

# Condition C effects in VP fronting constructions and the mode of semantic composition<sup>1</sup>

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**Abstract.** The paper studies Condition C effects in VP fronting constructions. The author explores new as well as known data that cannot be accounted for by current theories of reconstruction. He explores the mode of semantic composition by which the fronted verb composes with its sister in cases where Condition C effects are triggered and obviated. The author proposes that Condition C effects are triggered if a potential trigger inside a fronted VP is argument to a predicate that describes a situation that is identical to or co-varies with the Austinian topic situation described by the assertive content of the whole sentence.

**Keywords:** VP fronting, connectivity, Condition C, reconstruction, situation semantics, Restrict, argument identification.

## 1. Introduction

As defined in Chomsky (1981), Condition C of binding theory is a disjoint reference effect between an R-expression and a c-commanding pronoun. If co-indexation between a pronoun and an R-expression suggests that they have the same denotation, then (1) violates Condition C, whereas (2) does not.

- (1) \*She<sub>1</sub> said I criticized Mary<sub>1</sub>.
- (2) Mary<sub>1</sub> said I criticized her<sub>1</sub>.

Fronted predicates in general and fronted VPs in particular pattern with their non-fronted variants in triggering the Condition C effect.

- (3) \*Criticize Mary<sub>1</sub>, she<sub>1</sub> said I did.
- (4) Criticize her<sub>1</sub>, Mary<sub>1</sub> said I did.

Takano (1995) proposed that fronted VPs (and other predicates) obligatorily reconstruct at LF and that Condition C is checked at LF. Reconstruction of fronted predicates for Condition C has recently been confirmed in Adger et al. (2016) and Bruening & Al Khalaf (2019). In what follows, I assume that all fronted predicates undergo obligatory syntactic reconstruction at LF.

### 1.1. Heycock's Puzzle

Heycock (1995) observed that there is a contrast between sentences like (5) and (6):

- (5) \*Recommend a student that John<sub>1</sub> taught, he<sub>1</sub> said Mary did.
- (6) Recommend the student that John<sub>1</sub> taught, he<sub>1</sub> said Mary did.

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These data are puzzling because if fronted predicates reconstruct at LF, then both sentences are predicted to exhibit the Condition C effect and the contrast is unexpected. The difference between (5) and (6) is just the determiner: when an R-expression occurs inside an indefinite object to a fronted verb, the Condition C effect is triggered, and when it occurs inside a definite object, the Condition C effect is obviated. Importantly, the non-fronted versions of (5) and (6) exhibit no contrast and both violate Condition C:

- (7) \*He<sub>1</sub> said that Mary recommended a student that John<sub>1</sub> taught.
- (8) \*He<sub>1</sub> said that Mary recommended the student that John<sub>1</sub> taught.

The puzzle then is to explain the contrast in (5) and (6) and lack thereof in (7) and (8).

### 1.2. Extending Heycock's puzzle: novel data

I provide novel data suggesting that Heycock's puzzle is not just about indefinite vs. definite objects to fronted verbs. Other weak DPs (in the sense of Milsark (1977)) also pattern with indefinite objects to fronted verbs in triggering the Condition C effect between an R-expression they embed and a co-indexed matrix pronoun:

- (9) \*Recommend some students that John<sub>1</sub> taught, he<sub>1</sub> said Mary did.
- (10) \*Recommend many students that John<sub>1</sub> taught, he<sub>1</sub> said Mary did.

Strong DP objects on the other hand pattern with definite objects and bleed Condition C.

- (11) Recommend every student that John<sub>1</sub> taught, he<sub>1</sub> said Mary did.
- (12) Recommend most students that John<sub>1</sub> taught, he<sub>1</sub> said Mary did.

CP complements to fronted verbs pattern with weak DP objects in feeding Condition C:

- (13) \*Think that Mary<sub>1</sub> arrived on time, she<sub>1</sub> did.

The reconstruction puzzle we are dealing with is now even more complicated. It also has to do with the contrast between weak and strong objects and CP complements.

### 1.3. Overview of the paper

In the rest of this paper, I explore this puzzle and propose a new perspective on the environments in which Condition C effects arise. I proceed in the following order.

Section 2 shows that Heycock's puzzle enriched with the novel data is a challenge for current theories of connectivity in fronting constructions. In section 3, I propose three questions that must be answered in order for this puzzle to be solved. (In this paper, I provide answers only to the first two.) Section 4 provides data showing that adjuncts to fronted verbs are environments that feed Condition C effects and thus pattern with weak DP objects and CP

complements to fronted verbs. In section 5, I propose that what unites adjuncts and complements to fronted verbs in which Condition C effects arise is their mode of semantic composition with the verb. They all compose with the verb by a mode of composition known as Restrict, which involves identification of unsaturated arguments. In those environments where connectivity for Condition C is obviated, the semantic composition does not involve argument identification. Section 6 extends this observation to relative clauses inside weak and strong DP objects of fronted verbs. It is shown that a relative clause inside a weak object describes a situation that is semantically dependent on the situation described by the verb (i.e. is identical to or co-varies with it). Relative clauses inside strong DPs describe situations that are semantically independent of those described by the verb. Section 7 shows how the proposal can be extended to complement CPs. In section 8, I invoke the notion of the Austinian topic situation known from situation semantics and propose that if an embedded predicate in a fronting construction describes a situation that is semantically dependent on the Austinian situation, the arguments of this predicate are subject to Condition C effects. Section 9 concludes and provides an outlook into further research.

