Rescue by PF deletion, traces as (non)-interveners, and the *that*-trace effect

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Abstract: The paper demonstrates that the rescue-by-PF-deletion account of the amelioration effect of island violations under ellipsis, originally noted by Ross (1969), can be extended to account for the *that*-trace effect, including the adverb amelioration effect, and the lack of intervention effects with certain null arguments which are otherwise found with their overt counterparts, as well as to deduce the generalization that traces do not count as interveners for relativized minimality, which removes a potential problem for the copy theory of movement. The fact that the rescue-by-PF-deletion analysis makes possible a unification of a number of previously unrelated phenomena should be taken as a strong argument in its favor. The current extension of the rescue-by-PF-deletion approach, on which the rescue can arise not only through the deletion process involved in ellipsis but also through regular copy deletion, also accounts for the different behavior of the Superiority Condition and the Wh-Island Condition with respect to the amelioration effect under ellipsis, a surprising difference given that both of these are generally subsumed under relativized minimality effects in current research.

Keywords: copy theory of movement, ellipsis, *pro*, relativized minimality, superiority, *that*-trace effect, wh-islands

1. Introduction

Ross (1969) makes an important observation that island violations can be rescued by applying ellipsis (sluicing in the cases he was concerned with). This is illustrated by the following examples.¹

(1) a. *Ben will be mad if Abby talks to one of the teachers, but she couldn’t remember which (of the teachers) Ben will be mad if she talks to.

¹ Ross found the sluicing examples somewhat degraded, but still better than the non-sluicing examples. Following later literature (see, e.g. Lasnik 2001), I consider such examples acceptable.
b. Ben will be mad if Abby talks to one of the teachers, but she couldn’t remember which. (Merchant 2001: 88)

(2) a. *She kissed a man who bit one of my friends, but Tom does not realize which one of my friends she kissed a man who bit.
b. She kissed a man who bit one of my friends, but Tom does not realize which one of my friends.

(3) a. *That he will hire someone is possible, but I will not divulge who that he will hire is possible.
b. That he will hire someone is possible, but I will not divulge who.

(Ross 1969)

Chomsky (1972) addresses the amelioration effect with ellipsis, proposing the following account of the effect in question: He suggests that a * (Chomsky actually used #) is assigned to an island when a movement operation crosses it. If the * remains in the final structure, a violation incurs. However, if a later operation, like ellipsis, deletes a category containing the *-marked element, the derivation is rescued. The phenomenon in question has attracted quite a bit of attention in recent research (see Merchant 2001, 2008, Lasnik 2001, Fox and Lasnik 2003, Boeckx and Lasnik 2006, Park 2005, Hornstein, Lasnik, and Uriagereka 2003, among many others) but with one important modification of Chomsky’s approach. While for Chomsky (1972) the condition that bans *-marked elements applies at surface structure, in recent work the relevant condition is assumed to hold at PF, with ellipsis treated in terms of PF deletion (see Merchant 2001 for strong evidence that syntactic movement and PF deletion are involved in ellipsis processes such as the one in (1)). The examples in (1) are then handled as follows: When wh-movement crosses the adjunct island boundary, the island is *-marked in both (1a) and (1b). The presence of a * in the final PF representation then leads to a violation in (1a). The problem does not arise in (1b), since the *-marked island is deleted in PF, so that no * is present in the final PF representation. Under this approach movement out of an island is in principle not impossible, as long as a repair strategy is employed to rescue the otherwise problematic structure at the PF interface. This line of research has proved to be extremely fruitful, yielding rich empirical results and important theoretical conclusions regarding ellipsis and locality of movement. The goal of this paper is to show that several phenomena that have resisted a

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2 *-assignment raises an issue with respect to the Inclusiveness Condition; see in this respect Lasnik (2001), who offers a way of handling this issue.
satisfactory explanation and have been previously assumed not to be related to the island amelioration via PF deletion effect can receive principled explanations if the rescue-by-PF-deletion analysis is extended to them. Since one of these phenomena uncontroversially involves a PF deletion operation, the analysis presented in the paper will also confirm the overall approach on which at least some aspects of the locality of movement should be attributed to PF. The proposed analysis will also require us to become more precise regarding where Chomsky’s * is exactly placed. The phenomena I will be concerned with are Chomsky’s (1995, 2001, 2004) generalization that traces of movement do not count as interveners for Relativized Minimality, which raises a serious problem for the otherwise rather successful copy theory of movement (see Chomsky 1993, Nunes 2004, among many others), the lack of intervention effects with null arguments in Japanese *ga/no* conversion constructions (see e.g. Saito 2001) and certain imperatives that are otherwise found with the overt counterparts of these null arguments, and the *that*-trace effect, which has resisted a satisfactory account in over more than two decades of (sometimes very intense) research on the phenomenon. I will address the three phenomena in sections 2-4 respectively, offering rescue-by-PF-deletion accounts of the phenomena, thus unifying them with the island amelioration effect illustrated by (1). Section 2 will also provide an account of the different behavior of the Superiority Condition and the Wh-Island condition with respect to amelioration under ellipsis, which was noted by Boeckx and Lasnik (2006). Section 5 is the conclusion.

2. Copies and intervention effects

2.1. Traces do not count as interveners

It is a fundamental property of human language that syntactic elements can be interpreted in positions different from the ones where they are pronounced. This is illustrated in (4), where Mary occupies subject position but is interpreted as the object of kiss. In the Government and Binding framework such dependencies were treated by employing traces: Mary in (4) moves, leaving being a co-indexed trace, a phonetically null element that has interpretational properties of the moved element.

(4) Maryi was kissed ti
Chomsky (1993) adopts the copy theory of movement, according to which the trace of an overtly moved element is a copy of the moved element that is deleted in PF but available for interpretation in LF.

(5) Mary was arrested Mary.

The copy theory of movement has yielded very significant accomplishments both theoretically (even apart from the elimination of traces as grammatical primitives) and empirically (especially in the cases where a moved element is either fully or partially pronounced in the original position, which are difficult to deal with under the trace theory of movement; see Nunes 2004 and references therein for a variety of cases of this kind). There is, however, one potentially very serious problem for the copy theory of movement.


(6) Traces do not count as interveners for relativized minimality effects.

(7) a. *Gianni si sembra a Maria [t_i essere stanco]
   Gianni seems to Maria to be ill
   ‘Gianni seems to Maria to be ill.’

b. A Maria, Gianni si sembra a i [t_i essere stanco]
   to Maria Gianni seems to be ill
   ‘To Maria, Gianni seems to be ill.’

c. A chi si sembra Gianni a i [t_i essere stanco]
   to whom seems Gianni to be ill
   ‘To whom does Gianni seem to be ill?’

3 See, however, Nunes (2004) for a dissenting view. Note that I will not be concerned here with the exact implementation of intervention effects, simply referring to them as relativized minimality effects following the original insight of Rizzi (1990). It is important for the reader to bear this in mind.

4 For possible extensions of (6) which will not be examined here see Boeckx (2009). Notice that the word order in (7c) is affected by S-V inversion that is found in Italian wh-questions (see Rizzi 1991). Notice also that one should be careful in studying the experiencer blocking effect crosslinguistically given that in some languages (e.g. Spanish, see Ausin and Depiante 2000), seem+experiencer is a control construction, which obviously affects the availability of the paradigm from (7).
(7a) illustrates the experiencer blocking effect in Italian. *Gianni* in (7a) undergoes A-movement across an A-specifier, namely *a Maria*, which yields a relativized minimality violation.5 Significantly, (7b-c), where the intervener is moved, are acceptable. (7) then illustrates (6): while an experiencer blocks movement to the subject position, its trace does not. The generalization in (6) represents an obvious problem for the copy theory of movement; in fact, this is likely the reason why Chomsky stated the generalization in terms of traces, not copies. The generalization would not make much sense under the copy theory of movement, where both the moved element and what is left behind are copies: why would then *a Maria* block subject movement in (7a), but not in (7b)/(8)?

(8)  A Maria, Gianni, sembra a Maria [tì essere stanco]

There are several obvious answers to the question which turn out not to work. Chomsky (2001) proposes the Activation Condition, according to which X must have an uninterpretable feature to be eligible for movement. In the case of A-movement, the relevant feature is Case. We could then extend the Activation Condition to relativized minimality and assume that elements without uninterpretable features do not count as interveners; more precisely, elements without an uninterpretable Case feature would not count as interveners for A-movement. However, this would not work since inactive elements otherwise do count as interveners, as in Chomsky’s (1995) Defective Intervention; in fact, *a Maria* in (7a) does not seem to differ from the lower copy of *a Maria* in (8) in the relevant respect. Assuming that only a full chain can count as an intervener, or that only the head of an A-chain counts as an intervener for A-movement, would not work either: in addition to being the tail of an Operator-variable chain, the lower copy of *a Maria* in (8) is also a trivial A-chain. Furthermore, notice that in (9a), where the experiencer undergoes clitic movement, both the moved element and what is left behind in the experiencer position intervene between the subject and its trace, yet the example is still acceptable.

(9)   Gianni, glij sembra tì [tì essere stanco]

   Gianni   her seems   to-be   ill
   ‘Gianni seems to her to be ill.’   (Boeckx 2009)

5 The grammaticality of such constructions in English presents a very interesting problem that will not be addressed here; see Boeckx (2000, 2009), Chomsky (1995), Kitahara (1997), McGinnis (1998, 2001), Stepanov (2002), Torrego (1996), and Ura (1999), among others, for relevant discussion.
(9) is of course easily captured by (6): what matters for A-movement is interveners in A-positions, and the intervener in (9) is the trace of clitic movement, which is located in an A-position. However, being a trace, this element cannot cause an intervention effect, given (6).

Returning to the copy theory of movement, how can we make a difference between (7a) and (8)? The relevant intervener looks exactly the same in both examples in the syntax; however, there is a difference between the two in PF. The intervening copy is deleted in (8) but not (7a). In other words, while it is difficult to make the relevant difference between (7a) and (8) in the syntax, it is very easy to make it in PF. How can we make PF relevant here? This in fact can be easily accomplished under the repair-by-PF-deletion approach to locality of movement, where locality violations are incurred in PF, hence can be salvaged by PF deletion. Recall the account of (1) summarized above. Movement across the island takes place in both constructions in (1), as a result of which the trouble-maker, namely, the island, is *-marked. The * survives into PF in (1a), yielding a violation, but not in (1b), where the * is deleted in PF under ellipsis. I suggest that this is also what happens in (7a) and (8). With the adjunct condition, what causes the problem is crossing the adjunct boundary, i.e. the trouble maker is the island, hence the islands gets the *.

