Inversion as a Linearization Effect

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1 Main Verb Inversions

The sentences in (1) are instances of a family of constructions which Green 1985 has labelled "main verb inversion" (MVI):

(1)   a. In the garden stands a fountain. (Spatial Complement Inversion (SCI))
       b. "That's nonsense", snapped Robin. (Quotative Inversion (QI))

For more than two decades, attempts to integrate inversion phenomena into a unified body of syntactic analysis have addressed two interlocking but somewhat separate questions about sentences such as (1): the syntactic position and/or status of the preverbal element, and the syntactic position and/or status of the postverbal NP. Answers to these problems can be subdivided into two large classes. In what we want to call "configurational" approaches, the solution to the first problem, due originally to Bowers 1976, has been that the PP in (1) is a topicalized constituent (or, in Rochemont and Culicover's analysis, part of such a constituent) in a filler/gap relation to a position within or corresponding to the VP, and satisfies part of the syntactic valence of the verb around which the inversion occurs. Recent proposals for the status of the postverbal NP along the configurational line have tended to treat it as an adjunct, either of VP (Stowell 1981, Coopmans 1989) or of S (Safir 1985). The NP is then coindexed, either by movement or free indexing, with an empty category subject, as a base-generated internal argument to the unaccusative subclass of verbs, which do not assign θ-roles to their external arguments and assign theme roles—but not Case—to their NP complements (Coopmans 1989, Hoekstra and Mulder 1990; cf. also Bresnan 1990). The second class of approaches, which we will refer to here as "lexical", has attempted to account for MVI in terms of alternative lexical specifications for inversion verbs. The differences vis-à-vis the noninverted variants have been assumed to be reflected in the argument structure proper (Levine 1989, Green 1992) or the grammatical function assignment (Bresnan 1990).

The structure of this paper is as follows: in sections 2 and 3 we present the arguments given for the configurational and lexical approaches respectively and show that both suffer

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from inconsistencies and empirical inadequacies. In section 4, we will propose a novel look at the phenomenon—motivated in part by new data—that makes use of a radically new way of relating argument structure to surface order. This will lead to a simpler account of the data that at the same time is empirically superior to previous attempts.

2   Configurational Analyses

There are three subhypotheses that can be viewed as the essential componenents of the class of configurational analyses to MVI: extracted PP, adjoined NP, and unaccusative inversion verb.[1]

2.1   The Extracted PP

The evidence standardly invoked to justify this subhypothesis consists of three points.

2.1.1   Subjacency

As first claimed by Langendoen 1973, in SCI the material following the fronted PP constitutes an island for extraction, cf. his examples in (2):

(2)   a. *The elegant fountain that in the garden stands is my favorite.
      b. *What kind of world must over that fence be?
      c. *What does in the Italian garden stand?

If the PP in (2 a-c) occupies some crucial gateway position such as COMP, all further fronting operations out of the inversion clause are blocked, since the appropriate landing site for such fronting is occupied by the topicalized PP and, in effect, a subjacency violation results from long movement of the PP past this COMP node.

However, it has been known since Aissen 1975 that presentational *there* constructions have the same island properties as SCI, as shown in (3):

(3)   a. *That's the room which there walked into a man with long blond hair.
      b. *Who did there into the room walk?
      c. *Which room did there walk into a man with blond hair?

The only way to maintain that both Presentational *there* Insertion (PTI) and SCI derive their islandhood from the same source is to assume that *there*, like the PP in SCI, occupies a position under COMP in PTI and thus creates an island for further extraction. Coopmans does in fact claim that *there* undergoes S-structure insertion into COMP, a proposal he characterizes as "somewhat unorthodox" and one which is immediately falsified by the syntactic behavior of *there* in PTI as in the following:

(4)   a. Never in the history of Ostrogothia have there leapt from behind so many hiding places so few Janissaries.
      b. On which wall did there hang a portrait of the artist? (Bresnan 1990:34)
      c. We believe there to have walked into the room a man with long blond hair. (Rochemont and Culicover 1990[2])
      d. We wouldn't have expected there to leap from behind so many hiding places so few Janissaries.

There thus displays the full range of subject properties, including auxiliary inversion and Raising-to-Object (RTO), and thus can hardly be in an Ā-position. But then the island facts constitute no support for the extraction analysis.[3]

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[1]Due to space limitations we will not assess here the tenability of the unaccusative analysis of inversion, but see Levine 1993 for discussion.

[2]Rochemont and Culicover assign a question mark to this example, which in their hierarchy of acceptability corresponds to a judgment of 'odd or awkward but acceptable'. They note somewhat ruefully that such examples are actually inconsistent with their own analysis, which predicts that instances of this sort should be completely unacceptable.

