Is Locative Inversion an Empirical Argument for Local Economy?

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1. Introduction

Some locative PPs in English are able to be optionally fronted in a certain environment, as the following examples show:

- (1) a. A ball rolled down the hill
 - b. Down the hill rolled a ball

Note that in (1b) the logical subject and the verb are inverted. Example (1b) is called a locative inversion construction.

One of the controversial issues in locative inversion is where the inverted PP in (1b) is located (see, for example, Stowell 1981, Coopmans 1989, Hoekstra and Mulder 1990, Bresnan 1991, 1994, Watanabe 1994, Collins 1997, Jang 1997). Recently, this construction has been given

more attention by Collins (1997). He argues that the optionality of locative inversion may be problematic for the global economy condition, which dictates that a derivation with fewer steps be preferred over a derivation with more steps (cf. Kitahara 1995). In other words, if (1b) involves more movement steps than (1a), then (1b) would be blocked by the global economy condition.

In this paper, I explore the locative inversion construction in English within a minimalist framework (cf. Chomsky 1993, 1995). This paper is organized as follows. Section 2 illustrates some relevant properties of locative inversion constructions. In section 3, I review Collins' (1997) analysis of locative inversion. In section 4, I provide an alternative analysis and discuss its theoretical implications on the economy of grammar.

2. Basic Properties

The characteristic word order of locative inversion constructions is given below:1

(2) [PP V NP]

That is, the locative PP precedes the verb which is followed by the logical subject NP. In this section, I discuss some of the distinct properties of locative inversion.

First of all, only unaccusative (= ergative) verbs allow inversion (see, e.g., L. Levin 1985, Coopmans 1989, Hoekstra and Mulder 1990, Watanabe 1994, Bresnan 1994). Without inversion, both examples in (3) are fine.

- (3) a. A marksman shot through the wedding band
 - b. A bullet shot through the wedding band

^{1.} For ease of exposition, I will dub nominal categories NPs rather than DPs.

In (3a) the verb shot is unergative and assigns an agent role to its subject. In (3b) the verb is unaccusative and assigns a theme role to its subject. Once the inversion takes place as below, however, only unaccusative verbs make the sentence grammatical:

- (4) a. *Through the wedding band shot a marksman
 - b. Through the wedding band shot a bullet

Likewise, no transitive verbs are allowed in locative inversion:

- (5) My friend Rose seated my mother among the guests of honor
 - b. *Among the guests of honor seated my mother my friend Rose
 - c. *Among the guests of honor seated my friend Rose my mother

Hence, we may generalize that unaccusativity is involved in locative inversion.

However, Rochemont and Culicover (1990) and B. Levin and Rappaport Hovav (1995) point out that apparently unergative verbs like walk, run, and stroll also allow locative inversion:

- (6) a. Into the room walked John
 - b. Out of the barn ran a horse
 - c. Out of the house strolled my mother's best friend

But as noted by Coopmans (1989) and Hoekstra and Mulder (1990), the presence of a goal phrase turns an unergative motion verb into an unaccusative one. Observe the contrast in (7).

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- (7) a. *In the room ran a shrieking child
 - b. Into the room ran a shrieking child

In a broader sense, therefore, the generalization that only unaccusative verbs allow locative inversion can be upheld.²

Second, not all locative PPs may undergo locative inversion:

- (8) a. Onto the ground had fallen a few leaves
 - b. *Onto the ground had spit a few sailors

As Bresnan (1994: 78) observes, the inverted locative PP in (8b) is an adjunct in the sense that it describes the location of the entire event but it does not necessarily describe the location of the subject. That is, in (8b) the sailors are not necessarily implied to be on the ground. This situation is in sharp contrast with that in (8a) where the inverted locative PP necessarily describes the location of the subject. Hence, in (8a) the leaves must be on the ground. We conclude that only complement locative PPs allow inversion.

