Embedded Additive Presuppositions under Control: An Operator-Variable Account

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1. Introduction

In this paper, I propose a novel syntax and semantics for apparent association of additive focus particles with the PRO subject of clauses embedded under control verbs Heim (1992). The analysis combines the Movement Theory of Control (MTC, Hornstein 1999) and the Operator-Particle theory of focus syntax, proposed originally by Lee (2004) and thoroughly developed more recently by Hirsch et al. (2017) (see also Branan & Erlewine 2020). I demonstrate that this account can be fruitfully applied to the resolution of two puzzles that arise on accounts appealing to focus-marking on PRO, as in Heim (1992): i) focus marking on the controller in the matrix clause, and ii) the availability of embedded additive presuppositions in languages with focus particles adjoined to DPs in the matrix clause. While these phenomena prove difficult to explain on Heim's analysis, I show that they fall out as predictions of the alternative developed here.

The paper is structured as follows. In Section 2, I introduce the phenomenon of embedded additive focus with subject and object control verbs in English, and summarize Heim's (1992) analysis. Section 3 presents two puzzles for Heim's account, one using English data, the other focusing on cross-linguistic evidence from Japanese and Persian. In Section 4, I present my own analysis fusing the MTC with the Operator-Particle theory, and show how the analysis derives the phenomenon of interest and explains the facts that are puzzling on Heim's account. Section 5 concludes the paper with a discussion of testing the predictions of the analysis against alternative formulations.

2. Additive Presuppositions with Control Verbs

Additive focus particles, represented in English by the adverbs *also* and *too*, associate with constituents bearing focal stress and generate the presupposition that the denotation of the unfocused material is true of some salient alternative to the focused expression. Given the focus-sensitivity of these particles, placement of focal stress on different parts of the sentence generate entirely different presuppositions, as can be observed in (1): while both (1a) and (1b) assert that John ate pizza, the former presupposes that someone other than John ate pizza, while the latter presupposes that John ate something other than pizza (Rooth 1985, Rooth 1992).

(1) a. John$_F$ ate pizza, too.
   ⇝ Someone other than John ate pizza.
   b. John ate pizza$_F$, too.
   ⇝ Someone other than John ate pizza.

Though focus-sensitive, *too* has been observed to apparently associate with silent elements, despite the fact that, by virtue of being unpronounced, they cannot be marked by focal stress. Clear examples of this can be seen in the interaction of *too* with subject control verbs, such as *want*. With such verbs, *too* is able to generate presuppositions that include the content of the predicate embedded under *want*, but exclude the content of the attitude verb. This can be seen in (2).

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 Proceedings of the 39th West Coast Conference on Formal Linguistics, ed. Robert Autry et al., 236-242. Somerville, MA: Cascadilla Proceedings Project.

(2) CONTEXT: Ali sees his crush Saloumeh at a party, and decides to chat with her. They hit it off, but Saloumeh receives an urgent phone call, and reluctantly leaves the party. Because of this, ...
ALI$_F$ wants to leave, too.

Crucially, the presupposition of *too* is satisfied because someone in the context *left*, despite the fact that no one else *wanted* to leave. This suggests that *too* is able to presuppose the content of the control verb's complement without presupposing the attitude toward that content expressed by the control verb.

Such examples are not limited to subject control verbs; the same effect is also attested with object control verbs, such as *force* and *tell*. For instance, in both examples in (3), the presupposition of *too* is satisfied as long as someone other than Ali left, and does not require that someone other than Ali be *forced* or *told* to leave.

(3) a. CONTEXT: Saloumeh left the party of her own volition.
I forced ALI$_F$ to leave, too.

b. CONTEXT: Saloumeh left the party.
I told ALI$_F$ to leave, too (though he refused).

The felicity of the sentences in (2) and (3) is curious: *too* rather clearly takes the embedded clause as an argument, yet there is no focus-bearing expression for it to associate with. What could *too* possibly be associating with? Observing sentences like (2) and (3), Heim (1992) proposes a plausible associate for *too* in these environments: PRO. On Heim's account, PRO is marked for focus, despite the fact that it cannot bear phonological focus. Heim's analysis is schematized in (4).