[3]The alternative is to assume that it is the adjoined position of the postverbal NP which is responsible for the islandhood of PTI, in which case, presumably, the same account holds for SCI as already noted, and

2.1.2 Inversion and Topicalization

The syntactic properties of PP in SCI are claimed to be parallel to those of topicalized constituents in several crucial respects. Thus, the PP in SCI cannot undergo subject-auxiliary inversion (4 a-b) or appear in RTO constructions (4 c-d), which is exactly what we would predict if such constituents were not actually subjects but topicalized elements, since topics neither invert with respect to auxiliaries nor appear in RTO contexts:[4]

(5) a. *Does Robin, anyone like?
    b. *I expect Robin to like.[5]

It has also been claimed that both SCI and topicalization are root constructions—thus "the impossibility of locative inversion in embedded clauses [has] to do with the impossibility of topicalization in non-root contexts" (Coopmans 1989:738). There are two points that should be noted here. The first is that contrary to a number of writers on the subject, Green 1976 and Bolinger 1977 have provided abundant documentation that both topicalizations and MVI constructions can appear in non-root contexts, embedded moreover under verbs which are NOT weak-island-creating predicates. Thus we find the following kinds of data:[6]

(6) a. Robin forgot that beyond those walls lies the green and fertile land of England.
    b. *Beyond those walls lies the green and fertile land of England, Robin forgot.

(7) a. We doubt that there has suddenly burst into Robin's consciousness the solution to the problem of quantum gravity.
    b. *The solution to the problem of quantum gravity has suddenly burst into Robin's consciousness, we doubt.

(8) a. We would never dream of denying that beyond those walls lies the green and fertile land of England.
    b. *Beyond those walls lies the green and fertile land of England, we denied.

Thus the claimed parallel restriction to root clauses on topicalization and inversion proves to be empirically indefensible. The second point is more fundamental. The cases adduced in support of MVI and topicalization parallelism all distinguish subjects from nonsubjects; thus, for example, auxiliary inversion and appearance in RTO are characteristic of subjects. A fronted element would be blocked from such constructions not because it is extracted but because it isn't a subject, so that as long as the PP in SCI is not a subject, it will fail to interact with Aux Inversion and RTO, without any need for it to be in a filler/gap relation to some site within the inversion VP. The issue of the subjecthood of the PP will concern us again, independently of this argument, in section 3 below.

2.1.3 Inversion and Raising to Subject

As noted in Gazdar et al. 1982 and in Green 1985, the PP in SCI constructions inverts past all auxiliary and Subject Raising verbs:

(9)   In the garden appeared to be a unicorn.

The fact that an arbitrary number of raising verbs can intervene between the quasi-subject constituent and the VP in which this constituent is subcategorized for by the head would follow from the displacement of the PP upwards through an arbitrary depth of structure, corresponding to an Unbounded Dependency Construction (UDC) configuration. Thus the

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hence there is no argument from islandhood. In fact we argue directly that adjunction cannot be responsible for the starred data in (2) either.

[4] This view is advanced in Stowell 1981, and is also one of Bresnan 1990's major arguments for the representation of SCI as topicalization at the level of c-structure (i.e. phrase structure, though the topic PP is identified as bearing the SUBJ function at f-structure).

[5] On the reading paraphrasable as 'I expect that Robin, I will like'.

[6] The ungrammaticality of the b-examples shows that the embedding verbs cannot be construed as parentheticals.

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existence of cases like (9) is compatible with either a topicalization analysis or an analysis in which the PP is a subject. We will come back to the latter possibility in section (3).

With regard to the topicalization analysis, note that Raising to Subject (RTS) is also permitted by Quotative Inversion constructions (QI):

(10)   "We're innocent", began to plead the terrified members of the executive council.

We follow here the main work on the syntax of QI, Green 1985, who analyzes the fronted material in such inversions as not belonging to any syntactic category. Thus, consider examples such as: (based on Peters 1984:108):

(11)   a. "I intend", said Melicent rather grandly, because ..., "to take the veil, and would like to be among the Benedictine sisters of Polesworth."
       b. "I intend to take the veil", said Melicent rather grandly, "and would like to be ..."
       c. "I intend to take the veil, and would like", said Melicent rather grandly, "to be ..."

It is difficult to see how in anything remotely like an $\bar{X}$-based syntax the quoted material which appears to be fronted to the left of the inverted verb could be taken to be a projection of some lexical category—especially given the fact that this material need not be grammatical, or even correspond to human speech.[7] Given that the quotation cannot be characterized as a constituent or even a grammatical category, we find it extremely implausible that it could arise in its fronted position via a syntactic relation which is only well-defined between syntactic categories, such as that which relates a filler to the empty category it is linked to. It follows that to the extent that topicalization is defined as a filler/gap relationship, QI constructions cannot be instances of topicalization. Consider now the contrast between RTS versions of QI on the one hand and Equi versions on the other:

(12)   a. "We're innocent", began to plead the terrified members of the executive council.
       b. "But that", began to plead the terrified members of the executive council, "would mean the loss of all of our privileges!"

(13)   a. *"But we're innocent", wanted to say the members of the executive council.
       b. *"We want lawyers", expected to shout the members of the executive council at the crucial moment.

Such data show that in spite of the implausibility of characterizing QI in terms of a filler/gap analysis, raising verbs are transparent to the fronting of the quoted material while Equi verbs are opaque. It follows that the appearance of locative PPs in RTS versions of MVI, as in (9), and their inability to appear in Equi version of MVI, cannot possibly count as an argument in favor of a filler/gap analysis of such inversion, since whatever mechanism is responsible for the differential behavior of QI in such cases would yield exactly the same results in the case of SCI. It follows that examples such as (9) fail to offer any support for an extraction analysis of SCI, notwithstanding previous arguments for a UDC treatment based on such data.