## 2. The challenge for current accounts of reconstruction

Heycock (1995) suggests that the contrast between sentences like (5) and (6) can be predicted even under the assumption that fronted VPs obligatorily reconstruct, if we further assume that definite descriptions can exceptionally scope out from the reconstructed position to a position above the c-commanding pronoun. However, in light of the new data it is not clear how this proposal could be carried out for a sentence like (11), since universal quantifiers are not expected to scope out of a complement CP. Moreover, it is not clear why the definite cannot scope out to avoid Condition C effects in non-fronting constructions like (8).

Late merge accounts that allow an adjunct of a fronted constituent not to reconstruct (e.g. Lebeaux, 1988; Romero, 1998; Sauerland, 1998; Fox, 1999; Takahashi & Hulsey, 2009) predict that (5), (9), (10) should be acceptable: in all these cases, the offending proper name is inside an adjunct, but the Condition C effect is not obviated.

Accounts that prohibit “deep” late merge, i.e. late merge to an embedded position (Landau, 2007; Hunter & Frank, 2014), are unable to explain the acceptability of (6), (11), (12), where an R-expression occurs inside an adjunct in the projection of a noun, which is not the first maximal projection. The structure is incorrectly predicted to be ruled out.

Sportiche’s (2016) theory called Neglect allows one to ignore any material at any interface, as long as at least one copy is interpreted. This theory offers some correct predictions for many instances of Heycock’s puzzle. In particular, it predicts the unacceptability of (5) under a *de dicto* interpretation, which requires the indefinite to be interpreted in the low position. Neglect predicts the lack of Condition C effects under the *de re* interpretation of the indefinite in (5).

Indeed, making the *de re* interpretation of the indefinite in (5) more salient by adding *certain* significantly reduces the disjoint reference effect:

(14) Recommend a certain student that John<sub>1</sub> taught, he<sub>1</sub> said Mary did.

However, Neglect does not seem to explain the contrast observed in simple extensional cases:

- (15) a. \*Criticize a student that John<sub>1</sub> recommended, he<sub>1</sub> did.  
 b. Criticize the student that John<sub>1</sub> recommended, he<sub>1</sub> did.

Here, there is no contrast between the *de re* and *de dicto* interpretation: no matter which copy of the indefinite in (15)a is interpreted, the truth conditions are the same. If so, then we should expect an obviation of the disjoint reference effect in (15)a. Yet, this is not what we observe: the structure is ruled out.

Krifka (2018) develops an account of reconstruction effects in terms of semantic reconstruction and competition between co-reference and binding (cf. Cresti, 1995; Jacobson 1999; Reinhart, 1983). He argues that all fronting configurations can be interpreted in surface position if we allow higher type traces and adopt the variable-free approach to binding. A fronted phrase associated with a higher type trace receives a narrow scope interpretation in its surface position. Because of this, an R-expression inside such a phrase is never c-commanded by a co-referential pronoun and the configuration for Condition C does not obtain. According to this perspective, the degradedness of (15)a actually arises from a competition between (15)a and a competitor like “Criticize a student that he<sub>1</sub> recommended, he<sub>1</sub> did”, where the embedded pronoun *he* is of type  $\langle e, e \rangle$ . Together with certain rules of semantic composition, such a configuration licenses a “bound” interpretation of the pronoun *he* with respect to the matrix subject. Due to the general preference for anaphora via binding, (15)a is ruled out in favor of its competitor. As convincing as Krifka’s arguments are, it is not immediately clear why the same reasoning would not rule out (15)b (as well as (6), (11), (12)) and how the contrast between examples like (15)a and (15)b can be predicted<sup>2</sup>.

Finally, some theories of reconstruction develop Sharvit’s (1998) argument that reconstruction for scope does not feed Condition C whereas reconstruction for opacity does (see Lechner, 2013, 2018 and Keine & Poole, 2018). Such theories are known as hybrid because they combine the analytic potential of structural approaches like Neglect and those that appeal to semantic reconstruction in terms of higher type traces. According to Keine & Poole (2018), when A-bar movement undergoes obligatory reconstruction, the reconstruction can proceed either by the mechanism of Neglect (mentioned above) or by the mechanism of semantic reconstruction (which allows for higher type traces). Their account successfully predicts the data they discuss. However, it is not clear how the contrast that constitutes Heycock’s puzzle could be accounted for by a hybrid approach. As was shown above, the relevant contrasting cases are instances of the same kind of movement (VP fronting), so whatever options for reconstruction are available in cases that trigger Condition C effects should also be available in those cases where these effects are obviated. Moreover, extensional examples like (15)a do not involve reconstruction for opacity in the first place and it is not clear why such examples reveal Condition C effects in the first place. I conclude that hybrid accounts as formulated by the abovementioned theorists do not provide a ready solution to Heycock’s puzzle.

### 3. Desiderata from an account

<sup>2</sup> But see his discussion of factors like topicality, specificity, etc., which can affect acceptability judgments.

I believe that an account that aims to capture the data in the above examples must be able to provide answers to the following three questions:

Question 1. What determines the contrast exhibited by weak objects to fronted verbs in examples like (5), (9), (10), on the one hand, and the strong objects in examples (6), (11), and (12), on the other?

Question 2. Why do CP complements to fronted verbs pattern with weak DPs (ex. (5), (13))?

Question 3. Why does the contrast between strong and weak objects to fronted verbs arise only in fronting constructions? As was shown in (7) and (8), non-fronting configurations trigger the Condition C effect no matter whether the offending proper name is inside a weak or a strong object.

In what follows, I provide an account of the environment in which Condition C effects are triggered in VP fronting constructions and thus provide answers to the first two questions, leaving the third one for future research.