Third, inverted locative PPs are able to undergo cyclic raising, just as subject NPs are able to (Postal 1977, Bresnan 1994):

A question is then how to collapse seemingly unaccusative verbs (with an internal argument subject) and passive be (without an external argument) into one. Without getting into the details, I simply point out that these classes of verbs do not have an external argument.

In contrast to passive be, progressive be, perfective have, and modal auxiliaries make locative inversion less acceptable:

- (ii) a. *Out of the house was strolling my mother's best friend
 - b. *Down the stairs has fallen the baby
 - c. *Down the hill may roll the baby carriage

I will not discuss this state of affairs in this paper.

^{2.} In fact, passive be also allows locative inversion:

⁽i) On that table was put a valuable book

- (9)a. Near the fountain seem to have been found two purple bananas and a peach
 - b. On that hill appears to be located a cathedral
 - c. In this village are likely to be found the best examples of this cuisine

The above examples suggest that they may reside in subject NP positions. A question is then why the following is bad (Bresnan 1994):

- (10)a. *Did on the wall hang a Mexican serape?
 - b. *Was among the ruins found a skeleton?

Clearly, (10) shows that inverted locative PPs behave differently from nominal subjects.

The other important observation is that this phenomenon only occurs in root clauses.3

- (11)a. *He denied that down the hill rolled the baby carriage
 - b. *It is possible that out of the house strolled my mother's best friend
 - c. *He regretted that down the stairs fell the baby

Another interesting fact is that the verb in locative inversion does not agree with the fronted PP but with the rightmost NP, which is a

^{3.} Certain embedded clauses constitute exceptions to this observation:

⁽i) a. We all witnessed how down the hill came rolling a huge baby carriage

b. We suddenly saw how into the pond jumped thousands of frogs

As noted by Coopmans (1989), however, they seem to be instances of root environments that can qualify as asserted clauses in the sense of Hooper and Thomson (1973).

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logical subject:

- (12) a. In the swamp was/*were found a child
 - b. In the swamp were/*was found two children

Below, I will try to account for the aforementioned properties of locative inversion.

3. Global vs. Local Economy

Collins (1997) argues that economy conditions are local and that locative inversion is a strong argument for local economy. He defines local economy as in (13).

(13) Given a set of syntactic objects Σ which is part of derivation D, the decision about whether an operation OP may apply to Σ (as part of an optimal derivation) is made only on the basis of information available in Σ .

In particular, Collins argues that local economy is empirically superior to global economy in that it tends to allow a more natural analysis of optionality. Below, I examine his analysis.

Collins assumes (14) for the analysis of locative inversion.

(14) The Case feature of T and the EPP are unrelated in that they can be satisfied independently (cf. Branigan 1993, Watanabe 1994, Jang 1997).

With this point in mind, consider first the following:

(15) John rolled down the hill

It is not obvious if (14) holds in (15). Under the standard analysis, *John* checks the nominative Case of T and satisfies the EPP.

Collins argues that locative inversion shows that the EPP and nominative Case should be separated:4

- (16) a. Down the hill rolled John
 - b. ?Down the hill rolled HE

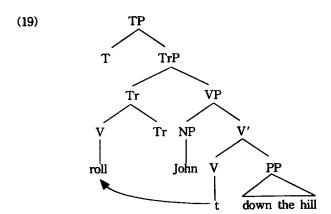
According to him, the EPP feature of T is checked by the fronted PP. The Case feature of T is checked later if John raises at LF. He therefore concludes that the EPP feature of T is strong and the Case feature of T is weak in English. The raising of John at LF accounts for the fact that John has nominative Case (16), and for the fact that the verb agrees with John rather than the fronted PP (17).

- (17) a. Down the hills rolls John
 - b. *Down the hills roll John

According to Collins, the examples in (18) have the tree in (19) at some point of derivation:

- (18) a. John rolled down the hill
 - b. Down the hill rolled John

^{4.} The capitalized words indicate that they are focused.



He assumes that all verbs move obligatorily to adjoin to Tr (= Transitive), hence the V feature of Tr is strong.