2.2   The Adjoined NP

The adjoined status of the postverbal NP was first proposed by Langendoen 1973 to motivate its non-extractability—an argument which of course evaporates if the blocked-COMP argument is maintained. It has long been assumed, however, that the postverbal adjoined position is reserved for focused elements in English, particularly since, under the *Barriers* analysis of adjunction developed in Johnson 1985, such an analysis would account not only for the bounding status of the focused element itself, but also for the supposed islandhood of the orginal site of this element:

(14)   a. We believe to be angry at Leslie several eminent critics of Tolstoy.

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[7]Thus, inarticulate cries, imitations of animal or industrial noises, indeed anything producible by the human vocal tract can appear within the fronted quotation.

   b. *Tolstoy is the author whom we believe to be angry at Leslie several eminent critics of.

   c. *Leslie is someone whom we believe to be angry at several eminent critics of Tolstoy.

(15) a. There walked into the room a man with long blond hair.

     b. *That's the room which there walked into a man with long blond hair.

     c. *That's the man who there walked into the room.

But the adjunction hypothesis for the postverbal NP, to the extent that it depends on islandhood facts about focused contexts, encounters what seems to us a major problem vis-à-vis data such as (16):

(16) a. That's the room into which there walked a man with long blond hair.

     b. Leslie is someone at whom we believe to be angry several eminent critics of Tolstoy.

If an adjunction of the focused NP here were really the source of the island status of the the relevant domain in (14 b) and (15 b), there would be no plausible basis for the frontability of the PPs in (16), since essentially the same subjacency violation would arise in all three cases.[8] Thus we have a priori reason to believe that the islandhood of focus construction cannot be due to the creation of configurational conditions via the adjunction operation. Hence, neither a blocked 'escape hatch' nor barrierhood due to adjunction seems a tenable analysis for presentational focus constructions such as PTI, and by extension, MVI.

    Moreover, the post-V NP exhibits a strong tendency to immediately follow the inversion verb, a pattern which mirrors very closely the familiar adjacency requirement holding between verbs and immediately following objects:

(17) a. Into the room strode Robin boldly.

     b. *Into the room strode boldly Robin.

(18) a. In front of us walked Dana proudly.

     b. *In front of us walked proudly Dana.

(19) a. Hillary informed Ellis immediately.

     b. *Hillary informed immediately Ellis.

(20) a. I very strongly believe Tony to be honest

     b. *I believe very strongly Tony to be honest. (Dowty in press:47)

This adjacency pattern should without question be a consequence of any analysis of SCI. But it is difficult to see how it can be on the assumption that the NP is adjoined, since focus constructions such as Heavy NP Shift (HNPS) and PTI, which have been taken to be exemplars of adjunction, themselves allow the focus NP to be separated from the inversion verb by intervening material. In fact, if we assume that the NP in SCI is not adjoined, then we predict that we can repair the adjacency effect violations in (17-18) by making the NP sufficiently heavy to allow adjunction, just as we can with the nonadjoined direct objects in (19-20) via HNPS. And this prediction is confirmed:

(21)   Into the room strode angrily one of the largest and most intimidating Joyce scholars anyone had ever seen.

If HNPS and SCI can interact as in (21), it follows that SCI is not itself an instance of the same grammatical effect, since otherwise the contrast between ordinary SCI, as in (17-18)

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[8] Although space conditions preclude a detailed discussion of examples such as (16), it is highly suggestive that not only PPs can pied-pipe in such contexts but APs as well, as in

(i)   Leslie is the author angry at whom I believe to be _ several eminent critics of Tolstoy.

Levine forthcoming argues that the immunity of such PP and AP complements to 'Freezing Principle' effects is due to the restriction of the relevant constraint giving rise to such effects to complements which are syntactically 'attached' to their heads, where the attachment relation is discussed below in section 4. This claim entails that only those complements which can extrapose, and which therefore are not subject to intervention constraints, can be fronted, while those which cannot are also unextractable from heavy-shifted contexts.

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on the one hand, and what one finds in (21) on the other, should not be observed. To the extent that HNPS corresponds to an adjunction structure, then, we should NOT treat the postverbal NP as an instance of adjunction.

We conclude from the preceding observations that there is little positive support for the subhypotheses that the configurational approaches to SCI embrace. In the following section we turn our attention to another class of approaches that tries to locate inversion behavior more directly in the lexicon.

3 Lexical Analyses

Another kind of solution for locative inversion has been proposed in various forms in Levine 1989, Bresnan 1990, and Green 1992. In these analyses, the PP in SCI cases comes to be associated with some kind of subjectlike properties through the lexical specification of the inversion verb. In Levine's and Green's analysis, the PP is subjectlike in being the least oblique element on the inversion verb's SUBCAT list. In Bresnan's analysis, the c-structure representation of inversions takes the PP to be an extracted topic, but this PP is identified as a subject in the f-structure representation, and both its subject and topic statuses are appealed to in stating properties of the construction.

All of these analyses (and some in the configurational camp) rest on the implicit or explicit assumption (e.g. Bresnan's discussion of the "theme subject" hypothesis) that convincing arguments exist against the subjecthood of the postverbal NP. We therefore begin by showing that such arguments are at best inconclusive and at worst false in light of the empirical evidence. In 3.2, we present what we consider the strongest evidence in favor of the post-V NP as subject hypothesis, and show the concomitant difficulty that this evidence poses for the lexical analyses cited.