#### 4. Adjuncts to fronted verbs feed Condition C

Heycock (1995) observes that proper names inside adjuncts to fronted predicates trigger Condition C effects:

(16) \*How pleased with Pollock<sub>1</sub> do you think he<sub>1</sub> really was? (Heycock 1995, ex. 23a)

I show that proper names in adjuncts to fronted verbs also trigger the disjoint reference effect with matrix co-indexed pronouns that c-command the base position of the VP:

(17) a. Leave without her<sub>1</sub>, Mary<sub>1</sub> thought you never would.  
b. \*Leave without Mary<sub>1</sub>, she<sub>1</sub> thought you never would.

(18) a. Sit next to him<sub>1</sub>, John<sub>1</sub> said Mary did.  
b. \*Sit next to John<sub>1</sub>, he<sub>1</sub> said Mary did.

If, however, a potential Condition C trigger occurs inside a definite (or, more generally, strong) DP that is argument to a fronted predicate or is inside an adjunct to a fronted predicate, the Condition C effect is obviated:

(19) Heycock (1995: ex. 21):  
a. How pleased with the pictures Pollock<sub>1</sub> painted in his youth do you think he<sub>1</sub> really was?  
b. How afraid of the people Gore<sub>1</sub> insulted years ago do you think he<sub>1</sub> is now?

(20) Leave without the girl who hates Mary<sub>1</sub>, she<sub>1</sub> said you never would.

(21) Sit next to every guy who knows John<sub>1</sub>, he<sub>1</sub> said Mary did.

Finally, if the same potential Condition C trigger is inside a weak DP in the same configuration, the Condition C is again triggered:

- (22) \*Leave without a girl who hates Mary<sub>1</sub>, she<sub>1</sub> said you never would.  
 (23) \*Sit next to a guy who knows John<sub>1</sub>, he<sub>1</sub> said Mary did.

What this shows is that adjuncts to fronted verbs pattern with complement CPs (ex. (13)) and weak DP objects to fronted verbs (ex. (5), (9), (10)): they feed Condition C. What can account for this pattern? What is common among adjuncts, weak DP objects and CP complements? In the next section, I propose that it is the mode of semantic composition with the verb.

## 5. The mode of semantic composition: Predicate Modification and Restrict

In this section, I discuss Restrict as the mode of semantic composition by which modifiers and weak DP objects compose with verbs. I show that Restrict involves an important step of argument identification. When a verb combines with a strong DP, the mode of composition is Functional Application. I present this discussion in terms of situation semantics.

### 5.1. Predicate Modification in situation semantics and identification of arguments

In situation semantics, predicates are viewed as taking a situation argument in addition to an individual argument (type  $\langle e, \langle s, t \rangle \rangle$ ). Predicate Modification requires the situation arguments of each predicate as well as their individual arguments to be identified. Keshet (2008b) argues that examples like (24) are anomalous because the two predicates in the restrictor of the subject, namely *U.S. Senator* and *at Harvard*, must be interpreted against the same situation, which leads to the anomalous interpretation:

- (24) #In 1964, every U.S. Senator at Harvard got straight A's.

Keshet's (2008a) Intersective Predicate Generalization states that two predicates that intersect may not be evaluated at different times and worlds. Thus, when *U.S. Senator* and *at Harvard* in (25) and (26) intersect to create the complex predicate *U.S.Senator at Harvard*, their individual and situation arguments are identified:

- (25)  $\llbracket \text{U.S. Senator} \rrbracket = [\lambda x . \lambda s . x \text{ is a U.S. Senator in } s]$   
 (26)  $\llbracket \text{at Harvard} \rrbracket = [\lambda x . \lambda s . x \text{ is at Harvard in } s]$   
 (27)  $\llbracket \text{U.S. Senator at Harvard} \rrbracket = [\lambda x . \lambda s . x \text{ is a U.S. Senator in } s \text{ and } x \text{ is at Harvard in } s]$

### 5.2. Verbal modification by Restrict and argument identification

Assuming that intransitive verbs are relations between individuals and situations (type  $\langle e, \langle s, t \rangle \rangle$ ), we get the following lexical entry for a verb like *leave*<sup>3</sup>:

$$(28) \quad \llbracket \text{leave} \rrbracket = [\lambda x . \lambda s . x \text{ leaves in } s]$$

Verbal modifiers like *without Mary* are predicates of situations (expressions of type  $\langle s, t \rangle$ ):

$$(29) \quad \llbracket \text{without Mary} \rrbracket = [\lambda s . s \text{ is without Mary}]$$

The semantic composition of verbs and verbal modifiers cannot proceed by Predicate Modification. Chung & Ladusaw (2004) propose the rule known as Restrict (Predicate Restriction). I provide the following definition for Restrict:

$$(30) \quad \text{If } \alpha \text{ has two daughters } \beta \text{ and } \gamma, \text{ such that } \llbracket \beta \rrbracket \in D_{\langle e, \langle e, t \rangle \rangle} \text{ and } \llbracket \gamma \rrbracket \in D_{\langle e, t \rangle}, \text{ then } \llbracket \alpha \rrbracket \in D_{\langle e, \langle e, t \rangle \rangle} \text{ and } \llbracket \alpha \rrbracket = [\lambda x_e . \lambda y_e . \llbracket \beta \rrbracket(x)(y) \ \& \ \llbracket \gamma \rrbracket(x)].$$

What Restrict does is identify a predicate's argument with the first argument of a transitive verb, so that the predicate becomes a modifier of the corresponding argument of the verb in the resulting complex predicate.

