



Locative Inversion, Unergatives, and Backward Control*

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ABSTRACT

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It is usually accepted that if a verb assigns an external theta role, it does not allow Locative Inversion (LI). However, this paper claims that even unergatives permit LI if (i) they assign an internal theta role as well as an external theta role, (ii) the two theta roles are assigned to the identical phrases that form the relation *Copy* in the sense of Chomsky (2021), and (iii) the external argument undergoes backward ellipsis. In this approach, deletion of the higher copy follows from Chomsky's (2013, 2015) Labeling Algorithm. Chomsky (2013, 2015) claims that the constituent in SPEC-*v** gives rise to labeling failure, which can be fixed if it raises to SPEC-T. This study shows that subject raising is not the only way to remove the constituent in SPEC-*v**. It can be deleted when it forms the relation *Copy* with an internal argument. In short, Unergative Inversion as well as Unaccusative Inversion is permitted in English, and it is a kind of backward control in the sense that the higher copy undergoes backward ellipsis.

KEYWORDS

locative inversion, labeling, backward ellipsis, backward control, quotative inversion, light inversion, heavy inversion

1. Introduction

Transitive verbs do not permit Locative Inversion (LI), as illustrated by (1) (Bresnan 1994, Levin and Rappaport Hovav 1995, Huddleston and Pullum 2003, among others).

- (1) Down the hill { *rolled John a ball, *rolled a ball John }.

On the other hand, intransitive verbs are divided into two types with respect to LI. The *roll*-type allows LI, whereas the *sleep*-type does not.

- (2) a. Down the hill rolled a ball.
b. *In the room slept Robin.

What sentences (1) and (2b) have in common is that their predicates assign external theta roles. It makes sense that they are ungrammatical because external arguments are base-generated in SPEC- v^* , and so they precede the v^* -V complex. In (3b), for instance, the subject *Robin* cannot be preceded by the verbal complex [v^* *sleep*] if it is base-generated in SPEC- v^* .

- (3) a. [v^* P Robin v^* [v_P sleep in the room]]: *Sleep-to- v^** movement
b. [v^* P Robin [v^* sleep] [v_P ~~sleep~~ in the room]]

Therefore, it is not surprising that LI cannot take place if a predicate assigns an external theta role. These considerations led many linguists to generalize that LI is a diagnostic for unaccusativity: that is, LI is not possible when there is an external argument (Bresnan and Kanerva 1989, Coopmans 1989, Hoekstra and Mulder 1990, Levin 1986, among others). However, Levin and Rappaport Hovav (1995) argue that the generalization is too strong because some unergatives permit LI, as illustrated in (4a-b).

- (4) a. On the third floor worked two young women called Maryanne Thomson and Ava Brent ...
[L. Colwin, *Goodbye without leaving*, 54] (Levin and Rappaport Hovav 1995, p. 224)
b. Inside swam fish from an iridescent spectrum of colors ...
[J. Olshan, *The Waterline*, 177] (Levin and Rappaport Hovav 1995, p. 225)

They claim that LI must be explained in terms of discourse function rather than argument structure: LI can be licensed if the verb is informationally light. However, Culicover and Levine (2001) suggest that we can maintain the correlation between LI and unaccusativity if we divide LI into Light LI and Heavy LI. They point out that the postverbal subjects in (4a-b) are heavy, and they go on to claim that if the postverbal subject in (2b) is heavily stressed, a well-formed sentence obtains.

- (5) Remember Robin? Well, in the room slept fitfully . . . ROBIN!
(Culicover and Levine 2001, p. 293)

Culicover and Levine argue that stress-focused constituents can undergo rightward movement, so (4a-b) and (5) are well-formed although they have unergative verbs. According to this approach, Light LI conforms to the

generalization that Subject-Verb Inversion can take place when the verb does not assign an external theta role. However, there are many data that run counter to the generalization. Sentences (6a-d) are well-formed although the verbs *dance*, *run*, *walk*, *storm*, and *bluster* are unergatives and the postverbal DPs are light.¹

- (6) a. Around the fire danced the women. (Bresnan 1994, p. 123)
 b. Out of the barn ran a black horse. (Coopmans (1989, p. 732))
 c. Into the room walked Robin. (Culicover and Levine 2001, p. 292)
 d. Into the room stormed/blustered Fred (Culicover and Levine 2001, p. 295)

In order to resolve this problem, many linguists have argued that some unergatives with manner of motion turn into unaccusatives when they are merged with directional complements (Coopmans 1989, Hoekstra and Mulder 1990, Levin and Rappaport Hovav 1995). The immediate question is whether the verbs in (6a-d) do not assign an Agent role. The adverbs *passionately/boldly/carefully* entail that the subjects are actively involved in the dancing/walking/storming/blustering events.

- (7) a. Around the fire danced the women passionately/boldly/carefully.
 b. Into the room walked Robin carefully. (Culicover and Levin 2001, p. 292)
 c. Into the room stormed/blustered Fred boldly.

This suggests that the postverbal subjects are not simply Theme arguments in (6-7). Furthermore, (8a-b) show that there are two types of Light Inversion: the tag pronoun for (6a) must refer back to the postverbal DP, whereas the one for (2b) must be *there*.

- (8) a. Around the fire danced the women, didn't they/*there?
 b. Down the hill rolled a ball, didn't there/*it?

Sentences (6b-d) pattern like (6a) in that the tag pronouns must take the postverbal DPs as their antecedents. This hints at the possibility that the tag pronoun for Unergative Inversion is a pro-form for the postverbal subject, whereas the one for Unaccusative Inversion is *there*. Sentence (9) provides further support for the claim that Light LI is not restricted to unaccusatives. Bresnan (1994) points out that the postverbal argument in (9a) is the Agentive argument of *shoot*. Interestingly, the tag pronoun for (9a) is not *there* but *he*, as shown in (9b).