3.1 Arguments against the Subject Status of the post-V NP

The hypothesis that the postverbal NP is the subject in English is an old one; it was proposed in Langendoen 1973 and Iwakura 1978, and most recently by Rochemont and Culicover 1990. However, despite this tradition, the subjecthood of this NP has been rejected by several investigators, most explicitly by Bresnan 1990, who offers three arguments against this analysis. In this section we summarize these arguments against what she labels the "theme subject" hypothesis and adduce evidence that they are, in effect, irrelevant to the correctness of this hypothesis. In 3.1.4, we discuss a fourth argument raised in Coopmans 1989.

3.1.1 Tag Questions

Bresnan's first argument has as its major premise the claim that in tag questions, "the pronoun must match the features of the (surface syntactic) subject of the [associated] assertion" (p. 26). She cites Bowers' (1976) example (22):

(22) In the garden is a beautiful statue, isn't there?

and comments that "the fact that the inverted theme argument is not the antecedent for the tag pronoun here is evidence that it cannot be the syntactic subject" (p. 27). Bresnan's argument fails because her major premise is factually incorrect: the tag subject does not have to share the syntactic features of the associated assertion. Linguists from Jespersen on have observed that *there* subjects can appear in tags associated with clauses whose subjects are normal NPs. Consider the following examples from McCawley 1988:485,588:[9]

(23) a. Nothing was broken, was there?
      b. Six books are on the shelf, aren't there?
      c. Hardly any progress was made, was there?

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[9] Cf. also Jespersen 1965:154–155, who provides an example from a literary text. We are greatly indebted to Jim McCawley for making us aware of this observation of Jespersen's and nailing down its source for us.

Numerous speakers whom we have consulted confirm the existence of normal NP subjects associated with *there* tags. It seems clear enough that Bresnan's fundamental assumption—that the subject of the tag must be identical to the subject of the main clause—is incorrect, and therefore, that the fact that tags containing *there* may appear with inverted main clauses is irrelevant to the issue of the proposed subjecthood of the postverbal NPs in those inverted main clauses.

3.1.2 Subject Extraction

Bresnan's next argument is based on the contrast between examples like (24):

(24) a. It's in these villages that we all believe can be found the best examples of this cuisine.
b. *It's in these villages that we all believe that can be found the best examples of this cuisine.

She comments that "the preposed locatives in locative inversions show the constraints on subject extraction adjacent to complementizers ... nonsubject constituents are unaffected by this condition" (p. 27). The implication is that this state of affairs is by itself diagnostic for subjecthood of the locative PP.

Based just on the data presented, however, an alternative explanation is plausible as well: the ill-formedness of (24 b) is due to the string-adjacency of the complementizer and the finite verb. This hypothesis runs counter to a vast literature, spanning both transformational and phrase-structure theoretic paradigms, which takes this '*that*-trace effect' or 'fixed subject constraint' as originating in profound structural conditions on well-formedness. There is however empirical reason to believe that adjacency, not hierarchy, is largely responsible for the difficulty. Consider the data in (25):

(25) a. Robin is the only person we know who we believe that *(at bottom) really hates icecream.
b. This is the tree that *(just yesterday) had resisted my shovel. (Culicover 1992a)

The reason why "nonsubject constituents are unaffected by this restriction" is therefore straightforward: the latter normally do not correspond to positions in the sentential string preceding the finite verb.[10] But the point of our analysis is that in inversion constructions a nonsubject does precede the finite verb, and hence its absence in the crucial context induces the ill-formedness due to the constraint on complementizer-verb adjacency.[11]

3.1.3 Extraction from Coordinate Constituents

Bresnan offers an argument based on "the parallelism constraint on extractions from co-ordinate constituents" (p. 28), without giving a precise characterization of this constraint, beyond the observation that "subject gaps at the top level of one coordinate constituent cannot occur with any other kind of gap in the other coordinate constituent." She offers familiar examples such as

(26) a. *She's someone that cooking amuses _ and _ hates jogging.
b. She's someone that cooking amuses _ and we expect _ will hate jogging.

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[10] If the foregoing is correct, we predict that in general it should be possible to place a complementizer before a finite verb if there is material intervening. Culicover provides several examples that such is indeed the case, e.g. Culicover 1992b:10:

(i) [Robin is] ?the person who Lee wondered whether *(for all intents and purposes) was already the Democratic candidate.

[11] There is in fact considerable evidence available in support of subject extraction in other languages—e.g., Icelandic and Dutch (see Maling and Zaenen 1978) and Kikuyu (Zaenen 1983). Hence, even apart from the phenomenon discovered by Culicover exhibited in (25), there can be no basis for stating the axioms of syntactic theory in such a fashion as to derive a prohibition on such extraction as a theorem, as in, e.g., Gazdar et al. 1982, Gazdar et al. 1985.

The same pattern is exhibited, she claims, in coordination of conjuncts containing nonsubject gaps with SCI conjuncts containing preverb gaps:

(27) a. ?/*That's the old graveyard, in which workers are digging _ and _ is likely to be buried a treasure.
      b. That's the old graveyard, in which workers are digging _ and they say _ is likely to be buried a treasure.

