

The paper is organized as follows. The remainder of this introduction reviews the soft triggering constructions I will be talking about. In Section 2, I present an approach to soft triggering that I call the basic conjunctive strategy, and argue that it can not work without the addition of some kind of semantic structuring. Section 3 introduces the analysis using presupposition triggering from alternative sets. The approach is first developed for four core constructions: focus, questions, affirmation-negation, and contrastive statives. Then it is extended to other soft-triggering constructions. Section 4 considers the issue of compositional filtering and transformation of presupposition. Although these phenomena superficially favor a standard approach where presupposition triggering is encoded semantically, I will show that triggering from alternatives can be formulated in a way which accounts for compositional filtering. Section 5 corrects a gap in the earlier reasoning about focus related to the ‘anaphoric’ status of focus. Section 6 discusses two alternatives to the theory of Sections 3 and 4, and Section 7 sums up the paper.

To show that a lexical item or construction is a soft trigger in my sense, one needs to show that it is a presupposition trigger in the first place, using tests of survival and transformation of presuppositions in contexts such as negation and conditionals, plus intuitions involving the common-ground interpretation of presupposition. Second, one needs to demonstrate ‘softness’, by showing that the presupposition can be fairly easily canceled. In (3), I go through these steps for *win*, which is an achievement with a preparatory phase.¹ In (3a,b) there is an intuition that the implication that John participated in the Road Race projects through negation and from the if-clause of a conditional.² (3c) illustrates compositional transformation of a presupposition. It can easily be understood as implying not that John participated in the Road Race, but that if he woke up on time, he participated in the Road Race.

- (3) Achievement with preparatory phase
- a. John didn’t win the Road Race.
 - b. If John won the Road Race, he’s got more victories than anyone else in history.
 - c. If John woke up on time today, he won the Road Race.
 - d. I have no idea whether John ended up participating in the Road Race yesterday. But if he won it, then he has more victories than anyone else in history.

(3d) illustrates that the implication in (3b) that John participated can be canceled by a discourse context which explicitly expresses ignorance. Thus (3a-c) are being used to show that the implication that John participated is projected and transformed in the way characteristic of presuppositions, while (3d) shows that the projected presupposition is cancelable, or in other terms, contextually defeasible. Finally, there is an intuition that (3a,b) would typically only be used in a conversational context where it is taken for granted that John participated, and that (3c) would only be used in a context where it is taken for granted that if John woke up on time, he participated. Here we are checking against our intuitions the

pragmatic interpretation of presupposition as entailment by the common ground (Stalnaker 1974).³

Since it is my purpose to distinguish a class of soft triggers from other presupposition triggers, it is crucial to contrast the degree of cancelability found with the different classes of triggers. (4) checks the acceptability of a cleft in a discourse context which explicitly expresses ignorance about the presupposed existential implication. The combination is odd, if not completely unacceptable. (5a) does the same for the presupposition trigger *too*. Again, the combination is very odd, though I find the variant (5b) a bit better.

(4) Cleft

?? I have no idea whether anyone read that letter. But if it is John who read it, let's ask him to be discreet about the content.

(5) Too

a. ?? I have no idea whether John read that proposal. But if Bill read it too, let's ask them to confer and simply give us a yes-no response.

b. ? John may or may not have read the proposal. If Bill read it too, let's ask them to confer and simply give us a yes-no response.

Throughout the paper, clefts will be used as a core case of a 'hard' presupposition trigger, where it is impossible or at least relatively hard to cancel the presupposition.

Contrastive statives are predicates such as *newcomer*, *have a green card*, and *bachelor* which seem to carry with them contrasting predicates which are not merely their complements. In our insular town, being a newcomer contrasts with being an oldtimer. In many situations, having a green card contrasts with being a non-citizen resident without a green card. Bachelors are contrasted with married adult men. A different but compatible viewpoint is that these predicates describe species (the 'species' of bachelors, or of newcomers to our town) and implicitly refer to a specific genus or superclass (the 'genus' of adult men, or residents of our town). These predicates defeasibly presuppose their genus predicates. (6) illustrates this for *have a green card*. It is perhaps vague what the genus predicate is in this case. I will take it to be 'human being who is not a native of the USA'. In most contexts, (6a,b,c) would be understood to imply that she satisfies the genus predicate, i.e. she is not a native of the USA. (6d) illustrates compositional satisfaction of the presupposition, by virtue of the if-clause in the conditional entailing the genus presupposition of the main clause.

(6) Contrastive stative

a. Does she have a green card?

b. She doesn't have a green card.

c. If she has a green card, we can pay her from the DOD grant.

d. If she's not a native, she has a green card. Otherwise she wouldn't be working on the DOD grant.

Imagine a bar where Thursday is Green Card night, and green card holders are greeted in an especially enthusiastic way, and given a free drink. The experienced bartender (perhaps knowing the customer) could use (7a) while

instructing the novice bartender about the policy, without presupposing that the customer satisfies the genus predicate. The same goes for (7b). This illustrates the context-based defeasibility of the genus presupposition.

- (7) a. She doesn't have a green card. She doesn't get a free drink.
b. If she has a green card, give her a free drink.

Affirmation-negation is the construction with *and not* that is illustrated in (8). To start with the pragmatic interpretation, there is an intuition that the sentence would normally be used only in a context where it is taken for granted that John is in one of the cities of Boston and New York. From one point of view, this is surprising. Assuming that *and* and *not* in (8) have their standard Boolean interpretations, and taking as given that Boston and New York are non-overlapping regions of space, (8) is informationally equivalent to (9), which does not have the presupposition of (8). So, either *and not* in (8) does not have its standard compositional semantics, or there is some indirect route to the presupposition.

- (8) Affirmation/negation
John is in Boston and not in New York.

- (9) John is in Boston.

Example (10) illustrates presupposition projection and transformation for affirmation-negation. While (10a) is simply too awkward to evaluate (presumably because of the double negation), the implication that John is in Boston or New York projects through the negative predicate in (10b), and from the if-clause of the conditional in (10c). In (10d) there is a conditionalized implication that if John is out of town, he is in Boston or New York.

- (10) a. ??John isn't in Boston and not in New York.
b. It is doubtful that John is in Boston and not in New York.
c. If John is in Boston and not in New York, his mother will be furious.
d. If John is out of town for the weekend, he is in Boston and not New York.

An interesting feature of affirmation-negation is that the presence of the presuppositional reading is sensitive to the affirmed predicate and the negated one being incompatible. Consider (11a). The area of Manhattan south of 23rd St does not overlap the area north of 42nd St, so the affirmed predicate and the negated predicate are incompatible. And (11a) seems to presuppose that the office is not between the two streets. On the other hand, (11b) has affirmed and negated predicates which are compatible, and it has no presupposition comparable to the presupposition of (11a). This is one kind of 'cancellation' of the presupposition of affirmation-negation. In (12a), cancellation is achieved with a discourse structure which justifies a contrast between John (who is permitted to miss the meeting) missing it, and Bill (who is not permitted to miss the meeting) missing it, without supporting a presupposition that one of them missed it. (12b) gives contrasting data with a cleft.⁴

- (11) a. The office is south of 23rd St, and not north of 42nd St.

- b. The office is north of 23rd St, and not west of 5th Ave.
- (12) a. Bill was ordered to be at the meeting, and for John attendance was optional. As it turned out, Bill and not John missed it.
- b. ? Bill was ordered to be at the meeting, and for John attendance was optional. As it turned out, it was Bill who missed it.

A variety of multi-agent verbs such as symmetric transfer verbs and verbs of accompanied motion have soft presuppositions. In (13a) and (13b), there is an intuition that the implication that Mary crossed the footbridge projects through the negation and the conditional. But this implication can easily be canceled, as shown by the sequence in (13c).

- (13) Accompanied motion
 - a. John didn't accompany Mary across the footbridge.
 - b. If John accompanied Mary across the footbridge, they are friends again.
 - c. John didn't accompany Mary across the footbridge, I know that, because he was with me. Perhaps she didn't cross it either.

The transfer implications of (14a) are (i) that John gave up possession of his bike, and (ii) that in return, he got possession of some money. In (14b) and (14c) there is an intuition that implication (i) projects through the negation and the conditional. (14d) is an extension of (14c) where implication (i) is cancelled, presumably because the sentence suggests that John would not have given up possession of the bike in a transaction other than a sale.

- (14) Symmetric transfer
 - a. John got money for his bike.
 - b. John didn't get money for his bike.
 - c. If John got money for his bike, he should pay the electricity bill.
 - d. If John got money for the bike he was trying to sell, he should pay the electricity bill.

Turning to the next construction, there is a strong tendency for questions to be understood presuppositionally, with (15a) presupposing that someone took Mary's bike. It is not possible to apply projection tests such as negation and conditional contexts, due to the limited distribution of questions in embedded positions. But (15b) seems to imply that someone took Mary's bike. This could be taken to indicate that the implication that someone took Mary's bike is projecting through the predicate *clear* and the negation. (15c) indicates that at least *clear* with a that-complement is a presupposition hole, with the cleft presupposition that someone took Mary's bike projecting. Then (15b) is accounted for by the assumptions that the embedded question triggers an existential presupposition, and that also the question-embedding *clear* (together with the negation) is a presupposition hole.

- (15) Question
 - a. Who took Mary's bike?
 - b. It isn't clear who took Mary's bike.
 - c. It isn't clear that it is Jennie who took Mary's bike.
 - d. Mary wonders who took her bike.

The tendency for a presuppositional reading of constituent questions is however not absolute. In (16a) and (16b), the second sentence is understood as leaving open the possibility that nobody will vote for the speaker. This is made explicit in the third sentence. Similarly, the second sentence in (16c) is understood as leaving open the possibility that nobody is available to teach field methods. Again, this is made explicit in the third sentence.

- (16) a. I've alienated my colleagues completely. I wonder who will vote for me. Probably nobody will.
b. I've alienated my colleagues completely. Who will vote for me? Probably nobody.
c. There's a severe problem with this schedule. It's not clear who is available to teach field methods. Unless I am mistaken, nobody is.

These data suggest that matrix and embedded questions have a systematic but defeasible existential presupposition. This picture falls between the position that constituent questions are presupposition triggers (e.g. Horn 1972 and Gawron 2001) and the position that they have no systematic existential presuppositions (e.g. Groenendijk and Stokhof 1984, Fitzpatrick 2005).⁵ In Groenendijk and Stokhof's logical analysis of the question-answer relation, (17b) comes out as a complete answer to the question (17a), not a rejection of a presupposition.⁶

- (17) a. Who on earth will vote for me?
b. Nobody will.

My approach to the question data is to claim that direct and embedded questions have no strict semantic existential presupposition. However, there is a default process which generates a presupposition from the semantic representation of the question.

