill to x⟧, only one holds, viz. ⟦John introduced Bill to Sue⟧.[12]

Of course, for this to be right, there must be some contextual restriction on the alternative set. We have not ruled out that sometime in his life, John introduced Bill to his mother. All we have is that at the party, the only person John introduced Bill to is Sue.[13] This is a relatively simple instance of domain restriction. There is a salient set of people: those at the party. The alternative set is restricted to this set.

The examples I offered based on (9) pose a different, and I believe more difficult, problem of contextual restriction of alternative sets. The full alternative set for *introduced* is very large: it is all ternary relations. Even if we put some reasonable restrictions on the set, say by throwing out elements entailed by other elements, we will still have a very large set. We will not rule out such relations as: x being at a location not collinear with the locations of y and z. Unlike the case of selecting the people at a party, if we restrict our attention to the relations that bear between John, Bill, and Sue at the wedding, there will still be lots of such specious relations. At the time and place of the wedding, Bill, Tom, and Sue stand in a huge number of relations, most of which are not relevant.

It is natural to say that the alternative set must be restricted to relations that are *salient* for the event in question. Strange geometric relations are not salient at a wedding (but might be if the issue were transworld balloon racing). But the issue is more complicated than that. Above I

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[12]The semantics of *only* is often described in two parts: presuppositional and assertoric. To avoid complication, I shall give these only for our example. The presuppositional requirement of *only*, for the case of *John only introduced Bill to* [*Sue*]$_F$, is that the alternative set {⟦John introduced Bill to x⟧} be non-empty. The assertoric content is that it contains exactly one element: ⟦John introduced Bill to Sue⟧. For some discussion of alternative ways to formalize this, see Hajičová *et al.* (1998).

[13]Most of the interest in alternative semantics has centered on compositional rules. Hence, the need for contextual restriction is often ignored. It is made explicit in von Stechow (1991), Rooth (1992), and Krifka (1993).

spelled out two different discourses ((10) and (11)) which induce different alternative sets. In the first, we are talking about Bill and Sue's relationship. The appropriate alternative set should look something like:

{*x* introduced *y* to *z*, *x* convinced *y* to go to therapy with *z*, *x* suggested marriage of *y* to *z*, … }.

In the second, where we are also talking about the wedding and events surrounding it, the alternative set is quite different. It should include, in addition:

{*x* told *y* about *z*'s favorite band, *x* designed a menu that *y* liked and *z* accepted, … }

Though there is no doubt *some* sense in which we could say that these are classes of salient relations, it is not a matter of salience *for the event*. For both, the event is the same. Rather, it is something like salience *for the discourse* that is at issue.

There is great variety in the kinds of things that can wind up salient for a discourse. Moreover, the class of alternatives need not wind up being particularly homogeneous. Consider another example:

(16)   Only [the house]$_F$ was visible from the trees.

Again, in most contexts, the alternative set for (16) cannot be all objects, or even all objects in the immediate vicinity of the house. What is in it depends on context, in the same way as the alternative set for (9) does. It typically depends on the discourse in which the sentence appears.

Consider the following discourses. The first is the report of a detective who was hiding in the trees, waiting to see who came and went:

(17)   I sat in the trees all night. No one came or went. No one let the dog out. No cars passed. There were no toys on the lawn. Maybe it looked different from the other side, but only the HOUSE was visible from the trees.

The alternative set in this case is relatively clear. It includes the house, and things found around it, including people and pets and cars and toys. As we have told the story, (16) appears true.

But consider a different monologue. A landscape designer is describing the house.

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(18)   In front of the house was a small garden, leading to a substantial lawn, which was

surrounded by trees. An isolated space was formed.

Only the HOUSE was visible from the trees.

Assuming the garden to be in the line of sight from the trees, the claim (16) is in this context false. What is the alternative set here? The house itself, the garden, the lawn, the porch of the house, etc. Yet it also appears that something like 'spaces' are among the alternatives. I think it is safe to say that the set is of something like landscape design features. Yet as such, it is still notable how heterogeneous it is. It includes house, lawn, and trees, but also the spaces between them. It does not, given the way the discourse seems to be going, include the shingles on the roof, though in some ways they are as prominent as the garden. Nor does it include the water faucet carefully concealed in the garden, though in a slightly different discourse on roughly the same subject, this might well be included.

This helps to make clear what is at issue. It is easy to say in a very rough way what determines these alternative sets: *what is being talked about*. In the first discourse (17), what is being talked about are things that move in and around the house; in the second (18), what is being talked about are landscape features of the house. The same may be said for (9). In the first discourse for it (10), we are talking about Bill and Sue's relationship; in the second (11), we are talking about events leading up to and including their wedding. There is thus some notion of *topic* at work in selecting alternative sets. Yet for none of these cases is the topic fixed by what is salient in the environment, or in the events surrounding the utterance. Rather, it is a discourse-based notion of topic. The heterogeneous nature of the alternative sets, especially in the last example, makes pressing the question of how this notion of topic may be properly characterized.

It is to this matter that we now turn. I shall argue that the notion of topic at issue is not well-captured by such individual statements as 'about landscape features'; rather, the notion of topic at work in our examples is a much more dynamic discourse notion.

5. Topic and Discourse

We have now seen that both classes of examples from Section (3) are based on some notion of topic. We have seen, for the focus examples, that the alternative set is the range of things consonant with what we are talking about. It is determined by topic. The set can be quite heterogeneous, and can be fixed as much by the discourse in which an utterance appears as by what is salient in the environment in which an utterance is made.

In this section I shall investigate this notion of topic. It will turn out to be highly dynamic. Even in a topically well-organized discourse, the discourse topic changes as the discourse proceeds. I shall argue that the notion of *what we are talking about* relevant to the examples we have considered is more a matter of how topics change in a discourse than what the topic is at any given moment. Furthermore, we will see that how topics may be changed is subject to a *global constraint*, derived from a global constraint on discourse coherence. Combining this with ideas from the previous sections will point to a discourse-global feature of context.

First, it is necessary to distinguish two notions of topic: *sentence topic* and *discourse topic*. Of particular interest for our purposes is the way sentence and discourse topic interact.

As Strawson diagnosed the pair (4)/(6), they indicate a difference in what we are talking about. In the first, we are talking about the old master, in the second, the Feininger. The difference between the two is a matter of sentence structure, in this case syntax. Somehow, the structures of the two sentences mark different constituents as topics. We see here a sentence-specific notion of *sentence topic*: a constituent marked as a topic by sentence structure.

As a rough and ready test for topic, one can consider whether a sentence is felicitous as an answer to a question which makes clear what the answer is supposed to be about. Using this sort of test, a range of constructions that mark constituents as topics can be identified. Syntactic constructions such as topicalization and left dislocation do so for English. For instance:

(19)   Q: What did you do today?
       A: (i)   I heard about Joe on the news.
            (ii)   #Joe, I heard about on the news.
            (iii) #Joe, I heard about him on the news.

(iv) #As for Joe, I heard about him on the news.

(I am marking inappropriateness in a discourse by '#'.) All but the first answer are marked to have *Joe* as topic, which is inappropriate given the question.[14]

Topic can also be marked in other ways. Like focus, it can be marked by pitch accent. There are cases, especially sentences with definite subjects and stative predicates, where there is a strong preference for reading subjects as topics. In some languages, such as Japanese, there are topic-marking morphemes.[15] As with focus, we may assume that at LF constituents may be marked with a topic feature $[\alpha]_T$.[16]

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[14]The relation between fronting constructions and topic marking is not simple. For instance, it has been pointed out on a number of occasions (e.g. Reinhart, 1980; Ward, 1985) that there are some cases where fronting seems to have little to do with topic marking, but rather performs some kind of 'scene setting' function . Here is an example, from Flaubert's *Madame Bovary* (Flaubert, 1994, p. 33):

(i)   Secretary of State under the Restoration, the marquis, anxious to re-enter political life, set about preparing his candidature to the Chamber of Deputies long beforehand.

There are some important syntactic differences between these and constructions that do tend to mark topics, but a thorough discussion would take us too far afield.