- (9) a. Through the window on the second story was shooting a sniper. (Bresnan 1994, p. 84)
 b. Through the window on the second story was shooting a sniper, wasn't he/*there?

The grammaticality of (6-7) and (9a-b) is quite puzzling, considering that their predicates seem to assign external theta roles and the external arguments are light.²

¹ Sentences (1a-b) show that the subject *Robin* must be adjacent to the verb *strode*. This lends support to the claim that the subject DP remains in situ: that is, it does not undergo rightward movement.

(i) a. Into the room strode Robin boldly.
 b. *Into the room strode boldly Robin. (Kathol and Levine 1992)

² Quotative Inversion also poses a problem to the generalization that Subject-Verb Inversion is restricted to unaccusatives. The

This study explores the possibility of providing a principled account for this puzzle by making use of the operation ‘Form Copy’, which is proposed by Chomsky (2021). The gist of the claim made in this paper is that (6-7) and (9a-b) are instances of backward control in the sense that (i) their predicates assign both an Agent role and a Theme role, (ii) the two arguments form the relation *Copy*, and (iii) the Agent argument undergoes backward ellipsis in compliance with Chomsky’s (2013, 2015) Labeling Algorithm.

2. Imperatives in Belfast English

Before getting into LI, let us first consider Imperatives in Belfast English. Henry (1995) notes that in dialect A of Belfast English, unaccusative verbs permit postverbal subjects in imperatives, whereas transitives and unergatives do not.

- (10) a. Go you quickly to school!
 b. Leave you now.
 c. Arrive you before 6 o’clock.
 d. Be going you out of the door when he arrives!
- (11) a. *Read you that book!
 b. *Eat you up!
 c. *Always laugh you at his jokes!
 d. *Protest you!

Radford (2005) proposes that this contrast follows if the subjects of unaccusative verbs are generated inside VP, whereas those of other types are generated in SPEC- v^* .³ For instance, (10a) and (11a) are represented as (12b) and (13b), respectively.

- (12) a. [v^* [_{VP} you go quickly to school]]: *Go-to- v^** movement
 b. [v^* go [_{VP} you ~~go~~ quickly to school]]
- (13) a. [you v^* [_{VP} read that book]]: *Read-to- v^** movement
 b. [you v^* read [_{VP} ~~read~~ that book]]

In (12b) the subject *you* is preceded by the v^* -V complex when *go* raises to v^* . By contrast, in (13b) the subject cannot be preceded by [v^* *read*]. Hence, the contrast between (10a-d) and (11a-d) can be captured in a principled way.

However, there is a remaining question. It seems to be correct that the subjects are assigned a Theme role in (10a-d). If an object undergoes location change, it is assigned a Theme role. The question is whether the Theme role is the only theta role that is assigned to the subjects in (10a-d). The subjects in imperatives must be assigned

verb *say* is compatible with the adverbs like *boldly*, and the tag pronoun takes the postverbal subject as its antecedent.

- (i) ‘I must leave now’ said Sue.
 (ii) ‘I must leave now’ said Sue *boldly*.
 (iii) ‘I must leave now’ said Sue, didn’t she?

³ See Platzack and Rosengren (1998) for an analogous analysis.

an Agent role. Unless the subject of an imperative is an Agent, there is no way to carry out the action that the addressee is ordered to do. These considerations lead us to the conclusion that the subjects in (10a-d) must be assigned an Agent role as well as a Theme role. To recapitulate, Radford's account seems to be on the right track, but it is not complete yet.

2.1 Movement into a Theta Position and Backward Control

One possible approach to imperatives in Belfast English is to make use of Hornstein's (1999, 2001) claim that movement into a theta position is possible. In (10a), for instance, *you* is assigned Theme from V' , and then it is assigned one more thematic role—Agent—from v^* when it moves from SPEC-V to SPEC- v^* .⁴

- (14) a. [$v^*(Agent) v^*$ [VP you [$V'(Theme)$ go quickly to school]]]: Movement into SPEC- v^* and Agent Role Assignment
 b. [you [$v^*(Agent) v^*$ [VP you [$V'(Theme)$ go quickly to school]]]]

In (14b) there are two copies of *you*. Let us consider whether it is possible to delete the higher copy in this representation. If there are multiple copies, the highest copy is usually pronounced. Nunes (2004) proposes that this can be derived from the economy principle. The higher copy has fewer uninterpretable or unvalued features than the lower one, and hence it is pronounced in accordance with the Chain Reduction Principles (15).

- (15) Chain Reduction Principles (Nunes 2004)
 a. Only one copy can be pronounced
 b. Pronounce the copy with the fewest unchecked features

Let us say that in (16b) the higher copy has a valued Case feature, while the lower copy does not. If so, it is more economical to pronounce the higher copy since the lower copy requires an extra operation to assign a Case value.

- (16) a. [... John_[Nominative Case] ... John_[unvalued Case]...]: Deletion of the Lower Copy
 b. [... John_[Nominative Case] ... ~~John_[unvalued Case]~~...]

However, there seems to be no reason that in (14b) the higher copy must be pronounced, as it is unclear whether structural Case is assigned to the subject in the imperative. If the subject in the imperative is conjoined, the second conjunct must be assigned accusative Case, as shown by (17a-b) (Zhang 1991).

- (17) a. Don't you and him/her/them fight again!
 b. *Don't you and he/she/they fight again!

This is in contrast with the subjects of the constructions with finite T. Sentences (18a-b) show that the second conjunct may be realized with either nominative or accusative Case when T is finite.

⁴ The agent role is compositionally determined by v^* and VP, as proposed by Marantz (1984) and Chomsky (1986). I also assume that the Theme role is not assigned by *go* but by *go quickly to school*.

- (18) a. Won't you and him come to the party?
 b. Won't you and he come to the party?