The final soft triggering construction that I would like to consider is intonational focus. In studies of focus, there is an argument about whether the semantics of focus involves an existential presupposition. Chomsky (1972) used the informal logical form (18a) for the focus sentence (18b). This suggests an existential presupposition, since definite descriptions have existential presuppositions.

- (18) Focus
a. the x such that Bill likes x – is John
b. Bill likes John_F.

Guerts and van der Sandt (2004) is an extended defense of a presuppositional semantics for focus. They describe a presuppositional semantics as a null assumption, and point out that projection data like (19) favor a presuppositional semantics, because the projection behavior is the same as what one sees with semantic presuppositions. Just as the presupposition that Fred has a wife is filtered in (19a), they observe, the presupposition that someone stole the tarts is filtered in (19b).⁷

- (19) a. If Fred has a wife, then Fred's wife stole the tarts.
b. If someone stole the tarts, then [Fred's wife]_F stole the tarts.

The point can be strengthened by constructing an example where the existential presupposition is conditionalized, rather than completely filtered. In (20a), the presupposition that someone opened the vault is weakened to (20b). This weakened presupposition might be satisfied because it is taken for granted that the Trust Company keeps all its money and valuables in the vault, so that it could not be robbed without the vault being opened.

- (20) a. If Abner and Lana robbed the Trust Company, then she_F opened the vault.
b. If Abner and Lana robbed the Trust Company, then someone opened the vault.
c. If Abner and Lana robbed the Trust Company, then it was she who opened the vault.

Notice that the same conditional weakening is seen with the cleft in (20c). I am assuming that clefts are genuine semantic presupposition triggers. If we hypothesized that also focus is a semantic presupposition trigger, then we would have an explanation for the fact that the implication that someone opened the vault gets compositionally transformed in the same way in the focus example (20b) and the cleft example (20c).

The presupposition filtering and transformation data look like a strong argument that focus triggers a semantic presupposition. But other arguments indicate that the semantics of focus can not be anything as strong as an existential presupposition, because sometimes the context does not satisfy the constraint on context which would follow from an existential presupposition.⁸ Here is an example and argument from Rooth (1999). A betting contest called a football pool is held in the department, where people bet on the outcome of football games. Consider the exchange below.

- (21) A: Did anyone win the football pool this week?
B: Probably not, because it's unlikely that Mary_F won it, and she's the only person who ever wins.

The observation is that focus on *Mary* does not give an existential presupposition 'someone won the football pool' which projects to the top level. This is clear because A's question indicates that A does not know whether someone won, and so it is not common ground that someone won. In (22), we change the example by substituting an *it*-cleft for intonational focus. The result is quite bad, and this can be attributed to the *it*-cleft producing a semantic presupposition that projects to the top level. This presupposition is in conflict with the first thing that B says, namely *probably not*, meaning that probably nobody won the football pool.

- (22) A: Did anyone win the football pool this week?
B: #Probably not, because it's unlikely that it's Mary_F who won it, and she's the only person who ever wins.

(23) is a representation for (22) which includes focus interpretation in the framework of Rooth (1992). By virtue of the semantics of focus and of focus

interpretation, Q is constrained to be a set of propositions of the form ‘x won the football pool’. This set is introduced by focus interpretation. On the analysis that Rooth advocates, the operator ‘ \sim ’ in (23) does not express an existential presupposition, and so there is no semantic presupposition that someone won the football pool at any level. Notice by the way that the scope of the focus is the embedded sentence, but focus is justified non-locally, by A’s question.

(23) [probably not, because it’s unlikely that [[Mary_F won it]~Q]]

Rooth uses these data as an argument against analyses where intonational focus introduces a semantic existential presupposition. Instead, he says, focus just introduces a set of alternative propositions, which has to find an antecedent in the discourse representation. But why then is there such a strong tendency for focus to be understood as conveying an existential presupposition? Here I will take the same line as for questions: although the semantics for focus does not involve an existential presupposition, the semantics for focus does create the potential for a default process to generate a presupposition.

Summing up, in each of the constructions I am calling soft triggering constructions, there is an implication which has presuppositional character, because it shows the compositional behavior of presuppositions (i.e. certain patterns of presupposition projection, filtering, and transformation) and the characteristic pragmatic interpretation of presupposition (i.e. a requirement of entailment by the common ground). My strategy in this paper will be to claim that the soft triggering constructions do not primitively encode presuppositions. Instead, they have a certain semantic property, the property of contributing alternatives sets, and this creates the potential for generating a presupposition by a default process.

A different approach is that soft triggers do encode presuppositions lexically or constructionally, and that these presuppositions can be turned into assertions by local accommodation. This possibility is not to be excluded on my assumptions. I am assuming that there are primitive semantic presupposition triggers (e.g. *it-clefts* and *too*). And there are constructions and discourse structures, such as the one in (24), where there appears to be the equivalent of local accommodation. The presupposition of *too* in the *if*-clause of (24b) is that someone other than Mary is at the climbing wall. In the context (24b), the presupposition can be understood as conjoined within the *if*-clause to the left of the assertion, so that the sentence is equivalent to (24c). So (24b) has the structure of (maximally) local accommodation, with the presupposition added in as embedded a position as possible. The situation is similar in example (24d) with conditional morphology.

- (24) a. I’m worried that John might have gone to the climbing wall.
b. Of course if Mary is there too, there’s no reason for concern. She is experienced and safety-conscious.
c. If John is at the climbing wall and Mary is there too, there’s no reason for concern.
d. Of course if Mary were there too, there would be no reason for concern.

So, we need a theory where local accommodation can apply in certain circumstances even for hard triggers, or where there are mechanisms that mimic accommodation, such ones involving free variables or discourse structure (along the lines of von Stechow 1994 and Beaver 2004a). Given this, there is the possibility of analyzing the apparent cancellation of presuppositions with soft triggers using local accommodation. In developing an analysis where also soft triggers are primitive presupposition triggers, one has to find an account for the differential behavior of hard and soft triggers that was discussed in this section. Van der Sandt and Guerts (2001) investigated this problem in the context of a DRT theory of presupposition (van der Sandt 1992). Although in that theory all presuppositions are in a sense anaphoric, hard triggers are distinguished by a stricter anaphoricity requirement which is also found with pronouns, van der Sandt and Guerts hypothesize. This harder requirement is resistant to accommodation. So the analysis of the data repeated below is that *won* triggers a presupposition, which in (25a) is locally accommodated at the level of the *if*-clause. The corresponding analysis is not possible for (25b), because the pronominal presupposition in (25b) is resistant to local accommodation.

- (25) a. I have no idea whether John ended up participating in the Road Race yesterday. But if he won it, then he has more victories than anyone else in history.
 b. ?? I have no idea whether anyone read that letter. But if it is John who read it, let's ask him to be discreet about the content.

Going deeply into van der Sandt and Guerts' proposal would carry me far afield, partly because of the significant differences in framework. However, I believe that it is a viable alternative to the proposal being articulated here.

2. A basic conjunctive analysis

Stalnaker (1974) suggested a pragmatic approach to the presupposition-triggering behavior of *know*. This analysis is only sketched, it was perhaps offered just as an example of the general kind of analysis one should consider, and *know* is not one of the triggers being analyzed in my paper. But for my purposes it is useful to consider a version of the proposal as an introduction to the idea of triggering from structured lexical entries. The starting point is the assumption that the content of a clause '*x know p*' can be divided into two conjuncts. One conjunct is the factive component, and the other is a predication attributing a propositional attitude to *x*. Using the relation symbol *K* for the attitude, the content can be written as $p \wedge K(x,p)$. The formula $K(x,p)$ is assumed to entail that *x* believes *p*, and to have additional entailments related to the source of the belief. Because the factive component is written as a conjunct, $K(x,p)$ is assumed not to entail *p*.

Assuming this much, we can reason as follows (Stalnaker 1974:206). 'Suppose a speaker were to assert that *x* knows that *P* in a context where the truth of *P* is in doubt or dispute.' Then he would be 'saying in one breath something that could be challenged in two different ways. He would be leaving unclear

whether his main point was to make a claim about the truth of P ' (i.e. to assert the factive conjunct), 'or to make a claim about the epistemic situation of x ' (i.e. to assert the attitude conjunct $K(x,p)$). If the speaker did that, he would be violating the presumption of being orderly, not confusing the listener, and not violating the reasonable expectations of the listener.

Both the speaker and hearer can be expected to recognize that it would violate maxims of conversation to use 'x knows p ' in a context where both entailments are at issue. The hearer can be expected to infer that the speaker assumes the contrary, i.e. that one of the entailments is taken for granted. This gives a pragmatic presupposition that the factive entailment is true, leaving the attitude entailment as the speaker's main point.

Let us call this strategy for deriving presupposition triggering the basic conjunctive strategy (BC). There are a couple of gaps in the strategy which indicate a need for a degree of structuring in the semantic input. First, we must assume that there is some process which pulls the entailments p and $K(x,p)$ out of the proposition denoted by 'x knows p '. For a given proposition q , except in trivial cases there are any number of ways of picking q_1 and q_2 such that $q = q_1 \wedge q_2$. If we are given the proposition q which is denoted by 'x knows p ', we can not uniquely factor q into two propositions q_1 and q_2 such that $q = q_1 \wedge q_2$, in the way that the number 14 uniquely factors into two prime numbers 2 and 7. We have to assume that the factive and attitude entailments are given in some way. One possibility is that the two entailments are represented syntactically or morphologically. Kiparsky and Kiparsky (1968) suggested a syntactic structure for sentences with *know* (and generally for factive predicates) which includes the noun *fact* in the complement. (26) is an example of the syntactic deep structure.

- (26) a. John knows that he is a jerk.
 b. John knows [fact [that he is a jerk]]

Or it might be plausible to theorize that the verb *know* is a compound of a null predicate FACT with a root $\sqrt{\text{KNOW}}$ which has the attitude meaning. In either case, a division between the factive predicate and the attitude predicate is given in syntax.

Alternatively, one could claim that there is a cognitive capacity which makes the factive and attitude entailments of *know* salient. On this account, it is somehow a property of human cognition that when someone entertains the proposition 'x know p ', the two entailments p and $K(x,p)$ pop into consciousness, so that they can be used in the pragmatic argument BC. Or finally, one can hypothesize that the semantic value of 'x knows p ' is given by compositional semantics as a set $\{p, K(x,p)\}$. It should be stipulated that this set has a conjunctive interpretation, but because it is a set, it makes the factive and attitude entailments available. These are different ways of executing the requirement that BC must have access to the factive and attitude entailments of 'x knows p '.

Assuming the set of two entailments $\{p, K(x,p)\}$ is given somehow, there is a further problem. In BC, we hypothesize that it would somehow be confusing and uncooperative to communicate the entire formula $p \wedge K(x,p)$ as novel information.