He claims that, from the structure in (19), if the NP John moves to Spec of TP, (18a) is derived. If the PP down the hill moves to Spec of TP, (18b) is derived. The derivation of (18a) is rather straightforward, under the following standard assumption:

(20) It is the nominal feature of an NP that enters into a checking relation with the EPP requirement of T (cf. Chomsky 1995).

The problem is how it is possible for the PP in (18b) to satisfy the EPP property. Collins proposes two ways to allow the PP to enter into a checking relation with T. I examine his two proposals individually.

His first proposal is that it is the NP the hill, which is a complement of the P, that is entering into a checking relation with the EPP feature of T in (18b). He claims that this is analogous to the fact that WH-movement in question formation can pied-pipe a PP:

(21) [PP Under [which bed]] did Betty hide the candy?

In (21) the [+WH] feature of the WH-phrase enters into a checking

relation with the strong Q-feature. What is odd is how a checking relation is established, in spite of the fact that it is a PP that is in Spec of CP, and not the WH-phrase itself. Apparently, a feature of the complement of a P may enter into a checking relation external to the PP

Applying this fact to locative inversion, Collins suggests that in (18b) the PP is pied-piped to Spec of TP and that the EPP feature of T enters a checking relation with the nominal feature of the hill, which is the complement of the P.

However, consider the following contrast:

- (22)Under which bed did Betty hide the candy?
 - Which bed did Betty hide the candy under? b.
 - Down the hill rolled John
 - d. *The hill rolled John down

The prepositional pied-piping of a WH-phrase is optional as in (22a, b). But in the case of an NP this pied-piping is not optional as in (22c, d). Hence, (22) shows that there is a fundamental difference between the pied-piping properties of WH-phrases and nominal phrases, consequently Collins' first proposal is not well motivated. Still worse, as Collins points out, this proposal leaves us with the question of why the verb in (23) does not agree with the complement of the P:

(23)*Down the hills roll John cf. Down the hills rolls John

Collins' second proposal is that the set of features that may enter into a checking relation with the EPP feature of T should be extended to encompass not only the nominal feature of an NP but any categorial feature. Under this option, the P feature of the PP may enter into a checking relation with the EPP feature of T.5

^{5.} I will examine this proposal later, along with Jang's (1997) proposal.

I will now compare the inverted and non-inverted derivations along the line of Collins. He claims that the non-inverted derivation has the following steps:

- (24) a. V raises to Tr overtly.
 - b. NP moves to Spec of TP overtly.
 - c. Tr adjoins to T covertly.

This derivation has three movement operations. It is important to note that movement of NP to Spec of TP results in checking of both the Case feature and the EPP feature of T (24b).

Now consider the steps in the inverted derivation:

- (25) a. V raises to Tr overtly.
 - b. PP moves to Spec of TP overtly.
 - c. Tr adjoins to T covertly.
 - d. Formal features of John adjoin to T covertly.

This derivation has four movement operations. It is important to note that the Case feature and the EPP feature of T are checked by virtue of two different movement operations (25b, d).

Based on the comparison between (24) and (25), Collins claims that the derivation of the inverted word order (18b) is longer than the derivation of the non-inverted word order (18a). Suppose that the reference set for determining the optimal derivation is determined by the numeration (Chomsky 1995). This amounts to claiming that if two derivations involve different numerations, they do not compete for the economy condition. Collins assumes that the inverted and non-inverted derivations in (18) are based on the same lexical choices. He concludes from this assumption that local economy is superior to global economy in its predictions, which dictates that a derivation with fewer steps be preferred over a derivation with more steps. In other words, if (18b) involves more movement steps than (18a), then (18b) would be blocked

by the global economy condition. Apparently, Collins' discussion seems valid.

However, if the inverted derivation involved an additional feature or lexical item, it could be claimed that its numeration was simply different from that of the non-inverted derivation, and therefore that global economy would be irrelevant. In the remainder of this paper, I explore this possibility.