With a view to explaining the contrast between (17) and (18), Potsdam (1996) makes use of default Case. He suggests that the second conjuncts can be assigned accusative Case as default Case and goes on to argue that imperative T is incapable of assigning Case and that the subject in the imperative is assigned default Case. If imperative T has no Case-assigning ability, and hence neither the higher copy nor the lower copy has a valued Case feature, it is logically possible for the lower copy to be pronounced. Furthermore, Chomsky's (2013, 2015) Labeling Algorithm requires that the copy in SPEC- v^* must not be pronounced, as will be discussed in Section 3. Therefore, it is not surprising that the lower copy is phonetically realized in (14b), as shown in (19).

- (19) [~~you~~ [$v^{*(Agent)}$ v^* [VP you [$v^{(Theme)}$ go quickly to school]]]]

In short, (10a-d) are generated when the lower copies are pronounced.

This analysis is reminiscent of Backward Control. Many linguists propose that backward control results when the lower copy, instead of the higher copy, is pronounced (Alexiadou et al. 2010, Boeckx et al. 2010, Haddad 2011, Haddad and Potsdam 2013, Hornstein and Polinsky 2010, Polinsky and Potsdam 2002, Potsdam 2009, among others). Let us consider (20a-b), for instance. Alexiadou et al. (2010) claim that in these sentences *o Janis* 'John' undergoes movement from the Agent position of *pezi* 'play.3SG' to the Agent position of *emathe* 'learned.3SG'. As a result, two copies of *o Janis* 'John' are generated, but only one of them can be pronounced. Let us recall that if the higher copy is assigned Case but the lower copy is not, the higher copy is phonetically realized in accordance with the economy principle. In certain languages like Greek, however, both the higher copy and the lower copy can be assigned Case. According to Alexiadou et al. (2010), either the higher copy or the lower copy can be pronounced in this context, as shown in (20a-b).

- (20) Greek
- a. Backward Control
- | | | | | | |
|---------------------|-------------|-------|----------|----------|----------|
| o Janis | emathe | [na | pezi | o Janis | kithara] |
| John.NOM | learned.3SG | [SBJV | play.3SG | John.NOM | guitar] |
- b. Forward Control
- | | | | | | |
|----------|-------------|-------|----------|---------------------|----------|
| o Janis | emathe | [na | pezi | o Janis | kithara] |
| John.NOM | learned.3SG | [SBJV | play.3SG | John.NOM | guitar] |
- 'John learned to play the guitar.'
- (Alexiadou et al. 2010, p. 96)

Sentence (20a) is an example of Backward Ellipsis. I have claimed that (10a-d) are also instances of Backward Ellipsis.

2.2 Form Copy and Control

Thus far, we have assumed that movement into a theta position is permitted. However, Chomsky (2021) proposes that External Merge is used for theta role assignment, while Internal Merge is used for discourse/information-related functions.

(21) Duality of Semantics

External Merge is associated with theta-roles and Internal Merge with discourse/information-related functions.

While assuming that Duality of Semantics is correct, Chomsky attempts to capture Hornstein's insight about similarities of raising and control by utilizing an operation called Form Copy. As mentioned above, Hornstein (2001) proposes that control and raising are similar in that both involve movement.

- (22) a. John tried to win.
b. John seems to win
- (23) a. tried [John to win]: Raising of *John*
b. John tried [~~John~~ to win]
- (24) a. seems [John to win]: Raising of *John*
b. John seems [~~John~~ to win]

Chomsky (2021) does not adopt the movement theory of control. However, he acknowledges that there are similarities between raising and control, and he captures the similarities by proposing the operation Form Copy (FC), which assigns the relation *Copy* to certain identical inscriptions. Identical inscriptions can be produced by movement, as shown in (25a-b). In (25a), for instance, the two occurrences of *John* are generated via movement and form the relation *Copy* via the rule FC.

- (25) a. seems [John to win]: Raising
b. John seems [John to win]: FC and Deletion
b. John seems [~~John~~ to win]

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Movement produces identical inscriptions. In addition, there can be identical inscriptions in the lexicon. More specifically, there can be two copies of *John* in the numeration, and hence (22a) can be generated without recourse to Internal Merge.

- (26) a. tried [John to win]: External Merge of *John*
b. John try [John to win]: FC and Deletion
c. John try [~~John~~ to win]

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According to Chomsky, the operation FC can assign the relation *Copy* to the two occurrences of *John* in (26b), even though they are not created via movement. It is because the earlier application of Merge is not detectable: that is, the history of derivation is not accessible. In (26c) the two occurrences of *John* form the relation *Copy* via FC. As a result, the copy in the embedded clause can be deleted. To put it in the terms of a more traditional framework, the copies of *John* form a chain and only one link is pronounced.

Let us now return to (10a), repeated here as (27). In this sentence, *go quickly to school* assigns Theme and the v^* -VP complex assigns Agent. So there are two occurrences of *you*, as illustrated in (28a), and they can form the relation *Copy* although they are not produced through Internal Merger.

(27) Go you quickly to school!

(28) a. [you [v^* _(Agent) v^* go [VP you [v^* _(Theme) ~~go~~ quickly to school]]]]: Form Copy and Deletion

b. [~~you~~ [v^* _(Agent) v^* go [VP you [v^* _(Theme) ~~go~~ quickly to school]]]]



In (28a) one copy of *you* must be deleted. If the higher copy is deleted, (27) is generated. The gist of the claim made in this section is that backward ellipsis can take place when there are identical copies in SPEC- v^* and VP-internal position. This approach is based on the assumption that two identical copies that are assigned a different theta role can form the relation *Copy*. Hornstein (2001) claims that it is possible via movement into a theta position, whereas Chomsky (2021) proposes that it is possible even when the two copies are base-generated. For the present purposes it does not matter which theory is correct, but this study tentatively assumes that Chomsky's Form-Copy approach is correct.

3. Account for the Puzzle

This section shows that the backward ellipsis approach put forth in Section 2, along with Chomsky's (2013, 2015) Labeling Algorithm, sheds light on the puzzle raised at the outset of this paper—the phenomenon that some unergatives license Light LI.