With relativized minimality violations what causes the problem is crossing the intervener, i.e. the trouble maker is the intervener hence the intervener should get the *. Movement in both (7a) and (8) crosses an intervener, hence the intervener should get a star in both (7a) and (8).

(10) Gianni sembl a Maria * [Gianni essere stanco]

However, the *-marked intervener is deleted under copy deletion in (8), but not in (7a). Since a * is present in the final PF representation only in (7a), only (7a) is a locality violation. Under this analysis, the contrast between (7a) and (8) is treated in exactly the same way as the contrast between (1a) and (1b). This was accomplished by using the repair-by-PF-deletion mechanism, which provides a uniform account of the saving effect of ellipsis and movement (i.e. traces) on locality violations. Most importantly, we have now deduced the generalization in (6) in a way that is fully consistent with the copy theory of movement, resolving a serious problem for this otherwise very successful approach.

2.2. Derivations vs representations
Another aspect of the amelioration effect discussed above with respect to (7a) and (8) is worth noting. Under the rescue-by-PF-deletion approach, although an aspect of the locality of movement is derivational, namely *-marking, locality of movement is ultimately representational, since examples involving locality of movement violations are not ruled out at the point when movement crosses an island/intervener. This, however, is also necessary under Chomsky’s account of the contrast between (7a) and (7b) that is based on the generalization in (6). In other words, this account is also not strictly derivational; if it were, turning the intervener into a trace would not matter since we would get a locality violation already at the point of crossing the intervener. In fact, assuming strict cyclicity, it is hard to maintain a purely derivational approach to locality of movement, where all locality violations would take place exactly at the point of crossing a trouble-maker (i.e. an island/an intervener), in light of the data in (7), which indicate that a later operation can rescue a locality violation. The difference between Chomsky’s account based on (6) and the current account is that under Chomsky’s account the later operation is the movement of the intervener, while under the current account the relevant operation is the deletion of the intervener (which is of course preceded by the movement of the intervener). By pushing the relevant operation (and the violation) later into the derivation, the current account ends up deducing (6), unifying it with an independently motivated rescue-by-PF-deletion mechanism; in other words, pushing the violation later into the derivation enables us to unify the amelioration effect of movement in (7)/(8) with the amelioration effect of ellipsis in (1).

2.3. Superiority vs wh-islands

I will now turn to a very interesting contrast regarding the amelioration effect discussed here between Superiority and wh-island effects, reported in Boeckx and Lasnik (2006). They examine Superiority and wh-island effects in Serbo-Croatian, a multiple wh-fronting language, and note that ellipsis ameliorates wh-island, but not Superiority effects (the latter observation is actually due to Stjepanović 1999, 2003; Merchant 2001 also makes the observation with respect to Bulgarian). This is illustrated for the wh-island effect in (12) and for the Superiority effect in (11). (Note that both fronted wh-phrases in (11) are located in SpecCP (see Bošković 2003, where it is shown that in the contexts where SC exhibits Superiority effects all fronted wh-phrase are located in SpecCP). The fixed order of fronted wh-phrases indicates that Superiority is at work here, see Rudin 1988.)
(11) a. Somebody bought something, but…
   b. i. Ivan i Marko ne znaju ko šta.
      Ivan and Marko neg know who what
   ii. *Ivan i Marko ne znaju šta ko.
       Ivan and Marko neg know what who
       ‘Ivan and Marko do not know who what.’

(12) a. Every journalist went out today to find out who was selling a certain book…
   b. ali ne znam koju (knjigu)
       but not know which book
       ‘but I do not know which (book).’ (Boeckx and Lasnik 2006)

The contrast raises a rather interesting question, given that, as noted by Boeckx and Lasnik, Superiority effects are now typically subsumed under relativized minimality effects, just like wh-islands effects, a tradition that actually goes back to Cheng and Demirdash (1990), who adopt Rizzi’s original conception of relativized minimality (RM) but argue that wh-phrases should be treated as A’-elements due to their semantics, namely because they are inherent operators (see also Cinque 1986), even when they are located in A-positions. One could interpret the contrast as indicating that Superiority should not be subsumed under RM; after all, there are several approaches to Superiority that treat Superiority effects quite differently from RM effects. Boeckx and Lasnik speculate that Superiority should be treated as a derivational condition, which reflects how narrow syntax works and is hence immune to interface operations like ellipsis, in contrast to wh-islands, which like other islands that are subject to the amelioration effect should be treated in terms of a representational, interface condition that can be repaired with PF operations like ellipsis. It would be obviously preferable not to make a such a difference between different locality violations. I will therefore explore the possibility of a different approach, which still treats superiority violations like all other island violations; more precisely, it treats them like another instance of RM effects. I will show now that the contrast between (11) and (12) with respect to the ellipsis amelioration effect is actually expected under the current, copy-deletion approach to RM locality effects, even if both superiority and wh-island effects are treated in terms of a representational interface condition that can be repaired with PF operations like ellipsis, in line with the overall approach to the locality of movement adopted above.
Before demonstrating this, let me first address a technical issue which as far as I know has not been addressed before in the repair-by-PF-deletion literature. Recall that, as discussed above, when movement takes place out of an island/ across an intervener, a * is placed on the trouble-maker, i.e. the island/intervener. If the *-marked element survives into PF, we get a violation; if the *-marked element is deleted, there is no violation. Earlier work has argued that the *-marked element can be deleted by employing ellipsis; I have argued here that the *-marked element can also be deleted via copy-deletion, which I have shown deduces Chomsky’s generalization that traces do not count as interveners. Now, suppose we have the following scenario: X moves out of an island Y, with Y getting a * as a result of this movement. Y then itself moves leaving a copy behind. A question then arises regarding what should happen with the *: should the * remain only on the original copy, should it be placed only on the moved copy, or on both copies? In other words, the question is what happens with *s under movement? As far as I can tell, there is no clear theoretical reason to prefer one of these options although if copying is taken literally, as copying everything, the last option may actually be preferred. However, it turns out that what appears to be a rather technical question has significant empirical consequences, which means that the above options can be teased apart on empirical grounds. If a * were to remain only on the lower copy, since the copy is typically deleted under copy-deletion the island effect should be voided (13a). On the other hand, if *s are copied under movement, deletion of the lower copy should not rescue the derivation since a *-marked element would remain in the final representation (13b). (I disregard here the option where the * is simply carried under movement, hence placed only on the higher copy, since this option does not differ in the relevant respect from option (13b), i.e. this option also fails to rescue the relevant derivation).

(13)  a. Y X Y*  
      b. Y* X Y*  

Y X Ψ  
Y* X Ψ*  

The question is then what happens when an island is moved, does such movement repair island violations? The answer is no: unlike ellipsis of an island, movement of an island does not repair island violations. This is shown by the English data in (14), where extraction out of a complex NP (with a relative clause) is followed by movement of the NP, and the German examples in (15), which are more informative given that the language is independently known to allow the necessary remnant movement operations.
(14)  
   a. *I wonder who she kissed [a man who bit t]?
   b. *[A man who bit t] you wonder who she kissed?

(15)  
      ‘John made an attempt to steal a car.’
   b. Hans hat einen Versuch ein Auto zu stehlen unternommen.
   c. Einen Versuch ein Auto zu stehlen hat Hans unternommen.
   e. *Ein Auto hat Hans einen Versuch zu stehlen unternommen.
   f. *[Einen Versuch t; zu stehlen] hat Hans ein Auto; unternommen.

Focusing on the German examples, (15a-c) give the base-line data. (15d-e) show that extraction out of the complex NP headed by Versuch is disallowed. (15f) involves scrambling of ein Auto, followed by remnant movement of the island (the complex NP) to SpecCP (as is well-known, German otherwise allows such remnant movements). The ungrammaticality of the construction shows that extraction out of an island cannot be rescued by a follow up movement of the island.6

The data in (14)-(15) thus favor option (13b), where the * is copied under movement, which means islandhood is not voided through copy deletion. As noted above, the option may actually also be preferable theoretically; if movement is literal copying we would expect it to copy everything, including *s. Significantly, the contrast between Superiority and wh-islands with respect to the PF deletion amelioration effect from (11)/(12) is now accounted for. In (12), a * is placed on the trouble maker, i.e. the intervening element who. Since the *-marked element is deleted under ellipsis there is no locality violation in (12). (I use here English words for the SC example from (12).)

6 The same holds if only the infinitive is remnant moved (in fact, such examples are even worse than (15f); thanks are due to Susi Wurmbrand for providing the German examples).

(i) **Zu stehlen hat Hans ein Auto einen Versuch unternommen
      To steal has John a car an attempt made
(16) I don’t know which book every journalist went out today to find out who* was selling

Things are different in (11) though. Here is how the derivation in (11) proceeds under standard assumptions regarding how multiple wh-fronting works, where the order of fronted wh-phrases reflects the order of their wh-movement. The object wh-phrase moves across the subject wh-phrase, an intervention effect as a result of which the subject wh-phrase is *-marked (17a). The subject wh-phrase then undergoes wh-movement, either right adjoining to the first wh-phrase, as in Rudin (1988), or tucking in in a lower Specifier, as in Richards (2001). The * is copied under movement (17b). Elipsis then applies, eliding the IP (17c).

(17) a. [CP Šta [IP ko* ...
   b. [CP Šta ko* [IP ko* ...
   c. [CP Šta ko* [HE-ko* ...]

Notice now that, in contrast to the wh-island derivation in (16), a * does survive into PF in the Superiority derivation in (17). Consequently, the superiority derivation results in a locality violation. The contrast between Superiority and wh-islands regarding the ellipsis amelioration effect from (11)/(12) is then accounted. Furthermore, the above account maintains the assumption that Superiority should be subsumed under RM; in other words, the above account does not require treating Superiority and wh-islands differently, the former as a derivational and a latter as a representational locality violation, as suggested by Boeckx and Lasnik. They can both be treated in exactly the same way, as representational locality violations along the lines of the general approach to the locality of movement adopted here. Moreover, we did not have to adopt any additional assumptions to account for the contrast in question. All the ingredients of the account were needed independently: it in fact turned out that a superiority amelioration under ellipsis would have raised a problem for the system, requiring additional assumptions; the lack of an amelioration effect is actually exactly what is predicted by the system.

The above account of the different behavior of Superiority and wh-islands with respect to the amelioration effect however brings us back to the examples that motivated the generalization in (6), namely (7a-b). If *s are copied under movement, the deletion of the original intervening copy, which was * marked (see (8) and (10)), will not help here, since we will still have a *-marked copy
in the final PF representation, namely the head of the experiencer chain. An obvious difference between (11) and (8) is that the higher copy of the intervener precedes the element whose movement has caused the violation in (8), but not in (11). In other words, the intervener intervenes between the moved element and its trace even after intervener movement in (11), but not (8) (i.e. (7b-c)). We can try to capitalize on this difference (see the discussion below). However, no matter how this difference is implemented the account will not extend to the case of clitic movement, since the moved experiencer in such cases follows the element whose movement has caused the violation, just as in the Superiority example. I will therefore first discuss the clitic example, which is repeated below.