If this problem is resolved if p is in the common ground of information, it seems that it could also be resolved if $K(x,p)$ is in the common ground. So it is not clear why p rather than $K(x,p)$ comes out presupposed.⁹

Near-minimal pairs I call Fillmore pairs make this problem worse. Fillmore (1971) pointed out pairs of verbs or constructions which have the same group of conceptually distinct entailments, but with different distributions of presupposition. Here is a case involving factivity.¹⁰ (27a) and (27b) both have a factive implication (Mary and Bill are having an affair) and an attitude implication (John believes or has claimed that they are having an affair). For *know*, we want the factive implication to come out presupposed, and for *be right*, we want the belief implication to come out presupposed, since the data in (28) indicate presuppositional status for this implication. It is difficult to see how one can make (27a) and (27b) come out differently, if they have the simple conjunctive representation (29), where H is the attitude predicate, or if they just make available the pair of entailments $\{p, H(x,p)\}$.

(27) a. John knows that Mary and Bill are having an affair.

b. John is right that Mary and Bill are having an affair.

(28) a. John is right that Mary and Bill are having an affair.

b. Is John right that Mary and Bill are having an affair?

c. If John is right that Mary and Bill are having an affair, that would explain their odd behavior yesterday.

(29) $p \wedge H(x,p)$

Here is a pair involving one of the soft triggers from Section 1. The sense of ‘ x got money for y ’ which is illustrated in (30) is close to being a synonym of ‘ x sold y ’. Both have (i) a transfer entailment that there was an event of x transferring ownership of y to some z , (ii) a counter-transfer entailment that there was an event of z transferring money to x , and (iii) an intensional entailment capturing that x and z intend for the two transfers to be in exchange for each other. It is plausible to claim that the conjunction of these entailments capture the content of both ‘ x got money for y ’ and ‘ x sold y ’.¹¹ But the two forms show different presuppositional behavior. The data in (30), repeated from Section 1, indicate a presuppositional status for the transfer entailment T of (30a), which is stated in (30e). The conditional (30b), the question (30c), and the negated version (30d), each have the implication T.

(30) a. John got money for his bike.

b. If John got money for his bike, he paid the phone bill.

c. Did John get money for his bike?

d. John didn’t get money for his bike.

e. Transfer entailment T

There was transfer of possession of John's bike from John to someone else.

Here are the versions with *sold*. (31a) has the entailment T, but this implication is not preserved under conditionalization, questioning, and negation in (31b-d). Instead, what is preserved is a weaker implication that John owned the bike.

- (31) a. John sold his bike.
b. If John sold his bike, he paid the phone bill.
c. Did John sell his bike?
d. John didn't sell his bike.

So, we have a near-minimal pair consisting of constructions φ_1 and φ_2 , the meaning of which can be expressed as the conjunction of a set of entailments $\{p_1, p_2, \dots\}$. For φ_1 , a certain conjunction of p_i 's has presuppositional status, while for φ_2 , a different conjunction of p_i 's has presuppositional status. It is impossible to capture these data if the semantic values of both are simply the conjunction $p_1 \wedge p_2, \dots$ and the process which accounts for presuppositional status can see only the semantics of the sentence, because then there is no way of getting different results for φ_1 and φ_2 . For the same reason it is impossible to capture the data if the compositional-semantic component delivers the same conjunctively interpreted set $\{p_1, p_2, \dots\}$ for φ_1 and φ_2 .¹²

I interpret these data showing that, to develop an indirect triggering account similar to BC, the triggering process has to have access to some degree of structuring of the semantic value, either because the structuring is expressed syntactically, or just semantically.¹³ Developing an account along these lines is the topic of sections 3 and 4.

It is worth mentioning that using a semantic presupposition operator, it is easy to express the presuppositional difference between *get money for* and *sell*. Given any set of entailments $\{p_1, p_2, \dots\}$, we can stipulate that any one of them is a presupposition, by hypothesizing a representation like $\partial p_1 \wedge p_2 \wedge \dots$, where ∂ is the presupposition operator (Beaver 1995). This is in one way good, but also shows that it is too easy to stipulate the results one wants using a semantic presupposition operator. As explained in Section 6, the theory being developed here does better only for the subset of the soft triggers where there is independent motivation for a representation involving alternatives.

3. Triggering from alternative sets

This section introduces a mechanism for presupposition triggering from alternative sets. The mechanism is first motivated by and applied to focus and question data, and then extended to other soft triggering constructions.

Section 1 reviewed an argument against the hypothesis that focus triggers a semantic existential presupposition. This leaves us with the question of why there is such a strong tendency for focus to be understood as associated with an existential presupposition. I suggest this is a secondary effect, related to a role for

focus alternative sets as topical questions. A representation like (32) with focus interpretation contributes a variable Q with the type of a set of propositions, according to the analysis of Rooth (1992).¹⁴ The semantics of focus does not contribute a presuppositional constraint that the disjunction of Q is true. However, pragmatic literature on focus has suggested that the alternative sets signaled by focus and topic features can take on the role of question topics, so-called questions under discussion (Carlson 1983, Roberts 1996, Büring 1997, Büring 2003). And very often, when a question like ‘who read it’ is under discussion, it is taken for granted that one of the alternatives is true, i.e. it is taken for granted that someone read it.

- (32) a. [... [[Mary_F read it]~ Q] ...]
 b. Q is a set of propositions of the form ‘ x read it’, where x ranges over a set of relevant individuals.

Thus the idea is to derive the existential presupposition of focus in two steps. Focus interpretation contributes a semantic object of type $\langle\langle s,t \rangle, t \rangle$, which is the semantic type of questions. This object is annotated here as Q . Secondly, there is a process which interprets an object like this as a topical question which as a default satisfies the presuppositional constraint that the disjunction of Q is true. As well as deriving the presupposition from a motivated representation for the semantics of focus, this gives us an account of why the presupposition of focus can be cancelled. We just have to assume that the secondary process which generates the presupposition has a default nature, which is not operative when the context of utterance, or other considerations of plausibility, are inconsistent with the existential presupposition.

Let’s consider now presupposition triggering from direct and indirect questions. As reviewed in Section 1, there is a strong tendency for both direct questions like (33a) and embedded questions like (33b) to be understood as presupposing that someone took Mary’s bike. This was supported both by pragmatic interpretation and by projection tests. But in the right contexts, the existential presupposition of questions can be canceled. For this reason, both direct and indirect questions have the status of soft presupposition triggers.

- (33) a. Who took Mary’s bike?
 b. It isn’t clear who took Mary’s bike.

According to Hamblin’s semantics (Hamblin 1973), questions, just like the semantic objects contributed by focus, have the semantic type $\langle\langle s,t \rangle, t \rangle$. We can apply exactly the same logic as for focus—a direct or indirect question contributes a semantic object with type $\langle\langle s,t \rangle, t \rangle$.¹⁵ This triggers a default presuppositional constraint that the proposition formed as the disjunction of the set is true. Because this amounts to a presupposition that some alternative in the set is true, I will call a presupposition derived in this way the *some-alternative presupposition*. For direct questions, the story seems very plausible—it is probably typical that when a speaker uses a direct wh-question, she intends to assume that the question has a positive answer, and intends for the listener to recognize this assumption.

So it is natural to claim that for direct wh-questions, the some-alternative presupposition is imposed as a discourse-structural default.

Formally, then, we can treat focus and questions as being subject to the same process of generating a presupposition from an alternative set. There is a construction (either a wh-question or focus) which introduces an alternative set Q . This is a set of propositions whose specific identity is in part given by compositional semantics, and in part constrained pragmatically. The representation triggers a default presupposition that the disjunction $\vee Q$ is true. (34) summarizes the steps for a direct question.

- (34) a. [Who took Mary's bike] (= Q)
b. Q is a set of propositions of the form 'x took Mary's bike', where x ranges over a set of relevant people.
c. There is a default presupposition $\vee Q$, i.e. a default presupposition that somebody took Mary's bike.

As already discussed, existential presuppositions are also observed for wh-questions in embedded positions. In a default context, (35a) seems to presuppose the same thing as (35b), that somebody took Mary's bike. But one can also tease out a different presupposition that Mary *believes* someone took her bike. Switching the examples, it is clear that a speaker for (36) does not want to imply that someone voted against Mary. But because of the first sentence, a presupposition that Mary *believes* someone voted against her is supported.

- (35) a. Mary wonders who took her bike.
b. Who took Mary's bike?
(36) Mary incorrectly believes somebody voted against her. She wonders who voted against her / she wonders who.

This pattern is typical for presupposition triggers in attitude contexts (Heim 1991). There is an intuition that in a default context, (37a) presupposes that someone voted against Mary. But with the context (37b), this is weakened to Mary *believing* that someone voted against her.

- (37) a. Mary believes it is Chris who voted against her.
b. Mary incorrectly believes somebody voted against her. Mary believes it is Chris who voted against her.
c. It is Chris who voted against Mary.

In Heim's study of presupposition projection in attitude contexts (Heim 1991), a compositional rule is stated which predicts that (37a) presupposes that Mary believes someone voted against her, by virtue of (37c) semantically presupposing that someone voted against Mary. This suggests the following strategy for deriving a presupposition from the complement of *wonder*.

- (i) By virtue of the embedded question denoting an alternative set Q , a default presupposition $\vee Q$ is generated.
(ii) Some additional process produces the transformed presupposition that Mary believes someone voted against her.

Part (i) is triggered by the presence of a construction which contributes a semantic object of type $\langle\langle s,t \rangle, t \rangle$, in this case the complement question. This part of the account should be developed in a way which covers the embedded question in (35a), the direct question (34a), and the focus structure (32a) in exactly the same way. Part (ii) has no counterpart in the examples discussed so far, because it is clear that it involves some kind of interaction between the indirect triggering mechanism and compositional semantics. Working out an account which satisfies the requirement (ii) is the topic of Section 4.

There is another point about (37b). So far, I said that the some-alternative presupposition was associated with a proposition set taking on the role of a question under discussion. It seems doubtful, though, whether the question ‘who voted against Mary’ is under discussion at the global level in this example, because the first sentence already indicates that nobody did. Perhaps one could appeal to a notion of a question being ‘under discussion’ in a hypothetical context. While I don’t think that direction of analysis is absurd, in Section 4 I will drop reference to the QUD construct, and refer simply to the logical type of the semantic object which triggers the default presupposition.

The next construction to be considered is affirmation-negation. Section 1 presented evidence that the *and not* construction in (38a) contributes a defeasible presupposition that John is in Boston or New York. It was pointed out that this is in a way puzzling, because assuming a Boolean semantics for *and* and *not*, and taking for granted that Boston and New York are disjoint areas of space, (38a) carries the same information as (38b).

- (38) a. John is in Boston and not New York.
 b. John is in Boston.