3.1 Labeling Failure and T-Movement

Chomsky (2013, 2015) claims that (i) T is not strong enough to project its own label, and (ii) if there is no label, the derivation crashes. This provides a principled account for why SPEC-T must be filled. According to Chomsky, when the subject raises to SPEC-T, the resulting structure can be labeled as Φ P via feature sharing.

(29) a. [T_Φ [v_P John $_\Phi$ love Mary]]: Subject Raising and Feature Sharing

b. [Φ_P John $_\Phi$ T_Φ [v_P ~~John~~ love Mary]]

This claim has some consequences on Locative Inversion. Let us consider (6a), which is rewritten here as (30).

(30) Around the fire danced the women.

If the locative phrase raises to SPEC-T, labeling failure takes place: that is, it does not share Φ -features with T, so that α fails to be determined.⁵ The EPP requires that SPEC-T must be filled. By contrast, Labeling Algorithm requires that T' must be merged with a constituent with Φ -features. However, around the fire has no Φ -features.

⁵ Lowler (1977), Postal (2004), and Bruening (2010) argue that the subject of the LI construction is a null expletive. They propose that (i) must be analyzed as (ii).

- (31) a. [T_{Φ} [$_{VP}$... around fire]]: Locative Inversion
 b. [$_{\alpha}$ around fire T_{Φ} [$_{VP}$... ~~around the fire~~]]: *Labeling Failure

This problem can be fixed if T moves to Topic, and then the topic *around the fire* moves to SPEC-Topic/T.

- (32) a. [Topic/T [$_{\alpha}$ T [$_{VP}$... around the fire]]]: T-to-Topic Movement and Topicalization
 b. [$_{Topic}$ around the fire Topic/T [$_{\Phi}$ [$_{VP}$... around the fire]]]

If T adjoins to Topic in (32a) and it is deleted in the launching site, the labeling problem disappears. To recapitulate, if the subject fails to raise to SPEC-T, T must undergo movement. Put differently, LI involves T-to-Topic movement. As a result, the locative phrase *around the fire* in (30a) does not move to SPEC-Topic, but to SPEC-Topic/T. SPEC-Topic is an A'-position, whereas SPEC-T is an A-position (Chomsky 1995, 2021). Interestingly, the locative phrase in the LI construction displays the properties of A-position as well as A'-position.⁶ Sentences (33a-b) show that the QP in an A'-position displays Weak Crossover (WCO) effects, whereas the one in an A-position does not.

- (33) a. ??Who_i does his_i mother like t?
 b. Everyone_i seems to his_i mother to be the best student?

It appears that in (34a-b) *into every dog's cage* occurs in the same position. However, (34a) shows WCO effects, but (34b) does not.

- (34) a. *Into every dog_i's cage its_i owner peered.
 b. Into every dog_i's cage peered its_i owner. (Culicover and Levine 2001, p. 289)

This can be explained as follows. Sentences (34a-b) are represented as (35a-b), respectively. In (35a) the PP *into every dog's cage* occupies an A'-position—SPEC-Topic. On the other hand, in (35b) it occupies an A/A'-position—SPEC-Topic/T.

- (35) a. [$_{TopicP}$ into every dog_i's cage_j Topic [$_{\Phi P}$ its_i owner peered t_j]]
 b. [$_{Topic}$ into every dog_i's cage_j Topic/T [$_{\Phi}$ [$_{VP}$ peered its_i owner t_j]]]

Hence, there is a contrast between (34a-b).⁷

-
- (i) Around the fire danced the women.
 (ii) [around the fire [$_{\alpha}$ pro T [dance the women]]]

Even though there is a null expletive in SPEC-T, α cannot be determined in (ii), as a phonetically null constituent fails to license labeling via feature sharing.

⁶ Rizzi (1997) proposes that C can be syncretized with T. It is predicted that SPEC-T/C has both the properties of both A and A'-positions. I leave for the future research whether this prediction is borne out.

⁷ Diercks (2017) asserts that the contrast in WCO effects provides evidence in favor of the claim that the PP *into every dog's*

3.2 A Backward Ellipsis Approach to Light LI

Let us now take a closer look at the vP-internal structure of Light LI. In (30), repeated here as (36), *the women* is assigned not only a Theme role but also an Agent role.

(36) Around the fire danced the women.

More precisely, *the women* in SPEC-VP is assigned a Theme role from V', as it undergoes location change while dancing around the fire, and *the women* in SPEC-v* is assigned an Agent role from v*, as shown in (37a).

- (37) a. [α the women [$v^*_{(Agent)}$ v* [VP the women [$V'_{(Theme)}$ dance around the fire]]]]: Form Copy
 b. [α the women [$v^*_{(Agent)}$ v* [VP the women [$V'_{(Theme)}$ dance around the fire]]]]: Deletion
 c. [α ~~the women~~ [$v^*_{(Agent)}$ v* [VP the women [$V'_{(Theme)}$ dance around the fire]]]] of the Higher Copy

If the operation 'Form Copy' assigns the relation *Copy* to the two occurrences of *the women* in (37a), one of them must be deleted. According to Chomsky's (2013, 2015) labeling algorithm, the copy in SPEC-v* must not be pronounced. Chomsky proposes that the Labeling Algorithm is just a minimal search: it selects the closest head as the label. In this approach, neither the light verb v* nor the determiner *the* can be the label in (37a), because neither of them is immediately dominated by α so that neither of them can be the closest head. Therefore, labeling failure takes place if the higher copy of *the women* is pronounced, and hence it must be deleted, as illustrated in (37b-c).⁸ If a series of trivial operations apply to (37c), (38) is generated.

case is the subject in (34b), but not in (34a). However, Bruening (2021) raises an objection to the claim that PP Topicalization differs from LI with respect to WCO effects. According to him, his experiments show that both PP Topicalization and LI display no WCO effects. There seem to be two different grammars with respect to the status of topicalized PP.