A version of Restrict that allows a predicate to modify the second and not the first argument of the function it composes with can be used to compose (28) and (29) and generate (31)<sup>4</sup>:

$$(31) \quad \llbracket \text{leave without Mary} \rrbracket = [\lambda x . \lambda s . x \text{ leaves in } s \text{ and } s \text{ is without Mary}]$$

### 5.3. Weak DPs compose with transitive verbs by Restrict

As defined by Milsark (1977), weak DPs are those that can occur in existential constructions and strong DPs are those that cannot:

(32) There was a student that John taught.

(33) There were (some) students that John taught.

(34) \*There was the student/every student that John taught.

(35) \*There were most students that John taught.

Partee (1986) showed that weak DPs can occur in predicative positions (such as those inside small clauses), whereas strong DPs cannot not:

(36) I consider John smart/a student.

(37) \*I consider John the student.

<sup>3</sup> In the neo-Davidsonian tradition (e.g. Parsons, 1990) verbs are treated as predicates of events (entities of type  $e$ ). I assume here that situations can substitute events in the lexical entries of verbs.

<sup>4</sup> Kratzer (1996) argues that a verb's external argument is severed from it. Under this perspective, *leave* would be an expression of type  $\langle s, t \rangle$  and its compositions with the modifier would proceed by Predicate Modification and not by Restrict. The verb's and the modifier's situation arguments would still be identified.

The pivot nominal in an existential construction is known to be property denoting (McNally, 1998). This suggests that in predicative, non-argument positions weak DPs behave as predicates and strong DPs do not.

Musan (1995) showed that the temporal interpretation of weak DPs is dependent on the interpretation of the main predicate:

(38) <sup>#</sup>There is a fugitive in jail.

Sentence (38) is anomalous because the weak DP *a fugitive* must describe the same situation that is described by the main predicate *is in jail* and we do not expect this to be possible.

McNally & Van Geenhoven (1998) argue that weak DPs in object positions also behave as predicates that do not introduce a discourse referent. Weak DP objects describe the same situation as the verb that takes them as complement (Schwarz, 2009).

The interpretation of a VP like *recommend a student* can be derived in the following way. *Student* is a relation between individuals and situations with the lexical entry in (39). The weak indefinite determiner is an identity function with the lexical entry in (40). The resulting interpretation of the weak DP *a student* is given in (41):

(39)  $\llbracket \text{student} \rrbracket = [\lambda x . \lambda s . x \text{ is a student in } s]$

(40)  $\llbracket a_{\text{weak}} \rrbracket = [\lambda P_{\langle e, st \rangle} . P]$

(41)  $\llbracket a \text{ student} \rrbracket = [\lambda x . \lambda s . x \text{ is a student in } s]$

A transitive verb like *recommend* is of type  $\langle e, \langle e, \langle s, t \rangle \rangle \rangle$ :

(42)  $\llbracket \text{recommend} \rrbracket = [\lambda y . \lambda x . \lambda s . x \text{ recommends } y \text{ in } s]$

The semantic composition of such a verb with a weak object DP of type  $\langle e, \langle s, t \rangle \rangle$  cannot proceed by Functional Application. It proceeds by a version of Restrict that allows the weak DP to identify both of its unsaturated arguments with the internal individual argument and the situation argument of the verb respectively. The resulting expression *recommend a student* is still of the transitive type  $\langle e, \langle e, \langle s, t \rangle \rangle \rangle$ :

(43)  $\llbracket \text{recommend a student} \rrbracket = [\lambda y . \lambda x . \lambda s . y \text{ is a student in } s \text{ and } x \text{ recommends } y \text{ in } s]$

Weak DP objects thus describe the same situation that is described by the main predicate.

In the resulting expression, the unsaturated internal argument position is closed as a next step in the derivation of meaning by the operation of Existential Closure, which introduces an existential quantifier that binds the internal argument position in the complex predicate:

(44) If  $P$  is an  $n$ -place predicate that takes arguments  $a_1, a_2, \dots, a_n$  in the order of the numeration and  $a_1 \in D_e$ , then  $\llbracket \exists P \rrbracket = [\lambda a_2 . \dots . \lambda a_n . \exists x (\llbracket P \rrbracket (x)(a_2) \dots (a_n))]$



After Existential Closure has applied, the VP *recommend a student* receives the structure in (45) and the interpretation in (46). It thus gets its familiar interpretation of type  $\langle e, \langle s, t \rangle \rangle$ .

(45)  $[\text{VP}_{\langle e, t \rangle} \exists [\text{VP}_{1 \langle e, et \rangle} \text{recommend}_{\langle e, et \rangle} [\text{DP}_{\langle e, t \rangle} a_{\langle \langle e, t \rangle, \langle e, t \rangle \rangle} [\text{NP}_{\langle e, t \rangle} \text{student}]]]]]$

(46)  $[[\text{(45)}]] = [\lambda x . \lambda s . \exists y (y \text{ is a student in } s \text{ and } x \text{ recommends } y \text{ in } s)]$

#### 5.4. Strong DP objects do not compose with verbs by Restrict

As was mentioned above, strong DPs are unacceptable in predicative positions. Enç (1986) showed that the temporal interpretation of a strong DP is independent from that of the main predicate. Sentence (47) can be understood to have an interpretation according to which every person who was a fugitive at a past time is now in jail.

(47) Every fugitive is in jail.

Schwarz (2009, 2012) suggests that strong determiners denote functions that take an independent situation argument that saturates their restrictor. Thus, strong DP objects do not identify their situation argument with that of the main predicate. Consequently, in a VP like *recommend the student*, the strong DP object *the student* does not compose with the verb by Restrict. The DP is an expression of type  $e$  and its composition with the verb proceeds by Functional Application, as illustrated below.

