On Some Semantic Consequences of Turn Taking
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Abstract
Implicit in most formal semantic work is the assumption that in a conversation the participants have equal access to the (semantic) objects in the context. In this paper I argue against this assumption by pointing out a puzzle concerning the resolution options in dialogue of fact-operator ellipsis. I develop an account of the puzzle within a dialogue-games approach by refining the structure on the common ground facts and explicating the update potential of utterances.

1 Introduction
Although it is generally accepted that conversational participants (CP's) play different roles at a given point in a conversation (e.g. querier v. responder), this is usually assumed to be a fact pertaining to the domain of speech act theory, not semantic theory. Implicit in this view is the following assumption, influential particularly since the dynamic approach to assertion and presupposition initiated by Stalnaker 1978: Equal Access to Context: As a conversation proceeds a common ground emerges: A has her turn, reaches a transition relevance point (TRP); Then either A proceeds or B takes over from the common ground point at which A spoke. In this paper I argue against Equal Access by pointing out a puzzle (the Turn Taking Puzzle) concerning the resolution options in fact-operator ellipsis, which I suggest are crucially linked to the issue of who keeps or takes over the turn. I suggest that an account of the puzzle can be provided within a dialogue-games approach (see e.g. Hamblin 1970, Carlson 1983, Houghton and Isard 1987, Ginzburg 1995b, Roberts 1996). Specifically, a solution requires an extension of the approach in two directions: first, I motivate a two sorted structure for facts, thereby offering a dialogical and purely semantic version of the Right Frontier Constraint familiar from work on text structure; second, I offer an account of utterance acts from which emerges a fundamental speaker/addressee contextual asymmetry.

(1) and (2) exemplify the Turn Taking Puzzle. The data at issue here concern the resolution of the bare factive–operator wh-phrase ‘why’. In examples like (1) two types of resolutions are, in principle available: one where the argument of the operator is the fact associated with the initial assertion (‘the fact that B is upset’), the other where the argument is the fact characterizing the initial utterance (‘the fact that A asserted that B is upset’). (1a), where at the TRP the original speaker keeps the turn, contrasts minimally with (1b), where two distinct speakers are involved. (2) is variant of (1) where the initial utterance is a query: in (2a), ‘why’ must pick up on a fact that positively resolves the initial question A poses, whereas when ‘why’ is uttered by a new speaker the resolution is to a fact characterizing

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A’s initial utterance. Notice that these data cannot be explained merely as a consequence of the differing coherence of an utterance depending on who makes the utterance: the resolution unavailable to A in (1a)/(2a) is coherent when it arises from a non-elliptical utterance, as in (1c)/(2c). Rather, what this data seems to show is that which semantic objects are available to a particular dialogue participant, i.e. which entities she can exploit in elliptical or anaphoric resolution, depends in part on the role that participant has most recently played in the conversation.

| (1a) | A: You're upset. Why? (unambiguously: ‘Why is B upset?’) |
| (1b) | A: You're upset. B: Why? (strong preference: ‘Why does A claim B is upset?’; ‘why is B upset?’ weakly available) |
| (1c) | A: You're upset. Why do I say that? |

| (2a) | A: Where was your Grandmother’s sister born? Why? (Unambiguously: ‘Why was she born there?’) |
| (2b) | A: Where was your Grandmother’s sister born? B: Why? (‘Why do you ask where she was born?’) |
| (2c) | A: Where was your Grandmother’s sister born? (and) Why am I asking this question? |

2 Semantics for Dialogue

The Turn Taking Puzzle (TTP) appears to constitute a direct refutation of Equal Access. In order to develop a solution I adopt the perspective of dialogue-games frameworks (refs above): this allows one to view conversation as a game the rules for which can affect distinct participants differently at a given point. In fact, the TTP also argues against dialogue game formulations stated exclusively as operations on a common ground, as e.g. in Roberts 1996, precisely because such formulations implicitly assume that Equal Access obtains. In attempting to defuse the tension between individual and common aspects of “context”, I adopt the following strategy: the basic domain of description is taken to be the mental state, avoiding a regress into solipsism by positing that conversational rules involve updates by each CP of her own dialogue-gameboard (DGB), a quasi-public informational repository (cf. Hamblin’s individual commitment slate).