[15]Aspects of topic marking are discussed by Gundel (1974, 1985) and Reinhart (1981). The discussion of Kuno (1972) addresses the issue of subjects as unmarked topics. Prince (1981) examines a range of fronting constructions and makes some distinctions among them. Topic-marking accent receives particular attention in Jackendoff (1972), Vallduví and Zacharski (1994), Büring (1999), and Steedman (2000). The case of Japanese is investigated by Kuno (1972) and Portner and Yabushita (1998). The literature on topic is large and often contradictory. The surveys of Schlobinski and Schütze-Coburn (1992) and McNally (1998) provide some useful overview.

[16]I am assuming as little about the structure of topic marking as possible. Though fronting constructions tend to mark topics, I am not identifying topics with clause-initial constituents. There is indeed a long tradition of identifying the initial constituent of a sentence or clause as its topic, often called its 'theme' (Halliday, 1967). Many arguments, including those of Reinhart (1981), Vallduví (1990), and Steedman (2000) give good reason to doubt this generalization. I am assuming that there is a need for distinct topic and focus markers. This is argued in von Fintel (1994) on the basis of examples of focus and topic constituents occurring within one another. A similar conclusion is reached from different points of view by Vallduví (1990) and Steedman (2000). I am following Reinhart (1981) in making constituents, rather than their referents, topics; though where convenient, I will sometimes intentionally confuse the two.

Examples such as (5), (7), and the focus examples (9) and (16), suggest that there is a non-sentential notion of topic as well. Very roughly, a *discourse topic* is what we are talking about in a discourse. In (19) it may be tempting to say that the discourse topic set by the question is whoever the referent of *you* is, making a discourse topic an appropriate discourse referent. This is too crude, as the topic is not merely the person, but what they did that day. It would not be acceptable to answer with *I am six feet tall*. For this reason, a discourse topic is often given as a proposition stating what is being talked about (Keenan and Schieffelin, 1976b). In (19) the topic can be given as the proposition stating that we are talking about what a particular person, the referent of *you* did today. Alternatively, we might think of a discourse topic as a question—the question under discussion (von Fintel, 1994; Büring, 1999). On this approach, the discourse topic in (19) is given by the semantic value of the question *What did you do today?* If we take the semantic value of a question to be something like the set of propositions that would be answers to it, these views are, at the very least, similar in spirit. I will not worry about what the differences might be, as I shall be more concerned with the dynamics of discourse topics—how they are modified or changed—than with how to represent a specific discourse topic. Hence, I will describe the discourse topic in a case like (19) by saying it is what (the referent of) you did today, without taking a stand on just what the appropriate representation of this may be. Where it happens to be specific enough, I will sometimes describe a topic simply by mentioning a discourse referent, though in many cases this does not suffice.[17]

It is a natural suggestion, in fact made by Strawson (1964), that discourse topic and sentence

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[17]A similar distinction between sentence and discourse topic, with an eye towards the sorts of issues related to discourse coherence that will occupy us in a moment, is made by van Dijk (1977). For some critical discussion, see Brown and Yule (1983). Another version of the question-based approach, with some important affinities to what I propose here, is developed by Roberts (1996). An approach making discourse topics something like propositions, extending some ideas from DRT, is given in Asher (1993). Taking topics to be discourse entities is most common in analyses of the semantics of sentence topics, such as Reinhart (1981) and Portner and Yabushita (1998), rather than discussions of discourse topic *per se*. Vallduví (1990) uses some related ideas in a discourse setting. In van Kuppevelt (1995) topics are defined to be sets of discourse entities, but these sets are derived from questions. There are quite a few other devices that have been used for defining discourse topic, including open propositions (Prince, 1981; Ward, 1985) and lambda terms (Steedman, 2000).

topic relate in a simple way: a sentence topic must be directed towards the current discourse topic, so a sentence would not be felicitous if its marked topic is not the discourse topic. (Perhaps more accurately, when the discourse topic provides an object, a topic-marked NP in a felicitous sentence must refer to that object.)

There are cases where this appears reasonable, but it is not right in general. There is a great deal of evidence that sentence topics often function in discourse to *change* discourse topics. For example (modifying one of Keenan and Schieffelin, 1976a):

(20)   Q: What happened to Tom?
        A: (i)   #As for [Tom]$_T$, he left.
              (ii)   [His car]$_T$, it broke down, and he's depressed.

Crucially, in this example, the discourse topic starts out being Tom, or what happened to Tom. The felicitous sentence then introduces the new topic of Tom's car. It is new—we were not talking about cars at all—but it is connected to the old topic in a way that keeps the discourse topically organized.

This is what we should expect. Even in conversations that are organized around a specific issue, topics tend to change. A debate on a single topic will usually have a number of subtopics. If we are debating, say, post-cold-war nuclear deterrence, we may discuss any number of subtopics, like the reliability of aging missiles, the political stability of certain states, and the health of some particular person, such as Boris Yeltsin. In carrying on a debate, participants will want to do two sorts of things. Sometimes, they will want to add new information on established topics. Sometimes, they will want to introduce appropriate new subtopics. Sometimes they will want to do *both*.

Within topic-continuous discourse, linguists interested in typology have identified two discourse functions: *topic collaboration*, adding information about an established topic; and *topic*

I am following a number of authors, including Reinhart (1981) and Schlobinski and Schütze-Coburn (1992) in not taking a simple analysis of topic in terms of given and new information to be sufficient. Topic/focus interaction arguments (von Fintel, 1994) and nested focus arguments (Krifka, 1993) reinforce this conclusion, as do the considerations I shall raise below.

incorporation, introducing a related new topic, and adding information about it (in service of addressing a wider topic) (Keenan and Schieffelin, 1976b). Sentence topic relates to both. In some way or another, a sentence is felicitous if its topic effects an acceptable discourse function: topic collaboration, topic incorporation, or perhaps marking a topic discontinuity.[18] There is some data (Keenan and Schieffelin, 1976a) which suggests that in English, the syntactic topic-marking constructions of left dislocation is used primarily for topic incorporation rather than topic collaboration.[19]

There is a great deal more to be said about discourse topic. Nonetheless, we are in a position to conclude that even in highly organized discourse, topics change, at least by incorporation of new subtopics.[20] The question then becomes what topics may be incorporated? One constraint is, roughly, that topics can be incorporated only if the result is coherent discourse. Clearly, we cannot incorporate topics if the result is wildly incoherent. Borrowing a line from my favorite conversationalist, *Cyrano de Bergerac* (Rostand, 1951, p. 119):

(21)   Q: Is Tom upset?

         A: From the moon, the moon! I fell out of the moon.

The moon is *not* thereby incorporated as a topic.

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[18]There is no reason to hold that these must happen in isolation. The interaction of topic and focus especially can allow the simultaneous incorporation of a new (sub)topic and comment on that topic. This is an important issue, but one there is not space to pursue here. For further discussion of topic-focus interaction, see among many sources Ward (1985), Vallduví (1990), von Fintel (1994), and Steedman (2000).

[19]There is notable complication here. Prince (1997) argues that there are in fact three distinct discourse functions for left dislocation, though her notion of poset-inference triggering, which is crucial to two of the functions, is very close to the idea of topic incorporation and to the idea of 'referential linking' of Reinhart (1980). For present purposes, let me merely note that what will become crucial below is that there is a structure of topics within a discourse, that this is reflected in how topics may be incorporated, and that in some cases sentence-level marking can help indicate what the topic structure is. For my arguments, I do not require the topic-incorporation function to be uniquely or invariably marked by any sentence-level constructions.

[20]As a result, a more accurate theory of discourse topic must have to have some sort of hierarchical structure of topics, as was mentioned by Hobbs (1985). Ideas along these lines have been developed somewhat more extensively in such works as Polanyi (1988), Asher (1993), van Kuppevelt (1995), and Roberts (1996). A similar notion appears as the 'focus space stacks' of Grosz and Sidner (1986).

Discourse coherence is an extremely messy subject, but there are a couple of constraints on coherent discourse that can help to give us some idea what is involved in acceptable topic incorporation.