⁸ Chomsky (2013) argues that pronouns are also complex phrases. Let us say that *you* is analyzed as [$DP \emptyset [you]$] in (i). If so, *you* cannot be the label. This amounts to saying that α cannot be determined in (i): that is, labeling failure takes place. This problem is resolved if the higher copy of *you* is deleted.

- (i) [α [$DP \emptyset [you]$] [$v^*_{(Agent)}$ [VP [\emptyset you] go $_{(Theme)}$ quickly to school]]]

The line of approach makes sense if we consider the possible interpretations of pronouns. Pronouns can be interpreted generically. For instance, *you* can have a generic interpretation in (iia-b).

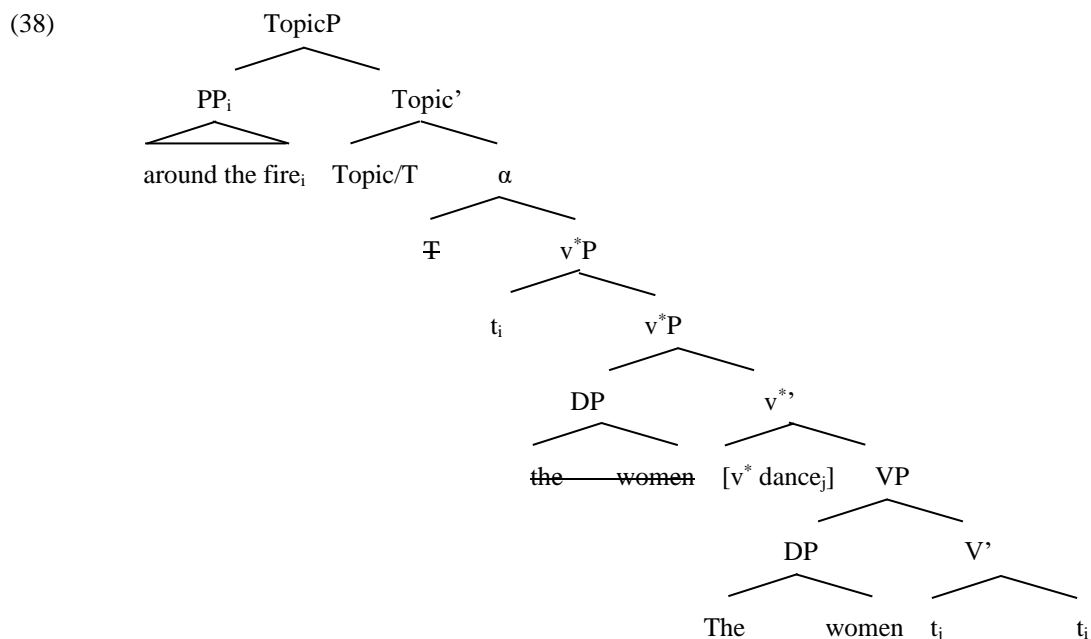
- (ii) a. It is important for you to finish your homework before watching television.
 b. You get depressed when you have to work all day long.

This can be explained if *you* consists of a null D and *you*, as shown in (iii). The null D has the semantic property of being a generic or non-generic operator.

- (iii) [$DP D_{generic/non-generic}$ [NP you]]

This is reminiscent of the fact that the null D cooccurring with a bare plural can be either a generic or existential operator.

- (iv) a. Boys will be boys. b. There are boys in the yard.
 (v) [$DP D_{generic/non-generic}$ [NP boys]]



To recapitulate, unergatives can permit Light LI if they assign an internal theta role as well as an external theta role and the two theta roles form the relation *Copy*.

This account also provides a principled account for why (39a) is ungrammatical. Sentence (39a) is represented as (39b), in which the subject *the women* occurs in SPEC- v^* and hence α cannot be determined.

- (39) a. *Around the fire have the women danced.
- b. [_{Topic/TP} around the fire Topic have [_{have} [_{α} the women v^* [_{VP} ~~the women~~ [_{V'} dance ~~around the fire~~]]]]]]

Therefore, (39a) is ill-formed.

3.3 Entailment and Licensing of Theta Roles

Theta roles are licensed if their existence is entailed by the predicate. For instance, the hitting event entails that there is a hitter and a hittee. So Agent and Theme are licensed.

- (40) John hit a ball.
- (41) There is a hitting event \rightarrow There is a hitter & there is a hittee.

Likewise, ‘jumping into x’ entails that there is an entity that undergoes location change. So *jump* and *into the hole* compositionally assign a Theme role to *the fox* in (44a).

- (42) Into the hole jumped the fox.
- (43) There is an event ‘jumping into the hole’ \rightarrow There is an entity that undergoes location change.
- (44) a. [_{VP} the fox [_{V'} jump into the hole_(Theme)]]: Assignment of Theme to *the fox*
- b. [_{VP} the fox [_{V'} jump into the hole]]

If the syntactic object (44b) is merged with v^* , *the fox* can be assigned one more theta role—an Agent role.

- (45) a. [v^* [_{VP} the fox [_{V'} jump into the hole]]]: Merge of *the fox*
 b. [the fox v^* [_{VP} the fox [_{V'} jump into the hole]]]

This line of approach is supported by the ungrammaticality of (46a).

- (46) a. *In the room danced the women. b. In the room the women danced.

Sentence (46a) is ungrammatical because the PP *in the room* does not give the meaning that the dancers undergo location change. If there is no location change, *the women* cannot be assigned a Theme role. Hence, there is no chance for *the women* to occur in postverbal position.

- (47) [_{v*P} the women [_{v**}_(Agent) v^* [_{VP} dance [in the room]_[+Topic]]]]

On the other hand, (46b) is generated if *the women* undergoes Raising, and then *in the room* undergoes Topicalization.