(4) [John wants [PRO$_F$ to leave]]

Combined with an appropriate analysis of *too*, this analysis indeed derives the embedded additive presuppositions observed above: the phenomena in (2) and (3) reduce to ordinary cases of association with focus. For example, assuming a simple existential analysis of *too* against the background of a two-dimensional focus semantics (Rooth 1992), Heim's analysis successfully predicts (2)'s presupposition that someone left.[1]

(5) $[\![\text{too}]\!] = \lambda p.\lambda w{:}\exists q[q \in [\![p]\!]^F \wedge q \neq p \wedge q(w)].p(w)$

(6) $[\![\text{PRO}_F \text{ leave too}]\!] = \lambda w{:}\exists q[q \in [\![\text{PRO}_F \text{ leave}]\!]^F \wedge q \neq \text{leave(PRO)(w)} \wedge q(w)].\text{leave(PRO)(w)}$

3. Two Puzzles for Heim's analysis

While Heim's analysis gets the facts right for the English data, it gives rise to two puzzles: placement of focal stress on the controller of PRO in English, and the distribution of constituent focus particles in the equivalents of (2) and (3) in other languages. I discuss these issues in turn below.

3.1. Focal stress tracks the controller of PRO

On Heim's account, focus is treated as a feature of PRO. Though bound by the subject of the control verb, PRO is a syntactically independent of DP, and it therefore does not immediately follow that focus on PRO should give rise to focal stress on its controller. This said, it seems to be an empirical fact that focal stress systematically falls on the controller of PRO in contexts licensing an embedded presupposition: placement of the stress on anything other than the subject of a subject control verb (7), or object of an object control verb (8), leads to a different presupposition, due to the focus sensitivity of TOO.

[1] Heim's own analysis adopts Kripke's (2009) deictic treatment of *too*, which presupposes that the predicate in the insertion is true of a particular contextually salient individual. I make use of the existential analysis of *too* here for ease of exposition, but nothing hinges on this choice.

(7) CONTEXT: Saloumeh left the party against her will, and now...
   a. ALI$_F$ wants to leave, too
   b. #Ali wants to LEAVE$_F$ too (⇝ Ali did something in addition to leaving)

(8) CONTEXT: Saloumeh left of her own volition.
   I forced ALI$_F$ to leave, too
   a. #I$_F$ forced Ali to leave, too (⇝ someone in addition to me forced Ali to leave)
   c. #I forced Ali to LEAVE$_F$ too (⇝ Ali did something in addition to leaving/I forced Ali to do something in addition to leaving)

Without recourse to additional assumptions, positing a focus feature on PRO does not predict the tight connection between the embedded additive presupposition observed with control complements and the placement of focal stress on the controller of PRO.

3.2. Constituent focus particles attach to the controller of PRO

A second kind of puzzle concerns the behavior of focus particles in languages other than English. The English additive focus adverb *too* typically occurs to the right of the sentence it modifies. However, many other languages instead possess *constituent focus particles*, which are adjoined directly to the DP containing their focus associate. This is true of Japanese *mo* and Persian *ham*: as (9) and (10) show, placement of the particle on different DPs results in different presuppositions.[2]

(9) a. Taro -mo sushi -o tabe -ta
   Taro -ADD sushi -ACC eat -PST
   'TARO_*F* ate sushi, too.'
   b. Taro -ga sushi -mo tabe -ta
   Taro -NOM sushi -ADD eat -PST
   'Taro ate SUSHI_*F*, too.'

(10) a. Rostam ham kabâb -o xord
   Rostam -ADD kebab -ACC eat.PST
   'ROSTAM$_F$ ate kabab, too.'
   b. Rostam kabâb -o ham xord
   Rostam kebab -ACC -ADD eat.PST
   'Rostam ate KABAB$_F$, too.'