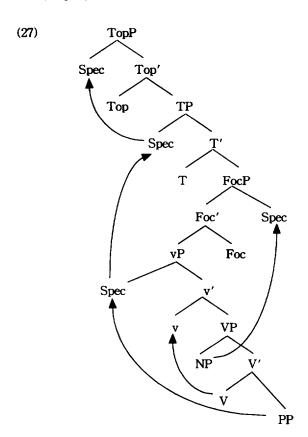
4. Proposals

Previously, I mentioned that locative inversion consists of three constituents; a locative PP, an unaccusative verb, and a logical subject NP. The most important question in locative inversion is, I believe. where these three constituents are located in the surface string. My answers are given below in summary form:

- (26)a. The unaccusative verb overtly raises to a higher thematic verb (v) obligatorily; therefore the V feature of v is strong (cf. Collins 1997, Jang 1997).
 - b. The logical subject NP moves to Spec of Foc(us)P for (presentational) focus feature checking.
 - c. The inverted locative PP is an NP in disguise (cf. Conway 1997). It moves first to Spec of TP and then to Spec of Top(ic)P.

These three claims will be substantiated below:

I present the following structure for locative inversion:



Putting aside the case of V movement, I concentrate on the movement of the logical subject NP and the locative PP, respectively.

Stowell (1981), Rochemont (1986), and Bresnan (1991, 1994) suggest that the NP is extraposed and adjoined to VP. Many scholars working in the discourse-functional framework, including B. Levin and Rappaport Hovav (1995), advocate this structure on the assumption that the VP-adjoined position receives presentational focus interpretation. As is well known, locative inversion constructions and presentational *there* constructions share many properties. For example, both constructions involve unaccusative verbs and the NPs receive focus interpretation.

Consider the following:

- (28)Into the room walked a MAN
- (29)*There walked a MAN into the room
 - There walked into the room a MAN

(28) is a case of locative inversion in which the unergative verb walk is changed into an unaccusative verb with the accompanying locative PP (Hoekstra and Mulder 1990). Note that the logical subject NP is necessarily focused in locative inversion constructions. Focusing effects are also detected in the examples in (29), which are so-called presentational there constructions. It is important to note that only (29b) is acceptable in which a MAN is right-adjoined to some XP. The contrast in (29) indicates that if there is an overt movement for focus interpretation, this movement should be rightward.

In this light, I propose that English has optional rightward focus movement in overt syntax. If focus movement is a substitution operation to Spec of FocP, this suggests that the specifier position is final (cf. Kim 1997). Consider the following:

- (30)a. *Into the room walked he cf. ?Into the room walked HE
 - b. *Down the stairs fell they cf. ?Down the stairs fell THEY

The reason for this ungrammaticality, as suggested in Rochemont (1986), is that, in these contexts, postverbal subjects are presented as new to the discourse, which is incompatible with their pronominal status. Examples (30a) and (30b) can only be acceptable with a deictic reading of the pronoun.

A rather straightforward argument for rightward focus movement in English is found in the following examples:6

^{6.} The subsequent discussion is based on Coopmans (1989).

- (31) a. Two sheiks lay near the oasis [vp without PRO1 talking]
 - b. *Near the oasis [vp lay [TWO SHEIKS₁]] [vp without PRO₁ talking]
 - c. Near the oasis [FocP [VP lay [VP without PRO₁ talking]] TWO SHEIKS₁]

Adopting an observation by Postal (1977), Maruta (1985) shows that locative inversion has an effect on control. The preverbal subject *TWO SHEIKS* can control the understood subject (PRO) of a *without* adjunct, but as a postverbal subject it cannot do so. On the assumption that in (31b) *TWO SHEIKS* resides in-situ, we may consider this to be responsible for the observed contrast. From a VP-internal position an argument cannot control into a *without* clause. (31b) should be compared with (31c), which seems better. This would indicate that moving *TWO SHEIKS* all the way to the right (i.e., Spec of FocP as in 27) may put it in a position from which it can control the understood subject of the *without* clause (cf. Rochemont 1986). I conclude, therefore, that there is rightward focus movement in English and that the Spec position is final.⁷