(48)  $[[\text{the}]] = [\lambda s . \lambda P_{\langle e, st \rangle} : \exists! y (P(y)(s) = 1) . \text{ix}(P(x)(s) = 1)]$

(49)  $[[[\text{DP} [\text{the } s_1] \text{ student}]]]^g = \text{ix}(x \text{ is a student in } g(1))$ , defined iff  $\exists! y (y \text{ is a student in } g(1))$

(50)  $[[[\text{VP} \text{ recommend } [\text{DP} [\text{the } s_1] \text{ student}]]]]^g = [\lambda y . \lambda s . y \text{ recommends in } s \text{ ix}(x \text{ is a student in } g(1))]$

In (49), the situation denoted by  $s_1$ , i.e.  $g(1)$ , saturates the first argument of the function denoted by *the*. Consequently, the predicate *student* is evaluated with respect to  $g(1)$ .

When a strong DP object is a universal quantifier like *every student*, it undergoes QR for type reasons creating a  $\lambda$ -abstract that binds the trace of type  $e$ . The embedded predicate applies to the trace by Functional Application and so does the raised quantificational DP to its sister.

## 6. Dependent situations in relative clauses

In the previous section, I showed that what unites weak DP objects and modifiers of fronted verbs is their mode of semantic composition with the verb. This mode of composition involves identification of situation arguments. Weak DP objects and verbal modifiers thus describe the same situation that is described by the main predicate. The picture becomes more complex when we look at the situations described by relative clauses inside weak DP objects.

The first thing to observe is an apparent problem with Keshet's (2008a) Intersective Predicate Generalization. Consider Keshet's (2008a) sentence (51).

(51) Every U.S. Senator who was at Harvard in 1964 got straight A's in college.

Unlike sentence (24) above, (51) is not anomalous. However, this might seem unexpected. Under the common assumption that relative clauses are modifiers of their head nouns, the relative clause *who was at Harvard in 1964* is an expression of type  $\langle e, \langle s, t \rangle \rangle$ :

(52)  $\llbracket \text{who was at Harvard in 1964} \rrbracket = [\lambda x . \lambda s . x \text{ was in Harvard in } s \text{ and } s \text{ is in 1964}]$

When the relative clause composes with a noun like *U.S. Senator* to create a complex predicate *U.S. Senator who was at Harvard in 1964*, we should expect the Intersective Predicate Generalization to require that both predicates be evaluated against the same situation. Sentence (51) should then be anomalous just like sentence (24). However, this is not what we observe.

What makes it possible for the relative clause to in (52) to describe a different situation from the situation described by the head NP *U.S. Senator* in (51) is the presence of the past tense that puts the situation of being at Harvard into the past of the situation of being a U.S. Senator.

An insight into the contribution of tense in relative clauses comes from Kratzer (2007) and Alxatib & Sharvit (2017). Kratzer (2007) suggests that tenses relate situations (a past tense in a simplex sentence relates the topic situation with the utterance situation by the relation of temporal precedence), Alxatib & Sharvit (2017) show that tenses inside English relative clauses can be locally anchored<sup>5</sup>. If tenses introduce situations (rather than times), then building on Partee (1973) and Heim (1994) we can understand them as bearing indices that are mapped to contextually relevant situations. Building on Kusliy (2020), I propose that a relative clause like *that John taught* has the following interpretation:

(53)  $\llbracket \text{that Past}_1 \text{ John taught} \rrbracket^g = [\lambda x . \lambda s : g(1) < s . \text{John taught } x \text{ in } g(1)]$

In (53), “<” stands for “temporally precedes” and the relative clause is understood to describe situation  $g(1)$ , which is presupposed to precede the anchoring situation associated with “ $\lambda s$ ”.

Under this perspective, the apparent problem with the Intersective Predicate Generalization disappears. A relative clause is a relation between anchoring situations and individuals. When it is intersected with a noun, it identifies its anchoring situation argument with the situation argument of the head noun. The result of such a composition is given in (54):

(54)  $\llbracket [\text{NP student that Past}_1 \text{ John taught}] \rrbracket^g = [\lambda x . \lambda s : g(1) < s . x \text{ is a student in } s \text{ and John taught } x \text{ in } g(1)]$

Observe that the NP in (54) takes a situation argument and this situation is described by *student*. The situation that is described by the relative clause is different, but it is anchored to the situation of being a student.

<sup>5</sup> I made the same proposal independently and on a different set of facts in my UMass Generals Paper Kusliy (2017) and in Kusliy (2020).

As before, the weak DP *a student that Past<sub>1</sub> John taught* is equivalent to the NP in (54). When this DP composes with a verb like *criticize* by Restrict, its situation argument is identified with that of the verb. The unsaturated internal argument is then closed by Existential Closure:

- (55)  $\llbracket [\text{VP } \exists [\text{VP criticize } [\text{DP } a [\text{NP student that Past}_1 \text{ John taught}]]]] \rrbracket^g =$   
 $[\lambda y. \lambda s: g(1) < s . \exists x(x \text{ is a student in } s \text{ and John taught } x \text{ in } g(1) \text{ and } y \text{ criticizes } x \text{ in } s)]$

In (55), the situation described by the relative clause, while being different from that described by the main predicate, remains *semantically dependent* on the main situation in the sense that it is anchored to it and, therefore, co-varies with it.

We thus arrive at a picture according to which situations described by relative clauses inside weak DPs are semantically dependent on the situations described by the main predicates.

The situation described by a relative clause inside a strong DP semantically depends on the restrictor situation denoted the variable taken by a strong determiner as its first argument. It is semantically independent of the situation described by the main predicate.