(18)  a. *Gianni, sembra a Maria [t₁ essere stanco]
       Gianni seems to Maria to-be ill
       ‘Gianni seems to Maria to be ill.’
   b. Gianni, gli sembra gli* [Gianni essere stanco]
       Gianni her seems to-be ill
       ‘Gianni seems to her to be ill.’

If (18b) is treated on a par with wh-movement in (11), where cliticization would involve clitic movement with the * being copied under clitic movement, just as it is copied under wh-movement, there should be no amelioration effect in (18b), just as there isn’t in (11), since the * on the clitic would survive into the final PF derivation. There are several ways of handling the issue raised by (18b). Chomsky (1995) argues that complex heads, typically created by head movement, are special with respect to PF processes like linearization (see also Nunes 2004). In particular, he argues that the LCA, a linearization procedure in Chomsky’s system, does not apply within a complex head because a complex head is converted by Morphology into a phonological word before the LCA applies. Nunes expands on this analysis, providing rich empirical evidence in its favor, and implements Chomsky’s morphological reanalysis in terms of morphological fusion, which fuses parts of complex heads into a single morphological element. We can then assume that the relevant morphological process eliminates *s, which after all are not morphological objects, so that no * could remain in the result of the morphological process in question.

There is another, more interesting way of handling (18). It is often argued in the literature that clitic movement, or head movement in general (see e.g. Chomsky 2001 and Boeckx and
Stjepanović 2001), is PF movement. Suppose now that *s, which are created in the syntax, are not copied under PF movement; they are only copied under syntactic movement. In both (11b) and (18b) the intervening elements (ko and gli) are *-marked in the syntax as a result of wh-movement and subject movement, both of which are syntactic movements, crossing the relevant elements. The intervener then undergoes wh-movement in the syntax in (11b), with the * copied under wh-movement. Since the * on the higher copy remains in the final representation (the lower * is deleted under copy deletion) (11bii) is ruled out as a locality violation.

\[(19) \quad [_{\text{CP}} \text{Šta ko}^* _{\text{IP}} \text{ko}^* \text{štà}] \]

On the other hand, under the PF head/clitic movement analysis the intervening element in (18b), namely the experiencer, undergoes PF movement. Since, by hypothesis, *s are only created in the syntax, they are not copied under PF movement (since this would involve additional * creation in PF). The only * in (18b) is then the * on the lower element, and that * is deleted under copy deletion.

\[(20) \quad [_{\text{IP}} \text{Gianni gli} \ldots \text{gli}^* \text{Gianni}] \]

The analysis sketched above makes a rather interesting prediction: any PF movement of a trouble maker (island/intervener) should lead to an amelioration effect, on a par with ellipsis. The prediction is not easy to test due to the uncertainty regarding which movement operations should count as PF movement. I therefore have to leave investigating whether or not the prediction of this analysis is borne out pending better understanding of PF movement (i.e. what counts as PF movement).

The above account of the clitic amelioration effect cannot be extended to (7b-c), since in these constructions the intervener undergoes syntactic movement (wh-movement and topicalization), just as in (11b). As noted above, we can appeal here to an obvious difference between (7b-c) and (11): the intervener still intervenes between the moved element and its trace even after the follow-up movement of the intervener in (11), but not in (7b-c). We can implement this by assuming that a * is copied under movement only if the movement does not cross the element that caused * assignment. The moved experiencer would then not get a * in (7b-c), since these examples involve re-crossing, with the experiencer crossing Gianni this time, but ko in (11)
would get a * when undergoing wh-movement, since wh-movement of ko does not involve re-crossing.

The analysis raises several issues: the analysis requires keeping track of which element caused *-assignment. Also, it requires making a distinction between intervention effects and rigid islands, since when a rigid island crosses the element that originally moved out of the island, we do not get an improvement (see (21a,c), with more detailed representations in (21b,d)). Since the lower copy of the island is deleted in (21) (see (21b,d), it must be the case that the * is copied under movement of the island; in other words, recrossing does not matter here.

\[(21)\]

a. *[A man who bit], you wonder who she kissed
b. *[A man who bit who] you wonder who she kissed [a man who bit who]

   An attempt to steal has John a car made
   ‘To steal a car, John made an attempt.’

d. *[Einen Versuch zu stehlen ein Auto]* hat Hans ein Auto [einen Versuch zu stehlen ein Auto] unternommen.

Finally, there are clearly unacceptable examples involving re-crossing, which argue against this approach. One such example is (22a), with relevant copies shown in (22b). (I indicate only the lowest and highest copies in (22b), where what first crosses who, and then who crosses what.)

\[(22)\]

a. *Who do you wonder what Mary told that John should buy
b. *Who do you wonder what Mary told who that John should buy what

There is however another way of handling the issue under consideration where the amelioration effect for all experiencer movement, regardless of whether it is clitic or wh-/topic movement, can be treated in the same way. Furthermore, under this account, the relativized minimality/rigid island difference can be easily maintained.

Let us assume that in the case of relativized minimality effects, when X crosses Y, Y is not simply assigned a *. Rather, since this type of information is crucial for relativized minimality violations (but not for rigid island violations, where this type of information is completely irrelevant), there is also an indication regarding what type of relativized minimality violation we are
dealing with, e.g. A, A’, or head intervention effects. Technically, this can be implemented either by using different types of marking (i.e. not just a * for all violations), or by adding a diacritic to the *, as in (23), where X would be undergoing A-movement.

(23)  X  Y^{A}  X

The proposal is now that the * is copied under movement only if Y undergoes the type of movement that has caused the violation. So, if Y in (23) undergoes A-movement, the * is copied on the head of the Y chain, but this would not be the case if Y undergoes A’-movement. This is a rather natural assumption that maintains the logic behind Rizzi’s relativized minimality.

Consider now the three relevant cases, namely the clitic-moved experiencer, the wh/topic-moved experiencer, and Superiority. (23) is actually an abstract representation of the experiencer blocking effect, since the effect involves A-movement across an A-specifier. The intervener should then be marked as in (23). Since in the cases where the experiencer blocking effect is voided, the intervenor undergoes head movement (9) or A’-movement (7b-c), *A is not copied under experiencer movement. This, however, is not the case with the Superiority examples from (11). Here, šta crosses ko when undergoing A’-movement; in other words, we are dealing here with an A’-movement relativized minimality violation, as in (24).

(24)  X  Y^{A'}  X

Since the intervener, ko, then undergoes wh-movement, the * is copied on the moved element. We then have (25) for the three cases under consideration.

(25)  a.  X  Y  Y^{A}  X  (clitic-moved experiencer)
    b.  Y  X  Y^{A}  X  (wh/topic-moved experiencer)
    c.  X  Y^{A}  Y^{A'}  X  (Superiority)
In all these cases, the second Y is deleted, under copy-deletion in (25a-b) and under ellipsis deletion in (25c). Since a *-marked element survives deletion only in (25c), we get a violation only in this case.\(^7\)

\[
\begin{align*}
\text{(26)} \quad \text{a. } & \ X \ Y \ Y \star^A \quad \text{(clitic-moved experiencer)} \\
& \ Y \ X \ Y \star^A \quad \text{(wh/topic-moved experiencer)} \\
& \ X \ Y^* \star^A \ Y \star^A \star^A \star^A \quad \text{(Superiority)}
\end{align*}
\]

The analysis in question gives us then exactly what we need: movement of the intervener improves the cases involving the experiencer blocking effect, but not the case involving a superiority violation. Whether or not the intervener moves in front of or following the element whose movement has caused the original *-marking is irrelevant here. This has enabled us to treat voiding of the experiencer blocking effect under clitic and wh/topic-moved in exactly the same way. Simply following through with the logic of relativized minimality has enabled us to make a distinction between these cases and the Superiority case. Recall also that the alternative analysis outlined above raised an issue as to how to make a principled distinction between relativized minimality and rigid islands, since in the case of rigid islands movement of the island never rescues a locality violation. Making a principled distinction in this respect is very easy under the above analysis. Since for rigid islands it does not matter at all whether the element crossing the island is undergoing A, A’ or head movement, all that the movement should leave on the island is a *. Since there can then be no conflict between * marking and the movement that the * marked element undergoes, the * is always copied under the movement of the trouble-maker, i.e. the island.\(^8\)

The analysis proposed above, which simply applies the logic of relativized minimality to the copying of *'s, thus enables us to make exactly the right cut with respect to the rescuing effect under PF deletion, explaining in a principled way why Superiority violations cannot be rescued by PF deletion.

\(^7\) Note also that (22) abstractly has the structure in (i); since two *s are present in the final structure, the example involves a locality violation. (The example in fact involves a traditional superiority and a traditional wh-island violation, hence two *s. Note that the * is copied under movement of X, i.e. who.)

\[
\begin{align*}
\text{(i)} \quad & X^* \ Y^* \ Y \star^A \star^A \quad Y \\
\end{align*}
\]

\(^8\) On the other hand, as discussed above, a conflict does arise in the experiencer movement cases, where a *^A would need to be copied under A’-movement.
It is worth noting here that the Superiority data discussed in this section provide evidence that the generalization in (6) is not quite correct since in the problematic Superiority case a trace, which is furthermore deleted under ellipsis, does cause an intervention effect. I have argued that whether or not a trace causes an intervention effect depends on the type of movement that the element that leaves behind the trace undergoes. In the Superiority case, the trace, which worked as an intervener for A’-movement, is itself a trace of A’-movement. This is precisely the case where deletion of the intervener does not help. We would expect to find the same kind situation with A-movement. In the cases where the experiencer blocking effect was voided by turning the experiencer into a trace, the trace in question was either a trace of wh/topic or head movement. Since the experiencer blocking effect is an A-movement intervention effect we would then expect that if the experiencer undergoes A-movement, leaving behind an A-trace, we should not get an improvement. It is however difficult to test this hypothesis with respect to A-movement more generally due to independent constraints on A-movement. One relevant case may however involve a locality effect with allege-class verbs discussed in Bošković (1997).

Pesetsky (1992) establishes the descriptive generalization that agentive verbs cannot ECM lexical NPs, as illustrated in (27).

(27)  a. *John wagered the woman to know French.
     b. *Mary alleged the students to have arrived late.