Unlike *too*, which, given its appearance at the end of a sentence, can be plausibly analyzed as right adjoined to the embedded clause, these particles appear to unambiguously modify their DP hosts. As such, one might propose, quite reasonably, to treat constituent focus particles as semantically contentful, along the lines of the analysis of the Greek additive operator *ke* in Spathas & Michelioudakis (2020), which, like *mo* and *ham*, also directly attaches to its focus associate. On this analysis, a constituent focus particle takes an individual argument and a property argument, and presupposes that this property holds of some individual other than the argument of the particle.[3]

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[2] Persian possesses *finite control constructions*: rather than using non-finite verb form such as infinitives, as in English, the complement clause of a control verb contains a finite subjunctive verb that agrees in person and number with the matrix subject. Such finite control constructions are well-attested cross-linguistically (Landau (2004)). See Darzi (2001), Darzi (2008), and Ilkhanipour (2014) for arguments that the constructions in Persian do in fact instantiate control constructions, *contra* Karimi (2008)

[3] My presentation differs slightly from that of Spathas & Michelioudakis in two respects. First, the denotation that Spathas & Michelioudakis provide is syncategorematic, in that only the denotation of *ke* in combination with its DP host is given. This is most likely due to abstracting away from quantificational arguments of constituent focus particles, which I also abstract away from here. Second, Spathas & Michelioudakis' denotations also include event arguments, which I suppress here.

(11) $[\![mo/ham]\!] = \lambda x.\lambda P.\lambda w{:}\exists y[y \neq x \wedge P(y)(w)].P(x)(w)$

Given this analysis, we expect embedded additive readings to be impossible in languages like Japanese and Persian, for two reasons. First, *-mo* and *ham* must have an overt host, and therefore cannot attach to a silent pronoun like PRO. Second, their attachment to the controller of PRO in the matrix clause should always result in a presupposition containing the attitude verb, due to the semantics in (11).

This expectation, however, is not borne out: embedded additive presuppositions possible with subject and object control verbs in both Japanese and Persian, as the following examples demonstrate.

(12) Embedded additive presuppositions with subject control

a. CONTEXT: Hikari sees Taichi fall into a fissure in the ground, disappearing from sight. Believing him dead, she becomes very depressed, and says:

watashi -mo kie -te -shimai -ta -i
I -ADD disappear -TE -EXPRESS -WANT -PRS

'I want to disappear, too'

b. CONTEXT: Ali is at a party. He sees his crush Maryam, and talks to her. They're hitting it off, but Maryam's mom calls her, and Maryam reluctantly leaves. Now that Maryam's gone,...

Ali ham mi- xâ -d be- r -e
Ali ADD IMPF- want.PRS -3.SG SBJV- GO.PRS -3.SG

'Ali wants to leave, too'

(13) Embedded additive presuppositions with object control

a. CONTEXT: Taro drank a beer. Then,

Shinichi -wa Ryoichiro -ni -mo biiru -o nomu-you-ni settoku shi -ta
Shinichi -TOP Ryoichiro -DAT -ADD beer -ACC drink-as-to persuasion do -PST

'Shin-ichi persuaded Ryoichiro to drink a beer, too.'

b. CONTEXT: Reza and Hasan are at a party. Reza left of his own accord, and later,

Hasan -o ham majbur kard -am ke be- r -e
Hasan -ACC ADD FORCE do.PST -1.SG that SBJV- GO.PRS -3.SG

'I forced Hasan to leave, too.'

As one can see from these examples, the placement of the additive particle tracks the controller of PRO: with subject control predicates, it attaches to the subject of the matrix verb, and with object control predicates it attaches to the object of the matrix predicate. The Persian examples are particularly revealing: the additive particle precedes the matrix verb, which in turn precedes the embedded clause material. This shows that the additive particle is syntactically in the matrix clause, despite the fact that it is interpreted as taking the embedded clause as an argument. This immediately causes a problem for an account based on Spathas & Michelioudakis' analysis, which predicts the absence of embedded presuppositions when the host of the additive particle is clearly in the matrix clause.