There are some well-known ideas about how individual sentences may be related in coherent discourse. For instance, it is a recurring idea that a topic-marked expression of a sentence should bear an appropriate semantic relation to an expression appearing earlier in the discourse. Among the appropriate relations is coreference, but also such relations as membership or subset relations, part/whole relations, or relations given by some familiar sorts of structures of concepts, or objects, or positions. Modifying an example of Reinhart (1980):

(22)   Smith was worried about the new paint job. [Blue]$_T$, he thought, was not appropriate.

The topic expression *blue* and *the new paint job* stand in an appropriate relation: that of a particular feature or part to the thing of which it is a particular feature.[21]

This is an example of a *local* condition for coherence: it tells us something about how sentences which comprise coherent discourse may relate pairwise.[22] This particular condition is clearly also a constraint on topic incorporation. A marked topic-expression can succeed in

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[21]This is an instance of the notion of referential linking (Reinhart, 1980). A similar idea is the basis of *centering theory* (Grosz *et al.*, 1995).

Precisely what relations are appropriate for this sort of connection is difficult to spell out. Centering theory offers a formalization based on ranked sets of forward-looking centers and the relation of realization. Ward (1985) builds upon centering theory with the idea that only relations which induces a partial ordering will be appropriate. It is often suggested that ideas from artificial intelligence, such as frames or scripts or plans will be required for a full analysis.

[22]Local conditions are aspects of what is sometimes called *cohesion* (Halliday and Hasan, 1976). I have characterized locality in terms of pairwise relations, but mostly for convenience. In the setting of a theory based on more complex features of discourse structure, such as Polanyi (1988), it is easy to define local coherence conditions in terms of *n*-ary relations between sentences.

There are other notions of locality to be found in the literature. Centering theory (Grosz *et al.*, 1995) is explicitly offered as a theory of coherence within discourse segments individuated according to the theory of Grosz and Sidner (1986). In the literature more oriented towards psychology, such as van Dijk and Kintsch (1983), it is sometimes assumed the relevant notion is adjacency, and how speakers process a sentence given what was immediately before it. Neither Reinhart nor Halliday and Hasan require adjacency.

incorporating a new topic only if it meets this sort of condition.

There are other well known local conditions: coherent discourse can be achieved in other ways than the artful linking of topic expressions. (Both Halliday and Hasan (1976) and Reinhart (1980) provide many examples.) For our purposes, it is more important to observe that meeting *local* conditions is not sufficient to guarantee coherence, and is not all that there is to the issue of topic incorporation either.

Consider the following, which is mostly from a textbook discussion of color (Parker and Smith, 1979, pp. 56–57, with obvious changes):

(23)   Color in either light or pigment has three characteristics or variants: *hue*, *value*, and *chroma*. A specific color can be thought of in terms of its *hue*, which is the color's wavelength or position in the spectrum; its *value*, signifying the color's black-to-white relationship; and its *chroma*, indicating the color's degree of purity (saturation) or freedom of neutrality. Black, it is my favorite color.

In the final sentence, *black* meets Reinhart's referential linking condition. We are talking about color, and then about specific values of colors. *Black* is then a further specified example. *Black* even appears earlier in the discourse. It bears semantic relations of reasonable kinds to all sorts of expressions in the prior discourse. Yet it is clearly unacceptable. Informally we can say why. The discourse is about colors, organized around certain properties that provide a classification of colors. *Black* is too specific, and *favorite color* is not the right kind of property, so it does not help us to refine the classification to make *black* fit in.[23]

This is not a local matter. No individual sentence here establishes that this is the way the discourse is going, nor is it fixed by the devices that link pairs of sentences. Indeed, a discourse can take surprising turns. Consider an alternative discourse, with the same first sentences as (23):

(24)   Color in either light or pigment has three characteristics or variants: *hue*, *value*, and *chroma*. A specific color can be thought of in terms of its *hue*, which is the color's wavelength or position in the spectrum; its *value*, signifying the color's black-to-white

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[23]A similar point is made with reference to another of Reinhart's local conditions by Giora (1985).

relationship; and its *chroma*, indicating the color's degree of purity (saturation) or freedom of neutrality. In choosing paints, it is important to remember how each of these features will affect the viewer. Choice of canvas is important as well . . .

This discourse winds up with a very different sort of topical organization, though it starts out with exactly the same sentences. We cannot in this case identify contributions of individual sentences to the topical organization without taking into account features of the rest of the discourse. We thus have a discourse-global organization.

Coherent discourse, at least of the kind we are looking at, is organized around a structure of objects and relations that are at issue for the discourse. This organizational structure is not always determined by localizable features of individual utterances in the discourse. Thus, having the right sort of organizational structure is a *global* constraint on coherence. It is, furthermore, a constraint on topic incorporation. Topics can only be incorporated if the result is coherent discourse, so incorporated topics must fit with this global organizational structure. Hence, we have a global constraint on topic incorporation.

I shall call this organizational structure *topic structure*.[24] In some discourses, especially those organized locally by linked topics, topic structure can be discerned from the *organization* of topic phrases and related constructions. Here is a nice example, from Flaubert's *The Legend of Saint Julian the Hospitaler* (Flaubert, 1978, pp. 560–561):

(25)   Julian's father and mother dwelt in a castle built on the slope of a hill, in the heart of the woods.

       The towers at its four corners had pointed roofs covered with leaden tiles, and the foundation rested upon solid rocks, which descended abruptly to the bottom of the moat.

       In the courtyard, the stone flagging was as immaculate as the floor of a church. Long rain-spouts, representing dragons with yawning jaws, directed the water towards the

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[24]In some cases, such as example (25), topic structure corresponds to what Brown and Yule (1983) call 'thematization'; though in other cases, such as example (26), it does not.

A related concept is found in Givón (1983) under the name 'thematic continuity'. It must be noted, though, that Givón works with a somewhat different notion of topic than I do here. For some comparison, see Vallduví (1990).

cistern, and on each window-sill of the castle a basil or a heliotrope bush bloomed, in painted flower-pots.

A second enclosure, surrounded by a fence, comprised a fruit-orchard, a garden decorated with figures wrought in bright-hued flowers, an arbour with several bowers, and a mall for the diversion of the pages. On the other side were the kennel, the stables, the bakery, the winepress and the barns. Around these spread a pasture, also enclosed by a strong hedge.

This is the opening of a story, and as a description it is probably more tightly organized than most conversations. Let us begin by looking at a partial list of its clause-initial constituents:

1. the towers at its four corners,   2. the foundation,

3. in the courtyard,   4. long rain-spouts,

5. on each window-sill of the castle,   6. a second enclosure,

7. on the other side,   8. around these.

At the sentential level, it is fairly clear that some of these are topic expressions. *The tower*, *the foundation*, and *long rain-spouts* are (unmarked) topics. *A second enclosure* appears to be as well, assuming indefinites can be topics.[25] The most noticeable syntactic device used in the text is the fronting of prepositional phrases, giving *in the courtyard*, *on each window-sill of the castle*, *on the other side*, and *around these*. We may assume that these PPs are marked topics. Considering *discourse* rather than *sentence* topic, at least, it is clear that with the sentence *On the other side were the kennel, the stables, the bakery, the winepress, and the barns,* something like the location the other side, or the property of being on the other side, is made important to the topic structure of the discourse. The presumed topic of the first sentence, *Julian's father and mother*, is not really relevant to the segment of the discourse I have quoted, though it does give the reader a hint of how this segment relates to others that follow. As far as this segment is concerned, note, it would be perfectly acceptable to front *the castle* in the first sentence, by making the sentence *The castle in which Julian's father and mother dwelt was built on the slope of a hill, in the heart of the woods.*

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[25]This assumption is defended by Ward and Prince (1991).