Bošković (1997) deduces Pesetsky’s generalization as an intervention effect from the proposal that agentive verbs have an additional VP shell (see Hale and Keyser 1993). In short, Bošković argues that as a result of the presence of the additional VP shell, matrix SpecAgroP, the accusative-checking position, is too far from the embedded clause subject.⁹

---

⁹ See Bošković (1997) for details of the analysis and justification of the structure in (28) (note that Bošković argues that ECM-ed NPs must undergo overt object shift in English). The upshot of the analysis is that under certain conditions equidistance allows skipping of one specifier, but never of two specifiers, which is what would have to happen with agentive ECM constructions (see Bošković 1997 for discussion of simple transitives; notice that John skips only one specifier when moving to SpecIP. Notice also that the Bošković 1997 analysis is consistent with Ochi’s 2009 analysis of Japanese ga/no conversion from section 3.1, but would require some adjustments under the alternative analysis of ga/no conversion given in section 3.1.)

Bošković (1997) also argues that the additional agentive shell, which is responsible for the ungrammaticality of (27), is not present in passive constructions, which gives us a straightforward account of the contrast between active (27) and passive (i).
Putting aside the details of the structure, what is important for our purposes is that (27) involves a locality violation. In particular, what we are dealing with here is exactly the A-movement counterpart of the failure to rescue a locality violation via PF deletion with Superiority. What is going on here is that movement of the woman across John induces a locality violation. John then undergoes movement, turning the original intervener into a trace/copy deleted in PF. This, however, does not rescue the locality violation since John undergoes the same type of movement as the one that has caused the intervention effect, just as in the Superiority case. In other words, what we have here is (29).

(29) a. John *A Mary  John *A Mary
    b. Y *A X  Y *A X

In its original position John gets a *A since it induces an A-movement intervention effect. Since, as in the Superiority case (25c), and unlike the experiencer blocking cases (25a-b), John undergoes the same type of movement, the * is copied under movement of John, as a result of which deletion of the lower *-marked copy of John does not save the construction. The construction in question then may represent an A-movement counterpart of the failure to rescue a locality violation in the Superiority case, which involved A’-movement. As noted above, the Superiority case and the allege case provide evidence that the generalization in (6) is not quite correct. The deduction of (6) presented above, however, accounts both for the cases that originally motivated the postulation of (6) as well as the exceptional cases, which appear to violate (6).

Having shown that the empirical domain of the rescue by PF deletion approach can be profitably extended if the rescue can arise not only through the deletion involved in ellipsis but also through regular copy deletion, in the next section I turn to another case where null elements fail to induce an intervention effect which their overt counterparts do induce.

(i) a. The woman was wagered to know French.
    b. The students were alleged to have arrived late.

The additional agentive shell is also not present with verbs like believe, which can ECM.
3. Null arguments/pro and intervention effects

The pro-drop parameter was in the center of theorizing in the Government and Binding framework. Interest into the phenomenon had decreased with the advent of Minimalism, only to revive in recent years. One of the hotly debated issues is whether the traditional pro arises through PF deletion in at least some languages. Under this analysis, often referred to as the argument ellipsis analysis, the antecedent of the null argument is present in place of the null argument in the syntax, but it is deleted in PF. The argument ellipsis analysis has been quite successively applied to East Asian languages by Goldberg (2005), Kim (1999), Oku (1998), Saito (2001, 2004, 2007), Sener and Takahashi (2009), Sugawa (2008), Takahashi (2008a, b), Takita (to appear a,b). As a result I will discuss it with respect to these languages, briefly touching on other languages, where the application of the PF deletion analysis is more controversial, in the end of section 3.

What is important for our purposes is a very interesting prediction that the PF deletion analysis makes with respect to pro and intervention effects. (Note that I will continue to use the term pro for ease of exposition, although under the argument ellipsis analysis null arguments do not actually involve the null pronominal pro.) Suppose that movement across pro results in an intervention effect, i.e. suppose that pro induces an intervention effect. Pro would then be *-marked as a result of that. Since under the PF deletion analysis whatever is present in place of pro is deleted in PF, the *-marked element would be deleted in PF and the derivation should be rescued from a locality violation. In other words, the prediction is that in languages where pro should be treated in terms of PF deletion/argument ellipsis, pro should not induce intervention effects (provided that we are not dealing with one of the exceptional cases discussed in the previous section).

3.1. Ga/no conversion

The argument concerns the well-known phenomenon of ga-no conversion in Japanese, illustrated in (30). As is well-known, the conversion is restricted to sentential modifiers, which indicates that the nominal projection is somehow responsible for genitive case assignment (all the data in this section are taken from Saito 2001).

---

10 The argument ellipsis analysis can actually be implemented either in terms of PF deletion or LF copying. I adopt the former here, following Saito (2001).
What is of interest to us is that a genitive subject is impossible when an object NP is present, as reported in Harada (1971), Watanabe (1996), Hiraiwa (2000), and Saito (2001), among many others.

Hiraiwa (2000) and Saito (2001) propose accounts of these data based on Hiraiwa’s assumption that the genitive of *ga-no conversion is not assigned by the noun, but by T of the nominal modifier (adnominal T), which Hiraiwa and Saito argue can assign either nominative or genitive Case. To account for (32), Hiraiwa and Saito propose the following conditions, assuming that *v is responsible for accusative Case:

(33) Spell-out of morphological accusative case by *v triggers nominative Case checking on T in the next strong phase.  

(Hiraiwa 2000)

(34) When an adnominal T checks genitive, it absorbs the Case-feature of *v.  

(Saito 2001)

When the subject is marked genitive in (32), (33)-(34) prevent the Case-checking of the accusative NP. (33)-(34), however, really block genitive case assignment in (32) by brute force; a question still remains why accusative case assignment has an effect on genitive case assignment in this case.
Now, Saito (2001) shows that only object NPs induce an intervention effect with respect to genitive subjects. Thus, an adverb can occur between a genitive subject and the verb, as (35) shows. This is not surprising since adverbs are not subject to Case-marking. If accusative case assignment is blocked when the subject gets genitive Case, adverbs should not be affected by this.

(35) Taroo-ga /-no kinoo it-ta tokoro
    Taroo-nom/-gen yesterday go-past place
    ‘the place where Taroo went yesterday’

Significantly, Hiraiwa (2000) observes that null objects also do not exhibit intervention effects. To see this, consider the following data discussed by Saito (2001), which were taken from Miyazawa (2001). (37) illustrates the standard intervention effect of accusative objects. (38), which involves a null object (and naturally follows (36)), shows that a null object does not block *ga-no conversion.

(36) Ziroo-ga hazimete Nagoya-ni ku-ru-node, minna-ga iiroiro-na
    Ziroo-nom for the first time Nagoya-to come-pres-since all-nom  various
    basyo-ni tureteik-u yotei-desu.
    place-to take-pres  plan-is
    ‘Since Ziroo is coming to Nagoya for the first time, the plan is for everyone to take him to various places.’

(37) Hanako-ga /*-no Ziroo-o tureteik-u tokoro-wa Nagoya-zyoo -desu.
    Hanako-nom/-gen Ziroo-acc take-pres  place-top Nagoya Castle-is
    ‘The place that Hanako is taking Ziroo is the Nagoya Castle.’

(38) Hanako-ga /-no  e tureteik-u tokoro-wa Nagoya-zyoo -desu.
    Hanako-nom/-gen take-pres  place-top Nagoya Castle-is
    ‘The place that Hanako is taking (him) is the Nagoya Castle.’

Turning the object into a phonologically null element, however, does not always help. Thus, Watanabe (1996) and Saito (2001) show that scrambling an intervening object does not void the intervention effect.
Recall now that Saito (2001) assumes that when the subject is nominative, \( v \) has the [ACC] feature and checks the accusative of the object NP. On the other hand, when the adnominal T checks genitive, it absorbs the [ACC] feature of \( v \) by hypothesis. Hence the accusative feature of the object fails to be checked, which is responsible for the ungrammaticality of both (32a) and (39) (on the no option). What about null objects? Here, Saito adopts Kim’s (1999) claim that null objects in Japanese/Korean can result from argument ellipsis. Since I will also adopt Kim’s analysis, I summarize below one of Kim’s arguments for the analysis, also given in Saito (2001).

Huang (1987) proposes a deletion analysis for null objects in Chinese based on examples in (40)-(41).

(40) Zhangsan da le  
Zhangsan hit Perf
  a. '*Zhangsan hit himself.'
  b. 'Zhangsan hit someone else.'

(41) Meigeren piping le ziji ma? Bu, John mei piping le  
everyone criticize Perf self Q no John not criticize Perf
  'Did everyone criticize himself? No, John did not criticize himself.'

While the null object cannot corefer with the subject of its clause in (40) it can do so in (41). Huang argues that the data can be accounted for if (41) is analyzed along the lines of English (42) in terms of VP deletion, the only difference being that in Chinese V moves to T, as a result of which VP deletion affects only the object. The VP deletion analysis cannot be applied to (40) due to the lack of an appropriate VP antecedent.

(42) Did everyone \([_{vp}\text{criticize himself}]\)? No, John didn’t \([_{vp}\text{criticize himself}]\).

Otani and Whitman (1991) apply Huang’s analysis to Japanese, providing evidence for it based on examples like (43), where both the strict and the sloppy interpretation are possible.
(43) John-wa zibun-no tegami-o sute -ta; Mary-mo e sute -ta.
    John-TOP self -GEN letter -ACC discard-PAST Mary-also discard-PAST
    'John threw out his letters, and Mary did too.'
    a. Mary threw out his (John's) letters, too. (the strict interpretation)
    b. Mary threw out her (Mary's) letters, too. (the sloppy interpretation)

(43) patterns in the relevant respect with English (45), which involves VP deletion, rather than (44),
    which involves a pronominal.

(44) Peter likes his picture, and Joan likes it too.
    a. Joan likes his (Peter's) picture, too. (the strict reading)
    b. *Joan likes her (Joan's) picture, too. (the sloppy reading)

(45) Peter likes his picture, and Joan does too.
    a. Joan likes his (Peter's) picture, too. (the strict reading)
    b. Joan likes her (Joan's) picture, too. (the sloppy reading)

Otani and Whitman then conclude that the null object construction in Japanese can involve VP-
ellipsis, which is preceded by movement of the verb to T.

Kim (1999) shows that there are contexts where sloppy reading, which the pro analysis cannot
    account for, is possible but VP deletion is not. One of these contexts involves the Korean double
    accusative construction, illustrated by (46).

    Mike-TOP James-ACC leg-ACC kicked
    'Mike kicked James on the leg.
    Mike-TOP leg-ACC James-ACC kicked

(46) shows that the order of the objects is fixed. What is important here is that sloppy interpretation
    is possible even when the first accusative NP is null.
    Jerry-TOP self -GEN child-ACC arm-ACC hit
    ‘Jerry hit his child on the arm.’

b. Kulena Sally-nun e tali-lul ttauajessta.
    but Sally-TOP leg-ACC hit
    a. But Sally hit his (Jerry's) child on the leg. (the strict reading)
    b. But Sally hit her (Sally's) child on the leg. (the sloppy reading)

If the null object in (47b) arises a result of applying V-movement and VP deletion, the deletion would have to affect the second object too, since this object is lower than the first object. The second object should then also be null.