4. Solving the Puzzles: Control as Movement and the Operator-Particle theory of Focus

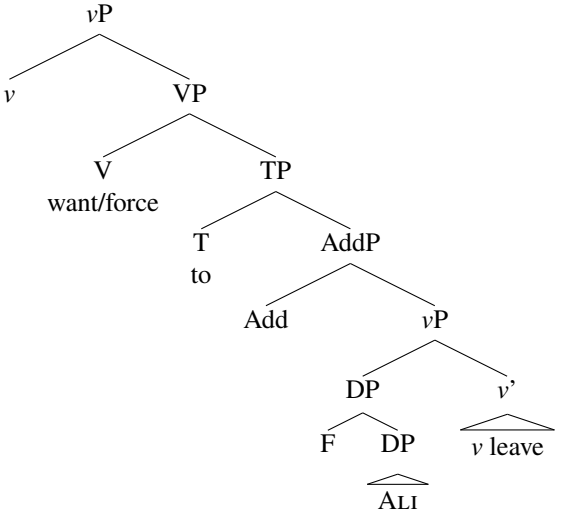
In this section, I develop my own analysis of embedded additive presuppositions that solves the puzzles that arise on Heim's analysis. My solution to the puzzles presented above has two components. The first of these components is the MOVEMENT THEORY OF CONTROL (MTC; Hornstein 1999). On the MTC, PRO is dispensed with in favor of a movement account of control dependencies (Hornstein 1999). As such, the subject of a subject control verb and the object of an object control verb originate in the embedded clause, and undergo movement into the matrix clause.

The second component of my analysis is the OPERATOR-PARTICLE THEORY of Focus syntax (OPT; Lee 2004; Hirsch 2017, Branan & Erlewine 2020). According to the OPT, focus particles adjoined to phrases

containing a focused subconstituent are *semantically inert*: they serve as markers of agreement with a semantically active focus operator, which may be silent. This approach has been argued for persuasively *only* by Hirsch (2017), and the general theory has been fruitfully applied to other areas of focus syntax, most recently with respect to cases of *anti-pied-piping* observed by Branan & Erlewine (2020).

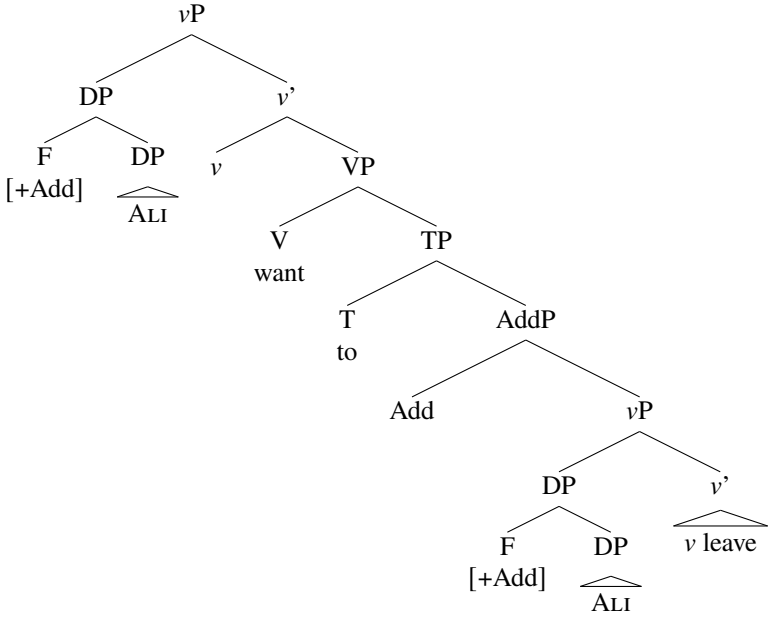
Combining the MTC with the OPT, I propose that PRO is in fact a copy of the phrase bearing focus in the embedded clause. The focused phrase has a focus particle adjoined to it, which stands in an AGREE relation with the head of an additive phrase above the embedded *v*P. (14) shows the relevant part of the structure prior to movement. AddP represents the phrase containing the semantically active additive operator, while F is the focus particle adjoined to the focused embedded subject.

(14) Underlying structure for a controlled clause, combining MTC and Operator-Particle syntax



The particle F Agrees with the c-commanding additive operator, endowing it with a +Add specification The focused DP then undergoes movement, ultimately to Spec-TP of the matrix clause in subject control, or to the specifier of a matrix *v*P in the case of object control. The resulting structure is shown in (15.