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Without worrying too much about the details of sentence topics, we can see pretty clearly from this list how the discourse is structured topically. It is a description of a castle, in terms of its architectural features, rather than, say, its geographical location in the country, or it military history. Indeed, as is made especially clear by the device of PP fronting, the topical elements of this discourse are organized in specific ways: they are organized around part/whole relations among architectural features, as in *the towers/the foundation* and spatial relations, as in *around these/on the other side*.[26]

This is a rough description of the topic structure of (25). It is a structure of a certain range of elements—roughly architectural features, organized by a certain range of relations—part/whole and spatial relations. I claim that having such a structure, being organized somehow, is a constraint on coherent discourse. As I claim coherence is a general constraint on topic incorporation, we have as a result a specific constraint on topic incorporation from topic structure. In the case of (25), for instance, this rough description of the topic structure is enough to tell us what sorts of topics might be acceptably incorporated in possible continuations of the discourse. We could easily, say, introduce the rampart of the castle. We could not easily introduce the political climate that led to the castle being built as a topic for this stretch of discourse.

As I have described it, the topic structure of a coherent discourse must include anything explicitly incorporated as a topic in the discourse, and any relations between items that are used to satisfy a local condition like referential linking. What the discourse explicitly says about topic incorporation must be part of the topic structure. But the structure is not defined to be only these elements. Rather, a coherent discourse has a topic structure from which it draws topical elements.

I have stressed that topic structure is a global feature of discourse. We have seen in examples (23), (24), and (25) that no individual sentences or relations between specific sentences fix the

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[26]The use of PP fronting in this text, especially the fronting of complex PPs, raises some additional complexities related to syntax and to accent placement and deaccenting, which I cannot pursue here. For what it is worth, I did check the pitch track of my reading of *on each window-sill of the castle* in this text. It at least appears to show an $L + H^*$ accent aligned with *each*, rather than with the embedded NP. This is the accent often argued to be associated with topic (Vallduví and Zacharski, 1994; Steedman, 2000), which lends some support to my claim that it is the spatial relation that is marked as important to topic structure.

topic structure. Nor does the information about topic structure provided by each sentence simply constitute a part of the topic structure. Any one of the sentences in the discourses we have seen could appear in a different discourse and not have the same effect on topic structure at all. We have already seen this with (23) and (24). In (25), the sentence *Around these spread a pasture, also enclosed by a strong hedge*, for instance, could perfectly well appear in a discourse about the the military history of the castle, which could well have an entirely different topic structure.

To explore the global nature of topic structure a little further, and to relate it back to the ideas about discourse-global properties I introduced in Section (2), let us look at one more example. Example (25) was chosen because its topic structure is clearly indicated by some sentence-level devices, like PP fronting. This one, from *One Hundred Years of Solitude* (García Márquez, 1970, p. 211), is somewhat different:

(26)   Dazzled by so many and such marvelous inventions, the people of Macondo did not know where their amazement began. They stayed up all night looking at the pale electric bulbs fed by the plant that Aureliano Triste had brought back when the train made its second trip, and it took time and effort for them to grow accustomed to its obsessive *toom-toom*. They became indignant over the living images that the prosperous merchant Bruno Crespi projected in the theater with the lion-head ticket windows, for the character who had died and was buried in one film and for whose misfortunes tears of affliction had been shed would reappear alive and transformed into an Arab in the next one. The audience, who paid two cents apiece to share the difficulties of the actors, would not tolerate that outlandish fraud and they broke up the seats. The mayor, at the urging of Bruno Crespi, explained in a proclamation that the cinema was a machine of illusions that did not merit the emotional outbursts of the audience.[. . .] Something similar happened with the cylinder phonographs that the merry matrons from France brought with them . . .

It is easy to make a rough approximation of the topic structure of this piece of discourse. It is a structure of things of a certain kind, which are apt to dazzle the people. Some background information is needed to fix the kind, say that Macondo had been somewhat isolated. We could easily imagine any number of incorporable topics. Anything from the list of 19th century

inventions would do. In fact the text continues to introduce the telephone. It would not be acceptable to introduce, say, *bottles*.

Yet this is in a way inaccurate, for it does not take into account the obvious segmentation of the discourse. *The audience* and *the mayor* are incorporated as topics, with no diminution of coherence, though they are not 19th century inventions. The explanation is that the description of the topic structure I gave only holds at certain segmentation levels. For each incorporated invention, there is a further description of events surrounding its introduction. We have a structure of *exemplifications* (to use the terminology of Hobbs, 1985), each of which in turn involves a structure of *elaboration*. Within a lower-level segment, one may incorporate topics that could not be incorporated at higher levels. *The audience* is an example. Indeed, we could presumably extend this segment to incorporate *bottles*, perhaps by something like . . . *broke up the seats. Bottles were strewn about the hall.* Likewise, certain topics incorporated at higher levels would not produce coherent discourse if incorporated at lower ones. *The cylinder phonographs* is an example.

I think we can leave the matter in this rather vague state. The full description of the topic structure of this discourse will be rather complicated. What I do need to establish, and what I think this passage illustrates, is that topic structure is *discourse-global*. We have already seen examples that show that topic structure is not fixed by individual sentences or pairs of sentences, nor is it composed of or derived from parts each of which is so fixed. In this example, we see how the coherence relations that obtain between and within discourse segments, rather than sentence-level devices at all, can be crucial to fixing the topic structure of a discourse.

We thus have a global constraint on discourse coherence: coherent discourse must have a topic structure.[27] Having a topic structure is a discourse-global property. As I have stressed, this tells us something about topic incorporation as well. Topics can only be incorporated if the result is coherent discourse; so, topics can only be incorporated if they fit into the global topic structure

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[27]This may not be the case for absolutely all discourse. Various categories of literary text may provide some counterexamples. It is easy to find comic texts that achieve their effects by violating the constraint on topic organization, or at least by misdirecting expectations about it. Some modern novels play with topic structure in much more elaborate ways.

of a discourse. Hence, we have a discourse-global constraint on topic incorporation. What we are talking about, in the dynamic senses of what we are allowed to do in incorporating new topics, is subject to the global constraint of producing topically well-organized discourse.

6.   Topic Structure and Context

I have stressed the discourse-global nature of topic structure at length, as it is the feature that turns out to be a discourse-global component of context. Recall, in Section (3) we began with some examples, drawing on topic and focus, that appear to raise problems for utterance-localizable notions of context. I argued in Section (4) that even the focus examples relate to context via topic—what we are talking about. We then turned to the notion of topic itself in Section (5), where I argued that to understand the examples, we need to turn our attention to the notion of discourse topic. Discourse topic is highly dynamic, and we saw in the last section that there are genuinely global constraints on topic incorporation. In particular, we identified a global constraint based on the topic structure of a discourse. For instance, in example (23), we attempted to incorporate a topic, but failed. The result met the local condition of referential linking of topics, but would not have fit into the global topic structure of the discourse. We saw the same in the discussion surrounding examples (25) and (26).

To complete the argument, we need only put these components together. I shall argue that the effects of context our initial examples indicate are best explained by topic structure. I shall conclude that topic structure is a part of context.

First, let us return to the focus examples, repeated here:

(9)   John only [introduced]$_F$ Bill to Sue.

(16)   Only [the house]$_F$ was visible from the trees.

I argued before that context affects the truth conditions of utterances of these sentences, by affecting alternative sets. I gave examples where, depending on the discourse setting, we got quite different alternative sets. I said then that it appears that 'what we are talking about' is somehow

the relevant issue. Now, we can see a little bit more. For each discourse, the topic structure of the discourse has a great deal to do with what the alternative set contains.

For (16), for instance, I described two contexts. One of them (17) determined an alternative set like:

> {the house, people (John, Sue, ...), pets (Fido, Morris, ...), things found around the house (cars, toys, ...), ...}.

In the other (18), we had something like:

> {the house, the garden, the lawn, the bay windows of the house, the space between the house and the trees, ...}.

Not included in the second are such things as the shingles on the roof or the water faucet on the house.

What determines what is in each set? In part, topic incorporation. For each acceptable alternative, we can form a sentence which would successfully incorporate the alternative as a topic in the discourse. In the first discourse, the detective can go on to say something like *Fido, he was barking* or *The car, it was expensive*, and successfully incorporate a topic. Hence, what winds up being an acceptable alternative is subject to the same constraints as topic incorporation, and this includes the global constraint from topic structure we just examined.