Kim then concludes that the VP deletion analysis cannot account for these examples. A pro analysis is also problematic given the possibility of a sloppy reading. Kim then argues that null arguments in Japanese and Korean can arise through argument ellipsis. The analysis straightforwardly accounts for the data discussed above, including Chinese (40)-(41). e in (41) can be an elided ziji ‘self’ because there is an appropriate linguistic antecedent in the discourse for the deletion of ziji.11 This is not the case with (40), where the only possible antecedent is Zhangsan.

The argument ellipsis analysis has been argued for by a number of researchers working on Japanese and Korean, see Goldberg (2005), Kim (1999), Oku (1998), Saito (2004, 2007), Sener and Takahashi (2009), Sugawa (2008), Takahashi (2008a, b), Takita (to appear a,b). Saito (2001) also adopts the argument ellipsis analysis, where (on Saito’s implementation of the analysis) the antecedent of a null argument is actually present in place of the null argument, but it is deleted in PF. Saito then analyzes the accusative intervention effect as another instance of repair by PF deletion, though different from the ones discussed in this paper since under Saito’s analysis the relevant examples do not involve a locality violation, but a Case violation. Saito assumes that nothing goes wrong in the syntax if an NP does not undergo Case checking. Rather, he assumes that such cases are ultimately ruled out in PF. In other words, Saito assumes that an NP which does not undergo Case checking induces a PF violation (in more traditional terms, Saito assumes that the Case Filter holds in PF.) Following Lasnik’s (1995) work on rescue by PF deletion, Saito then reasons that since a Case violation is a PF violation, it should be possible to repair it with PF

---

11 Note that the pro analysis cannot account for (41) since pro in the place of e would yield a Condition B violation on the relevant reading.
deletion. This is then what happens in (38): the antecedent of e, namely Ziroo-o, is actually present in the structure in (38), just as it is in (37). In both (37) and (38) we then have a Case violation, since the accusative case of Ziroo-o cannot be checked under Saito’s assumptions. The difference between (37) and (38) is that the Case violation is rescued in (38) by deleting the offending element in PF so that no NP with an unchecked Case feature is present in the final PF representation in (38), in contrast to (37), the crucial assumption being that Case violations are PF violations.12

Saito’s analysis is quite interesting. However, it still faces several problems. One of them, pointed out by Saito himself, concerns the double-o effect. The causee in the Japanese causative construction can bear either dative (-ni) or accusative (-o) Case, as shown in (48a). However, as illustrated in (48b), when the embedded verb takes an accusative object, the dative -ni is the only option for the causee. It is standardly assumed that v can license only one instance of the accusative –o. The double-accusative pattern in (48b) is then ruled out because it involves a Case violation: one of the accusatives in (48b) cannot be checked.

(48) a. Hanako-ga Taroo-ni /-o Nagoya-ni ik-ase -ta.
   Hanako-NOM Taroo-DAT/-ACC Nagoya-DAT go-make-PAST
   ‘Hanako made Taroo go to Nagoya.’

b. Hanako-ga Taroo-ni /*-o biiru-o nom-ase -ta.
   Hanako-NOM Taroo-DAT/-ACC beer-ACC drink-make-PAST
   ‘Hanako made Taroo drink beer.’

Importantly, the double-o effect also holds for null objects (see Harada 1973 and Shibatani 1973, among others). This is unexpected under Saito’s assumptions since it should be possible to save the Case violation from (48b) by deleting the object NP, as in (49) In other words, we would really expect Saito’s account of the contrast between (37) and (38) to extend to (48)-(49) in such a way

12 Following Harada (1971), Saito observes that a relative gap has no effect on the genitive subject.

(i) Taroo-ga /-no e kat-ta hon
    Taroo-nom/-gen buy-past book
    ‘the book that Taroo bought’

Perlmutter (1972) argues that Japanese relative clauses can involve a null pronoun instead of movement, based on the fact that Japanese relative clauses do not exhibit Subjacency effects. As noted by Saito, in order for his analysis of (38) to extend to (i), the null argument in (i) also must arise through argument ellipsis, i.e. PF deletion. The same holds for the alternative analysis proposed below.
that both (37) and (48b) are saved by deleting the relevant accusative object, thus voiding the Case violation.

(49) Ziroo-ga kusuri -o motteki-ta -node, Hanako-ga Taroo-ni /*-o e

\[\begin{array}{c}
\text{Ziroo-NOM} \quad \text{medicine-ACC} \quad \text{bring -PAST-since Hanako-NOM Taroo-DAT/ -ACC} \\
\text{nom-ase} \quad -ta. \\
\text{drink-make-PAST}
\end{array}\]

‘Since Ziroo brought a medicine, Hanako made Taroo drink it.’

The main issue raised by Saito’s analysis, however, concerns the condition in (34). The question is why checking of genitive absorbs accusative. The question is particularly salient given that nominative/genitive and accusative are checked by different heads. In other words, (34) really simply restates the phenomenon to be accounted for. I will therefore propose an alternative account of the intervention effect on ga-no conversion, which is intended to explain the effect stated in (33)-(34), and which will not extend the lack of the blocking effect of null objects on ga-no conversion to the double-o effect. It is, however, worth noting here that the analysis will still be crucially based on Saito’s insight that examples like (38) involve rescue by PF deletion. I will, however, depart from Saito in subsuming (38) under the cases discussed in section 2; I will treat it as another case where deletion of an intervener voids a locality violation.

There are a few assumptions that are crucial to the analysis to be proposed. First, I assume following Miyagawa (1993), Ochi (2001), among others, that the source of genitive case assignment is in the nominal projection above the sentential modifier, which seems to me to be the simplest way to capture the fact that ga-no conversion is restricted to sentential modifiers (i.e. this seems to be the simplest way to account for the contrast between (30) and (31)). I will not, however, assume that no-licensing necessarily requires overt movement to the nominal projection since such licensing can also be done via the mechanism of Agree. I will also assume overt object shift analysis for Japanese (see Koizumi 1995, Ochi 2005, 2009), which means that accusative NPs move to Spec\(v\)P. The movement takes place prior to the insertion of the external argument, which is then inserted into a lower Spec\(v\)P, following Richards’s (2001) tucking in.\(^{13}\) Finally, I assume that -ga is not a real structural Case, as argued extensively in Saito (1985). This means that when NP-ga

\(^{13}\) The external argument will then not induce an intervention effect for movement of the object. Notice also that I do not adopt the stipulative mechanism of equidistance (Chomsky 1995).
moves across a shifted object the movement does not take place for Case reasons, hence we would not expect to find here an intervention effect of the kind discussed directly below with NP-no.

Turning now to NP-no, as discussed above, I assume that its Case licener is located within the NP projection (it is in fact the noun), i.e. outside of the sentential modifier. I assume that quite generally, when an NP is not located in a position where it can enter into a Case-licensing relation with its Case licener due to a locality problem, either due to a PIC locality effect or due to an intervention effect, the NP will move to a position where it can get Case-licensed.\textsuperscript{14} This also holds for NP-no, which will then also move to a position where it can get Case-licensed. What we are dealing with here is movement that is driven by an uninterpretable feature of the moving element, namely Case (see Bošković 2007, Franks and Lavine 2006, Surányi 2004, and Bobaljik and Wurmbrand 2005 for relevant discussion). Since, after object shift, NP-o intervenes between NP-no and its Case licener blocking the Case-licensing relation, NP-no then must move across NP-o to get closer to its Case licener. Since the movement is Case driven, NP-o, which bears Case, counts as an intervener. This is then what is behind the blocking effect in (32a).

(50) Taroo-no hon-o* Taroo-no

It is worth noting here that Ochi (2009) presents an alternative account of the blocking effect of accusative objects on ga-no conversion which also treats it in terms of a locality violation.\textsuperscript{15} Ochi’s account does not require assuming that –ga is not a regular Case, but it does require adopting the concept of equidistance. Ochi also assumes overt object shift for Japanese, which means that NP-o always intervenes between NP-ga/no and its licener (after the shift). Ochi assumes that –ga is licensed by T (the whole clause being a TP, not a CP) and –no is a licensed by a higher phase head, namely D. It should be noted here that Bošković (2008) argues that Japanese lacks DP; however, Bošković (in preparation) argues that in languages without DP NP works as a phase. Since N then counts as a phase head, Ochi’s analysis can be easily recast within this system, with N licensing –no (this analysis is actually somewhat simpler since under the D analysis a question arises why the noun in the complement of D does not count as an intervener). Ochi adopts the concept of equidistance, where multiple Specs of the same head count as equidistant, but following Chomsky’s

\textsuperscript{14}Bošković (2007) argues that the PIC actually does not hold for Agree, in which case only intervention effects would matter here. Notice also that even if the PIC were to hold for Agree, it is not clear that there would be a PIC effect in the relevant configuration.