There is a certain similarity between the focus data and affirmation-negation. (39a) repeats an example which demonstrates compositional transformation of a focus presupposition. It seems that one can understand the presupposition to be either (39b), or the weaker (39c). Presumably, we get the stronger presupposition if we take the salient alternatives to Lena to be just Abner and Lena, and the weaker presupposition if also other individuals are alternatives to Lena. Notice now that the presupposition of the affirmation-negation sentence (39d) is precisely the stronger of the two options for the focus sentence, namely the presupposition (39b). This suggests that the presupposition of (39c) comes from the affirmation-negation construction (39d) somehow contributing the alternative set (40).

- (39) a. If Abner and Lena robbed the trust company, then she_F opened the vault.
 b. If Abner and Lena robbed the trust company, then Lena or Abner opened the vault.
 c. If Abner and Lena robbed the trust company, then someone opened the vault.
 d. If Abner and Lena robbed the trust company, then Lena and not Abner opened the vault.
- (40) $\{\lambda w. \mathbf{open}_w(\text{Abner}, v), \lambda w. \mathbf{open}_w(\text{Lena}, v)\}$ (The set containing two propositions ‘Abner opened the vault’ and ‘Lena opened the vault’.)

The most direct route to the alternative set would be to assume the denotation (41a) for *and not*. I use an operator written with three dots and a double bar that in this case introduces a two-element alternative set. In general, the notation ‘ $\varphi : \psi_1 \parallel \dots \parallel \psi_n$ ’ is understood as ‘ φ , with the alternative set $\{\psi_1, \dots, \psi_n\}$ introduced.’ The term φ names the ordinary denotation, while after the vertical dots ‘:’ there are terms ψ_i naming the alternatives, separated by ‘ \parallel ’. So in (41a), the body of the lambda expression is understood as ‘ $P(x)$, with the alternative set $\{P(x), P(y)\}$ introduced’. With this denotation for *and not* in example (39d), the propositional alternative set (40) gets introduced. Using triggering from alternative sets, this triggers a default presupposition which is the disjunction of the alternative set, i.e. (41b). This is not quite right, because we want the transformed presupposition (39b). But as shown in the next section, it is the right start.¹⁶

- (41) a. $\lambda y \lambda x \lambda P [P(x) : P(x) \parallel P(y)]$
 b. Abner opened the vault or Lena opened the vault.

The denotation (41a) is however too weak, because it does not explain why (42a) is contradictory. Here there is a contrast with the focus example (42b). Clearly, what is wrong with (41a) is that the standard content (ignoring the alternative set) does not entail $\neg P(y)$. In (42c), this is fixed by adding $\neg P(y)$ as a conjunct. (42d) gives the semantics of *and not* combined with its three arguments.

- (42) a. Abner and not Lena read the letter. And perhaps Lena read it too.
 b. Abner_F read the letter. And perhaps Lena read it too.
 c. $\llbracket \text{and not} \rrbracket = \lambda y \lambda x \lambda P [P(x) \wedge \neg P(y) : P(x) \parallel P(y)]$
 d. $\llbracket \text{and not} \rrbracket (y) (x)(P) = P(x) \wedge \neg P(y)$, with the alternative set $\{P(x), P(y)\}$ introduced.

The denotation (42c), which introduces an alternative set, interacts in the required way with presupposition triggering from alternatives. It also has the advantage of being close to a standard Boolean interpretation for *and* and *not*.

Here is a twist on the analysis. We assume the straightforward Boolean meaning for *and not*, i.e. (42c) minus the introduction of the alternative set. Instead of stipulating the alternative set, we treat it as being derived discourse-structurally. The idea is that affirmation-negation instantiates a *rhetorical* pattern of affirming one alternative, and negating the others. When a sentence with *and not* is interpreted as an instance of the rhetorical pattern, the alternative set is indirectly identified.

The next construction I would like to look at is contrastive statives. By now the plot is clear. I would like to claim that contrastive statives inherently ‘carry along’ their contrasting terms, e.g. for *newcomer*, the contrasting term *oldtimer* and, since a resident may be neither a newcomer nor an oldtimer, *middletimer*. (43) puts this into a lexical entry. A free parameter y is included, whose value might be our town (the town of Ovid in upstate New York). This inclusion of a

free parameter follows the analysis of phrases like *a local bar* in Mitchell (1986). (44) shows how an example should work out. In (44b), the part after the dots introduces an alternative set $\{\mathbf{newcomer}(\mathbf{p},\mathbf{o}), \mathbf{middletimer}(\mathbf{p},\mathbf{o}), \mathbf{oldtimer}(\mathbf{p},\mathbf{o})\}$. The presupposition is generated as the disjunction of this alternative set, which we can assume to be $\mathbf{resident}(\mathbf{p},\mathbf{o})$.

$$(43) \quad \llbracket \mathbf{newcomer} \rrbracket = \lambda x[\mathbf{newcomer}(x,y) \dot{\vee} \mathbf{newcomer}(x,y) \parallel \mathbf{middletimer}(x,y) \parallel \mathbf{oldtimer}(x,y)]$$

(44) a. Paul is no newcomer.

$$b. \neg[\mathbf{newcomer}(\mathbf{p},\mathbf{o}) \dot{\vee} \mathbf{newcomer}(\mathbf{p},\mathbf{o}) \parallel \mathbf{middletimer}(\mathbf{p},\mathbf{o}) \parallel \mathbf{oldtimer}(\mathbf{p},\mathbf{o})]$$

One point about contrastive statives may be of significance to the theory of presupposition triggering. Arguably, the opposition between newcomers and oldtimers is primitively a sociological and cognitive opposition, not a linguistic one. The lexicon of English alludes to this distinction, but it does not seem quite right to claim that the distinction is stipulated in the lexicon of English as a semantic presupposition. From this point of view, the representation (43) is perhaps preferable to one like (45) with a semantic presupposition.¹⁷

$$(45) \quad \llbracket \mathbf{newcomer} \rrbracket = \lambda x[\partial \mathbf{resident}(x,y) \wedge \mathbf{newcomer}(x,y)]$$

Also, the Green Card Night scenario from Section 1 suggests that the contrasting terms evoked by contrastive statives can be context dependent. This has a natural place in the alternatives theory, but it is harder to see where to locate it in a theory using lexical semantic presuppositions.¹⁸

At this point, triggering from alternative sets has been applied to focus, direct and indirect questions, the affirmation-negation construction, and contrastive statives. For each of them, there is some kind of case that the independently motivated semantics or pragmatics of the construction involves alternative sets, though certainly analyses without alternative sets are possible, such as the partition semantics in the case of questions. While an analysis of these constructions using semantic presuppositions plus some mechanism (such as local accommodation) for eliminating the presupposition has not been refuted, I have made a case that the alternatives analysis is a better match for what is known or believed about the grammar and semantics of these constructions. Assuming this much, there is the possibility of analyzing other soft presupposition triggers using triggering from alternative sets, rather than with a direct lexical encoding of a semantic presupposition. I will work this out for inchoatives.

Let us return for a moment to affirmation-negation. Consider example (46a), as used by a nurse with reference to her work shift. Intuitively, the sentence presupposes that the patient was asleep at the start of the shift. This is supported by projection data in (46b), where the presupposition is either preserved, or transformed into a presupposition that the nurse believes the patient was asleep.

(46) a. The patient was asleep and then awake, and not asleep the whole time.

b. The nurse doubts that the patient was asleep then awake and not asleep the whole time.

In the analysis I proposed, presupposition triggering is attributed to the *and not* phrase contributing an alternative set. The individual alternatives can be described using a logic of change interpreted in an interval semantics. Following Dowty (1979), sentences and formulas of the logic of change have truth values relative to intervals, and stative sentences are true relative to an interval iff they are true at every point in the interval. This makes the atomic formula (47a) an adequate representation of ‘the patient was asleep the whole time’, where z_1 designates the patient. In (47b), change of state is represented using the operator **T** ‘and then’ from von Wright (1968).¹⁹ The alternative set then is (47c). As we want, the disjunction of the alternatives entails that the patient was asleep at the start of the reference interval, something that can be expressed with (47d).

- (47) a. **asleep**(z_1)
 b. **asleep**(z_1) **T** **awake**(z_1)
 c. { **asleep**(z_1) **T** **awake**(z_1), **asleep**(z_1) }
 d. **asleep**(z_1) **T** $z_1 = z_1$

The point of going through this is that the examples (46a,b) are close to being paraphrases of the inchoative sentences (48a,b). The two versions are nearly equivalent in their assertions.²⁰ And as reviewed in Section 1, change-of-state sentences have their pre-states as soft presuppositions. (48b) is a projection example comparable to (46b), where the implication that the patient was awake at the start of the shift survives embedding under the negative verb *doubt*.²¹

- (48) a. The patient woke up.
 b. The nurse doubts that the patient woke up.

So, the particular assertion-negation complex in (46) is effectively a compositionally constructed inchoative, which not only has the right assertion, but also exhibits the soft triggering behavior of inchoatives. Assuming that the alternatives analysis of assertion-negation is right, this suggests the possibility of a lexical analysis of inchoatives as introducing alternatives. All that is required is a lexical entry for the inchoative which contributes the alternatives which are contributed by assertion-negation in (46). (49a) is the definition of an inchoative operator describing a transition from the subject not being in the state described by the predicate, to the subject being in that state. If we assume that the inchoative suffix *-en* denotes **inc**, as indicated in (49b), then we get (49d) as the semantics for (49c). (50a) modifies the inchoative operator to include an alternative set, resulting in the semantics (50b) for (49c). The disjunction of the alternatives is equivalent to (50c). So to presuppose the disjunction is to presuppose that the sky was black at the start of the interval of evaluation.

- (49) a. **inc** = $\lambda P\lambda x . \neg P(x) \mathbf{T} P(x)$
 b. $\llbracket \text{black-en} \rrbracket = \llbracket \text{-en} \rrbracket (\llbracket \text{black} \rrbracket) = \mathbf{inc}(\mathbf{black})$
 c. The sky blackened.
 d. $\neg \mathbf{black}(s) \mathbf{T} \mathbf{black}(s)$
- (50) a. **inc** = $\lambda P\lambda x . \neg P(x) \mathbf{T} P(x) : \neg P(x) \mathbf{T} P(x) \parallel \neg P(x)$
 b. $[\neg \mathbf{black}(s) \mathbf{T} \mathbf{black}(s) : \neg \mathbf{black}(s) \mathbf{T} \mathbf{black}(s) \parallel \neg \mathbf{black}(s)]$

c. $\neg \mathbf{black}(s) \mathbf{T} s=s$

There is an advantage in putting the introduction of alternatives into the inchoative, because this predicts that any verb formed from this operator is a soft trigger. A language learner does not have to learn independently that each inchoative is a soft trigger, she just has to learn its morphology. Admittedly that this kind of advantage can be obtained with other analyses of the triggering properties of inchoatives, e.g. we could try to write a semantic presupposition into the inchoative operator, perhaps using the definition (51).²²

(51) $\mathbf{inc} = \lambda P \lambda x . (\partial \neg P(x)) \mathbf{T} P(x)$

Summing up, this paper has claimed that an analysis using triggering from alternatives is motivated for focus, direct and indirect questions, affirmation-negation, and contrastive statives. If we observe soft triggering behavior for another construction, lexical item, or class of lexical items (call it *X*), and can identify an alternative set whose disjunction is the desired presupposition, then hypothesizing a representation with an alternative set is a way of producing a defeasible presupposition for *X*. The case for analyzing the construction using triggering from alternatives will be stronger if there is independent motivation for the alternative set. But even if there isn't such independent motivation, the analysis using triggering from alternatives has the advantage of predicting soft triggering behavior.