Thus, when a strong determiner like *the* in (48) composes with the NP *student that John taught* from (54), the resulting DP *the student that John taught* receives the interpretation in (56):

- (56)  $\llbracket [\text{DP } [\text{the } s_2] [\text{NP student that Past}_1 \text{ John taught}]] \rrbracket^g = \lambda x(x \text{ is a student in } g(2) \text{ s and John taught } x \text{ in } g(1)),$   
 defined iff  $g(1) < g(2), \exists! y(y \text{ is a student in } g(2) \text{ and John taught } y \text{ in } g(1))$

The DP in (56) composes with a verb like *criticize* by Functional Application to create a VP:

- (57)  $\llbracket [\text{VP criticize } [\text{DP } [\text{the } s_2] [\text{NP student that Past}_1 \text{ John taught}]]] \rrbracket^g =$   
 $[\lambda y . \lambda s . y \text{ criticizes in } s \lambda x(x \text{ is a student in } g(2) \text{ s and John taught } x \text{ in } g(1))]$   
 defined iff  $g(1) < g(2), \exists! z(z \text{ is a student in } g(2) \text{ and John taught } z \text{ in } g(1))$

We see that the relative clause describes situation  $g(1)$  which does not semantically depend on the situation argument that saturates the whole VP.

## 7. Dependent situations in complement CPs

In the textbook approach to the semantics of attitude reports which goes back at least to Hintikka (1969), attitude verbs are viewed as taking their complement CPs as arguments. Complement CPs denote propositions and attitude verbs denote functions that introduce quantification over attitude alternatives and require that the proposition denoted by their CP complements obtain in each of those alternatives.

A different perspective on the interaction of an attitude verb with its complement CP is presented in Kratzer (2006). Attitude verbs are viewed as taking an individual as their internal argument. This is supported by their compatibility with DP arguments:

(58) John believes [<sub>DP</sub> the rumor that ghosts exist].

Kratzer (2006) proposes that attitude verbs take so-called content individuals as their internal arguments and are similar to transitive verbs. These individuals are entities of type *e*; they represent the content of an attitude. A complement CP is a predicate of content individuals (expression of type  $\langle e, t \rangle$ ). TPs denote propositions (type  $\langle s, t \rangle$ ). The complementizer that applies to a TP is an expression of type  $\langle \langle s, t \rangle, \langle e, t \rangle \rangle$ . The complementizer introduces universal quantification over alternatives compatible with the content individual and requires that the proposition denoted by the TP obtain in all of those alternatives (see Moulton 2009).

Importantly, Kratzer (2006) explicitly proposes that a complement CP composes with an attitude verb by a version of Restrict. The semantics of an attitude verb like *believe* can be represented as shown in (59), where the first argument of the verb is its content argument and the second argument is its individual argument saturated by the subject.

(59)  $\llbracket \text{believe} \rrbracket = [\lambda c_e . \lambda x_e . \lambda s . x \text{ believes } c \text{ in } s]$

For a CP like *that ghosts exist*, Kratzer (2006) proposes the following interpretation:

(60)  $\llbracket \text{that ghosts exist} \rrbracket = [\lambda c_e . \forall w'(\text{compatible}(w')(c) \rightarrow \text{ghosts exist in } w')]$

According to Kratzer, when the CP composes with the verb to produce the VP *believe that ghosts exist*, it restricts the content argument of the verb. The content argument of the CP and the content argument of the attitude verb are identified:

(61)  $\llbracket \text{believe that ghosts exist} \rrbracket = [\lambda c_e . \lambda x_e . \lambda s . x \text{ believes } c \text{ in } s \text{ and } \forall w'(\text{compatible}(w')(c) \rightarrow \text{ghosts exist in } w')]$

Kratzer (2006) also proposes that the unsaturated content argument on the resulting VP is closed by Existential Closure. The resulting structure of the VP after Existential Closure has applied is as shown in (62) and its interpretation is given in (63):

(62)  $[\text{VP}_2 \exists [\text{VP}_1 \text{ believe } [\text{CP that ghosts exist}]]]$

(63)  $\llbracket (62) \rrbracket = [\lambda x_e . \lambda s . \exists c(x \text{ believes } c \text{ in } s \text{ and } \forall w'(\text{compatible}(w')(c) \rightarrow \text{ghosts exist in } w'))]$

In order for parallelism between complement CPs and weak DP objects to be fully established, CPs must also take a situation argument and identify it with the situation argument of the attitude verb when they compose by Restrict.

In Kusliy (2020), I provide new evidence and arguments suggesting that this is indeed the case. Just like weak DP objects, complement CPs can be viewed as describing an actual situation anchored to the situation described by the main verb. This happens when the main tense of a complement CP is interpreted *de re* and is locally anchored. This means the embedded *de re* tense is anchored to the situation argument of the main verb just like the tense inside a relative clause embedded in a weak DP object anchors to the situation argument of the main verb (see (55) above). I argue that the locally anchored temporal *de re* analysis is the preferred one for attitude reports in English.

However, the semantics of attitude reports involves the intensional component. In order to account for it within a theory of a locally anchored *de re* tense, a technically complex formal apparatus is required. I provide this apparatus in Kusliy (2020), but space limitations prevent me from presenting it here in full form. So, I can only outline that approach here in a significantly impoverished way.

Recall sentence (13), repeated here as (64):

(64) \*Think that Mary<sub>1</sub> arrived on time, she<sub>1</sub> did.