Assuming for the moment the correctness of the judgments noted, consider what (26) and (27) have in common. In both cases, it proves relatively bad to coordinate S with VP (if we assume no extraction has taken place in the second conjunct) or conjuncts with gaps on different sides of the verb (if we make the contrary assumption), and relatively good to coordinate "harmonic" conjuncts, i.e. conjuncts with "same-side" gaps. Thus, if a coordination can be construed as harmonic, it may be well-formed, while disharmonic coordination is ill-formed. In the case of (27 b), such construal is possible: the gap in both cases falls to the immediate right of the matrix verb, but in (27 a) it is not possible, hence the form is bad. This characterization is not meant to be a sufficient condition, but it accounts for the facts noted as well as any other we are aware of. Then, once again, nothing in Bresnan's argument establishes the need to recognize the preverb constituent in (27) as a subject per se.[12]

In sum, it turns out that Bresnan's three arguments have no bearing on the (non)subject status of the inversion focus constituent. Contra her claim (p. 29) that "the syntactic evidence internal to English— ... parallel extractions from coordinate constituents, subject extractions and tag questions—is sufficient to reject the hypothesis", it appears in all cases that one of her critical assumptions is at best unwarranted by the evidence and at worst factually disconfirmed. Hence there appears to be no substantial basis for suspicion of the postverbal subject hypothesis advocated above.

3.1.4   Control of *without* Adjuncts

The final argument against the subjecthood of the postverbal NP is given in Coopmans 1989, borrowed from Postal 1977. The argument rests on two claims: first, that only subjects can control *without*+gerundive VP adjuncts, so that in (28), the adjunct can only be taken to hold of the speaker, not Robin:

(28) We photographed Robin without knowing what we were doing.

and second, that the postverbal NP in inversion sentences cannot control the *without* adjunct. Coopmans gives as an example (29):

(29) a. Two sheiks lay near the oasis without talking.
      b. *Near the oasis lay two sheiks without talking.

On these grounds, it follows that the postverbal NP in (29) patterns like a direct object, not a subject, and therefore the null hypothesis is that this NP is not a subject. But (29 b) is not really particularly bad. Compare the following data:[13]

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[12]Here too, it is worth noting that the general structural condition responsible for the badness of (27 a) in, e.g., Gazdar et al. 1985, viz., that all conjuncts are heads and that filler/gap linkages must extend over (all possible) head paths, fails empirically. Much recent work (e.g., Goldsmith 1985, Lakoff 1986) has shown that the Coordinate Structure Constraint, which is a consequence of these assumptions, does not hold as a syntactic restriction, at least in the case of English. This failure is consonant with other mispredictions of the assumption that UDCs are restricted to head paths, as discussed in detail in Hukari and Levine 1992. A second central point made in the latter source is that there is considerable crosslinguistic evidence for noncomplement extraction. These two points effectively eliminate the need for a separate treatment of subject extraction from complement extraction, so that there now is no systemic reason for the failure of disharmonic coordination. Put another way, we now have no theory-internal reason to believe that it is the structural distinction between subjects and nonsubjects that is responsible for the failure of disharmonic coordination, and Bresnan's argument goes through only on the strength of such a belief.

[13]We are indebted to Georgia Green for calling this flaw in Coopmans' argument to our attention.

(30) a. *I rushed to save Leslie and Pat without once thinking of themselves.

 b. Under the tree sat Pat and Leslie for two hours without once talking about themselves.

There is a vast difference between these two examples, the first of which is unquestionably bad, and the second good enough to be unquestionably in the set of strings that the grammar must license. Other examples seem to us to be comparably good, and we see no reason to assign a star to any of them, though some examples are more awkward than others. We conclude then that the *without*-adjunct case is yet another non-argument against the theme subject hypothesis.

3.2 The Case for Postverbal Subjects in Inversion Clauses

Having shown that lack of any substantial arguments against the postverbal subject hypothesis, we now adduce three pieces of evidence that strongly support this proposal. Naturally such evidence concomitantly raises significant difficulties for analyses positing a PP-subject.

3.2.1 Case in Inversion Clauses

We begin by claiming that when the post-V NP is a pronoun it must have nominative case. Consider the following data:[14]

(31) a. Under the garden wall sat I (, waiting for my friends to appear).

 b. "Where would we go?", he mocked me. "Well", said I, "if we watched every word we spoke I'd never get anything said." (Niven 1975,"The Coldest Place", p. 2)

In isolation, such examples may sound somewhat unnatural; it is a commonplace that in English, pronouns are extremely poor targets for presentational focus, and to the extent that these examples are strange, the anomaly can be ascribed entirely to this fact. Given that a pronoun is to be focused, however, the overwhelming preference is for nominative case to appear, as in the examples from literary text provided. Compare expressions like (31) with inversion sentences exhibiting accusative focused pronouns:

(32) a. *Under the garden wall sat me (, waiting for my friends to appear).

 b. *"Good", said me.

The problem with these examples is nothing at all like the strangeness of presentational focus on pronouns; it is that they are simply not English, in exactly the same way that

(33) *Me sat under the garden wall.

is not English. Since in English, nominative case in noncoordinated contexts in finite clauses is displayed exclusively by (pronominal) subjects, the burden of proof in such cases falls on any analyses in which these focused NPs are not subjects.

3.2.2 Verb Agreement

The evidence here is is the familiar fact that main verb inversions reflect number agreement with the post-V NP, not the preposed material:

(34) a. In that garden stands/*stand a statue of Napoleon.

 b. In that garden stand/*stands two statues of Napoleon.

(35) a. "That's nonsense", says/*say Terry.

 b. "That's nonsense", say/says the twins.