Consider how this works out for the transfer construction in the example repeated in (52a). Assume the content of (52) is expressed with the conjunctive formula (52b), where *T(j)* is the transfer entailment and *C(j)* is the countertransfer entailment. Then we can get the transfer entailment to come out as a soft presupposition by stipulating the alternative set (52c), because of the Boolean logic (52d). The appropriate alternative is simply John giving up his bike *without* getting money.

- (52) a. John got money for his bike.
 b. $T(j) \wedge C(j)$
 c. $\{T(j) \wedge C(j), T(j) \wedge \neg C(j)\}$
 d. $[T(j) \wedge C(j)] \vee [T(j) \wedge \neg C(j)] \equiv T(j)$

This analysis has revealed a problem: it turns out to be too trivial to identify an alternative set which produces the right presupposition. Suppose we have a construction or lexical item with an observed presupposition *p* and assertion *q*. If we stipulate a binary alternative set $\{p \wedge q, p \wedge \neg q\}$, then by propositional logic the disjunction of the alternatives is equivalent to *p*. On this basis, it is possible to stipulate any desired presupposition, and the fact that the presupposition is to be generated from an alternative set provides no constraint at all. So for constructions where there is no independent motivation for the representation with alternatives, generating the presupposition from alternatives is just a way of

representing the softness of the triggering. I discuss this problem further in Section 6.

4. Compositional interactions

There is a group of observations about presupposition projection which are considered characteristic of semantic presupposition, first because these effects show up with clear cases of semantic presupposition, and second because systematic accounts of them have been given in compositional semantic accounts (Karttunen 1973, 1974, Karttunen and Peters 1979, Heim 1983, Beaver and Kraemer 2001, Schlenker 2006). One case is the transformation of presuppositions in conditionals which served as a test for presupposition in Section 1. In isolation, (53) presupposes that John has twins; this presupposition q' comes from the definite description. In a conditional context (54), the presupposition q' is transformed to $p \rightarrow q'$, where p is the assertion of the *if*-clause (in this case, that John has children).²³

(53) Mary does not like John's twins.

> John has twins. (presupposition q')

(54) If John has children, then Mary will not like his twins.

> If John has children then he has twins. (presupposition $p \rightarrow q'$)

This transformation of presuppositions is captured in a dynamic compositional account using semantic presuppositions (Heim 1983), accounts using three-valued valuations (Beaver and Kraemer 2001) and in Schlenker's account using incremental evaluations in a static two-valued system (Schlenker 2006). The potential problem for my analysis is that, as we already saw in Section 1, when we check similar examples with soft triggers, the data come out in the same way, with conditional weakening of the presupposition. Here is an example with *and not*. The clause in (55) presupposes that John is in Syracuse or Binghamton. In (56), this clause is embedded as a main clause in a conditional.

(55) John is in Syracuse and not Binghamton.

> John is in Syracuse or in Binghamton.

(56) If John is in a city, he is in Syracuse and not Binghamton.

> If John is in a city, he is in Syracuse or in Binghamton.

(57) {John is in Syracuse, John is in Binghamton}

It seems clear that the presupposition that John is in Syracuse or in Binghamton, which is obtained as the disjunction of the alternative set (57), is conditionally weakened to the implication showed in (56). Further, there is an intuition that to contextualize (56), one has to imagine a common ground which supports the conditionalized implication. For instance, it could be common ground that John is in an electronically monitored parole program which makes it impossible for him to visit cities other than Syracuse and Binghamton. So, with *and not*, we see the compositional transformation of content that is characteristic

of semantic presupposition, and the characteristic pragmatic interpretation of entailment by the common ground. If *and not* was analyzed with a semantic presupposition, then this behavior would fall out. In a theory using triggering from alternative sets, it has to be explained how the same effects follow.

Putting the point in terms of the alternatives theory, the problem is that in a normal utterance context for (56), the some-alternative constraint is not met at the global level. That is, the common ground does not entail that John is in Syracuse or in Binghamton. Indeed with a common ground like that, (56) is odd, because it casts doubt on something that is taken for granted. So, it is not clear how the analysis from Section 3 is to be applied.

Another compositional effect related to presupposition is interaction with bound variables in quantified contexts. This is discussed in van der Sandt (1992); see also Beaver (1997). In (58), the *and not*-phrase includes a bound pronoun. As a consequence, each of the alternatives generated by *and not* has a bound variable, as shown in the description of the alternative set in the last part of the labeled bracketing. The problem for my analysis is that since each alternative contains a variable x_2 which is free in the alternative, but bound in the sentence context, it is unclear what interpretation the alternative set could get at the discourse level.²⁴

(58) Every one of them is in Worcester, and not his home town.

[every one of them]₂

[x_2 is in Worcester : x_2 is in Worcester || x_2 is in x_2 's home town]]

These two problems (presupposition projection and interaction with variable binding) are similar, because they involve interactions with compositional semantics. Accounts which assume lexical semantic presuppositions have the resources to deal with them, because they manipulate denotations which encode presuppositions. Furthermore, since the problems have to do with what is happening at embedded levels in the sentence, they seem to involve compositional semantics, rather than discourse-level reasoning. And finally, these phenomena have been analyzed in the literature on the compositional semantics of semantic presuppositions. How could the account using triggering from alternative sets do as well?

Some literature on presupposition triggering expresses optimism that presuppositions which are triggered in some indirect way (such as by conversational implicature) would be filtered and transformed in the same way as semantically triggered presuppositions (Chierchia and McConnell-Ginet 1990, p. 113, Kadmon 2001, p. 216). The question is how to achieve this in detail in the analysis using alternatives for triggering. This can not follow from any very general considerations, because presupposition filtering in semantic accounts is the result of certain specific mechanisms and interactions, and there can be no general expectation that these mechanisms and interactions would work the same way with presuppositions which are the result of an indirect mechanism. In fact, the analysis from Section 3, stated in a way that refers to global QUDs, is an example of an indirect triggering mechanism which does *not* interact with compositional semantics to predict filtering and transformation of presuppositions.

I will approach this problem by re-formulating the theory in dynamic semantic terms, taking advantage of the same dynamic compositional interactions which are used in semantic accounts of presupposition projection. In the standard picture adopted here, the pragmatic interpretation of presuppositions relates to the global common ground (Stalnaker 1974). On the other hand, in the compositional phenomena above, it seems that one has to consider what information is available in a local compositional context. This is what dynamic semantic theories do when they check semantic presuppositions against a local information state. This creates a tension between the global and local information levels in the analysis which was suggested in Section 3. To resolve it, I will state the analysis in a way which refers to local, compositionally determined information states, and drop the assumption that the alternative sets which are used in the derivation are necessarily questions under discussion at the discourse level.

The notion of local, compositionally determined information states is illustrated in (59), which is the compositional rule for conditionals from Heim (1983), stated in her file-change notation. c is an input information state for a conditional [if ϕ then ψ]. The formula describes the result of incrementing c with a conditional sentence in terms of a binary increment operator ‘+’ and Boolean operators. The formula predicts presupposition transformation because the local context for the main clause ψ is the state term $c + \phi$ rather than c , and ϕ can contribute to satisfying the presuppositions of ψ . The notation d will be used for local compositional contexts such as $c + \phi$, reserving c for the global information state.

$$(59) c + \text{if } \phi \text{ then } \psi = c - ((c+\phi) - (c+\phi+\psi))$$

Suppose that the clause ψ in (59) contributes an alternative set Q . The discussion of (56) showed that it will not work (or will not always work) to impose a default constraint that the global context c entails the disjunction of Q . Referring instead to the *local* context in the constraint on alternatives results in a weaker presuppositional constraint, since the local context has the information contributed by ϕ , which in (56) is the information that John is in a city. This will result in the same filtering and transformation of presuppositions which is obtained with semantic triggering.

This approach is expressed in a default constraint L stated in (60).²⁵ The constraint is ultimately a constraint on the global information c , and so it has a presuppositional character. But it also refers to the correspondence between c and the local context d which is established by compositional semantics. (61) shows how L applies to (56). γ is the entire sentence, and ψ is the main clause of the conditional, which contains *and not* and contributes the alternative set. As a result of the compositional rule (59), the local context for ψ is the one described in (61b). In the constraint, d is required to entail the disjunction of the alternative set (61c). Since d is defined in terms of c , this provides a constraint on the global common ground c which is equivalent to the conditional presupposition shown in (56).

(60) *Default Constraint L*

If a sentence γ is uttered in a context with common ground c , and γ embeds a clause ψ which contributes an alternative set Q , then c is such that the corresponding local context d for ψ entails the disjunction of Q .

- (61) a. [γ [if John is in a city], [ψ he is in Syracuse and not Binghamton]] { Q John is in Syracuse, John is in Binghamton } ψ] γ]
b. $d = c + \text{John is in a city}$
c. {**in(j,s)**, **in(j,b)**}

Notice that in constraint L, Q is described as an alternative set, not as a question under discussion. An ‘alternative set’ is just a semantic object with the type of a set of propositions. These alternative sets can have a variety of origins: an origin in focus semantics, a social institution in the case of contrastive statives, a rhetorical pattern in affirmation-negation, the ordinary denotation in the case of questions, or the inchoative operator for inchoative verbs. Alternative sets with these origins *can* have the role of QUDs, but they do not need to have that role in order for L to be triggered. The constraint is stated in this way because it must apply in cases where the alternative set in question is not a global question under discussion, for instance (56).

Although there is no reference to QUDs in L, cases where the alternative set is a QUD contribute to the motivation for the constraint. Questions under discussion often obey the some-alternative constraint, and the alternative sets which figure in L are often questions under discussion (as in the case of focus in matrix answers, and direct questions). This extends to cases where the trigger for the alternatives is in an embedded position. In (62a), the focus is embedded under negation, but it can be motivated by a discourse context where the question ‘who did Mary tell about it?’ is topical, and where that question obeys the some-alternative constraint relative to the global context c . In a context like that, (62a) is consistent with L, because by virtue of the update rule (62b) for negation, the local context d for the embedded clause with the focus is c itself.