\textsuperscript{15} The discussion below slightly modifies Ochi’s analysis.
(2001) suggestion that the PIC locality effect kicks in only with the next phase head (not with any higher head), he crucially assumes that equidistance holds only up to the point in the derivation at which the next phase is introduced. As a result, a non-phase head $T$, which enters into a relation with NP-$ga$, can attract NP-$ga$ across NP-$o$, since as multiple Specs of the same head the two count as equidistant. However, equidistance becomes irrelevant once another phase head, D/N, which licenses $–no$, enters the structure. Movement of NP-$no$ across NP-$o$ then inevitably violates locality.\footnote{I refer the reader to Ochi’s work for details of the analysis. I only note here that for Ochi T does not work as a probe in examples without $–ga$ and that genitive phrases cannot undergo scrambling, as shown by Saito (1985) (note also that nothing changes in the equidistance analysis if $ga/no$ subjects have an option of staying in situ, see Ochi 2009).}

What is important for us is that under both the analysis presented above and Ochi’s analysis, the blocking effect of NP-$o$ is analyzed in terms of a locality violation. In other words, (50) applies to both. Recall now that under the argument ellipsis analysis of null arguments in Japanese, which following a number of authors I also adopt here, null objects, which do not induce an intervention effect (cf. (38)), arise through PF deletion. The lack of a blocking effect with null objects can now be easily captured. This is in fact just another case where PF deletion of an intervener voids a locality violation.

$$\text{(51) Taroo-no hon-o* Taroo-no}$$

Since, as a result of object deletion, (51) does not contain any $*$-marked elements, the configuration in (51) is correctly predicted to yield a grammatical result (cf. (38)). We thus capture the fact that, in contrast to overt objects, null objects do not block $ga-no$ conversion. The contrast has in fact been captured in exactly same way as Ross’s contrast from (1) and the contrast with respect to the experiencer blocking effect in (7). In each case an overt element induced a locality violation, which is then repaired with the null element through PF deletion. Needless to say, to the extent that it is successful the account provides strong evidence for the argument ellipsis analysis of null elements in Japanese.\footnote{It is worth noting here that the above analysis is consistent with regarding Japanese to be a language that has both argument ellipsis and null $pro$. All we need is the possibility of argument ellipsis. However, under the mixed argument ellipsis/$pro$ analysis we would expect that once the possibility of argument ellipsis is blocked, an intervention effect would re-emerge. I leave exploring this option, which is not easy to test, for future research. (Note that Ochi does try to tease apart the argument ellipsis and the $pro$ option with respect to $ga-no$ conversion. However, the judgments for the relevant data are quite murky (difficult to elicit and subject to speaker variation), so I will not go into them here.) It should be also pointed out that Saito (2004b) suggests that unlike sluicing in English, argument ellipsis in Japanese does not salvage Subjacency violations. However, Sugawa (2008) reanalyzes the relevant data in such a way}
Having captured the crucial contrast between (37) and (38), I turn now to the other data discussed in this section. (The following discussion is couched in terms of the analysis proposed above; see Ochi (2009) for discussion how they would be handled within his system.) Notice first that the grammaticality of (35) can be easily captured. Since NP-no undergoes Case-motivated movement, only Case-marked elements count as interveners, hence an adverb does not induce an intervention effect. (39) can also be straightforwardly accounted for: the problem with (39) is that NP-no cannot be Case-licensed from the nominal projection across an intervening Case-marked element, hon-o.\textsuperscript{18} Notice also that the problem does not arise in (52) since the intervening element is not Case-marked.

(52) kinoo Taroo-ga /-no it-ta tokoro
    yesterday Taroo-NOM/-GEN go-PAST place
    ‘the place where Taroo went yesterday’

The reader can verify that (49) does not raise a problem for the current analysis, which does not require assuming that a Case violation can be fully repaired by deleting the NP with an unchecked Case in PF.

Let me finally briefly discuss some additional data. As is well-known, stative predicates can take nominative objects in Japanese.

(53) Taroo-ga purin -ga suki-da
    Taroo-NOM pudding-NOM like
    ‘Taro likes pudding.’

If ga/no conversion applies in this context, we get the following result.

(54) Taroo-ga /-no purin -ga /-no suki-na koto
    Taroo-NOM/-GEN pudding-NOM/-GEN like fact

\textsuperscript{18} In other words, the problem here is not caused by the trace of the scrambling chain, but the head of the chain.
‘the fact that Taro likes pudding’

The *ga-ga* and *no-ga* patterns are straightforward. As discussed above, I assume that NP-*ga* does not count as an intervener, since –*ga* is not a regular Case (in other words, NP-*ga* is more like an adverb than a structurally marked element in this respect). Since NP-*no* can then be Case-marked across NP-*ga*, nothing goes wrong in the *ga-no* pattern. Finally, I assume that the *no-no* pattern involves Hiraiwa’s (2005) multiple Agree, where the same Case licenser undergoes Agree with both NP-*nos*. As discussed by Hiraiwa, application of Multiple Agree voids locality effects; i.e. elements that undergo Multiple Agree do not induce intervention effects for each other, hence the *no-no* pattern converges without problems.

In summary, I have argued that the blocking effect of accusative NPs on *ga-no* conversion should be analyzed in terms of a locality violation, a claim that is also made in Ochi (2009). The fact that null objects do not induce a blocking effect can then be seen as another instance of rescue by PF deletion, where a locality violation is saved by deleting the trouble maker in PF. The contrast between (37) and (38) then receives the same account as Ross’s locality contrasts in (1) and the contrasts in (7) regarding the experiencer blocking effect. The current analysis follows Saito’s insight that we are dealing here with a rescue by PF deletion phenomenon. However, by casting the relevant violation in terms of locality of movement instead of Case, it manages to fully unify the *ga-no* conversion case with the other phenomena noted above (namely the rescuing effect of ellipsis and movement/traces on locality violations), and to avoid some problems that the Case approach faces. Most importantly, the stipulations in (33)-(34) can now be dispensed with.

### 3.2. Argument drop and left edges

As discussed above, the current analysis makes a clear prediction regarding null arguments that arise via PF deletion: such arguments should not count as interveners for relativized minimality effects. Argument ellipsis differs from *pro* in the relevant respect: in contrast to null arguments that arise through PF ellipsis, the null pronominal *pro* should still count as an intervener. (To be more precise, nothing proposed here would void the intervention effect with the traditional *pro*, in contrast to the situation found with argument ellipsis). A serious problem with testing the above prediction is that it is very hard to determine the proper analysis for various null arguments crosslinguistically. Above, I have considered null arguments in Japanese, where an argument...
ellipsis analysis has strong independent motivation. I now turn to a case where treatment in terms of argument ellipsis is more controversial, my goal being simply to point out that if this is the right way to analyze the null arguments in question, some otherwise puzzling properties of the construction in question can be easily explained in terms of a rescue by PF deletion analysis.

The case in question concerns imperative subjects, another plausible instance of argument ellipsis. Many languages allow alternation between overt and null subjects in imperatives. This even holds for languages that otherwise do not have productive pro-drop, which makes a pro analysis of imperative null subjects for such languages difficult to maintain. I will therefore assume that the alternation in examples like (55) arises via PF deletion of the subject. Under this analysis (55a) and (55b) differ in that the imperative subject is deleted in the PF of (55b) (the fact that the construction does not violate Condition A indicates that a subject is syntactically present in (55b)).

(55)  a. You buy yourself a nice present!
     b. Buy yourself a nice present!

Sigurðsson and Maling (2008) discuss object drop in Germanic languages, which is illustrated for German, Icelandic and Swedish in (56)-(58), respectively, where the dashes indicate the canonical object position.

(56)  A:     Was meinst du über den neuen Hausmeister?
        what mean you over the new janitor
        ‘What do you think of the new janitor?’
     B:     Weiß’ich ___ nicht, hab’ich ___ noch nicht gesehen.
        know I not, have I still not seen
        ‘I don’t know (that), I have still not seen (him).’
(57)  A:     Hvað finnst þér um nýja húsvördinn?
        what think you about new janitor.the
     B:     Veit’é(g) ___ ekki, hef’é(g) ekki séð ___ enn.
        know I not, have I not seen yet
(58)  A:     Vad tycker du om den nya vaktmästaren?
        what think you about the new janitor.the
Sigurðsson and Maling observe a very interesting restriction on null objects in Germanic languages. Null objects in Germanic languages are possible only with an empty SpecCP. The relevant condition is given in (59) and relevant examples are given in (61)-(63), where _ again indicates the position of the null object.

(59) The Empty Left Edge Condition (ELEC):
The left edge of a clause (i.e. SpecCP) containing a silent referential argument must be phonetically empty.

(60) a. (Das) kenne‘ich __ nicht. German
   b. (Det) känner’ja(g) __ inte. Swedish
   c. (Pað) þekki’é(g) __ ekki. Icelandic

   (that) recognize’I not

(61) a. * Jetzt kenne‘ich __ nicht. German
   b. * Nu känner’ja(g) __ inte. Swedish
   c. * Núna þekki’é(g) __ ekki. Icelandic

   now recognize’I (that) not

(62) a. * Ich kenne __ nicht. German
   b. * Jag känner __ inte. Swedish
   c. * Ég þekki __ ekki. Icelandic

   I recognize not

Sigurðsson and Maling analyze the data in terms of an intervention effect. Adopting a Split CP, they assume that there are context-linking elements Topic, Logophoric Agent/Speaker (ΛA) and Logophoric patient/hearer (ΛP) above CP (i.e. above the projection where the initial element in V-2 clauses is located; I will refer to the projection as CP for expository reasons), and that null objects must enter into a licensing relation with these context-linking elements. Slightly departing from their analysis, I assume that the licensing is accomplished via movement of null objects to the Specifiers of these projections. This immediately captures the intervention effect.
movement obviously must be A’-movement, it is blocked by an intervening SpecCP, as in (61) and (62).\textsuperscript{19}

\begin{equation}
\text{(63) } [ \text{Top/ΛΛ/ΛP} \text{ SPEC} \ldots [\text{IP} \ldots \text{Ø} \ldots \text{↑} \ldots \text{↑} \ldots \text{↑} \ldots \text{↑} \ldots ] ]
\end{equation}

Notice also that, assuming that SpecCP must always be filled in V-2 clauses, the requirement in question can be satisfied by the null object in (56)-(58) (see also Huang 1984), which would be moving through SpecCP on its way to the context-linking projections.

Now, Sigurðsson & Maling observe that an overt subject blocks object drop in imperatives. They note that the phenomenon can be subsumed under ELEC if the overt subject in (64) is located in SpecCP, with the verb moving to a higher projection in the split CP.

\begin{itemize}
\item (64) a. Skerið (*þið) í litla bita. \text{Icelandic} \\
\quad cut.Imp.2PL (*you.PL) in small pieces \text{‘Cut in small pieces.’}
\item b. cf. Skerið (þið) þau í litla bita. \\
\quad cut.2PL (you.PL) them in small pieces \text{‘(You) cut them in small pieces.’}
\end{itemize}

Recall now that I have assumed above that the overt/null subject alternation in imperatives is a result of PF deletion (at least in languages that do not allow productive subject drop of the kind found in e.g. Spanish, which is the case with the languages under consideration here). The overt and the null subject option in (64) then differ in that on the latter option the imperative subject is deleted in PF. But then we have a straightforward explanation for the contrast in (64a). In both cases null object moves to the context-licensing projections above CP, crossing SpecCP, which induces a relativized minimality violation.

\textsuperscript{19}Sigurðsson and Maling treat the effect in question as a PF processing effect, which raises several issues. As Sigurðsson and Maling themselves note, it seems strange to treat an intervention effect of the kind typically found in syntax as a PF phenomenon. Also, we seem to be dealing here with an effect that has a semantic reflex (determining the reference of the null object), which is tricky to capture in a PF analysis. Finally, if we were dealing here with a processing effect we might expect speakers to be able to “recover” from it, which does not happen. Nevertheless, although I do not adopt the details of Sigurðsson and Maling’s analysis, I do follow their main insight that we are dealing here with an intervention effect.
However, the intervening element is deleted in PF on the null imperative subject option. Since no * is present in the final PF representation in (65b), the example is correctly predicted to be acceptable on the null imperative subject option. The contrast in question is then another instance of rescue by PF deletion, capturable in essentially the same way as Ross’s original ellipsis/non-ellipsis island contrasts. 20

To summarize, in this section I have presented several cases where analyzing null arguments as arising via PF deletion seems to be a plausible move. What is important for our purposes is that such arguments do not count as interveners for relativized minimality effects. This is immediately explained under a rescue by PF deletion analysis, which thus provides a uniform account of the rescuing effect of “standard” ellipsis, movement (i.e. traces), and argument ellipsis on locality violations. In the next section I will consider another phenomenon where a rescue by PF deletion analysis can be profitably employed, namely the that-trace effect.