As a starting point I take the view of DGB structure and updates articulated in Ginzburg 1994, 1995b, 1997a: on this view the DGB is structured by at least the following attributes: FACTS: a set of facts, closed (cf. Asher 1993) under meets and joins; QUD(’questions under discussion’) : a set consisting of the currently discussable questions, partially ordered by ≺ (‘takes conversational precedence’). Both querying and assertion involve a question becoming maximal in the querier/asserter’s QUD, the posed question q for a query q, p? for an assertion p. Roughly: the responder can subsequently either choose to start a discussion (providing information σ that is ABOUT q/p? or posing a question q1 on which q/p? DEPEND) or, in the case of assertion, update her FACTS structure. A CP can downdate q/p? from QUD when, as far as her (not necessarily public) goals dictate, sufficient information has been accumulated in FACTS.

2 Similar mismatches arise with other factive wh-operators such as ‘where’, ‘when’, ‘how’ etc, as illustrated in (i) and (ii):
(i) A: who attacked you? (and) where? [roughly: where did that person attack you?]
(ii) A: who attacked you? B: where? [roughly: what place I are you asking who attacked me at?]

3 I have also argued in the afore-mentioned works that the DGB keeps track of an attribute dubbed ‘LATEST-MOVE’, representing information about the content and structure of the most recent accepted illocutionary move. In the current, concise exposition, I will ignore this rather crucial attribute.
3 FACTS and its Structure

3.1 The locality of fact ellipsis

The first extension a framework like that of Ginzburg 1995b, 1997a requires in order to account for the TTP, I suggest, is the imposition of a bi-sortal structure on FACTS. One motivation for this is the strictly local nature of fact-entity ellipsis and anaphora. Consider (3a): in (iv) ‘why’ has two possible resolutions, as indicated below. However, if this dialogue continues from (iii) with the turns (iv’)-(vi’), the resolution possibilities change, in particular the facts previously available as resolutions are no longer available:


(3b) A(iv’): Uh huh. B(v’): Mary also left. A(vi’): Hmm. So, do you know why? ( why: why Mary left recently. or: why Mary left recently and Bill left recently. not: why does everybody hate Bill, why Bill left recently.)

Now although such dialogue data have not, to the best of my knowledge, been addressed before, they seem clearly analogous to the phenomena addressed by work on fact and propositional anaphora in texts. Both Webber 1991 and Asher 1993 have proposed accounts based on a tree-configurational view of discourse structure primarily constrained by the Right Frontier Constraint (RFC) (Polanyi 1987). Given certain fundamental differences between text and dialogue, as discussed in Ginzburg 1997b, one cannot take over directly these text-theoretic notions. Below I sketch the purely semantic, dialogical version of the RFC from Ginzburg 1997b, based on an analogy that relates the text-derived notion of open constituent (“unexhausted topic”) with the dialogue–derived notion of question (currently) under discussion.

3.2 Hasty Accommodation

An additional motivation for the bi-sortality of FACTS concerns what one might term hasty accommodation: although at the best of times information is taken to be presupposed only once all CP’s have indicated that they accept it, a speaker can, nonetheless, coherently presuppose material that has not been accepted into the DGB and after discussion retract it:

(4) A: Merle Frankenstern hasn’t published much recently. That (fact) disappoints me. B: No, she’s just published a couple of books over the past year. A: Oh really.

A related phenomenon is illustrated in (5), similar to (1a) and (2a), where two questions are posed by a single speaker. Apparently, the only possible resolutions are the corresponding resolutions in (6), not the corresponding parenthesised resolutions:

(5a) A: Who left the institute before 5? (and) Why?
(5b) A: Did Bill buy that book for Mary? At what time?
(5c) A: Is Millie going to get a job? Why?

(6a) Why did they, those people that left the institute before 5, leave? (Why did no one leave the institute before 5?)
(6b) At what time did Bill buy that book for Mary? (At what time did Bill not buy that book for Mary?)
(6c) Why is Mary going to get a job? (Why is Mary not going to get a job?)

Thus, what is accommodated are the positive resolutions to the question, not just any resolving SOA. That is, we have what seems to be a conventionalized accommodation strategy, since as far as plausibility goes, nothing should rule out the negative resolutions.\(^4\) However, nothing guarantees that the positive resolutions

\(^4\)See Ginzburg 1995a for arguments against associating an existential presupposition with a wh-interrogative, based in particular on the existence of contexts where a querier not only lacks the requisite presupposition but actually suspects that it is false and yet can, entirely felicitously,
are factual, so just as in (4) they might need retracting.