- (62) a. Mary didn’t tell JOHN_F about it.
b. $c + \text{not } \varphi = c - c + \varphi$

So, if one wanted to motivate L as a true statistical generalization, cases like these where the alternative set is a QUD provide a bunch of positive cases for the generalization. It is also important that L can also be triggered in cases like (56) where the alternative set is not or does not have to be a QUD. Arguably, when an alternative set is contributed in an embedded position by a focus, indirect question, affirmation-negation construction, or contrastive stative and is not a QUD, it still has a certain discourse-structural role which is shared with matrix questions. I would like to claim that there is a linguistic and cognitive phenomenon of alternative sets which by default obey the some-alternative constraint relative to a local information state. This phenomenon is instantiated by alternative sets which are QUDs, but not limited to them.

What is the theoretical status of constraint L? I suggest that it should be located in a theory such as the one articulated by Asher and Lascarides (2003), where discourse structure is governed by a variety of constraints with a default character.²⁶ An example of this is the default assumption about the temporal order of events in (63), which Asher and Lascarides propose is governed by a constraint Narration(π_1, π_2), which requires that the post-state for the event e_{π_1} described by the clause π_1 overlap the pre-state of the event e_{π_2} described by the second sentence π_2 .

(63) Max fell. John helped him up.

It is an important feature of this theory that constraints interact and compete with each other, and can be in effect ‘cancelled’ by contextual information. This is my model for what happens in the cancellation cases from section 1. Simply stated, speakers and hearers will assume that the some-alternative constraint is not in force for a particular question variable, if the some-alternative presupposition is either inconsistent with context, or made implausible by context.

5. Anaphoricity of Focus

This section identifies and fixes a weakness in the argument about focus from Section 3. That discussion used the focus interpretation theory of Rooth (1992), but it ignored the important ‘anaphoric’ component of that theory: focus interpretation does not just contribute an alternative set, it also requires that the alternative set be available as an antecedent in the discourse representation. The requirement for antecedents for focus interpretation is the core of the givenness theory of Schwartzschild (1999). In a focus-triggering question-answer dialogue like (64a), the set of propositions introduced by focus interpretation is coindexed with the question in the way shown in (64b) in Rooth’s indexing representation.

- (64) a. Who went to the reception? Bill_F went there.
 b. [who went to the reception]₁ [Bill_F went there]_{~1}

There are a couple of ways in which the anaphoric dimension of focus theories complicates the picture for the argument of this paper. First, in a representation like (64b), one might wonder whether it is the focus alternative set or the antecedent (in this case the question) which is responsible for the existential presupposition. Since matrix questions generate default some-alternative presuppositions, and (64) has a matrix question as well as a focus, this example does not constitute evidence that focus generates a default some-alternative presupposition. We could say that the presupposition comes from the question, and that there is no default constraint which generates a some-alternative presupposition from a focus.

I think this worry is not a very serious one. In the representation (64b), the question is identified with the proposition-set constrained by focus by indexing. It does not matter whether the some-alternative constraint applies to the question, the focus variable, or both. To ask which alternative set the some-alternative constraint applies to is to create a false distinction, because there is only one alternative set.

A second point is that it is easy to construct examples with anaphoric uses of focus which do not satisfy a some-alternative constraint. Consider example (65). If one works through the predictions of L, one finds that the conditionalization of the presupposition is trivial, so that a default presupposition that someone went there is derived. But it is easy to think of contexts for the sentence where this presupposition is not satisfied—imagine a scenario where John and Bill are exploring a cave that nobody has ever visited before, and ‘there’ refers to a certain narrow underwater tunnel.

- (65) a. If John didn’t go there, I doubt that Bill_F went there.
 b. If not [John go there]₃, I doubt that [Bill_F went there]_{~3}.

In the anaphoric focus theories, (65a) gets an analysis like (65b), where the antecedent for the focus is the part of the if-clause under the negation. This representation is licensed by the theory of Rooth (1992) because ‘John go there’ can be obtained from ‘Bill go there’ by making a substitution in the position of the focused subject, and in the theory of Schwarzschild (1999) because John going there entails someone going there.²⁷

Here it can be pointed out that in both theories, the index 3 has the propositional type $\langle s,t \rangle$ rather than the question type $\langle \langle s,t \rangle, t \rangle$. As a result, constraint L is not triggered at all, and the theory does *not* predict a default existential presupposition for structure (65b).

A third issue is that the anaphoric part of Schwarzschild’s and Rooth’s focus theories represents a lack of analogy between focus and the other soft triggering constructions. For instance, with inchoatives like (66a,b), or a contrastive stative like (66c), there is no feeling that the relevant alternative set has to be present in the preceding discourse or antecedent discourse representation.

- (66) a. In the cold snap, the lake froze over.
 b. Despite the cold snap, the lake didn’t freeze over.
 c. He doesn’t have a green card.

A lack of analogy between focus and other soft triggers does not count against the analysis using L though, because the theory does not claim that soft triggers are similar in every respect, just that soft triggers (or a significant subgroup of them) are analogous in the one respect of contributing alternative sets. The constraint L does not require the alternative set Q is either anaphoric or novel, so it applies both to anaphoric Q ’s (such as certain focus variables) and non-anaphoric ones (such as the hypothesized alternative set in the representation of inchoatives).²⁸

So far, none of these points has undermined in a decisive way the analysis using L or the motivation for it which comes from focus data. However, I think a substantial issue can be synthesized from the first two points. Suppose we adopt an anaphoric theory of focus interpretation, say the givenness theory of Schwarzschild (1999). That theory requires a focus to have (in a certain sense) an antecedent in the discourse, call it A. Suppose we say that the antecedency constraint exhausts the semantic/pragmatic impact of focus, and that focus does not interact with a constraint like L. If one takes that position, then it is no

surprise that a focus existential presupposition is sometimes satisfied, and sometimes not. The possible discourse representations divide into three types:

- (i) A has type $\langle\langle s,t \rangle, t\rangle$ and satisfies the some-alternative constraint.
- (ii) A has type $\langle\langle s,t \rangle, t\rangle$ and does not satisfy a some-alternative constraint.
- (iii) A has another type such as $\langle s,t \rangle$ and the issue of satisfying a some-alternative constraint does not arise.

If representations of type (i) are very prevalent compared to representations of type (ii), one could claim that this provides motivation for subjecting focus alternative sets to a default constraint like L. But one could also claim that the prevalence of representations of type (i) is a fact about the salient antecedents of type $\langle\langle s,t \rangle, t\rangle$ which happen to be available in discourses: for instance, many of these salient antecedents are matrix questions, and matrix questions usually meet the some-alternative constraint.

The objection, then, is that if focus is anaphoric, the antecedents for focus alternative sets in particular utterance contexts already decide the question whether the some-alternative constraint is satisfied in the particular utterance situation or not. There appears to be little room for a default constraint to favor interpretations where the constraint is satisfied over ones where it is not.

This objection might be strong enough to undo the motivation for constraint L coming from focus, if focus is always anaphoric in the sense of there being an overt antecedent. However, it is a commonplace in discussions of anaphoric theories of focus that antecedents need not be overt in the discourse (e.g. Rooth 1992). Consider the example repeated in (67a). Certainly this sentence, with a focus on the subject *she*, can be used in a discourse where there is no overt antecedent for the focus, such as the question (67b) or the existential clause (67c). Rather, the focus can be licensed by the *implicit* assumption or common knowledge that the Trust Company keeps all money and valuables in the vault, so that if Lena and Albert robbed it, somebody opened the vault. When (67a) is used in this kind of context, there is no overt discourse antecedent along the lines of the question ‘who opened the vault’. So it is not possible to attribute the presuppositional effect to properties that an antecedent happens to have, independent of the focus. There is literally nothing in the overt discourse or in the sentence grammar which could be held responsible for the presupposition, except for the contrastive accent on the subject *she*. Note also that a matrix question like (67b) could not be responsible for the conditionalized presupposition which is observed in (67a).

My conclusion is that discourses like this where there is no overt antecedent for focus do provide motivation for constraint L.

- (67) a. If Lena and Albert robbed the Trust Company, then she_F opened the vault.
b. Who opened the vault?
c. Someone opened the vault.

An interesting additional dimension in focus data like this has to do with the phonological realization of the scope of the focus on *she*, i.e. the adjunction site of the \sim operator that interprets the F feature. In (67a) I assumed that the focus scope

was the clause ‘she opened the vault’. Some literature has claimed when phrases in the scope of the focus are not discourse-given, rather than having a flat intonation, they are realized with pitch accents (Selkirk 2002, Fery and Samek-Lodovici 2006). When (67a) is used in the context described above, pitch accents naturally fall in the positions indicated with capitals in (68), and it is not possible to de-accent the VP starting with *opened*. Selkirk explicitly argues that the scope of the focus feature in examples like this is phonologically detectable, because the pitch accent corresponding to the F feature has greater prominence than pitch accents in discourse-new material that is not focused. Thus there might be phonological evidence bearing on my claim that the scope of the focus in (67a) is the *then*-clause.²⁹

(68) If LENA and ALBERT robbed the TRUST Company, then SHE opened the VAULT.

6. Other versions of the constraint

In Section 2, I argued that any indirect account of triggering would have to assume some degree of structuring of lexical entries. I first considered a theory where a denotation was structured into a set of entailments, and then in Sections 3 and 4 developed the theory of triggering from alternative sets. It was proposed that lexical entries can specify alternative sets Q , and that these interact in a certain way with the default constraint L. The constraint always uses an alternative set in a specific way—it checks the disjunction of Q against a local information state. Suppose that instead of encoding an alternative set Q , soft triggers directly encoded a proposition q which is the disjunction of the alternative set Q which is assumed in the formulation from Sections 3 and 4. If we put q and the standard semantic value p together into a set $\{p, q\}$ which is contributed by the compositional semantics for a clause, this almost brings us back to the set-of-entailments proposal from Section 2. The difference is that since p asymmetrically entails q , there is an inherent ordering on the set, so that it is possible for a process which manipulates $\{p, q\}$ to select q as the presupposed entailment. (69a) is an example. In the structured semantic value, ‘John is in Syracuse’ is the stronger proposition p , and ‘John is in Syracuse or Binghamton’ is the weaker proposition q .

- (69) a. John is in Syracuse rather than Binghamton.
 b. $\{\text{John is in Syracuse, John is in Syracuse or Binghamton}\}$

The set denotation $\{p, q\}$ can serve a couple of purposes at once, because the standard denotation can be recovered as the conjunction $\wedge\{p, q\}=p$, while the potential presupposition can be recovered as the disjunction $\vee\{p, q\}=q$. Because of the latter fact, the appropriate version of constraint L, which is stated in (70), looks almost the same as before.