(15) Structure after movement/agreement



Because a representation of the focused DP remains in the scope of the additive operator, the additive operator in the embedded clause may associate with it. This is what allows for an embedded additive presupposition to arise in these configurations. Apparent focus association with PRO is thereby reduced to focus association with traces, as in Erlewine's (2018) work on backward association with *even*. The semantics of a subject control sentence is given below, demonstrating that the account derives the desired embedded presupposition.[4]

(16) $[\![\text{Ali wants to leave}]\!] = \lambda w{:}\exists q[q \in [\![\text{Ali leave}]\!]^F \wedge q \neq [\![\text{Ali leave}]\!]^O \wedge q(w) = 1].\text{want}(a)(\lambda w.\text{leave}(a))(w)$

What of the difference between English on the one hand, and Japanese and Persian on the other? I conjecture that both types of language make use of a more or less identical underlying syntactic structure, following the derivations presented in (14) and (15). The difference between the two classes of language, then, concerns whether it is the semantically active focus operator or the semantically inert focus particle that is pronounced. In English, it is the semantically active head, Add, that is pronounced as *too*, and the focus particle goes unpronounced. In Japanese and Persian, on the other hand, it is the semantically inert focus particle F that is pronounced, surfacing as *mo* in Japanese and as *ham* in Persian. In these languages, the semantically active operator Add is unpronounced. The difference between the two languages then reduces to a parametric difference in the choice of pronunciation of operator vs. particle.

This analysis solves both puzzles presented above. The solution to Puzzle #1 is that the matrix subject and the embedded subject are copies of the same syntactic object, and thus are both marked for focus. As such, if one copy bears focus, the other will too. The solution to Puzzle #2 is that constituent focus particles arise by agreement with an embedded operator. After agreement between operator and particle occurs, the focused phrase undergoes movement into the matrix clause, bringing the focus particle along with it.

5. Conclusion

In this paper, I pointed out the existence of embedded additive presuppositions under control verbs, which appear to provide evidence for the possibility of focus-sensitive operators like *too* associating with unpronounced material in the embedded clause. I then discussed two puzzles for an analysis that takes this approach seriously by positing the existence of a focus feature on PRO (Heim 1992), noting that the placement of focal stress and the existence of embedded additive readings in languages with constituent focus particles adjoined to the focused DP go unaccounted for on such an approach. I then developed my own approach to embedded additive presuppositions under control verbs, combining the Movement Theory of Control and the Operator-Particle Theory of focus syntax to analyze apparent focus on PRO as association with the unpronounced copy of the DP that becomes the subject/object of the matrix control verb. I then demonstrated that this analysis succeeds in solving the two puzzles raised by Heim's account.

This account opens the door to a number of interesting avenues for future research, largely devoted to testing the predictions of the analysis in different domains and languages. I will discuss three areas for future research below.

One prediction concerns the set of possible patterns for the pronunciation of the semantically active focus operator and the semantically contentless focus particle. As my account of the difference between English-type languages and Japanese/Persian-type languages depends on a difference in which of the two objects is pronounced and which unpronounced, my analysis predicts the possibility of a language in which *both* the operator and the particle are pronounced at the same time. While I do not know of any language that does this in the domain of additive focus, Hole (2013), Erlewine (2017) and Branan & Erlewine (2020) all note that such a pattern is attested with the focus-sensitive adverb *only* in Vietnamese, which allows for the simultaneous pronunciation of the exhaustive operator *chi* and the focus particle *moi*. Given the attestation of such double-marking in the domain of exhaustive particles, it stands to reason that such a pattern is in principle possible in the domain of additive particles as well.[5]

[4] The lower copy of this DP will ultimately be reduced to a trace by an operation like Trace Conversion Fox 2002.

[5] Thanks to Si Kai Lee for discussion on this point.

Another prediction of the analysis concerns the interaction of *too* with empty categories cross-linguistically. The analysis I have developed here places a very tight restriction on the expected distribution of association of additive focus with unpronounced material: I predict that *too* should only be able to associate with expressions that can be analyzed as the tail of a movement chain. As such, I do not predict that *too* is possible with other kinds of null elements, such as null bound pronouns. This said, preliminary work on Spanish appears to show that the equivalent of *too*, *también*, is able to associate with *pro* in subjunctive clauses.[6]

(17) CONTEXT: María left the party. Then,
Le dije a Juan que *pro* se fuera también
3.SG.DAT say.PST.1.SG to Juan that PRO SE go.3.SG.PST.SBJV too
'I told Juan to leave, too.' (lit. I said to John that he leave too)

One possibility for analyzing constructions like these is to treat them on a par with the similar Persian examples discussed above, that is, as finite control constructions. It would then be necessary to investigate uses of *pro* that do not lend themselves as readily to an analysis in terms of the MTC.