The approach builds on Kratzer's (2006) treatment of CP complementation and extends it to cases of the temporal *de re*. In a nutshell, it is proposed that complement CPs like *that Mary arrived on time* has the following interpretation:

(65)  $\llbracket \text{that Past}_1 \text{ Mary arrived on time} \rrbracket = [\lambda c . \lambda s: g(1) < s . c \text{ is a content individual and that Mary arrived on time in } g(1) \text{ is the content of } c]$

Observe that in (65), unlike (60), the contribution of the past tense is accounted for. As before, the past tense introduces a situation, here  $g(1)$ , and anchors to a situation that the CP takes as argument. The CP now becomes a relation between content individuals and temporal anchors<sup>6</sup>. When the CP composes with the attitude verb by Restrict as suggested by Kratzer (2006), it identifies both its content individual and its situation arguments with the corresponding arguments of the attitude verb. The situation described by the complement CP thus becomes semantically dependent on the situation described by the matrix verb.

## 8. Semantic dependence on the Austinian situation and Condition C effects

In the preceding discussion, I observed that adjuncts, weak DP objects and CP complements to fronted verbs compose with these verbs by Restrict and identify their situation arguments with the situation argument of the verb. Situations described by adjuncts are identical to those described by verbs. Situations described by relative clauses inside weak DP objects or CP complements to fronted verbs are semantically dependent on the situation described by the main predicate. I also observed that this is not what happens in the case of strong DP objects whose restrictors are evaluated against an independent situation that is not identified with the situation described by the main predicate. In this section, I propose a hypothesis why this distinction matters for Condition C effects.

I invoke the notion of Austinian topic situations. They are contextually provided situations that particular utterances are about (Barwise & Echmendi, 1987; Kratzer, 2007). An Austinian situation is the situation that the assertive content of an utterance is about. These situations are described by the main predicate of a sentence. Thus, to be semantically dependent on the situation described by the main predicate of an uttered sentence means to be semantically dependent on the Austinian situation.

<sup>6</sup> In a more detailed version of this theory, the situation denoted by the embedded *de re* past tense is mapped to a concept by a concept generator (see Kusliy 2020).

We saw that adjuncts, weak DP objects and CP complements to fronted verbs describe situations that are identical to or semantically dependent on the situation described by the main verb. We also saw that they are the environments in which Conditions C effects are triggered. In light of all this, I propose the following descriptive generalization:

- (66) If a potential Condition C trigger inside a fronted constituent is argument to a predicate that describes a situation that is identical or semantically dependent on the Austinian situation of the whole sentence, then the Condition C effect cannot be obviated.

The general rationale behind (66) is the following: when a fronted VP reconstructs into its base position, only those of its components that are related to the Austinian situation retain their prominence and are visible for Condition C. The components that relate to the situations that are not dependent on the Austinian situation are demoted and are not seen by Condition C after the VP reconstructs.

Let us see how (66) relates to the cases that constitute Heycock's puzzle. First, recall the simple extensional cases from (15)a,b, repeated below:

- (67) a. \*Criticize a student that Past<sub>3</sub> John<sub>1</sub> recommended, he<sub>1</sub> do+Past<sub>2</sub>.  
b. Criticize the student that Past<sub>4</sub> John<sub>1</sub> recommended, he<sub>1</sub> do+Past<sub>3</sub>.

For the purposes of this discussion, I assume that the matrix tense provides the Austinian topic situation<sup>7</sup>, which feeds the situation argument on the fronted VP. The fronted VP in (67)a has the semantics in (68): the weak DP object composes with the verb by Restrict followed by the Existential Closure of the internal argument of the verb. The result is (68):

- (68)  $\llbracket [\text{VP } \exists [\text{VP criticize } [\text{DP a}_{\text{weak}} \text{ student } [\text{that Past}_3 \text{ John}_1 \text{ taught}]]]] \rrbracket^g =$   
 $[\lambda x . \lambda s: g(3) < s . \exists y (y \text{ is a student in } s \text{ and John taught } y \text{ in } g(3) \text{ and } x \text{ criticizes } y \text{ in } s)]$

After the VP reconstructs, its external individual and its situation arguments are saturated by the matrix subject *he*<sub>1</sub> (the index on the pronoun is mapped to John by the assignment function) and by the matrix tense (*Past*<sub>2</sub>), respectively. The truth conditions for (67)a are below:

- (69)  $\llbracket (67)a \rrbracket^{gt} = 1$  iff  $\exists y (y \text{ is a student in } g(2) \text{ and John taught } y \text{ in } g(3) \text{ and John criticizes } y \text{ in } g(2))$ , defined iff  $g(2) < t, g(3) < g(2)$

In (69), the embedded situation *g*(3) is anchored to *g*(2) by the embedded tense and is, therefore, semantically dependent on it. By (66), Condition C applies and the sentence is ruled out.

The semantics for the fronted VP in (67)b is provided in (57) above and the truth conditions for this sentence are given below:

<sup>7</sup> This is not exactly true because the Austinian topic situation is the situation described by the main predicate and viewpoint aspect establishes a relation between this situation and the situation provided by the main tense (Klein, 1994; Kratzer 2007) making the former semantically dependent on the latter. I will ignore this complication here because it does not seem to bear on anything I have to say.

- (70)  $\llbracket (67)b \rrbracket^{g,t} = 1$  iff John criticizes in  $g(3)$   $\iota x(x$  is a student in  $g(2)$  and John taught  $x$  in  $g(1))$ , defined iff  $g(3) < t$  and  $g(1) < g(2)$ ,  $\exists! z(z$  is a student in  $g(2)$  and John taught  $z$  in  $g(1))$

According to (70), the situation described by the relative clause, namely  $g(1)$ , is semantically independent of the Austinian situation  $g(3)$ .  $g(1)$  is dependent on  $g(2)$ , which is the contextually salient situation provided by the situation argument taken by the strong determiner.