4. The that-trace effect

I now turn to the that-trace effect, illustrated by the contrast in (66).

(66)  a. *Who do you think that t left Mary?
      b. Who do you think C t left Mary?

\[\text{English data in (i) can be accounted for in the same way if the imperative subject moves to an A’ position, which Sigurðsson and Maling seem to assume.}\]

(i)  a. Open carefully
    b. *You open carefully
    c. You open it carefully

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20 English data in (i) can be accounted for in the same way if the imperative subject moves to an A’ position, which Sigurðsson and Maling seem to assume.
The *that*-trace effect has generated a great deal of interest, particularly within the Government and Binding framework (to mention just a few relevant works, Chomsky 1981, 1986, Kayne 1984, Lasnik and Saito 1984, 1992, Pesetsky 1981, Rizzi 1990), with the interest in it starting to wane with the onset of Minimalism, likely because the phenomenon in question was considered too hard to explain. More recently, minimalist accounts of the contrast have begun to emerge (see Boeckx 2008, Branigan 2005, Buesa García in press, Hoge 2001, Ishii 2004, Kim 2008, Lohndal 2009, Mizuguchi 2008, Pesetsky and Torrego 2001, Richards 2001, Rizzi and Shlonsky 2007, Roussou 2002, Szczegielniak 1999). I will not be concerned here with providing a detailed account of (66a). I will simply assume, following the majority of the literature on the topic, that locality of movement is responsible for the unacceptability of the construction, leaving open exactly how this is to be accomplished.21 What I will be concerned with here is the contrast between (66a) and (66b). More precisely, my goal is to find a principled way of blocking whatever mechanism is used to rule out (66a) from applying to (66b).

As noted above, following the standard practice I assume that (66a) involves a locality violation. Whatever the precise implementation of the locality analysis is, it seems safe to assume that the trouble-maker is the complementizer *that*. Following the approach to locality of movement from sections 1 and 2, where in cases involving a locality of movement violation a * is placed on the trouble-maker, a * is then placed on *that*. Since the * survives into PF in (66a), the example is then ruled out in PF following the general approach to locality of movement from the above discussion.

(67)  Who do you think [CP who that* who left Mary]

What about (66b)? It has been extremely difficult to find a non-stipulative way of accounting for the contrast between (66a) and (66b). The reason for this is that locality has been standardly assumed to apply in the syntax, and the only clear principled difference between (66a) and (66b) is phonological, the complementizer being overt in (66a) and phonologically null in (66b). The current approach, where an aspect of locality is PF-based, makes possible a principled, non-stipulative account of the contrast in question, which capitalizes on the PF difference between the two complementizers.

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21 The example is standardly ruled out either as a movement violation, or because the relevant movement leaves a trace that cannot be properly licensed. I am taking locality of movement here rather broadly, to involve both types of approaches: what is important for me is that *that* is crucially involved in the locality violation.
I therefore assume that, just like the complementizer *that* causes a problem with respect to locality in (66a), the null C causes a locality problem in (66b), which means that the null C should be *-marked after the subject wh-phrase crosses it in (66b), just as *that* is in (66a). This is certainly the null hypothesis since it is hard to see why phonological overtness should matter to syntactic *-marking. In other words, this way we avoid stipulating a difference between *that* and C with respect to syntactic locality, which has been a problem for accounts that treat the contrast in (66) strictly in syntactic terms.

(68) Who do you think [CP who C* [IP who left Mary]]

Now, Pesetsky (1992) argues that the null C is a PF affix, which undergoes affixation to the higher verb. Ormazabal (1995) generalizes this analysis by arguing that all null heads are in fact PF affixes. Pesetsky implements the PF affix analysis for the null C through syntactic head movement of the null C affix to the verb, while Bošković and Lasnik (2003) implement it by assuming that the verb and the null C undergo PF merger. As a compromise between the two analyses, and following the general approach that places head movement in PF (see Chomsky 2001 and Boeckx and Stjepanović 2001), I will assume that the null C undergoes PF movement to the verb, undergoing affixation this way. Notice now that under a Pesetsky-style analysis, what intervenes between the copy of *who* in the embedded SpecCP and the copy in SpecIP is in fact a trace, more precisely, a trace of C. (66b) then may be another instance of (6), where turning an intervener, i.e. an element that causes a locality violation, into a trace rescues a locality violation.

Since the goal of the current paper is to deduce (6) let us consider the derivation of (66b) more closely, picking it up at point (68), which is its overt syntax structure. In PF, the null C undergoes affixation to the verb. A question that arises here is whether the * on the null C should be copied under C-to-V movement. In section 2.3. I have discussed three possibilities regarding * copying under movement for constructions involving complex heads. Regardless of which of these options is adopted, the head of the null C movement chain will not be *-marked. Recall the options discussed in section 2.3.: One analysis was based on the assumption that the morphological process that turns a clitic and its host into one morphological element eliminates *s. The process should also

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22 Two of the options considered below are actually also compatible with the C-movement in syntax analysis.
23 Regarding the term relativized minimality from (6), I am using it here loosely for cases where the intervener c-commands (rather than dominates) the original movement site and where the intervener does not block all movement, like rigid islands do. In that sense *that* counts as an intervener for the purpose of (6) (see also the discussion below).
occur in the case of affixation, and should then eliminate the * on the head of the null C movement chain. The other analysis considered in section 2.3., which treats head movement as PF movement, was based on the assumption that *-creation is a syntactic mechanism, hence it does not apply to PF movement. Under this analysis, the head of the null C movement chain would not even get a *. Finally, under the third analysis from section 2.3. it is not even necessary to assume that the null C movement takes place in PF; nothing would change if it takes place in the syntax (the same actually also holds for the first option from above). This analysis was based on a distinction between trouble-makers that are sensitive to the kind of movement that crosses them and those that are not. In the syntax, sensitive trouble-makers get a marking indicating the kind of movement they cause a problem for, and the * is copied only if the trouble maker undergoes this kind of movement. Non-sensitive trouble makers always copy *s under movement. In section 2.3. I have compared in the relevant respect relativized minimality interveners and rigid islands. The former are sensitive to the type of movement that crosses them, hence copy *s only if they undergo the right type of movement, while the latter are insensitive trouble-makers which block all movement, hence always copy *s. Considering the that-trace effect, the trouble-maker here is even more sensitive than typical relativized minimality interveners. It does not even create a problem for all A’-movement, only for subject A’-movement. It should then be considered a sensitive trouble-maker, which is marked with the type of movement it causes a problem for. It is not important here exactly how this marking is to be implemented, since it is clear that the affixation movement of the null C to V is not of the same type, hence the * should not be copied. Regardless which of the options from section 2.3. is adopted, we then end up with the structure in (69).

(69) Who do you think [CP who C* [IP who left Mary]]

At this point copy-deletion applies, deleting all copies that are not heads of chains.  

(70) Who do you think [CP who C* [IP who left Mary]]

Since no *-marked element remains in the final representation, (70) then does not involve a locality violation, in contrast to (67).

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24 I assume that copy deletion applies to all chains, regardless of whether we are dealing with phonologically overt or null elements.
Under the above analysis there is no need to posit any difference between *that* and the null C with respect to syntactic locality; they both raise a locality problem for subject wh-movement. Adopting Pesetsky’s C-to-V movement analysis, the grammaticality of (66b) was analyzed as another instance of (6), which I have demonstrated can also be captured under the rescue-by-PF-deletion account of the generalization in (6).

The analysis explains another rather interesting and puzzling fact regarding the *that*-trace effect. In particular, the analysis provides a principled explanation for Culicover’s (1992) adverb intervention effect, where intervening adverbials mitigate *that*-trace effects, as shown in (71).

(71)  
   a. *Robin met the man who Leslie said that t was the mayor of the city.  
   b. Robin met the man who Leslie said that for all intents and purposes t was the mayor of the city.

I will adopt here the CP recursion analysis of such constructions. In particular, I adopt the analysis proposed in Watanabe (1993a), also argued for in Browning (1996), where *that* is generated in the lower CP and then undergoes movement to the higher CP.

It is then easy to see why, in contrast to (71a), (71b) is grammatical. We are in fact dealing here with another instantiation of (6) (see also footnote 23), where turning an intervener into a trace ameliorates a locality violation. Like other cases of (6) discussed above, the amelioration effect in (71) also receives a straightforward PF deletion account. The wh-phrase in (72) crosses *that* while *that* is still located in the lower CP. As in other cases of the *that*-trace effect, *that* receives a * as a result of this movement. *That* then undergoes movement to the higher CP. However, the * is not copied under this movement for reasons discussed above. When copy deletion applies, the lower copies of the wh-phrase and *that* are deleted. Since no * remains in the final representation, the grammaticality of the construction is correctly captured.

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25 This holds under all three options discussed above, which means that it does not really matter whether the movement in question will be assumed to take place in the syntax or PF.

Notice that the higher copy of *that* should not cause a problem by itself since, as is well-known (see for example Lasnik and Saito 1992), the *that*-trace effect arises only with the first step of subject A’-movement; it does not arise with object movement, adjunct movement, or later steps of subject movement.

26 I assume that the second lowest trace of the wh-phrase is located in the Spec of the lowest CP, with the adverb being adjoined to this CP. This way we may be able to capture that fact that crossing the adverb in such constructions apparently does not yield a locality (i.e. a relativized minimality) violation, as the full acceptability of (71b) as well as (i) shows.

(i) Which book did Leslie say that for all intents and purposes John co-authored with Mary.
Robin met the man who Leslie said [CP that i [CP for all intents and purposes who that, was the mayor of the city]]).