A final consideration is the issue of partial control. Certain control predicates, such as *want*, permit a singular controller to non-exhaustively control the subject of the embedded predicate, as (18) shows.

(18) John wants to meet tomorrow

(18) can be used to mean that John wants to meet with some other person. In this case, the referent of the subject of *meet* is not merely John, but a plural individual of which John is a proper part. Partial control is known to provide a challenge for the movement theory of control, as the null subject of the embedded clause is not interpreted as simply John, and can therefore not simply be a reduced copy of the controller (Landau (2016)). I leave this interesting issue for future research.

References

Branan, Kenyon & Michael Yoshitaka Erlewine. 2020. *Anti-pied-piping*. Ms., National University of Singapore.

Darzi, Ali. 2001. *Nonfinite control in persian*. University of Illinois, Urbana-Champaign dissertation.

Darzi, Ali. 2008. On the vp analysis of persian finite control constructions. *Linguistic Inquiry* 39(1). 103–116.

Erlewine, Michael Yoshitaka. 2017. Vietnamese focus particles and derivation by phase. *Journal of East Asian Linguistics* 26(4). 325–349.

Erlewine, Michael Yoshitaka. 2018. Even doesn't move but associates into traces: a reply to nakanishi 2012. *Natural Language Semantics* 26(3-4). 167–191.

Fox, Danny. 2002. Antecedent-contained deletion and the copy theory of movement. *Linguistic Inquiry* 33(1). 63–96.

Heim, Irene. 1992. Presupposition projection and the semantics of attitude verbs. *Journal of semantics* 9(3). 183–221.

Hirsch, Aron et al. 2017. *An inflexible semantics for cross-categorial operators*. Massachusetts Institute of Technology dissertation.

Hole, Daniel. 2013. Focus particles and related entities in vietnamese. *Linguistics of Vietnamese: an international survey* 253. 265.

Hornstein, Norbert. 1999. Movement and control. *Linguistic inquiry* 30(1). 69–96.

Ilkhanipour, Negin. 2014. On the cp analysis of persian finite control constructions. *Linguistic Inquiry* 45(2). 323–331.

Karimi, Simin. 2008. Raising and control in persian. *Aspects of Iranian linguistics*. 177–208.

Kripke, Saul A. 2009. Presupposition and anaphora: remarks on the formulation of the projection problem. *Linguistic Inquiry* 40(3). 367–386.

Landau, Idan. 2004. The scale of finiteness and the calculus of control. *Natural Language & Linguistic Theory* 22(4). 811–877.

Landau, Idan. 2016. Against the null comitative analysis of partial control. *Linguistic Inquiry* 47(3). 572–580.

Lee, Youngjoo. 2004. *The syntax and semantics of focus particles*. Massachusetts Institute of Technology dissertation.

Rooth, Mats. 1985. *Association with focus*. University of Massachusetts, Amherst dissertation.

Rooth, Mats. 1992. A theory of focus interpretation. *Natural language semantics* 1(1). 75–116.

Spathas, Giorgos & Dimitris Michelioudakis. 2020. States in the decomposition of verbal predicates. *Natural Language & Linguistic Theory*. 1–54.

[6] I thank Luis Irizarry Figueroa for discussion of this Spanish example.

Proceedings of the 39th West Coast Conference on Formal Linguistics

edited by Robert Autry,
Gabriela de la Cruz Sanchez,
Luis A. Irizarry Figueroa,
Kristina Mihajlovic, Tianyi Ni,
Ryan Smith, and Heidi Harley

Cascadilla Proceedings Project Somerville, MA 2024

ISBN 978-1-57473-481-2 hardback

Ordering information

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This paper can be cited as:

Smith, Ryan Walter. 2024. Embedded Additive Presuppositions under Control: An Operator-Variable Account. In *Proceedings of the 39th West Coast Conference on Formal Linguistics*, ed. Robert Autry et al., 236-242. Somerville, MA: Cascadilla Proceedings Project. www.lingref.com, document #3634.