(70) Default Constraint L’

If a sentence ψ is uttered in a context with common ground c and ψ embeds a clause ϕ which contributes a denotation set S , then c is such that the corresponding local context d for ϕ entails that the disjunction of S is true.

This version of the alternative-set approach perhaps looks like a formal tweaking of the old one, so that there might not be much to decide between them. If one wanted to adopt the second approach, one would have to show how to extend it to cases like constituent questions, where there can be more than two alternatives in Q , and where there is independent evidence about what the denotation should be.

Next I would like to discuss whether, assuming that the analysis using L is motivated for certain soft triggers such as focus and affirmation-negation, it is attractive to extend it to others soft triggers such as inchoatives, where there is no independent evidence for a representation with an alternative set. If we do hypothesize a representation with an alternative set, soft triggering behavior is predicted. This can be seen as an extension of an available mechanism to cover additional data. But it is also unsatisfactory, because it is a way of recording status as a soft trigger, in the absence of insight into what lexical feature is responsible for soft triggering behavior. Arguably, instead of mechanically applying the alternatives analysis to all soft triggers, we should look for *other* features (presumably, other kinds of structuring) which might be responsible for triggering behavior in other classes of soft triggers.

I will briefly sketch one possibility inspired by Thomason, Stone, and DeVault (to appear).³⁰ In a class of triggers including inchoatives, achievements with preparatory phases, and agentive verbs such as *sell* with preconditions, one can independently establish a kind of temporal structuring of the entailments of the predicate. As shown in (71), predicates in these classes are compatible with punctual time adverbs. In this respect, they contrast with predicates in the aspectual class of accomplishments: the sentences in (72) are odd because of implausible entailments, contradictory, and/or difficult to contextualize.

- (71) a. He finished the six-mile race at 12:27.
b. He lost his wallet at 12:27.
c. He shut down the system at 12:27.
d. He entered Canada for the first time at 12:27.
- (72) a. # He ran the race at 12:27.
b. # He built a house at 12:27.
c. # He spent two weeks in Canada at 12:27.

The sentences in (71) do have entailments about the time period prior to 12:27—it is not that all of the information entailed by the sentence is about the time point 12:27. For instance (71d) entails that he was not in Canada at any time before 12:27, and (71c) entails that the system was up shortly before 12:27. As a baseline theory, say that verbs in the achievement class have an entailment s describing an event which is located within the time parameter which interacts with temporal frame adverbs, and an entailment r describing a preparatory process or pre-condition that is located prior to the time frame described by a temporal frame adverb, rather than within it. Syntactically, suppose we use a formula constructor \mathcal{T} which in the formula $r\mathcal{T}s$ constructs a proposition in the achievement class from a formula r describing the precondition, and a formula s describing the change. \mathcal{T} is like von Wright's operator T , except for the possible

difference that the logic and compositional semantics should be set up so that when $r\mathcal{T}s$ is modified by a temporal frame adverb, s rather than the sequence r,s gets located within the temporal frame.³¹

With these assumptions, a particular representation $r\mathcal{T}s$ for predications such as achievements and changes of state is motivated by frame adverb modification and other criteria developed on literature on aspectual classification (Kenny 1963, Dowty 1979, Krifka 1992). These criteria are independent of presupposition phenomena. Consider now how the defeasible presuppositions of predications in the achievement class should be derived. In the approaches considered so far, one would state a semantics for $r\mathcal{T}s$ which introduced an alternative set $\{r\mathcal{T}s,r\}$ or a set denotation $\{r\mathcal{T}s, r\mathcal{T}s \vee r\}$. Then application of constraint L (the alternatives constraint) or constraint L' (the set-denotation constraint) results in checking that the local information state entails the precondition. That is, one obtains a default presuppositional status for the precondition.

One could also proceed more directly, and state a default constraint like (73) referring to preconditions, and try to motivate that constraint. (73) handles the facts of presupposition projection in exactly the same way as L.

(73) Presuppositions from preconditions

If a sentence ψ is uttered in a context with common ground c and ψ embeds a clause ϕ with precondition r , then c is such that the corresponding local context d for ϕ entails r .

To apply the constraint, one needs a semantic model where it is possible to recover the preconditions of the embedded clause ϕ . If that can be worked out, I don't see a reason to prefer an analysis using alternatives to the one referring directly to preconditions.

7. Conclusion

The argument of this paper can be summarized like this. (i) There are various 'soft' presupposition triggers, where triggering behavior is defeasible. (ii) For some of these triggers, a representation involving alternatives is motivated, and for these it is attractive to derive presupposition triggering from the alternatives. (iii) An account of presupposition filtering and transformation can be adapted from Heim (1983), and the whole analysis can be expressed as a default constraint L which refers to logical forms that contribute alternative sets. (iv) For triggers where we have not found any independent motivation for a representation with alternatives, once we have L, we can derive soft triggering anyway, by stipulating a lexical representation with a set of alternatives whose disjunction is the observed presupposition. (v) But perhaps, where a representation using alternatives is not independently motivated, it is better to look for a different constraint referring to some lexical feature which is motivated. An example is a constraint referring to preconditions.

Part (iii) is in one way a modest success: the basic mechanism for presupposition filtering is identical to what is found in dynamic semantics, and from this point of view there is little independent interest to it. But this can also be seen the other way around: in the alternatives analysis, it is easy to deal with

presupposition filtering by using the mechanisms of dynamic semantics. So the facts of presupposition filtering are not a barrier to the alternatives analysis, or more generally, to indirect analyses of presupposition triggering.

The overall program being advocated here is one of tying presupposition-triggering behavior to motivated features of lexical semantics, constructional semantics, or pragmatic status which are not inherently presuppositional. This paper has made a case for a derivation from alternatives, focusing on a handful of constructions. If this kind of approach is correct, it is plausible that the full story would involve a number of distinct features which can be responsible for soft triggering behavior.

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Notes

1. Simons (2001) identified achievements like *win* as soft triggers in my sense. The general setting of Simon's paper is the same as this one, with a group of soft triggers being identified, and then with triggering being attributed to an indirect mechanism. This paper looks at a largely different group of soft triggers that motivate the alternatives analysis.
2. Here 'implication' is used as a cover term for presuppositions, logical entailments, and conversational implicatures. I sometimes use the notation ' $p > q$ ' for ' q is an implication of p '.

3. The pragmatic test is used here not as a definition of presupposition, but as one of a group of linguistic tests which tend to correlate. Arguably, most of the linguistic theory of presupposition would be the same if presupposition was *not* interpreted as entailment by the common ground. Matthewson (2006) argues that in the St'át'imcets language, linguistic presuppositions do not have the common-ground pragmatics.
4. I would like to hedge the claim of a contrast between (12a) and (12b) in two ways. First, I have the impression that the second sentence in (12a) is licensed by the fact that the first sentence presents it as possible for John to miss the meeting. If one makes this sort of context more explicit, even the cleft version becomes fully good:

(i) Bill was ordered to be at the meeting, and John was permitted to attend or to miss it. As it turned out, it was Bill who missed it.

Second, the discourse in (12b) with the cleft in fact seems fine to some speakers. Perhaps these speakers are readily able to imagine a discourse structure like the one in (i).

5. One point raised by Horn is that the presupposition can be obviated by an *if*-phrase as in (i), which seems to indicate satisfaction of a genuine presupposition, rather than some kind of cancellation. These data turn out to be consistent with the analysis proposed in Section 4.

(i) John wonders who if anyone will vote for him.

6. An interesting point about (16) and (17) is that an analysis using semantic presupposition plus accommodation will not work. In (17), there is no space for local accommodation, because the question is a top-level one, and a global accommodation of the existential presupposition is inconsistent with the second sentence. In (16a) there might be space for local accommodation within the attitude predicate, but it seems this would give the wrong result, a presupposition that the speaker believes that someone will vote for her.
7. Section 5 argues that (19b) is actually irrelevant, but that (20a) is genuine evidence for an existential presupposition of focus.
8. See Jäger (2004) and Kratzer (2004) for related discussion.
9. Important progress on factive and semifactive verbs is made in Simons (2007). She shows that in evidential contexts like (i) where the factive implication is at issue, the factive implication is systematically not presupposed.

(i) Why isn't Louise coming to our meetings these days?

Henry discovered that she's left town.

This is evidence for 'softness' of triggering by factives (or semi-factives). The theory being criticized in the text leads us to expect that there would be discourse contexts where the *attitude* entailment comes out presupposed for *discover* or *know*.

10. Fillmore discusses pairs like *accuse/blame for*. *Know/be right* and *sell/get money for* are my own additions.
11. This kind of structured lexical representation for *sell* is articulated in Jackendoff (1990).
12. In Section 6, working backwards from my alternative-semantics theory, I show that by making the right choice for p and r in a structured denotation $\{p,r\}$, one can solve this problem. The general point is that φ_1 and φ_2 could be represented by *different* sets $\{p_1,p_2,\dots\}$ and $\{q_1,q_2,\dots\}$, with $p_1 \wedge p_2 \wedge \dots \equiv q_1 \wedge q_2 \wedge \dots$.
13. But see Section 6. There I sketch a theory which tries to attribute triggering to an aspectual distinction which is reflected in patterns of truth with respect to intervals in interval semantics. Arguably this is not a matter of structuring, but of a theory of triggering which refers to aspectual distinctions. I don't think that approach would be able to distinguish *sell* from *get money for*.
14. See Section 5 for some discussion of how things come out if we assume the givenness theory of Schwarzschild (1999), or consider representations licensed by the theory of Rooth (1992) where the antecedent for focus has a propositional type, rather than a question type.
15. The difference at most is in how the proposition set in the two cases is located in the system of semantic values. See Rooth (1985) and Beck (2006).
16. Getting from (41a) to (40) in a derivation for (39d) requires a logic where lambda conversion and intensionality interact with alternatives in the right way. Solutions have been developed in literature on alternative semantics for focus and questions (Rooth 1985, Ch. 2, and Shan 2004). The appendix to this paper outlines an adaptation of Rooth's solution to my notation.
17. Expressions like (45) are given a meaning in typed logics for presupposition such as Beaver and Krahmer (2001). ∂ is the presupposition operator.
18. Beaver (2004b) pointed out that an alternatives analysis would be motivated by cases where the alternatives vary with context. There is a technical issue of how to fit contextually determined alternatives into the architecture where alternatives are introduced with operators as in (42b) and (43). Applying a standard architecture with context variables (Stanley 2000), one needs some kind of context variable and an operator which can optionally add expressions that introduce alternative sets. If following the pattern of (43) the target is $\lambda x[\exists y[\mathbf{greencard}(y) \wedge \mathbf{have}(x,y)] : \exists y[\mathbf{greencard}(y) \wedge \mathbf{have}(x,y)] \parallel A_i\{x\}]$, where A_i is a context variable of property type, then the operator that introduces alternatives is $\lambda Q\lambda x[Q\{x\} : Q\{x\} \parallel A_i\{x\}]$. It combines with the denotation of *have a green card*. The variable A_i has a property type because the contextual alternative is a property, not an extensional set. In this formal shell of an analysis, the alternative is introduced at a compositional level, rather than a

lexical one. If one is willing to think informally, it seems clear that it is *have a green card* rather than *have or green card* that has a salient alternative.