To summarize, we have seen that under Pesetsky’s C-to-V movement analysis, the grammaticality of (66b) can be analyzed as another instance of (6), which can be captured under the rescue-by-PF-deletion account of the generalization in (6). I have shown that the adverb amelioration effect from (71) can also be subsumed under the generalization in (6) and treated in terms of rescue by PF deletion under Watanabe’s CP recursion analysis of such constructions, where that undergoes movement. What improves a Comp-trace violation in both (66b) and (71b) is the movement of the trouble-maker. The reason for the amelioration is that the original problematic copy is deleted in PF under “standard” deletion of lower copies.\(^{27}\)

I will not have much to say here about non-adverbial topicalization due to the controversy regarding the relevant judgments. Non-adverbial topicalization appears not to rescue that-trace effect violations, though there is some controversy regarding this in the literature (Culicover 1992 gives some examples he claims to be acceptable). Note that there is a potentially interfering factor here. Movement of the topic across the subject wh-phrase in (ii) may result in a relativized minimality violation, a problem that does not arise with adverbs, which may be base-generated in their surface position.

(ii) *Who did Robin say that this present, gave Lee (Browning 1996:250)

There is also a controversy regarding whether there are topic islands (i.e. whether movement across an argumental topic is allowed). Thus, Lasnik and Saito (1992) claim that it is not (based on examples like (iii)), while Culicover (1996) claims that such extraction is in principle possible.

(iii) ??Which problem do you think that Mary, Bill told that John solved (Lasnik and Saito 1992:98)

If the general pattern is as reflected in the judgments in (ii–iii), it could be captured by assuming that a non-adverbial topic is actually located in SpecCP (preventing the subject from moving through this position), so that crossing of the topic induces a locality violation. The violation is more severe in (ii), which is another illustration of the well-known fact that a locality violation with the first step of subject wh-movement yields a stronger violation than a locality violation with object movement or subsequent steps of subject movement, however this is to be captured. (It is worth noting here that Browning actually argues that non-adverbial topicalization involves CP recursion, but, contra Watanabe 1993a,b, she argues that such cases do not involve that-movement. This analysis can also be incorporated into the current system, since under this analysis (ii) does not fall under the generalization in (6) (i.e. the lower CP is not headed by a trace, hence is not affected by copy-deletion. The analysis is, however, incompatible with the alternative account of the that-trace effect discussed below. (Recall, however, that according to Culicover, argumental topicalization may actually not differ from adverb topicalization in the relevant respect, putting aside the interfering factor noted above with respect to (ii), so that it is not clear that there is an issue here.) It is also worth noting that Browning shows that negative adverbials which normally trigger inversion fail to trigger it when the subject is moved, which means that examples with negative adverbials are also compatible with that-movement.)

\(^{27}\) It is worth noting here that Browning (1996) accounts for the amelioration effect in (71) essentially by stipulating that in contrast to the overt complementizer that, its trace can bear an index hence can license the subject wh-trace in SpecIP. The current analysis provides a principled explanation why the trace of that behaves differently from that with respect to the Comp-trace effect.
There is also an alternative rescue-by-PF-deletion analysis that still keeps the assumption that (66a) involves a locality violation. The gist of this analysis was in fact suggested in An (2007a) in a way that is not quite compatible with the current *-marking system. I will therefore implement the analysis within this system, following An’s insight. The analysis is based on a revival of the Chomsky and Lasnik’s (1977) proposal that (74) is derived from (73) via deletion of that. Following the current approach to deletion and extending the current PF update of Chomsky’s (1972) condition barring *s to that-deletion, I will assume that the deletion is a PF phenomenon.28

(73) Mary thinks that John left.
(74) a. Mary thinks John left.
    b. Mary thinks that John left.

It is now easy to see why, in contrast to (66a), (66b) is acceptable. Consider first (66a). As discussed above, when the subject wh-phrase crosses the complementizer, the complementizer is *-marked, following the approach to the locality of movement adopted here, where in cases involving a locality of movement violation a * is placed on the trouble-maker. Since the * survives into PF in (66a), as shown in (67), which gives the structure following copy deletion, the example is then ruled out in PF following the general approach to the locality of movement from the above discussion. Consider now (66b). Recall that on the analysis currently pursued, following Chomsky and Lasnik, (74) is derived from (73) via deletion of that, with the deletion applying in PF. The same should then hold for (66b): (66a) and (66b) then have exactly the same syntax, but (66b) involves an additional step of PF deletion of the complementizer that.

(75) Who do you think that left Mary?

Since the deletion removes the *-marked element, namely that, there is no locality violation in (66b). The contrast in (66) thus receives a principled account.

It is worth emphasizing that the analysis does not require positing any syntactic differences between (66a) and (66b), which should be considered to be an argument in its favor given that coming up with a principled non-stipulative syntactic difference between (66a) and (66b) has

28 It is worth mentioning in this respect An (2007b), Franks (2005), and Kim (2008), who also argue that the alternation in (73)/(74a) should be analyzed in PF terms; they however differ from the current approach in that they assume that that is inserted in the PF of (73) (instead of assuming that it is deleted in the PF of (74a), as I do here).
proven to be extremely difficult. The PF deletion analysis capitalizes on the obvious PF difference between the embedded complementizer in (66a) and (66b), the complementizer being overt in (66a), but not in (66b). It is, however, worth noting one aspect of the *that*-deletion analysis. Given Recoverability of Deletion, the analysis is based on the assumption that the deleted *that* is essentially semantically null; otherwise its deletion would violate Recoverability of Deletion. Franks (2005) (see also Hegarty 1992) indeed argues that the deleted *that* is similar to *do of do* support in this respect. A natural extension of this analysis would be to argue that at least in some cases where *that* cannot be deleted, *that* does have semantic import, hence its deletion would violate Recoverability of Deletion. This analysis can actually be very nicely applied to, for example, factive clauses. It is well-known that *that* is obligatory in factive complements, which in current terms means that *that* in factive complements cannot be deleted. Hegarty (1992) argues that *that* in factive complements actually has semantic import. More precisely, he argues that the event position of a factive complement is theta-bound by the complementizer of the complement, which yields the characteristic presuppositional semantics. Since the complementizer in factive complements does have semantic import, it is then not possible to delete it without violating Recoverability of Deletion. On the other hand, with a verb like *believe*, the event position of the complement is bound in semantic composition with the verb *believe*, the embedded complementizer playing no semantic role. (Note that Hegarty extends his analysis of factive verbs to response stance verbs (e.g. *accept* and *confirm*), where the complementizer is then also semantically contentfull, hence cannot be deleted. Hegarty in fact suggests that in all (and only) the cases where the complementizer *that* in the complement of a verb cannot be deleted, *that* has semantic import.)

Another potentially relevant phenomenon from this perspective involves the well-known fact that the complementizer *that* is obligatory with embedded topicalization.

(76) a. John didn’t believe that Mary, Bill kissed.
    b. *John didn’t believe Mary, Bill kissed.

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29 It is worth noting here that in some languages at least a subset of factive verbs has a phonologically distinct complementizer. This is, for example, the case with SC, where the clauses in (i) are introduced by distinct complementizers (see Browne 1980 and Bibović 1971).

(i) a. Petar vjeruje da Milan voli Ana.
    Petar believes that Milan loves Ana
    b. Petar žali što Milan voli Ana.
    Peter regrets that Milan loves Ana
Recall that Watanabe (1993a) analyzes topicalization examples like (76a) as involving CP recursion, with *that* generated in the lower CP and then undergoing movement to the higher CP. Under this analysis, *that* can be taken as a marker of CP recursion, which plausibly blocks its deletion since its deletion would affect recoverability of the CP recursion structure. (This is in fact what Watanabe 1993a suggests.) Given that under the analysis in question (76b) underlyingly has *that* in the embedded clause, which undergoes deletion, we then may have an account of the ungrammaticality of this construction.30

Finally, returning to the amelioration effect of PF deletion, it is worth noting that Merchant (2001) observes that *that*-trace violations can also be rescued by ellipsis.

(77) a. *It’s probable that a certain senator will resign, but which senator it’s probable that t will resign is still a secret.

b. It’s probable that a certain senator will resign, but which senator [it’s probable that t will resign] is still a secret. (Merchant 2001:185)

This is not surprising in the overall approach to the locality of movement adopted here. In fact, the amelioration effect in (66) and the amelioration effect in (77) receive essentially the same account.

I conclude therefore that the contrast in (66) is amenable to a rescue-by-PF deletion analysis. The rescue-by-PF-deletion analysis of (66) does not require positing two different complementizers that would differ regarding whether they raise a problem with respect to the locality of movement, which is an argument in favor of the rescue-by-PF-deletion analysis given that accomplishing this in a non-stipulative way has proven extremely hard to do in the previous work. Under the rescue-by-PF-deletion analysis, the embedded complementizer raises a problem for subject wh-movement in both (66a) and (66b), the violation being rescued in (66b) via PF deletion. It is worth noting here that the rescue-by-PF-deletion account does not need any new assumptions (it simply makes use of assumptions that have already been made in the literature for independent reasons) and that it does not really depend on the exact implementation of the locality violation in (66a) (any analysis that considers the complementizer the trouble maker will do). Once we adopt the locality approach to (66a) and either Pesetsky’s C-affixation or Chomsky and Lasnik’s *that*-deletion analysis, the

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30 An avenue that can be explored under Pesetsky’s C-to-V analysis, which assumes the existence of a null C that however undergoes affixation to V (in contrast to *that*), is a potential incompatibility between the recursion structure and the C-affixation movement (in other words, the option to explore is that the recursion creating movement cannot be followed by C-to-V affixation).
contrast in (66) immediately falls out as another instance of rescue by PF deletion. In other words, (66) is now unified with the amelioration effects in (1)-(3); (7a)/(7b-c), (9); (37)-(38); and (64a): all these contrasts represent cases where a locality violation is rescued by PF deletion. We have also seen that the rescue-by-PF deletion analysis can be extended to account for Culicover’s adverb amelioration effect, which is another case where a locality violation is rescued by PF deletion.

5. Conclusion

To sum up, we have seen that the rescue-by-PF-deletion account of the amelioration effect of island violations under ellipsis can be extended to account for the *-trace effect, including the adverb amelioration effect, and the lack of intervention effects with certain null arguments which are otherwise found with their overt counterparts, as well as to deduce the generalization that traces do not count as interveners for relativized minimality, which is a potential problem for the copy theory of movement, in a way that is fully consistent with the copy theory of movement. The fact that the rescue-by-PF-deletion approach has enabled us to unify a number of previously unrelated phenomena should be taken as a strong argument in its favor as well as an argument for the view of locality of movement on which this approach is based, which is partly derivational (*-marking takes place derivationally) and party representational (the ultimate violations are determined representationally). I have also shown that the current extension of the rescue-by-PF deletion approach, on which the rescue can arise not only through the deletion process involved in ellipsis but also through regular copy deletion, accounts for the different behavior of the Superiority Condition and the Wh-Island Condition with respect to the amelioration effect under ellipsis, a surprising difference in light of the fact that both of these are generally subsumed under relativized minimality effects in current research. I have also made several proposals regarding the precise implementation of the *-marking mechanism.

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