The more complicated sentences from (5) and (6) receive a similar treatment *modulo* the intensional component of attitude reports (not fully accounted for in this exposition):

- (71) \*Recommend a student that Past<sub>3</sub> John<sub>1</sub> taught, Past<sub>4</sub> he<sub>1</sub> said Mary do+Past<sub>2</sub>.  
 (72) Recommend  $\llbracket$ the  $s_2$  $\rrbracket$  student that Past<sub>4</sub> John<sub>1</sub> taught $\rrbracket$ , Past<sub>5</sub> he<sub>1</sub> said Mary do+Past<sub>3</sub>.

The truth conditions for (71) are given in (73):

- (73)  $\llbracket (71) \rrbracket^{g,t} = 1$  iff  $\exists c$ (John said  $c$  in  $g(4)$  and in all alternatives compatible with  $c$ , it is the case that  $\exists y(y$  is a student and John taught  $y$  in  $g(3)$  and Mary recommended  $y$  in  $g(2))$ , defined iff  $g(4) < t$ ,  $g(2) < g(4)$ ,  $g(3) < g(2)$

The Austinian topic situation is  $g(4)$  and the situation described by the relative clause, namely  $g(3)$ , is semantically dependent on  $g(4)$ , because it is presupposed to precede  $g(2)$ , which is presupposed to precede  $g(4)$ . The configuration described in (66) obtains and (71) is ruled out.

The truth conditions for (72) are given in (74):

- (74)  $\llbracket (72) \rrbracket^{g,t} = 1$  iff  $\exists c$ (John said  $c$  in  $g(5)$  and in all alternatives compatible with  $c$ , it is the case that Mary recommends in  $g(3)$   $\iota y(y$  is a student in  $g(2)$  and John taught  $y$  in  $g(4))$ ), defined iff  $g(5) < t$ ,  $g(3) < g(5)$ ,  $g(4) < g(2)$ ,  $\exists! y(y$  is a student in  $g(2)$  and John taught  $y$  in  $g(4))$

In (74), the Austinian topic situation is  $g(5)$ . The situation provided by the main tense of the complement CP is  $g(3)$ , which is semantically dependent on  $g(5)$ . The situation described by the relative clause, namely  $g(4)$ , precedes the restrictor situation  $g(2)$ . Neither  $g(4)$ , nor  $g(2)$  are semantically dependent on the Austinian situation. The configuration described in (66) does not obtain and the Condition C effect in (72) is not triggered.

The Condition C effect is triggered in sentence (13)/(64) repeated again in (75), as seen from the schematic truth conditions given in (76):

- (75) \*Think that Past<sub>3</sub> Mary<sub>1</sub> arrived on time, she<sub>1</sub> do+Past<sub>2</sub>.  
 (76)  $\llbracket (75) \rrbracket^{g,t} = 1$  iff  $\exists c$ (Mary thought  $c$  in  $g(2)$  and in all alternatives compatible with  $c$ , it is the case that Mary arrived on time in  $g(3)$ ), defined iff  $g(2) < t$ ,  $g(3) < g(2)$

The situation described by the embedded clause,  $g(3)$ , is semantically dependent on the Austinian topic situation  $g(2)$ . The predicate that describes that situation takes the potential Condition C trigger as argument. By (66), the disjoint reference effect is triggered in (75).

Finally, sentence (18)b, repeated below as (77), also triggers the Condition C effect.

(77) \*Sit next to John<sub>1</sub>, Past<sub>2</sub> he<sub>1</sub> said Mary do+Past<sub>3</sub>.

(78)  $\llbracket (77) \rrbracket^{g,t} = 1$  iff  $\exists c(\text{John said } c \text{ in } g(2) \text{ and in all alternatives compatible with } c, \text{ it is the case that Mary sat next to John in } g(3))$ , defined iff  $g(2) < t, g(3) < g(2)$

The situation described by the adjunct of the fronted verb is identical to the situation described by the main predicate of the complement CP and since the latter is semantically dependent on the Austinian topic situation, the former is too. Since the potential Condition C trigger *John* is argument to the predicate *next to*, which describes the Austinian topic situation, the configuration described in (66) obtains and the Condition C effect is triggered.

## 9. Conclusion and outlook

In this paper, I presented and explored a puzzle about Condition C effects in fronted VPs. I observed that the disjoint reference effect between a proper name inside a fronted VP and a matrix pronoun is obviated only if the proper name is embedded in a strong DP. Proper names in object positions and inside adjuncts, complement CPs and weak DP objects all trigger the Condition C effect. I showed that a number of current structural, semantic and hybrid accounts of Condition C effects cannot capture the data. I observed that the emergence of Condition C effects correlates with the availability of a particular mode of semantic composition between a fronted verb and its complement or adjunct. I invoked the approach of situation semantics and proposed that Condition C effects arise when a proper name occurs inside a clause that describes a situation that is semantically dependent on the Austinian topic situation described by the assertive content of the whole sentence. I showed how this view applies to cases considered in this paper.

This discussion provides an answer to Question 1 in Section 3 about the nature of the contrast between strong and weak DPs and its relation to Condition C effects. It also provides a partial answer to Question 2 about the nature of the pattern observed between weak DP objects and complement CPs: the latter are presented as describing a situation that is semantically dependent on the situation described by the attitude verb.

Having proposed a distinction between those VP fronting constructions that trigger Condition C effects and those that do not, I did not say anything about the reason why similar contrasts are not observed in non-fronting constructions. Because of space limitations, Question 3 must remain unanswered here. I am leaving its discussion for a future occasion.

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