3.3 Two grades of Facts

The phenomena discussed in the previous sections lead me to the following conclusion: in addition to the standard structure on FACTS, one needs to recognize a localized, “temporary” component of FACTS, so that liable to be corrected material is not fully integrated into the DGB using \(+_{\text{facts-closure}}\) (unioning in of the SOA plus closure under $\lor/\land$) before discussion, since retraction will be costly. Thus, one needs to recognize two grades of SOA’s within DGB | FACTS. The first sort of element in FACTS are SOA’s dubbed stored.\(^5\) Such SOA’s are to be thought of as items of information that truly have the acceptance of all conversational participants, following perhaps some discussion. They can thus be safely integrated with the conversationally emergent body of knowledge: STORED will be closed under $\lor$ and $\land$. The second sort in FACTS, to be dubbed topical, concerns SOA’s that pertain to questions under discussion at that point in time. TOPICAL will be treated as a set of pairs of $a = \{ \text{question}_0, \text{soa}_0 \}$, where question$_0$ (a’s address) is an element of QUD, soa$_0$ is ABOUT $q_0$. TOPICAL is updated using priority union (Carpenter 1993, Grover et al 1994), a defeasible update operation in which later accepted material takes precedence, hence allowing for an account of hasty accommodation.

As far as querying and assertion: in this revised setup updating QUD has the additional consequence of introducing a new address in TOPICAL about which SOA’s can be provided, together initially with the trivial SOA $\top$. In addition, when a new question gets introduced, the addresses for questions that are no longer under discussion are downdated from TOPICAL. This latter assumption represents our own version of the RFC. Consequently: the hypothesis I make is that:

**It is precisely the SOA’s in FACTS | TOPICAL to whom access by ellipsis and pronominal anaphora is possible.**

For reasons of space I restrict myself to illustrating the account by considering a simple example, as given in (7), which abstracts away from various details irrelevant for current concerns, concentrating mainly on the evolution of TOPICAL. The dialogue works essentially as follows: A asks a question in (i), $q_1$, to which B responds in (ii). A accepts the assertion in (iii). Let us assume she is now ready to move on to another issue, the one she raises in (4), so she can now downdate from QUD both $q_1$ and the question ‘Bill left recently?’. At this point there is one possible fact antecedent in TOPICAL, ‘Bill left recently’. This can, therefore, serve as an antecedent for A’s ‘why’ in (iv). However, a side effect of A’s posing her question in (iv) is that the addresses corresponding to $q_1$ and to ‘Bill left recently?’ get downdated from TOPICAL, since these questions are no longer in QUD, therefore inter alia eliminating ‘Bill left recently’ as a possible elliptical fact antecedent. Notice that there is, thus, always a one move lag between the downdating of questions from QUD and the disappearance of the addresses they provide in TOPICAL. This seems like an intuitive prediction: once some information is no longer contentious, one still wants to be able to use it as a constituent of other contents which “comment” on it.

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\(^5\)One can, speculatively, think of this distinction as relating to a long-term memory v. working memory distinction.
4 Utterances and Updates

As commonly conceived formal semantic approaches bypass entirely issues pertaining to communication. However, for dialogue such a strategy is untenable given that a large proportion of the utterances directly concern the conversation itself—whether an utterance has been understood, if not what aspects need clarifying etc. To take a concrete example, (1b) and (2b) cannot be analyzed without allowing facts and questions that concern A’s previous utterance enter the DGB in some way. The view of communication developed in Ginzburg 1997c starts out from the commonplace observation that A being the speaker and B the addressee involves a basic asymmetry in their roles, but takes this to what might seem at first like a rather surprising conclusion. The asymmetry between speaker and addressee is that whereas it is incoherent for A to make an utterance u without being aware of the content he intends to convey, the content of u is not automatically transparent to the addressee B, who must continually signal whether or not (she believes) she understands what u meant (for psycholinguistic evidence concerning this “grounding” process see Clark 1996). The view of utterance update I develop leads to a significant mismatch between the updates A and B perform on their respective DGB’s as a consequence of A’s utterance.