This same pattern holds for *there* constructions, of course, where the postverbal NP is not the subject. But as Green notes, "agreement with the ex-subject seems to occur only when the derived subject is a dummy like *there*. Since the preposed phrases that occur preverbally after inversion in these constructions are clearly not dummies, but make reference to the specifics of the discourse they occur in, rejection of [the pattern in (34-35)] as evidence that inversion neither effects nor reflects a change in grammatical relations is

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[14]This observation was also made in Levine 1989.

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not obviously a necessity" (p. 177). Given the extensive arguments Green herself has most convincingly presented against derivation of main verb inversion from *there* constructions, contra Bowers 1976, Postal 1977, Gazdar et al. 1982, etc., the simplest conclusion on the evidence available is that the postverbal NP in the relevant subclass of main verb inversions is indeed a subject and that it is the fact of this subjecthood which induces the observed pattern of person/number agreement.

3.2.3 'SGF' Coordination in English

One of the more unexpected facts about certain of the main verb inversions, and one that we do not believe has been previously discussed in the literature on English inversion, is exhibited in the examples in (36):

(36) a. Then in will come John and say, "..." (Bolinger 1977:99)
      b. Down came the rain and washed the spider out,
         Out came the sun and dried up all the rain.... ('The Itsy-Bitsy Spider')
      c. Into the woods went the hunter and shot a hare.
      d. "Well, I know when I'm beat," said the challenger, and made as if to turn away.
      e. Pretty soon out came the Colonel walking up to me, seized my gun and ran up within ten feet of the mule, standing broadside and fired. (Brown 1991:240)

Such coordinations are familiar from German, where they are known, following Wunderlich 1988, as instances of "S(ubject) G(ap in) F(inite clauses)" coordination.[15] Although sentences like these are admittedly not accepted to an equal degree by all speakers of English that we consulted, they nevertheless are found grammatical by a large enough number to warrant recognition as a type of construction that the grammar of English should not categorically rule out.[16] What is immediately clear about such examples is that they cannot be construed as normal VP coordination: there is no doubt that the second VP in (36 c) does not predicate over the initial PP *into the woods*. However, this would be exactly what any analysis treating the first element as a subject would be driven towards, including, for instance, an analysis based on Bresnan 1990 where S and VP are coordinated in c-structure. In such an analysis, the problem of subject construal would arise in connection with deriving the right f-structure for the sentence.[17] Rather, what is going on is that the second VP is understood as combining with the NP *the hunter*, which therefore has to be understood as the unquestionable subject for the second VP. But if the NP counts as a subject in the interpretation of the second conjunct, on the most straightforward account of

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[15]See Wunderlich 1988, Höhle 1983, Höhle 1990, and Kathol 1992 for further discussion.

[16]There also seem to be a number of semantic restrictions that make it impossible to have, for instance, two stative predicates in an SGF construction:

(i)   *In the garden stands a fountain and is admired by many tourists.

[17]Bresnan 1990's analysis is problematic in a number of other respects. For example, it requires a separate account of why agreement in locative inversion is with the postverbal NP, rather than with the PP. Central to this account is the assumption that "locative PPs are not morphologically categorized for agreement features" (p. 39). To sustain her point, it proves necessary for Bresnan to assume that certain apparent locative PPs are really NPs, with virtually no argumentation in defense of this position. In fact, Jaworska 1986 gives an argument against just this assimilation of subject PP to NP. She cites the contrast between the examples in (i):

(i)   a. Which counter did he pick the gun from?
         b. *Behind which counter did he pick the gun from?
The point is that since (i a) shows that a structure
(ii)   NP[wh] did he pick the gun [PP from [NP e]]
must be sanctioned, there is no apparent reason why the wh-NP *behind which counter* should not also be able to fill the NP gap in (i b). Other arguments similar in form to hers can readily be constructed, using evidence from *tough* movement and parasitic gap constructions which strictly distinguish NPs from PPs. By all such tests, there are no NPs generable which have the form of locative PPs. But then a crucial component of Bresnan's account of agreement with the postverbal NP in SCI collapses.
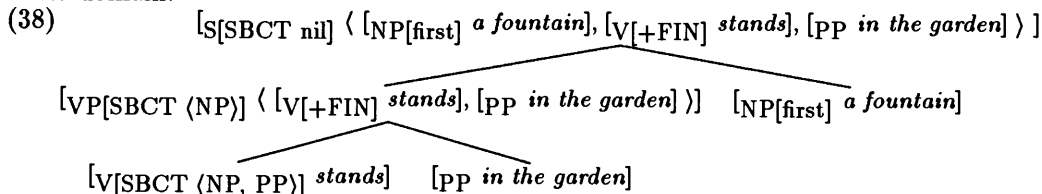
the data, this NP should also count as such in the context of the initial inversion clause. In section 4 we will present an analysis of data such as in (36) that will analyze them in terms of a conjunction of two VPs that share a noninitial subject NP.