In our examples, the topic structure constraint on topic incorporation seems to be especially important. In the second case, for instance, how does the space between the house and the trees get into the set, while the faucet that would be used to water the lawn does not? Because the discourse is organized around certain sorts of landscape features that relate to each other in certain ways, which sets the topic structure of the discourse. It is hard to say exactly what those relations are, except to note that they are the kinds of things that a landscape designer would take to be relevant in describing a design to a client, and not the things that would be relevant in describing it to the gardener. Certain sorts of spatial and visual relations are clearly part of this.

In contrast, when the topic structure is based on objects of the sort the detective is interested in, and the sorts of relations that the detective might care about, we get a very different alternative

set. Different not just in extent, but in the sorts of things that get into the set at all. To highlight the discourse-global nature of topic structure, in this example, note that it would not change the topic structure of the detective's report if it had contained a sentence from the landscape designer's discourse: *In front of the house was a small garden, leading into a substantial lawn, which was surrounded by trees.* But, we would expect the detective to then say something like, *The trees provided good cover as I watched the house*. That would render the whole discourse coherent.

We are now back to a matter of context. For, as we observed, in the cases we are considering context fixes the alternative set. We now see that what fixes the alternative set is in part the discourse-global topic structure. We have also seen that in the presence of focus-sensitive particles like *only*, alternative sets can affect truth conditions. Hence, we must conclude, topic structure is a part of context even in the sense of whatever combines with a sentence uttered to determine truth conditions. Context in this sense thus has a discourse-global component.

With this in mind, let us return to our topic-based examples, repeated here:

(4)   !That old master is obscuring my view of the Feininger.

(6)   My view of the Feininger is obscured by that old master.

(7)   Q: Is anything obscuring your view of the Feininger?
       A: That old master is obscuring my view of the Feininger.

An initial suggestion to explain these, motivated by the contrast between (4) and (6), might have been that only expressions in sentence-topic position carry existential presuppositions. This might be applied to (7) as well, on the basis of the intonation contour of the answer (A). But what prosodic topic marking is acceptable is fixed by the *discourse topic* set by the question (Q). Likewise, (6) is only felicitous—only expresses a proposition or avoids semantic defect—if its topic can be incorporated, which is a matter of discourse topic. It is discourse topic as much as any sentence-level devices that seems to be responsible for suspending or circumventing

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existential presuppositions in cases like these.[28]

What appears to be important in these cases is the discourse function of setting or changing discourse topics. In (6) and (7) the topic-setting function works unproblematically. In (4) the existential presupposition failure of the topic expression seems to make the topic-setting function misfire. When topic setting or incorporating devices succeed in their discourse functions, we seem to get non-defective utterances, in spite of presupposition failures. When they fail, sometimes due to presupposition failure, we get semantic defects.

Consider a variant example, again occurring in the modern art gallery:

(27)   Q: Are there any interesting paintings here?

       A: !The use of oblique angles, it makes that old master especially fascinating.

(We may assume the presuppositions of *the use of oblique angles* are satisfied but those of *that old master* are not.)

My intuitions about this example are hopelessly weak, but as I set up the example, I am inclined to think it is semantically defective, even though the marked topic phrase does not suffer from presupposition failure. The sort of explanation we were inclined to give above in cases where a presupposition appears to be suspended, that we are describing a property of the use of oblique angles, does not seem to be right. If this is so, why? It appears this case is an attempt at topic incorporation. The idea is to move from the general issue of interesting paintings to a feature that makes paintings interesting via the phrase *the use of oblique angles*. The attempt seems to fail, even though the marked phrase itself is unproblematic. The global constraint on coherence from topic structure helps to explain why. The success or failure of topic incorporation is not just a matter of what is indicated by a topic-marked phrase, but how what is indicated is to be fit into the topic structure of the discourse. The referent of *that old master* is required to fix

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[28]Dahl (1974), Gundel (1974), and Reinhart (1981) have cautiously proposed that only topical NPs carry existential presuppositions. In addition to the point that it is discourse as much as sentence topic that is at issue, von Fintel (1998) suggests that it is not exactly right to say the presupposition is simply canceled, but rather that it does not result in a lack of truth value (cf. Lasersohn, 1993).

how the referent of *oblique angles* is to be fit into the topic structure. There is no referent of *that old master*, so the attempt at topic incorporation fails and the utterance is defective.

Though in this case reference failure is at issue, and it results in semantic defect, the general phenomenon of unsuccessful topic incorporation is not specific to presupposition failure. We can produce a similar example with:

(28) Q: Are there any interesting paintings here?

       A: #The use of oblique angles, it keeps the walls from falling in on us.

In isolation, this is incoherent, and fails to incorporate its marked topic. (A long discourse about the relations between modern art and modern architecture *might* manage to incorporate this, but not with the topic structure we presume the example to have in isolation.) The problem is not with *the use of oblique angles* though, which may refer perfectly well; rather, it is with how it is supposed to fit into the rest of the discourse, just as we saw with (27).

The issues here are quite subtle, and intuitions about examples like (27) and (28) are weak. But the treatment of the topic examples I am urging reiterates the conclusion we reached in considering contextual restrictions on alternative sets. Whether or not something winds up in an alternative set is determined in part by whether it fits into the topic structure of the discourse. Likewise, whether or not a presupposition failure results in semantic defect—failure to express a proposition—is determined in part by whether we can construe the utterance as collaborating on the discourse topic. Just as with alternatives, this may be a matter of whether the marked topic of the utterance fits into the topic structure of the discourse.

Both the topic and focus examples show that topic structure, a global feature of discourse, must be a feature of context. As I mentioned at the outset, this conclusion is entirely about context as it relates to truth conditions. It may have appeared obvious that in some way or another, fully appreciating a discourse involves appreciating its topic structure. This is no doubt so, but the conclusion I offer is much stronger. The topic structure of a discourse has an effect on what if any propositions, indeed what if any truth conditions, are expressed by utterances within the discourse. Topic structure is part of context.

7.   A Global Aspect of Context

So far, I have argued that topic structure is part of context. We have seen examples of sentences that express different propositions, or fail to express propositions at all, in different settings. Some aspect of context must explain this, and it turns out that topic structure is precisely what does so. Hence, it must be an aspect of context, even narrowly construed as whatever combines with a sentence to determine the truth conditions expressed by an utterance.

I have argued that topic structure is not generally determined by information from a single utterance or by a running total of information encapsulated in individual utterances. Topic structure need not be derivable from only information made available at the utterance level at all. Indeed, we have seen that the same sentences can appear in different discourses and make entirely different contributions to their topic structures. Hence, topic structure is not generally utterance-localizable. The result is that we have identified a discourse-global feature of context.

Finding such a discourse-global feature of context narrowly construed is a striking, and I believe surprising, result. We did not begin our investigation with the global properties of discourse, but rather with context narrowly construed as what combines with a sentence to determine the proposition expressed by an *individual utterance* of it. We started out looking at the most localized aspect of language use, yet we have found a discourse-global component nonetheless. The context of an individual utterance must reflect properties of the entire discourse in which the utterance appears. Not just utterance-localizable properties of previous discourse, but the global structure of the whole discourse is reflected. This is a surprise, I believe.

How much of a surprise? When I introduced the distinction between utterance-localizable and discourse-global information, I raised the question of whether we might think of discourse-global as the extremum of degrees of utterance-localizability. At the very least, we can observe that topic structure is at the extremum of degrees of non-localizability in a very strong sense. This is evident from examples like (25), which rely on the devices of sentential topic marking to set the topic structure of the discourse. We might attempt to account for the global topic structure of such cases by noting that each sentential topic-marking device is indeed a feature of an individual sentence or utterance, and so enough information about individual utterances might be enough to

describe the topic structure through the patterns of sentential topic marking. This may be so. But recall the range of phenomena involved in topic marking and the relating of topic-marked phrases in discourse. Sentential topic marking relies on a number of syntactic and prosodic devices (at least). Beyond that, to describe the topic structure, we would have to identify the right inter-sentential relations to describe how the marked topics relate. These can be complex semantic relations. To describe this information fully, without relying on the organization of global topic structure, we would have to transcribe the syntactic, semantic, and prosodic properties of each utterance. But this would be to transcribe virtually every describable aspect of every individual utterance. We would simply have to repeat the discourse. Hence, insofar as we can extract topic structure from this information, it is at the extremum of the degrees of utterance-localizability. It is at the extremum in the very strong sense of being derived only from information which constitutes a transcription of the entire discourse. It is clear that this is only in a degenerate sense utterance-localizability at all.