- (48) a. [_{T ϕ} [_{v*P} [in the room]_[+Topic]_i [_{v*P} the women v^* [_{VP} dance t_i]]]]]: Subject Raising
 b. [_{ϕ P} the women_j _{T ϕ} [_{v*P} [in the room]_[+Topic]_i [_{v*P} t_j v^* [_{VP} dance t_i]]]]]: Merge with Topic and Topicalization
 c. [_{TopicP} [in the room]_[+Topic]_i _{Topic} [_{ϕ P} the women_j _{T ϕ} [_{v*P} t_i [_{v*P} t_j v^* [_{VP} dance t_i]]]]]]]

The entailment-based approach is further supported by the contrast between (49a-b). The event ‘jumping into the hole’ entails that the Agent of the event undergoes location change in (49a), but ‘excreting into the hole’ does not entail that the Agent undergoes location change.

- (49) a. Into the hole jumped the rabbit. b. *Into the hole excreted the rabbit. (Bresnan 1994, p. 78)

This amounts to saying that *the rabbit* can be assigned not only an Agent role but also a Theme role in (49a), but not in (49b).

- (50) a. [the rabbit v^* [_{VP} the rabbit [_{V'} jump into the hole]]]
 b. [the rabbit v^* [_{VP} (*the rabbit) [_{V'} excrete into the hole]]]

Therefore, (49a) is grammatical, but (49b) is not. As noted above, Coopmans (1989), Hoekstra and Mulder (1990), Levin and Rappaport Hovav (1995) argue that some unergatives with manner of motion turn into unaccusatives when they are merged with directional complements. They are correct in that the unergatives with directional complements can assign a Theme role, but it is not the case that they do not assign an Agent role.

Let us now consider why (9), repeated here as (51), is grammatical.

- (51) Through the window on the second story was shooting a sniper. (Bresnan 1994, p. 84)

In (51) *through the window* describes the location of the shooting event. However, the bullet does not start from the window but from the shooter. ‘Shooting through the window’ entails that there is a starting point from which the bullet is fired. Hence, *shoot* and *through the window* compositionally assign the theta role Source to *the sniper*.⁹

- (52) a. [_{V’(Source)} shoot [through the window on the second story]]: Merge with *the sniper* and Assignment of the Source Role to *the sniper*
- b. [_{VP} the sniper [_{V’(Source)} shoot through the window on the second story]]: Merge with v*, Merge with *the sniper*, and Assignment of Agent to *the sniper*
- c. [_{v*P} the sniper [_{v*(Agent)} v* [_{VP} the sniper [_{V’(Source)} shoot through the window on the second story]]]]: Form Copy and Deletion of the Higher Copy
- d. [_{v*P} ~~the sniper~~ [_{v*(Agent)} v* [_{VP} the sniper [_{V’(Source)} shoot through the window on the second story]]]]

On the other hand, v* and VP compositionally assign Agent to the other copy of *the sniper*. If the two occurrences of *the sniper* form the relation *Copy*, the higher copy must be deleted in accordance with the Labeling Algorithm. Therefore, Subject-Verb Inversion takes place.

3.4 Heavy LI

Thus far, we have been concerned with Light LI. This subsection briefly discusses the derivation of Heavy Inversion. Let us recall that (5), repeated here as (53b), is grammatical, whereas (2b), rewritten as (53a), is not.

- (53) a. *In the room slept Robin.
- b. Remember Robin? Well, in the room slept fitfully . . . ROBIN!

The ungrammaticality of (53a) is not surprising. It cannot be generated because the verb *sleep* assigns an Agent role but not a Theme role. By contrast, (53b) can be generated if *ROBIN* undergoes rightward movement, as Culicover and Levine (2001) claim. Let us first consider the possibility that the subject undergoes movement from SPEC-T to the edge of the clause, as shown in (54).

- (54) [_{TopicP} [_{TopicP} in the room Topic [_α ROBIN T [_{Robin} v* [_{VP} sleep in the room]]]]] ROBIN
- |—————*—————↑

This possibility must be excluded if we consider the lack of nominative case on pronouns.¹⁰

⁹ As an anonymous reviewer points out, another possibility is that *through the window* is not the Source of shooting but the Path Locative of bullets.

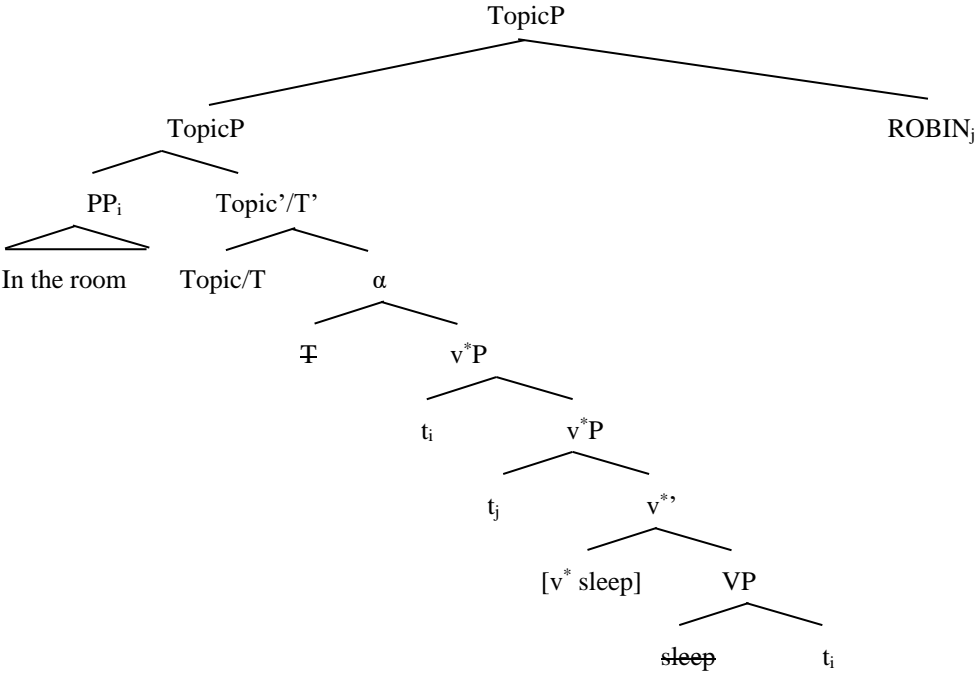
¹⁰ Chomsky (2015) argues that (i) is ungrammatical because labeling takes place on a phase-basis. As illustrated in (ii), α cannot be labeled if *who* moves to SPEC-C. Therefore, (i) is ungrammatical. The analysis in (54) must be ruled out for the same reason: α fails to be labeled when *ROBIN* undergoes movement from SPEC-T to the clause-final position.