4 Linearization

Suppose the string representation of a sentence is not related to that sentence's syntactic structure as the terminal yield of a tree encoding that structure, as has been assumed in most syntactic theories including GB, GPSG and LFG. Instead suppose that the sentential string is derived via a recursive process that operates directly on the string representations of the subconstituents of the sentence. This is what we want to call a "linearization grammar" as opposed to the familiar hierarchical approach to syntax. A proposal along these lines has recently been advanced by Mike Reape (Reape in press), who introduces the notion of "word order domain" into HPSG. Another such proposal is that of David Dowty (Dowty in press), who adopts Curry's distinction of "tectogrammatics", i.e., functor-argument structure, and "phenogrammatics", i.e. string representation.[18] The differences between the two proposals are immaterial for our purposes here, and, in fact, we'll adopt a hybrid version based on HPSG that encodes valence directly in lexical entries. For the sake of concreteness let us take a look at how an uninverted sentence such as (37) would be analyzed in such a system.

(37) A fountain stands in the garden.

Beginning with the lexical verb, the derivation involves a number of word order domains that are formed at each node from the domains of the (tectogrammatical) daughters of that node. In particular, we assume that the domain of the VP is merged into that of its mother so that subject, finite verb, and PP argument all become elements of the clausal order domain:

(38)

$$[_{S[SBCT\ nil]} \langle\ [_{NP[first]}\ \textit{a fountain}],\ [_{V[+FIN]}\ \textit{stands}],\ [_{PP}\ \textit{in the garden}]\ \rangle\ ]$$

$$[_{VP[SBCT\ \langle NP\rangle]} \langle\ [_{V[+FIN]}\ \textit{stands}],\ [_{PP}\ \textit{in the garden}]\ \rangle]\qquad [_{NP[first]}\ \textit{a fountain}]$$

$$[_{V[SBCT\ \langle NP,\ PP\rangle]}\ \textit{stands}]\qquad [_{PP}\ \textit{in the garden}]$$

A "domain tree" like this bears an obvious resemblance to derivation trees familiar from Montague Grammar. Order within word order domains is treated either via LP statements or by means of an "attachment" operation that places one element inseparably adjacent to some other one. There are no reordering operations such as move-α. Once an element is combined with an existing order domain, the constituents can be placed anywhere in the new domain, subject to the requirement that the resulting domain comply with the LP statements, does not separate units combined by attachment, and that the order in the originally smaller domains be preserved. In a sense, the creation of a new order domain goes along with "bracket erasure", unless the domain is what Dowty calls a "bounding domain", i.e. one which is "impenetrable" for interleaving of outside constituents. While NPs and PPs give rise to bounding domains, we assume that VPs crucially don't. This is why the clausal domain in (38) contains three rather than two elements. The placement of these elements will be determined via a number of LP statements. The one most crucial for our purposes is given in (39) which places an element initially in the domain of a finite verb.

(39) X [+FIRST] $\prec$ V [+FIN]

By default, the element specified as [+FIRST] will be the subject NP in English. Suppose now that main verb inversion in English does not arise from syntactic dislocation, as in the configurational approach, or a rule changing the argument structure, as in the lexical

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[18]Dowty's notion of "Minimalist Syntax" should not be confounded with the one underlying Chomsky's recent "Minimalist Program" (Chomsky 1992)!

approach, but rather from a special type of linearization. In particular, let's assume that inversion verbs instantiate a general constraint on SUBCAT lists in which the FIRST feature is borne by one of the verb's nonsubject arguments, as in (40):[19]

(40)   SUBCAT ⟨NP[nom], X[first], ... ⟩ (X ≠ NP)

A linearization of the sentence in (1 a) could then proceed as outlined in (41):

(41)   [$_S$ ⟨ [$_{PP[first]}$ *in the garden*], [$_{V[+FIN]}$ *stands*]+[$_{NP}$ *a fountain*] ⟩]

[$_{VP}$ ⟨ [$_{PP[first]}$ *in the garden*], [$_{V[+FIN]}$ *stands*] ⟩]   [$_{NP}$ *a fountain*]

[$_{V[SBCT ⟨NP, PP[first]⟩]}$ *stands*]   [$_{PP[first]}$ *in the garden*]

If we compare (41) and (38), we find that the functor-argument structure is precisely the same. Yet, the resulting linearizations are different. In Dowty's terms, the two sentences have a nearly equivalent tectogrammatical structure, while they disagree in their phenogrammatics. Since we conceive of the subject as a tectogrammatical notion, the fact that in both sentences, *a fountain* is is the subject follows automatically. In HPSG, this is reflected by the fact that subjecthood is not determined via tree-configurational notions, but rather in terms of relations that hold of a verb's valence features. The fact that the subject is ordered postverbally in (1) is irrelevant for the assignment of subject properties by the verbal head, in particular nominative case marking and agreement with the verb.[20]

Notice also that in (41), the placement of the subject NP to the right of the verb is by means of attachment which rules out intervention by adverbial or parenthetical material. Dowty motivates his attachment operation for a number of different constructions, such as determiner-noun sequences. In particular, the ungrammaticality we saw earlier in the b examples of (19) and (20) is predicted since a direct object attaches to the verb. We suggest that an intervention constraint holds for V+NP sequences in general, regardless of the NP's grammatical function.[21] This allows us to subsume the placement of direct objects and subjects in inverted sentences under a constraint along the lines given in in (42):

(42)   *The least oblique postverbal NP argument of the highest thematic verb in a clause must be attached to the right of that verb.* ('Thematic verb' = verb taking a thematic subject)

What this entails is that the domain associated with VPs does not necessarily have to end up as a continuous subdomain in the domain of the whole sentence. Since VPs don't give rise to bounding domains, the notion of a VP constituent as an uninterrupted string only exists in the tectogrammatical derivation. VP constituenthood does not correspond to a property

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[19]It should be clear that we intend this to be only *one* of the ways in which a preverbal element can be licensed because examples can be found in which the constituent specified as [+FIRST] is clearly not an argument.