Let us turn to the position of the inverted locative PP. There has been controversy with regard to the location of the PP. For example, Stowell (1981) and Coopmans (1989) argue that the locative PP moves to Spec of CP for Case reasons. On the other hand, for examples, Hoekstra and Mulder (1990), Watanabe (1994), Collins (1997), and Jang (1997) argue that the locative PP moves to Spec of IP/AgrsP/TP. Interestingly, Bresnan (1994) argues that the locative phrase is a subject at the functional level and a PP at the categorial level within the framework of Lexical Functional Grammar.

In what follows, I argue that the locative phrase has two derivational stages on its way to the landing site; it first moves to

^{7.} Sluicing, Heavy NP Shift, and Right-Node-Raising, which have a sentence-final focus effect, could provide additional evidence that English chooses the Spec-final focus parameter. See Kim (1997).

Spec of TP, and then to Spec of TopP. Evidence is given below.

Conway (1997) observes that with respect to Case properties, certain surface PPs behave like NPs. In (32) the presence of the preposition of provides Case for the complement of the adjective fond. In ECM constructions, these special PPs pattern like ordinary NPs, as shown in (33).

- (32)a. I am fond *(of) John
 - b. I am fond *(of) down the hill
- (33)a. I believed (*yesterday) him to be dangerous
 - b. I believed (*yesterday) down the hill to be dangerous

Moreover, like NPs, these PPs must be adjacent to the verb as in (33). That is, with NP arguments, Case-licensing is blocked when material intervenes between the argument and the licenser (Chomsky 1981). The generalization about adjacency and Case for NPs in disguise is confirmed by (34) and (35).

- (34)John described Mary to me
 - b. *Iohn described to me Mary
- (35)John described down the hill to me
 - b. *John described to me down the hill

When both an NP and a PP follow a verb, the NP must be adjacent to the verb. The different sequence of the two phrases results in ungrammaticality. By contrast, when multiple true PPs follow a verb, transposition is typically good:

- (36)John talked to Mary about me a.
 - John talked about me to Mary b.

In this light, Conway argues that these PPs are NPs in disguise; [NP $[N' \otimes_N [PP]]$. These PPs are complement to Null N and are selected by Null N in the lexicon. Null N is identical to a lexical N, except it has a morphological requirement to satisfy by PF. Following Conway (1997), I propose that the PPs in locative inversion are in fact NPs.

Now that the PPs at issue turn out to be nominal, it is not surprising that they are able to satisfy the EPP property, that is, to move to Spec of TP in order to check off the EPP feature of T. However, I argue below that the PPs do not stay in Spec of TP but move further to Spec of TopP.

In section 2, I noted that locative inversion only occurs in root clauses, suggesting that the relevant operations are root transformation:

- (37) a. *He denied that down the hill rolled the baby carriage
 - b. *It is possible that out of the house strolled my mother's best friend
 - c. *He regretted that down the stairs fell the baby

Emonds (1976) and Stowell (1981), among others, argue that what makes the examples in (37) ungrammatical is the topicalization nature of PP-preposing. That is, the general impossibility of locative inversion in embedded clauses is related to the impossibility of topicalization in nonroot contexts. Along these lines, I propose that the final landing site of the inverted locative PPs is Spec of TopP. Further evidence is given below.

The proposed analysis can provide straightforward accounts for a number of facts with respect to locative inversion. First, it explains why only complement locative PPs, but not adjunct locative PPs, are able to be inverted:

- - b. *[PP With great care] walked John into the room

Since the complement PP in (38a) is in fact an NP, it can satisfy the EPP property of T. However, the adjunct PP in (38b) is simply a PP

and thus cannot check the strong EPP feature of T.