This is already a result I find somewhat surprising. When we started down the path of keeping a running record of information about discourse in a context, I doubt we expected to wind up here. However, I think, as I indicated back in Section (2), that a stronger conclusion may be in order. I suggest that seeing topic structure as the extremum of degrees of utterance-localizability is not the right way to look at it.

The problem is that even if we have at our disposal an entire transcription of a discourse, utterance by utterance, and so reach the extremum, we still do not really have the topic structure of the discourse. We do have information that in some way encodes the topic structure. If we did not, we should hardly say topic structure is an aspect of discourse at all. But the encoding of topic structure in such a transcription is highly indirect. Whereas the transcription directly provides syntactic and prosodic information, we have already seen that it need not directly state the topic structure of the discourse. No more must it directly provide anything that amounts to the parts or components of the topic structure, which may simply be collected together. Topic structure is often given by a transcription only in virtue of it being possible to extract it by some *decoding* procedure. I suggest that such a procedure will normally *bring* discourse-global information with

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it. Hence, I suggest, even the extremum of degrees of utterance-localizability is not enough to reach topic structure. We have a genuinely discourse-global phenomenon.

Consider how the topic structure of (25) is fixed. I pointed out that this is substantially done by the organization of topic-marked terms. But it is not fixed by information that merely indicates which terms are topic-marked, and what their semantic values are. Nor is it enough to add information about what relations obtain between these and other semantic values. All of this can obtain in discourses with very different topic structures. What else is needed? It is difficult to state in a non-question-begging way. We need information that tells us that in this case, the arrangement of topic-marked terms does organize the discourse topically. In the worst case, what is needed is just the topic structure of the discourse itself. Even if something less is required, it still must be something about the organization of the discourse as a whole, which allows the step from the arrangement of topic-marked terms to the fact that it fixes topic structure in this case.

This is brought out even more forcefully by examples like (26). In that example, coherence relations among discourse segments, not properties of individual utterances, are crucial to the topic structure. If we just look at the facts about the utterance events, in isolation from facts about the rest of the discourse, we will not find the right sort of information. We may well find information about sentential topic marking, but not the information about relations between discourse segments that is crucial to the topic structure. It will not help matters to assume that we can somehow extract the segmentation of the discourse from an utterance-by-utterance transcription of it (be it from cue phrases, or pitch accents, or any other utterance-level features of the discourse). Even if we have this, it will not determine how the segments are organized. Moreover, even if we can somehow extract from the transcription the relations that organize the discourse segments, it will not suffice to determine which aspects of the organization fix the topic structure of the discourse. It will not even determine that it is relations between discourse segments, rather than, say, sentential topic marking, which fixes the topic structure. To get information about topic structure out of even the entire transcription of a discourse, we have to rely on some global information about the organization of the discourse as a whole.

An analogy might be helpful. A well-known issue in the study of vision is how our basically two-dimensional visual apparatus provides information about the three-dimensional world. It is

no doubt in some sense right to say that a two-dimensional retinal array encodes information about a three-dimensional visual scene. But the visual system can only decode it by making substantial assumptions which provide some essentially three-dimensional structure. Likewise, there is a sense in which an utterance-by-utterance transcription of a discourse encodes discourse-global information, at the extremum of utterance-localizability. But it can only be extracted by bringing to bear some already discourse-global information.

So, we may conclude that topic structure is at least at the extremum of degrees of utterance-localizability; but moreover, we have good reason not to see it as utterance-localizable even in degree. With this in mind, we should return to the theories of context I presented in Section (1). As both see context as to a significant degree utterance-localizable, both are strained by topic structure as a feature of context. We should consider whether they might be modified to make room for it.

Let us first consider the index theory. As I mentioned in Section (1), the index theory may be seen as merely a formalism for describing contexts. Taken as such, we could simply add a coordinate to indices for topic structure. This is problematic. It might suffice to address the focus examples, as semantic values may have parameters for alternative set, which this coordinate could serve to fix. However, it is much less clear how it could help with the topic examples. We have not identified a parameter whose value explains the behavior we have seen with these examples. Even if we assume topic structure is a coordinate of an index, we lack a sufficiently general explanation of what it does in terms of the index theory.

More importantly, as a philosophical account of context, the index theory is extremely hard-pressed to explain topic structure. In Section (1) I suggested the index theory sees index coordinates as appropriate features of utterance events. Yet we have already seen that topic structure is not a feature of any utterance event, nor is it composed of or derived from such features in any non-trivial way. It will not result from the sorts of operations on coordinates we considered as a way to extend the index theory in Section (2). The global nature of topic structure is incompatible with anything along the lines of the philosophical account of the index theory I

offered in Section (1).[29]

The presupposition theory as I described it in Section (1) is likewise strained by topic structure. As I presented it there, the theory includes among speakers' presuppositions, over and above common ground background assumptions, the contents of utterances made in a discourse and information about the making of the utterances. The preceding discussion makes clear why this cannot suffice to provide topic structure. As I suggested, if we look just at the facts about utterance events, described in isolation from the facts about the structure of the discourse in which they occur, we will not find the right sort of information. Even if we enrich the context-update procedures by more sophisticated Gricean mechanisms, if we start with utterance-localizable information, we will not be able to derive topic structure. Hence, we can conclude that the presupposition theory as offered in Section (1) has as much difficulty with topic structure as the index theory.

However, there are a couple of ways the presupposition theory may offer some additional flexibility. In Section (1), I restricted the basic information in a context according to the presupposition theory to that derived from two sources: the contents of utterances and facts about utterance events. We might respond to my arguments for topic structure by expanding these sources to include speakers' presuppositions *about the global properties of discourses*. This could retain the basic idea of the presupposition theory, that context is a species of content. Given the distinctive nature of discourse-global information, I think this is a significant amendment to the theory, though one in keeping with its basic ideas.[30]

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[29]Lewis (1970) considers adding a 'previous discourse' coordinate to indices. His discussion indicates he probably had in mind utterance-localizable features of discourse, but we have already seen from the argument against the extremum of degrees view why simply adding previous discourse as a coordinate, *unanalyzed*, does not account for topic structure.

[30]I believe Stalnaker might be amenable to such an extension. He makes clear in the Introduction to Stalnaker (1999) that he sees the presupposition theory primarily as a general framework for representing contextual phenomena. The proposals of Stalnaker (1978) and Stalnaker (1998), which form the basis for the received view of the theory that I outlined in Section (1), are described as investigations of how the general framework might be applied rather than as exhaustive statements of a theory. Nothing about the general framework seems to preclude the presupposition of discourse-global information.

Though this way of incorporating discourse-global information into context is certainly open to the presupposition theory, I would like to make a tentative suggestion of another approach. Any information that is part of context must be in principle available to speakers. The difficulty we face is how to make information about the global structure of a discourse available to speakers at a particular point within the discourse. One way to do so is to equip speakers with propositional information about the whole discourse. However, it would suffice for them to be able to recognize elements of its topic structure as such. They must be able to recognize objects and properties and whatever else may figure into a topic structure *as topical for the discourse*, and they must be able to take this to be part of the common ground of the discourse. This suggests an *attitude* of *taking to be topical for a discourse*. This attitude is very much like that of speaker's presupposition. Like presupposition, it is reflected in speakers' dispositions to make or accept moves within a conversation. It differs from presupposition primarily in being *object* rather than proposition directed. It is an attitude of taking an object to be topical for a discourse, rather than one of taking it to be common ground *that* something is the case. ('Object' must be must be taken quite liberally. Properties, relations, and even propositions can be topical elements for a discourse.) We might supplement the presupposition theory not by adding more kinds of propositional information but by adding to the attitude of presupposition the attitude of taking to be topical for a discourse.