Simplifying significantly, for obvious reasons of space, the basic idea is this: when B forms the belief that A has made an utterance whose conventional meaning is µ, the first issue she is obliged to contend with, obliged by virtue of participating in the conversation, is what did A intend to convey with u whose meaning is µ? Concretely, I take this to involve introducing into QUD two questions: the (conventional) content question \[\text{content}(u, µ)\] and the goals question \[\text{goals}(u, A)\]. Roughly: \[\text{content}(u, µ)\] is the question individuated by u and µ, the abstract corresponding to the (Kaplan/Barwise-Perry view of) sentential meaning used in u (‘what values do the contextual parameters of µ get in u?’), \[\text{goals}(u, A)\] is the question ‘what goals did A have in making u’. It is only if B believes she knows the answers to both \[\text{content}(u, µ)\] and \[\text{goals}(u, A)\], that she can proceed to update her DGB, downdating both these questions from QUD and acting in accordance with the illocutionary act that has taken place; otherwise a clarification stage must ensue. An important consequence of this update process on B’s DGB is that certain facts relating to the utterance itself become TOPICAL, specifically those facts that pertain to \[\text{content}(u, µ)\] and \[\text{goals}(u, A)\]. Such facts, nonetheless, lose their TOPICALness very quickly due to their addresses being downdated from QUD, assuming that understanding has been attained, in a way analogous to that illustrated in section ??.

Crucially, I argue that as a rule neither \[\text{content}(u, µ)\] nor \[\text{goals}(u, A)\] get added to A’s QUD as a consequence of A’s utterance—A makes her utterance without any explicit wish or need to address these questions. I suggest that there is here a

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6The actual account I develop makes use of more structured objects than sentential meanings of this kind, motivated in part by the need to account for phrasal ellipsis clarification possibilities.

7That a fact pertaining to \[\text{content}(u, µ)\] becomes TOPICAL has been exemplified in (1b) and (2b) above; (i) is an analogous example for \[\text{goals}(u, A)\]:

(i) (Context: B has annoyed A] A: OK, well bye! B: But why? (= Why are you indicating you’re leaving?)
disanalogy with assertion, where I assume that, in general, both asserter and her
addressee do have the issue \( p \) in QUD as a consequence of an assertion \( p \). When an
asserter \( p \) is made, the asserter is committed to a belief \( p \), but has no guarantee that
\( p \) will be accepted by her interlocuter; only some usually well founded hope that the
interlocuter will address the issue whether \( p \). With an utterance, however, as a rule,
the utterer A does know what she has just said and meant and can assume that B
will (perhaps immediately, perhaps eventually) know it too. Thus, the strategy I will
propose is similar in spirit to the one proposed in Ginzburg 1997b with respect to
query acceptance: there I argued that one of the DGB update operations performed
by the querier, A, is to add \( q \) to his DGB, despite the possibility that the responder,
B, will not adopt \( q \). It was left as an option for B to raise the issue of whether \( q \) was
to be discussed. Similarly here, I suggest that in general A herself has no explicit
intention to discuss either \( \text{content}(u, \mu) \) or \( \text{goals}(u,A) \) —as far as her own DGB
goes she need not adopt these as issues in QUD unless B provides indications to
the contrary.

5 Accounting for the TTP

I conclude by sketching an account of the TTP, discussing here the data in (2). The
reading A can get in (2a) is possible since, by the accommodation strategy
mentioned in section 3.2, after A’s initial query the question \( q_0 = \) ‘where B’s grand-
mother was born’ is QUD-maximal, so A can accommodate a positive resolution
of \( q_0 \) into her FACTS | TOPICAL —this gives her the requisite fact. On the other
hand, since \( \text{content}(u, \mu)? \) never gets into A’s QUD, a fact positively resolving
\( \text{content}(u, \mu)? \) is not TOPICAL, so is not accessible to A. B’s options: a fact posi-
ively resolving \( \text{content}(u, \mu)? \) is TOPICAL for B immediately after A’s utterance,
so is accessible to B. Why does the resolution in (2a) not arise? Before B grounds
A’s utterance, the posed question \( q_0 \) is not in B’s QUD. Hence, accommodating
a fact positively resolving \( q \), \( \text{pos-res}(q) \), is not possible. After grounding there are
a two options: (a) If an answer is provided, this answer will subsume the fact that
is \( \text{pos-res}(q) \) [see (8b)]. So the \( \text{pos-res}(q) \) reading disappears. (b) If no answer is
provided, the \( \text{pos-res}(q) \) reading remains as an option, shown in (8c):

\[
(8a) \text{A: Who solved the chess problem?} / (8b) \text{B: Gary and Judit. I know how too.} / (8c) \text{B: I’m not quite sure. I do know how though.}
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