Second, my analysis accounts for the number agreement phenomenon in locative inversion:

- (39)
 - b. $[NP]_{N'} \otimes_{N} [PP]$ In the swamp]]] were/*was found TWO **CHILDREN**

Recall that the inverted locative PP is analyzed as an NP with a null head N. I propose that the NP headed by a null N does not have agreement features with T, checking only the EPP. The agreement features of T can be checked later if the formal features of postverbal subject NPs are adjoins to T at LF, following Chomsky's (1995) theory of feature movement. Hence, it is concluded that the Case feature of T and the EPP are unrelated in that they can be satisfied independently (cf. Branigan 1993, Watanabe 1994, Collins 1997, Jang 1997).

Third, my analysis accounts for why inverted locative PPs are able to undergo cyclic raising (Postal 1977, Bresnan 1994):

- (40)a. Near the fountain seem to have been found two purple bananas and a peach
 - b. On that hill appears to be located a cathedral

The inverted PPs in (40) are actually NPs so that they are able to undergo cyclic raising.

One might suggest that the following is evidence against the NP in disguise analysis:

- (41) a. *Did on the wall hang a Mexican serape?
 - b. *Was among the ruins found a skeleton?

Despite the fact that the inverted locative PPs are NPs, they do not seem to undergo subject-Aux inversion in (41). This property naturally follows from the very nature of locative inversion. In the case of locative inversion, the PPs are topicalized (cf. 37). That is, they already occupied the topic position, Spec of TopP. That is why (41) is bad.⁸

This analysis has a few theoretical consequences. Let us consider first the claims given below:

- (42) Any categorial feature may enter into a checking relation with the EPP feature of T (Collins 1997).
- (43) The EPP requirement is not a feature checking phenomena but a universal requirement that Spec of TP must be overtly filled (Jang 1997).

These two claims are virtually identical on the empirical grounds in that any categories satisfy the EPP requirement. They cite the following examples for the evidence:

- (44) a. Just as surprising was his love for clothes
 - b. No less corrupt was the ward boss

However, there are counterexamples to the claims in (42) and (43):

- (45) a. *Completely drunk jumped a man
 - b. *Crammed with babies rolled a baby carriage

^{8.} That-clauses are also resistant to question formation (Ross 1967, Kuno 1973). On the assumption that only NPs can receive Case, Stowell (1981: 146) argues that the inverted locative PPs and that-clauses must move out of the subject position to which Case is assigned:

⁽i) a. *Did that John showed up please you?

b. *What does that John showed up prove?

The inverted PPs and that-clauses are analyzed as to be in Spec of CP and not in Spec of IP under Stowell's analysis.

In short, my analysis lends support to Chomsky's (1995) assumption that only nominal elements satisfy the EPP requirement of T.

Second, there is good reason to reconsider Collins' (1997) claim that optionality provides potential evidence for local economy. Consider Neg-inversion cases:

- (46) a. At no point did I tell a lie
 - b. I told a lie at no point

Suppose that (46a) and (46b) involve the same lexical choices. Then, the inversion in (46a) would seem to be ruled out by global economy, since inversion requires one more step. The point is that it is not clear that the numeration is the same in each case, since (46a) may involve a Comp with a strong feature, as Collins acknowledges. With this point in mind, let us move on to locative inversion:

- (47) a. [TP John: [vp ti rolled down the hill]]
 - b. [Tour Down the hill, [Tr t', [Focr [Vr t2 rolled t1] JOHN2]]]

Previously, I showed that in the case of locative inversion, the inverted PP undergoes topic movement, which involves an optional feature [+topic], while the postverbal subject NP undergoes focus movement, which involves an optional feature [+focus]. That is, the locative inversion construction contains two additional features, compared to the non-inverted counterpart. Therefore, the comparison of the two examples in (47) is not relevant to global vs. local economy simply because the numerations are not identical.

5. Conclusion

So far, I have discussed locative inversion in English within a minimalist framework. I argued that the locative PP in locative

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