This is still a significant extension of the presupposition theory. We have seen that a topic structure is not simply a collection of salient or given objects, but an organization of topical elements, where the organization reflects the organization of a discourse as a whole. So, for example, if the topic structure of a discourse is based on part/whole relations, then (barring any further restrictions) speakers in the discourse should be disposed to accept as topical any parts of topical objects. The arguments given here show that this is not a matter of simply taking things to be salient in the environment, but rather of taking them to be topical in virtue of the structure of the discourse. This is an attitude that reflects speakers' understanding of the organization of the discourse as a whole. Its source must be in speakers' ability to follow along and apprehend the global structure of a discourse in which they participate.

I am inclined to think extending the presupposition theory by this attitude provides a better solution than the approach of enriching the contents presupposed, though much more needs to be done to resolve the issue. Given the complex nature of topic structure, if speakers are to hold propositional attitudes about it, these attitudes must be highly tacit. It seems such attitudes will manifest themselves in conversation primarily through speakers' dispositions to recognize elements as topical. Hence, in describing what may be common ground in a discourse, it appears simpler to appeal directly to the object-directed attitude of taking to be topical for a discourse. Moreover, doing so appears to get the phenomenology of participating in a discourse right. We seem to experience following a discourse as being able to *recognize* what is topical for it.

Context does have a discourse-global aspect, and this is something any complete theory of context must address. More work needs to be done to fully elaborate the aspect of context the arguments given here have uncovered, and to provide an adequate formal treatment of it. Let me conclude merely with some clarificatory remarks.

First, I have argued that one aspect of context is discourse-global. This does not imply that all of them are. For instance, it does not imply that the index theory cannot be right in some domains, such as that of indexicals for which it was originally designed. Even so, my conclusion is enough to show that it is a mistake to think all context-dependence may be understood on the model of indexicals offered by the index theory.

Second, as I mentioned in Section (1), it is important not to confuse questions of constitutivity and of application. I claim that context has a discourse-global component, as a matter of its constitution. But it is still the case that context is whatever determines what proposition is expressed by an *utterance* of a sentence. Context thus must *apply* utterance-locally. The question that has been at issue here is what sort of information needs to be in place at the point of utterance for context to do its job, and my thesis is that it must be in part discourse-global information about topic structure. Hence, context must provide a local image of a discourse-global feature of discourse.

If this is right, it highlights a difficult situation speakers sometimes find themselves in, of trying to interpret utterances based on information that they may have difficulty accessing, because it will not be made fully plain until the discourse unfolds. This is a more familiar

situation than it may appear. We are all familiar with cases of failure, where we misunderstand the organization of a discourse, and find our comprehension suffering as a result. Speakers may use all sorts of strategies or devices for carrying on with discourse in the presence of this sort of uncertainty about discourse-global structure. I want to stress that my proposal that topic structure is a part of context does not in any way attempt to address how they do so. Context has a component that is discourse-global. What speakers do to figure out what is in this component is another matter entirely.[31]

Finally, the presence of a discourse-global component of context does imply that context in general may be more messy and more complicated than some might have thought. I want to stress that I do not think that messy and complicated implies intractable, mysterious, or not apt for formal analysis. What it does imply is that context can be as complex as an entire discourse.

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References

Asher, N. 1993: *Reference to Abstract Objects in Discourse*. Dordrecht: Kluwer.

Barwise, J. and Perry, J. 1983: *Situations and Attitudes*. Cambridge: MIT Press.

Bolinger, D. 1972: Accent is predictable (if you're a mind-reader). *Language*, 48, 633–644.

Brown, G. and Yule, G. 1983: *Discourse Analysis*. Cambridge: Cambridge University Press.

Büring, D. 1999: Topic. In P. Bosch and R. van der Sandt (eds.), *Focus: Linguistic, Cognitive, and Computational Perspectives*. Cambridge: Cambridge University Press, 142–165.

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[31]Some ideas about how speakers accomplish this are to be found in the literature on discourse processing, such as the macrostrategies and thematic strategies of van Dijk and Kintsch (1983) or the story grammars of Rumelhart (1975) and Thorndyke (1977) (which have been the subject of extensive subsequent investigation). Ideas about plan recognition (e.g. Carberry, 1990) are also relevant. Some suggestions along more Gricean lines are given in Schwarzschild (1999). It should be clear, though, that topic structure is not in any way like a story grammar.

Carberry, S. 1990: *Plan Recognition in Natural Language Dialogue*. Cambridge: MIT Press.

Chierchia, G. and McConnell-Ginet, S. 1990: *Meaning and Grammar: An Introduction to Semantics*. Cambridge: MIT Press.

Chomsky, N. 1971: Deep structure, surface structure, and semantic interpretation. In D. D. Steinberg and L. A. Jakobovits (eds.), *Semantics*. Cambridge: Cambridge University Press, 183–216.

Cresswell, M. J. 1973: *Logics and Languages*. London: Methuen.

Dahl, Ö. 1974: Topic-comment structure revisited. In Ö. Dahl (ed.), *Topic and Comment*. Hamburg: Helmut Buske, 1–24.

Daneš, F. 1968: Some thoughts on the semantic structure of the sentence. *Lingua*, 21, 55–69.

van Dijk, T. A. 1977: *Text and Context*. London: Longman.

van Dijk, T. A. and Kintsch, W. 1983: *Strategies of Discourse Comprehension*. New York: Academic Press.

Dretske, F. 1972: Contrastive statements. *Philosophical Review*, 81, 411–437.

van Eijck, J. and Kamp, H. 1997: Representing discourse in context. In J. van Benthem and A. ter Meulen (eds.), *Handbook of Logic and Language*. Amsterdam: Elsevier, 179–237.

von Fintel, K. 1994: *Restrictions on Quantifier Domains*. Ph.D. dissertation, University of Massachusetts at Amherst.

von Fintel, K. 1998: Would you believe it? The King of France is back! Unpublished handout.

Firbas, J. 1964: On defining the theme in functional sentence analysis. *Travaux Linguistiques de Prague*, 1, 267–280.

Flaubert, G. 1978: The legend of Saint Julian the Hospitaller. In R. V. Cassill (ed.), *The Norton Anthology of Short Fiction*, 3rd edn. New York: Norton, 560–581. Translated from the French original of 1877.

Flaubert, G. 1994: *Madame Bovary*. Ware: Wordsworth. Translated from the French original of 1856.

García Márquez, G. 1970: *One Hundred Years of Solitude*. New York: Harper and Row. Translated by G. Rabassa from the Spanish original of 1967.

Giora, R. 1985: Notes towards a theory of text coherence. *Poetics Today*, 6, 699–715.

Givón, T. 1983: Topic continuity in discourse: An introduction. In T. Givón (ed.), *Topic Continuity in Discourse*. Amsterdam: John Benjamins, 1–41.

Grice, P. 1969: Utterer's meaning and intentions. *Philosophical Review*, 78, 147–177. Reprinted in Grice (1989).

Grice, P. 1989: *Studies in the Way of Words*. Cambridge: Harvard University Press.

Grosz, B. J., Joshi, A. K., and Weinstein, S. 1995: Centering: A framework for modelling the local coherence of discourse. *Computational Linguistics*, 21, 203–225.

Grosz, B. J. and Sidner, C. L. 1986: Attention, intentions, and the structure of discourse. *Computational Linguistics*, 12, 175–204.

Gundel, J. K. 1974: *The Role of Topic and Comment in Linguistic Theory*. Ph.D. dissertation, University of Texas at Austin. Published by Garland, New York, 1988.

Gundel, J. K. 1985: Shared knowledge and topicality. *Journal of Pragmatics*, 9, 83–107.

Hajičová, E., Partee, B. H., and Sgall, P. 1998: *Topic-Focus Articulation, Tripartite Structures, and Semantic Content*. Dordrecht: Kluwer.

Halliday, M. A. K. 1967: Notes on transitivity and theme in English (part 2). *Journal of Linguistics*, 3, 199–244.

Halliday, M. A. K. and Hasan, R. 1976: *Cohesion in English*. London: Longman.

Heim, I. 1982: *The Semantics of Definite and Indefinite Noun Phrases*. Ph.D. dissertation, University of Massachusetts at Amherst. Published by Garland, New York, 1989.