19. Dowty (1979) stated this semantics for T, using an interval semantics framework where denotations are relative to time intervals.

[$\phi T \psi$] is true at an interval I iff (1) there is an interval J containing the lower bound of I such that ϕ is true at J and ψ is false at J , (2) there is an interval K containing the upper bound of I such that ψ is true at K and ψ is false at K , and (3) there is no non-empty interval $I' \subset I$ such that (1) and (2) hold for I' as well as for I .

He defines an inchoative operator as [BECOME ϕ] = [$\neg \phi T \phi$]. This agrees with my discussion. Explaining notation like that in (49) and (50) requires integrating interval semantics with a typed intensional logic of alternatives. I haven't thought about this, except to guess that time intervals should be treated as worlds are treated in Rooth (1985) or Shan (2004). On this, see the appendix.

20. It needs to be established whether there are aspectual differences. Initially I thought that the *and then ... not* complex was bad with punctual adverbs, unlike with inchoatives like (i). But (ii) is perhaps relatively OK.

(i) At 2:13, the patient woke up.

(ii) At 2:13, the patient was asleep and then awake and not simply asleep.

21. The predicted projected presupposition is that the nurse believes the patient was asleep. As in (46b), one can also perceive the strengthened presupposition that the patient was asleep.

22. Since I have not described an integration of interval semantics as in Dowty (1979) with a typed logic of presupposition, (51) is no more than a guess at the appropriate definition of a presuppositional inchoative.

23. The twins examples are from Heim (1983), who credits them to personal communication from Stanley Peters. Although (or perhaps because) the conditional presupposition is so bizarre, I find these data clear. The pragmatic prediction is that (54) should be usable only in a context where the common ground entails the conditionalized presupposition, and this seems right. For instance, it could be common ground that John is a member of a species (a kind of armadillo) whose firstborns are always twins. Then if John has any children at all, he has some twins. In this paper, clefts rather than definite descriptions are the paradigm example of hard triggers. The cleft version (i) of the bank robbery example illustrates conditional transformation with clefts.

(i) If John and Mary robbed the Trust Company, then it is she who opened the vault.

> If John and Mary robbed the Trust Company, then someone opened the vault.

24. The point being made here does not have to do with the restricting domains of quantification to satisfy presuppositions. According to some intuitions, in (i) the

domain gets restricted to Germans who have Mercedes automobiles. This matter is independent of the point I am bringing up about (58). No matter how the domain is restricted, one alternative in (58) contains a bound variable *his*.

(i) Every German likes his Mercedes.

25. This analysis has a certain connection with the analysis of soft triggering in Simons (2001), which refers to this Question raising principle.

If A says S, and S embeds q , then A raises the question whether q .

Both theories use the idea that embedded clauses can raise (or in my case, refer to) questions. A problem from the point of view of the theory being developed here is that a whether-question Q derived from a non-presuppositional proposition q will derive a trivial some-alternative presupposition. See a prepublication version of this paper (doi:1813/12212) for some discussion of Simons' pragmatic derivation.

26. Other possible theoretical settings for L are I-implicature (Levinson 2000), and enrichment reasoning (Carston 2002).
27. The theories of Rooth (1992) and Schwarzschild (1999) both license representations with propositional antecedents, in addition to representations with proposition-set antecedents. Formally, Schwarzschild's givenness theory does not refer to indices. Instead it requires that salient antecedents be present.
28. Still, it must be recalled that this paper has stated no independent evidence that inchoatives contribute alternative sets. If they contributed *anaphoric* alternative sets, that would be detectable, providing evidence for the representation.
29. There are other representational and analytic possibilities, however. One alternative, pointed out to me by David Beaver, is that grammatical focus on *she* has a narrower scope, expressing simply a contrast between Lena and Abner. In the indexing theory, this might be represented as $[[she_F \sim 1]$ opened the vault], where 1 is an index with value {Lena, Albert}. This would presumably not predict a conditionalized presupposition along the lines of the one I am discussing, or entail that the subject *she* is more prominent than the predicate *opened the vault*. Another possibility is that the accent on *vault*, rather than being the kind of accent characteristic of discourse-new material in Selkirk's analysis, is a topic accent in the sense of Büring (1997). The Focus-Topic combination would contribute an implicit discourse structure along the lines of 'what about opening the vault? Who did that?' or 'who performed what action involved in robbing the Trust Company?'
30. The commentary Abusch and Rooth (2006) criticized Thomason, Stone, and DeVault's paper for not explaining what the concepts of presupposition and precondition have to do with each other, almost as if there was a terminological confusion. Now it seems to me that reducing triggering of linguistic presuppositions to features with independent character and motivation is exactly right.

31. See footnote 19.

Appendix

The definition in (42c) is intended to generate the propositional alternative set {Abner read the letter, Lena read the letter} at the level of the first sentence in (42a). This appendix sketches a logic for such expressions.

- (42) a. Abner and not Lena read the letter. And perhaps Lena read it too.
 b. Abner_F read the letter. And perhaps Lena read it too.
 c. $\llbracket \text{and not} \rrbracket = \lambda y \lambda x \lambda P [P(x) \wedge \neg P(y) : P(x) \parallel P(y)]$
 d. $\llbracket \text{and not} \rrbracket (y) (x)(P) = P(x) \wedge \neg P(y)$, with the alternative set $\{P(x), P(y)\}$ introduced.

My approach is to simplify alternative semantics for focus so that alternatives propagate less. In alternative semantics for focus, alternatives can propagate past functions, because there is the need to generate wide-scope alternatives for focused phrases in embedded positions. (i) is an example. To propagate alternatives, recursive rules for alternative sets are used that define a ‘focus semantic value’ $\llbracket \dots \rrbracket^f$, together with the ordinary semantic value $\llbracket \dots \rrbracket^o$. (ii) is the simplest version of the recursive semantic rule for focus semantic values for function/argument terms. This definition of the focus semantic value $\llbracket \alpha(\beta) \rrbracket^f$ of a function term $\alpha(\beta)$ propagates alternatives from both the function sub-term α and the argument sub-term β .

- (i) Sue wants JOHN_F to marry her. [She doesn’t want Bill to marry her.]
 (ii) $\llbracket \alpha(\beta) \rrbracket^f = \{ x(y) \mid x \in \llbracket \alpha \rrbracket^f \wedge y \in \llbracket \beta \rrbracket^f \}$

If lexically triggered alternatives also propagated from the argument part of application terms, one would get the alternative set (iv) for (iii), where the alternatives coming from *freeze* have propagated past the function *impossible*. This is undesirable, because the disjunction of (iv) isn’t a presupposition of (iii).

- (iii) It’s impossible that the pool water froze. This is Tel Aviv!
 (iv) {it’s impossible that the pool water was liquid and became frozen,
 it’s impossible that the pool water was liquid and remained liquid}

So, lexically triggered alternatives should not propagate from the argument part of an application term. They *should* propagate from the function part, because for instance in (42), the alternatives {Abner read the letter, Lena read the letter} should be generated from the denotation (42c) for *and not*, which has a functional type and contributes the alternatives. In fact all the examples in the paper follow this pattern: a lexical item denoting a function and contributing an alternative set should be ‘filled out’ to set of alternative propositions, by adding arguments. This suggests the definition (v), where $\llbracket \dots \rrbracket^a$ is a semantic value

function for lexically triggered alternatives, and $\llbracket \dots \rrbracket^0$ is the ordinary semantic value.

$$(v) \llbracket \alpha(\beta) \rrbracket^a = \{ x(y) \mid x \in \llbracket \alpha \rrbracket^a \wedge y = \llbracket \beta \rrbracket^0 \}$$

Since lambda is used in (42c) and other definitions of triggers in the paper, a semantics for abstraction is also needed. There are proposals for this in literature on alternative semantics for focus (Rooth 1985, Shan 2004). (vi) is Rooth's solution applied to the alternatives value $\llbracket \dots \rrbracket^a$. All semantic values have additional argument positions for assignment functions and for worlds. (vii) is (v) adjusted to the raised types. (viii) defines the alternative value for the intension operator. Other clauses should not propagate alternatives, e.g. (ix). (x) defines the alternative semantic value of an atomic symbol as the unit set of the ordinary semantic value.

$$\begin{aligned} (vi) \llbracket \lambda x. \alpha \rrbracket^a &= \{ \lambda g \lambda w \lambda y. f(g[y/x])(w) \mid f \in \llbracket \alpha \rrbracket^a \} \\ (vii) \llbracket \alpha(\beta) \rrbracket^a &= \{ \lambda g \lambda w. x(g)(w)(y(g)(w)) \mid x \in \llbracket \alpha \rrbracket^a \wedge y = \llbracket \beta \rrbracket^0 \} \\ (viii) \llbracket \wedge \alpha \rrbracket^a &= \{ \lambda g \lambda w \lambda v. f(g)(v) \mid f \in \llbracket \alpha \rrbracket^a \} \\ (ix) \llbracket \varphi \wedge \psi \rrbracket^a &= \{ \llbracket \varphi \wedge \psi \rrbracket^0 \} \\ (x) \llbracket \alpha \rrbracket^a &= \{ \llbracket \alpha \rrbracket^0 \}, \text{ where } \alpha \text{ is atomic.} \end{aligned}$$

Finally, here is the clause for the operator that initiates the alternative set.

$$(xi) \llbracket \varphi : \psi_1 \parallel \dots \parallel \psi_n \rrbracket^a = \{ \llbracket \psi_1 \rrbracket^0, \dots, \llbracket \psi_n \rrbracket^0 \}$$

This operator does not affect ordinary denotations:

$$(xii) \llbracket \varphi : \psi_1 \parallel \dots \parallel \psi_n \rrbracket^0 = \llbracket \varphi \rrbracket^0$$

In this system, where φ is a formula, $\llbracket \varphi \rrbracket^a$ has type $[[\text{Assignments} \rightarrow \text{Worlds} \rightarrow \text{Bool}] \rightarrow \text{Bool}]$, while the ordinary semantic value $\llbracket \varphi \rrbracket^0$ has type $[[\text{Assignments} \rightarrow \text{Worlds} \rightarrow \text{Bool}]]$. A set of propositions (characteristic functions of worlds) is recovered from $\llbracket \varphi \rrbracket^a$ using a contextual assignment g as $\{f(g) \mid f \in \llbracket \varphi \rrbracket^a\}$.

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