- (i) *Who do you think that t met Mary?
- (ii) [_{CP} who that [_α t met Mary]]

- (55) a. *In the room slept HE. b. In the room slept HIM

If the postposed pronominal subject drops by SPEC-T, it must be realized as *HE*, not *HIM*. However, HE is not permitted in (55a). This suggests that (54) is not correct. Let us now consider the possibility that (i) T moves to Topic, and (ii) *Robin* undergoes movement from SPEC-*v** to the edge of the clause without stopping by SPEC-T.

- (56) a. [_{TopicP} Topic [T [ROBIN v* [VP sleep in the room]]]]: T-to-Topic Movement and Topicalization, Rightward Movement
b.



There is no labeling problem with the derivation in (56a-b). According to this analysis, Heavy LI is analogous to Light LI in that T raises to Topic. The major difference between them lies in the fact that the subject in SPEC-*v** undergoes rightward movement in Heavy LI, whereas it is deleted under identity with the lower copy in Light LI. Let us finally consider the landing site of rightward movement. As mentioned above, Light LI does not display WCO effects: that is, *every dog* can take *its* as its variable in (57a). In (57b), which is an instance of Heavy LI, *every dog* cannot bind *its*.

- (57) a. Light LI: In every dog_i's cage hung its_i collar. (Light LI)
b. Heavy LI: *In every dog_i's cage hung on a hook its_i most attractive and expensive collar.
(Culicover and Levine 2001, p. 289)

This suggests that *ROBIN* is not in the c-domain of the topic phrase, as illustrated in (56b).

4. Extension to Quotative Inversion

Quotative Inversion (QI) also falls under the rubric of Light Inversion. In (58a) nothing can intervene between the postverbal subject *the woman* and the verb *say*, which suggests that the postverbal subject does not undergo rightward movement.

- (58) a. ‘I like you’ said the woman quietly.
 b. *‘I like you’ said quietly the woman.

Let us attempt to generate (58a), while assuming that *the woman* does not undergo rightward movement. If *say* is an unaccusative verb, it is generated as in (59).

- (59) [_{TopicP} [I like you]_i Topic T [$\bar{\text{F}}$ [_{VP} t_i v* say [_{VP} the woman say t_i]]]]

If *the woman* occurs in SPEC-V, we can account for why it is preceded by the verb. However, the analysis in (59) is problematic, considering that (58a) is compatible with the adverbs *boldly* and *willfully*, as shown in (60).

- (60) ‘I like you’ said the woman boldly/willfully.

Sentence (60) suggests that *the woman* is assigned an Agent role, which in turn means that it is required to occur in SPEC-v*. So QI also runs counter to the generalization that Subject-Verb Inversion is possible only when the subject is not assigned an external theta role.

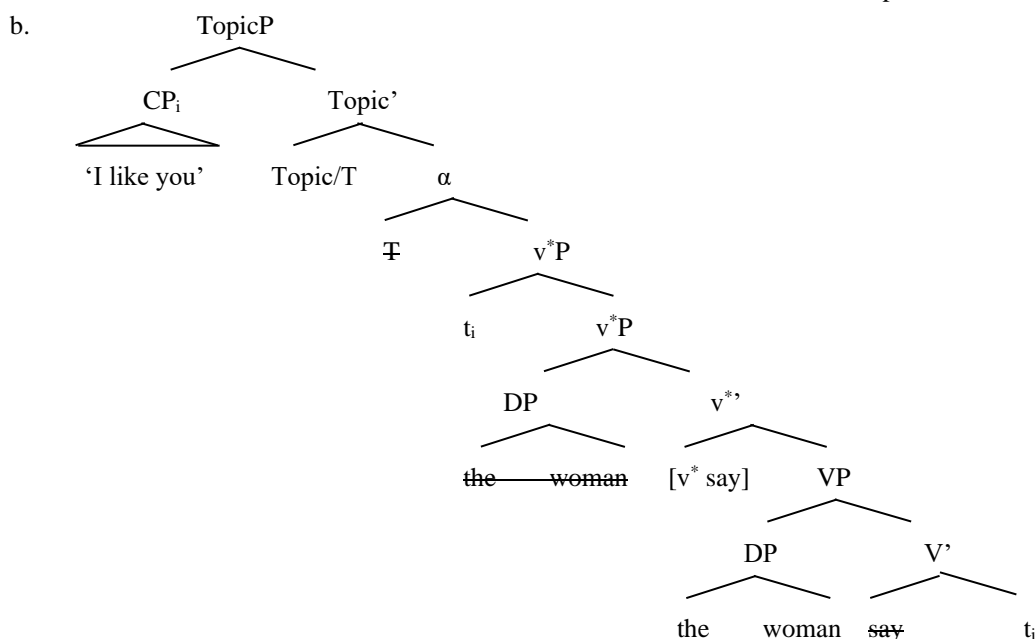
4.1 Source as an Internal Theta Role of *Say*

I propose that QI is another case in which the lower copy is pronounced. If there is an event ‘saying a quoted expression’, there is a source of the quoted expression and there is an agent of the saying event.