Hobbs, J. R. 1985: On the coherence and structure of discourse. Tech. Rep. CSLI–85–37, CSLI, Stanford.

Jackendoff, R. S. 1972: *Semantic Interpretation in Generative Grammar*. Cambridge: MIT Press.

Kamp, H. 1984: A theory of truth and semantic representation. In J. Groenendijk, T. Janssen, and M. Stokhof (eds.), *Truth, Interpretation, and Information*. Dordrecht: Foris, 1–41.

Kaplan, D. 1989a: Afterthoughts. In J. Almog, J. Perry, and H. Wettstein (eds.), *Themes from Kaplan*. Oxford: Oxford University Press, 565–614.

Kaplan, D. 1989b: Demonstratives. In J. Almog, J. Perry, and H. Wettstein (eds.), *Themes From Kaplan*. Oxford: Oxford University Press, 481–563. First publication of a widely circulated manuscript dated 1977.

Keenan, E. O. and Schieffelin, B. 1976a: Foregrounding referents: A reconsideration of left dislocation in discourse. *Proceedings of the Berkeley Linguistics Society*, 2, 240–257.

Keenan, E. O. and Schieffelin, B. 1976b: Topic as a discourse notion: A study of topics in the conversations of children and adults. In N. Li (ed.), *Subject and Topic*. New York: Academic Press, 335–384.

Krifka, M. 1993: Focus and presupposition in dynamic interpretation. *Journal of Semantics*, 10, 269–300.

Kuno, S. 1972: Functional sentence perspective: A case study from Japanese and English. *Linguistic Inquiry*, 3, 269–320.

van Kuppevelt, J. 1995: Discourse structure, topicality and questioning. *Journal of Linguistics*, 31, 109–147.

Ladd, D. R. 1996: *Intonational Phonology*. Cambridge: Cambridge University Press.

Lasersohn, P. 1993: Existence presuppositions and background knowledge. *Journal of Semantics*, 10, 113–122.

Levinson, S. C. 1983: *Pragmatics*. Cambridge: Cambridge University Press.

Lewis, D. 1970: General semantics. *Synthese*, 22, 18–67. Reprinted in Lewis (1983).

Lewis, D. 1979a: Attitudes *de dicto* and *de se*. *Philosophical Review*, 88, 513–543. Reprinted in Lewis (1983).

Lewis, D. 1979b: Scorekeeping in a language game. *Journal of Philosophical Logic*, 8, 339–359. Reprinted in Lewis (1983).

Lewis, D. 1980: Index, context, and content. In S. Kanger and S. Öhman (eds.), *Philosophy and Grammar*. Dordrecht: Reidel, 79–100. Reprinted in Lewis (1998).

Lewis, D. 1983: *Philosophical Papers*, vol. 1. Oxford: Oxford University Press.

Lewis, D. 1998: *Papers in Philosophical Logic*. Cambridge: Cambridge University Press.

Mann, W. C. and Thompson, S. A. 1988: Rhetorical structure theory: Toward a functional theory of text organization. *Text*, 8, 243–281.

McNally, L. 1998: On recent formal analyses of topic. In J. Ginzburg, Z. Khasidashvili, C. Vogel, J.-J. Lévy, and E. Vallduví (eds.), *The Tbilisi Symposium on Logic, Language and Computation*. Stanford: CSLI, 147–160.

Montague, R. 1968: Pragmatics. In R. Klibansky (ed.), *Contemporary Philosophy: A Survey*. Florence: La Nuova Italia Editrice, 102–122. Reprinted in Montague (1974).

Montague, R. 1974: *Formal Philosophy*. New Haven: Yale University Press. Edited by R. Thomason.

Parker, W. O. and Smith, H. K. 1979: *Scene Design and Stage Lighting*. 4th edn. New York: Holt, Rinehart and Winston.

Pierrehumbert, J. and Hirschberg, J. 1990: The meaning of intonational contours in the interpretation of discourse. In P. R. Cohen, J. Morgan, and M. E. Pollack (eds.), *Intentions in Communication*. Cambridge: MIT Press, 271–311.

Polanyi, L. 1988: A formal model of the structure of discourse. *Journal of Pragmatics*, 12, 601–638.

Portner, P. and Yabushita, K. 1998: The semantics and pragmatics of topic phrases. *Linguistics and Philosophy*, 21, 117–157.

Prince, E. F. 1981: Topicalization, focus-movement, and yiddish-movement: A pragmatic differentiation. *Proceedings of the Berkeley Linguistics Society*, 7, 249–264.

Prince, E. F. 1997: On the functions of left-dislocation in English discourse. In A. Kamio (ed.), *Directions in Functional Linguistics*. Amsterdam: John Benjamins, 117–144.

Reinhart, T. 1980: Conditions for text coherence. *Poetics Today*, 1, 161–180.

Reinhart, T. 1981: Pragmatics and linguistics: An analysis of sentence topics. *Philosophica*, 27, 53–94.

Roberts, C. 1996: Information structure in discourse: Towards an integrated formal theory of pragmatics. *Ohio State University Working Papers in Linguistics*, 49, 91–136.

Rooth, M. 1985: *Association with Focus*. Ph.D. dissertation, University of Massachusetts at Amherst.

Rooth, M. 1992: A theory of focus interpretation. *Natural Language Semantics*, 1, 75–116.

Rostand, E. 1951: *Cyrano de Bergerac*. New York: Bantam. Translated by B. Hooker from the French original of 1897.

Rumelhart, D. E. 1975: Notes on a schema for stories. In D. G. Bobrow and A. Collins (eds.), *Representation and Understanding*. New York: Academic Press, 211–236.

Schlobinski, P. and Schütze-Coburn, S. 1992: On the topic of topic and topic continuity. *Linguistics*, 30, 89–121.

Scholes, P. A. 1955: *The Oxford Companion to Music*. 9th edn. Oxford: Oxford University Press.

Schwarzschild, R. 1999: How specific is an utterance? Unpublished handout.

Stalnaker, R. C. 1974: Pragmatic presuppositions. In M. K. Munitz and P. K. Unger (eds.), *Semantics and Philosophy*. New York: New York University Press, 197–213. Reprinted in Stalnaker (1999).

Stalnaker, R. C. 1978: Assertion. In P. Cole (ed.), *Pragmatics*, vol. 9 of *Syntax and Semantics*. New York: Academic Press, 315–322. Reprinted in Stalnaker (1999).

Stalnaker, R. C. 1998: On the representation of context. *Journal of Logic, Language, and Information*, 7, 3–19.

Stalnaker, R. C. 1999: *Context and Content*. Oxford: Oxford University Press.

Stanley, J. and Szabó, Z. G. 2000: On quantifier domain restriction. *Mind and Language*, 15, 219–261.

von Stechow, A. 1991: Current issues in the theory of focus. In A. von Stechow and D. Wunderlich (eds.), *Semantics: An International Handbook of Contemporary Research*. Berlin: de Gruyter, 804–825.

Steedman, M. 2000: *The Syntactic Process*. Cambridge: MIT Press.

Strawson, P. F. 1950: On referring. *Mind*, 59, 320–344. Reprinted in Strawson (1971).

Strawson, P. F. 1964: Identifying reference and truth-values. *Theoria*, 30, 96–118. Reprinted in Strawson (1971).

Strawson, P. F. 1971: *Logico-Linguistic Papers*. London: Methuen.

Thorndyke, P. W. 1977: Cognitive structures in comprehension and memory of narrative discourse. *Cognitive Psychology*, 9, 77–110.

Vallduví, E. 1990: *The Informational Component*. Ph.D. dissertation, University of Pennsylvania. Published by Garland, New York, 1992.

Vallduví, E. and Zacharski, R. 1994: Accenting phenomena, association with focus, and the recursiveness of focus-ground. *Proceedings of the Amsterdam Colloquium*, 9, 683–702.

Ward, G. L. 1985: *The Semantics and Pragmatics of Preposing*. Ph.D. dissertation, University of Pennsylvania. Published by Garland, New York, 1988.

Ward, G. L. and Prince, E. F. 1991: On the topicalization of indefinite NPs. *Journal of Pragmatics*, 16, 167–177.