- (61) a. There is an event ‘saying a quoted expression’ → there is a source of the quoted expression.
 b. There is an event ‘saying a quoted expression’ → there is an agent of the event.

In (60) the verb *say* and the quotative clause compositionally assign a Source role to the copy of *the woman* in SPEC-V, and the light verb v* and VP compositionally assign an Agent role to the copy in SPEC-v*, as illustrated in (62a).

- (62) a. [_{v*P} the woman [_{v*}_(Agent) v* [_{VP} the woman [_{V*(Source)} say_(Theme) 'I like you']]]]: A Series of Trivial Operations



The rest of the derivation is analogous to the derivation of Light LI constructions. In (62b) there are two copies of *the woman*. They can form the relation *Copy*, and hence one of them must be deleted. According to the Labeling Algorithm, the copy in SPEC- v^* must be deleted. Therefore, the lower copy of *the woman* is pronounced.¹¹

The major claim made here is that Light LI and QI can be handled in the same way. More generally, Subject-Verb Inversion is permitted even in unergative constructions if the subject is assigned an internal thematic role as well as an external thematic role.

4.2 The Transitivity Restriction

The uniform approach to LI and QI is supported by the fact that they are subject to the same condition: they are not permitted if the verb has an object. Alexiadou et al. (2001) observe that there is a contrast in grammaticality between (63a) and (63b). The most important difference between the two sentences lies in whether the Goal is realized as a PP or a DP. If it is realized as a DP, ungrammaticality results, which suggests that QI abides by the transitivity restriction.

- (63) a. 'It's raining' said [the weatherman] [to the anchorwoman]
 b. * 'It's raining' told [the weatherman] [the anchorwoman]

¹¹ Collins and Branigan (1997) propose that the verb precedes the subject in QI because V raises to AgrO, and Suñer (2000) also claims that subject inversion takes place on account of V-to-Aspect movement. One of the problems with these approaches is that it is mysterious that V raises to a position higher than v^* only in Quotative Inversion.

We have seen that LI, just like QI, conforms to the transitivity restriction (Bresnan 1994, Huddleston and Pullum 2003, Levin and Rapaport Hovav 1995, among others).

- (64) a. The women danced dances around the fire.
 b. *Around the fire danced dances the women. (Bresnan 1994, p. 124)

This phenomenon can be explained in a straightforward way, provided that the Agent argument must form the relation *Copy* with an internal argument in Subject-Verb Inversion. In (63b) the intransitive verb *tell* is required to have three arguments. The subject *the weatherman* must be an internal argument if it is to be pronounced in postverbal position. The quotative clause and *the anchorwoman* are also required to be internal arguments. Pesetsky (1996) argues that a predicate cannot have more than two arguments. In fact, it is structurally impossible for a predicate to have three arguments unless multiple SPEC is permitted.

- (65) *_{[VP the weatherman [_V the anchorwoman [_V tell 'it's raining']]]}

Therefore, (63b) is ill-formed. Of course, (66a) is well-formed, because it is represented as (66b), where the quotative clause occurs in SPEC-Topic, not in SPEC-Topic/T.

- (66) a. 'It's raining' [the weatherman] told [the anchorwoman]
 b. [_{TopicP} 'it's raining' Topic [_{ΦP} the weatherman T [~~the weatherman~~ v* [_{VP} the anchorwoman [_V tell 'it's raining']]]]]

In this construction *the weatherman* does not have to be assigned an internal theta role, and hence the intransitive verb *tell* is a two-place predicate, as shown in (66b).

Let us now turn to the ungrammaticality of (64b). It is not grammatical for the same reason as (63b) is not: that is, it is ruled out because a predicate cannot have more than two arguments. Let us remember that when LI takes place, locative phrases occur in SPEC-Topic/T, which is not only an A-position but also an A'-position. Given that only arguments can occur in A-positions, it is predicted that only arguments can undergo Topicalization to SPEC/Topic/T. This prediction is borne out. It is not the case that every unaccusative allows LI. Verbs of change of state are not compatible with LI although they are unaccusatives.

- (67) a. *On the top floor of the skyscrapers broke many windows.
 b. *On the streets of Chicago melted a lot of snow.
 c. *On the backyard clotheslines dried the weekly washing. (Levin and Rapaport Hovav 1995, p. 224)

The ungrammaticality of (67a-c) follows from the fact that the locative phrases are adjuncts. Verbs of change of state do not assign the thematic role 'Locative', and (67a-c) are ill-formed, as adjuncts are not allowed to occur in A-position. Provided that LI is permitted only when the locative phrase is an argument, we can rule out (64b), repeated here as (68), since a verb cannot have more than two arguments.

- (68) *Around the fire danced dances the women.

In (68), the intransitive verb *dance* is forced to have three arguments. *The women* must be assigned a Theme role; otherwise, it cannot be preceded by the verb. In addition, the verb *dance* is required to take *dances* and *around the fire* as its arguments. However, it is not possible for a predicate to have three arguments. Therefore, (68) is ill-formed.

5. Summary and Conclusion

It is usually accepted that Light LI is a diagnostic for unaccusativity: that is, it can be licensed if the verb does not assign an external theta role like Agent or Experiencer. However, this paper has pointed out that there are some exceptions to the generalization. Subject-Verb Inversion can be licensed by a verb that assigns an external theta role if (i) it assigns an internal theta role as well as an external theta role, (ii) the two theta roles are assigned to the identical inscriptions that form the relation *Copy*, and (iii) backward ellipsis takes place. To summarize the major claims made in this paper, (i) there are two types of Light LI—Unaccusative Inversion and Unergative Inversion, (ii) Unergative Inversion is a kind of backward control in the sense that the higher copy is elided, and (iii) this line of approach also sheds light on Quotative Inversion and the distribution of overt subjects in Belfast English imperatives.

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Examples in: English

Applicable Languages: English

Applicable Level: All