[20]Note that we regard subject status only as a NECESSARY, but not sufficient condition for nominative case assignment in noncoordinated contexts. Therefore, the following example from Bresnan 1990, in which the deictic pronominal subject bears accusative case, is not a counterexample to our proposal:

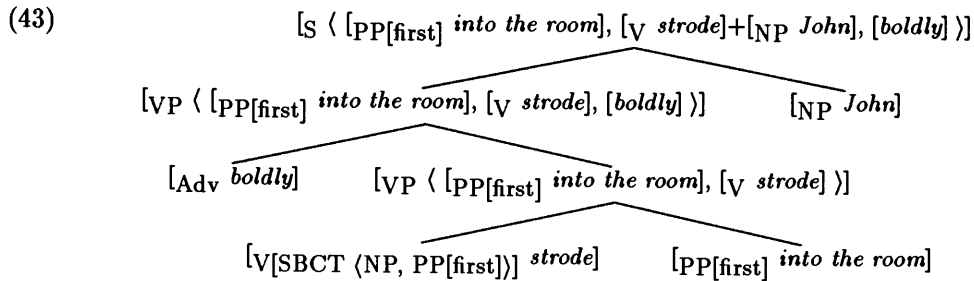(i)   Among the guests of honor was sitting HER [pointing].

Rather, this is to be expected given that the pronoun here has to accomodate strong presentational focus (which arguably cannot be borne by the nominative form). Note that the accusative is not possible in QI contexts (cf. (32) and (35) above), which, under normal circumstances, are not associated with presentational focus.

[21]This is also suggested by Dowty, who in addition adduces the following examples involving auxiliary inversion (Dowty in press:49):

(i)   a. *Was apparently he posing on the couch?

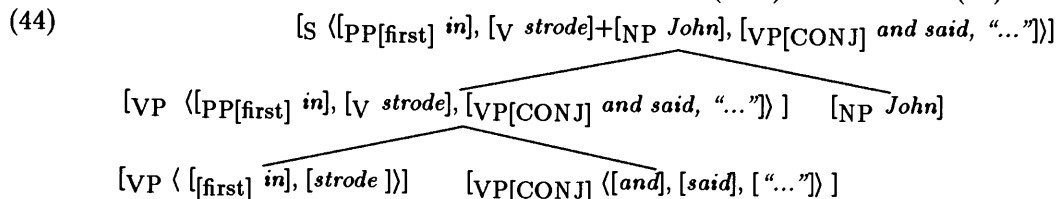   b. *Were, I suspect, Mrs. Gardmore prime minister, she would dissolve parliament.

While it is clearly desirable to extend the intervention constraint of (42) to auxiliary inversion cases as well, we will have nothing to say about Aux Inversion here.

of the phenogrammatic representation of an inverted sentence. An example is given in (43) in which a VP adverb is placed after the postverbal NP:

(43)   [S ⟨ [PP[first] *into the room*], [V *strode*]+[NP *John*], [*boldly*] ⟩]

[VP ⟨ [PP[first] *into the room*], [V *strode*], [*boldly*] ⟩]   [NP *John*]

[Adv *boldly*]   [VP ⟨ [PP[first] *into the room*], [V *strode*] ⟩]

[V[SBCT ⟨NP, PP[first]⟩] *strode*]   [PP[first] *into the room*]

As noted earlier in conjunction with (17-21), the adjacency requirement of (42) can be overridden when the NP is "heavy" and/or bears special presentational focus. In our system, this corresponds to the situation in which the subject NP is not joined into the VP domain via attachment but rather in terms of regular domain union.

Furthermore, note that the proposed treatment of postverbal NPs in inversion sentences also lends itself to an analysis of the sentences noted in (36). Following the proposal advanced in Kathol 1992 for the treatment of similar sentences in German, we want to argue that the apparent asymmetry only affects the sentence's phenogrammatical structure, while at the tectogrammatical level, the sentence indeed involves the conjunction of two VPs. In particular, this means that when the two VPs are conjoined, the resulting domain is projected directly from that of the INITIAL domain, except that the coordinate domain now contains the noninitial VP as one single, additional element.[22] This in turn has the effect that the placement of the subject is determined only with reference to elements stemming from the first VP, and, if inversion is licensed, the subject can occur postverbally regardless of the presence of the second VP conjunct. A derivation of (36 a) is outlined in (44):

(44)   [S ⟨[PP[first] *in*], [V *strode*]+[NP *John*], [VP[CONJ] *and said, "..."*]⟩]

[VP ⟨[PP[first] *in*], [V *strode*], [VP[CONJ] *and said, "..."*]⟩]   [NP *John*]

[VP ⟨ [[first] *in*], [*strode*]⟩]   [VP[CONJ] ⟨[*and*], [*said*], ["..."]⟩]

That left peripheral conjuncts in general appear to be able to participate in constructions which do not apply across-the-board to the other conjuncts is evidenced by examples in which a topicalized element is not shared across conjuncts as in (45) (from Heycock and Kroch 1992):

(45)   This advice the committee decided to follow and proceeded to set up a new subcommittee.

Hence it should not come as a surprise that inversion can also give rise to such surface asymmetries.[23]
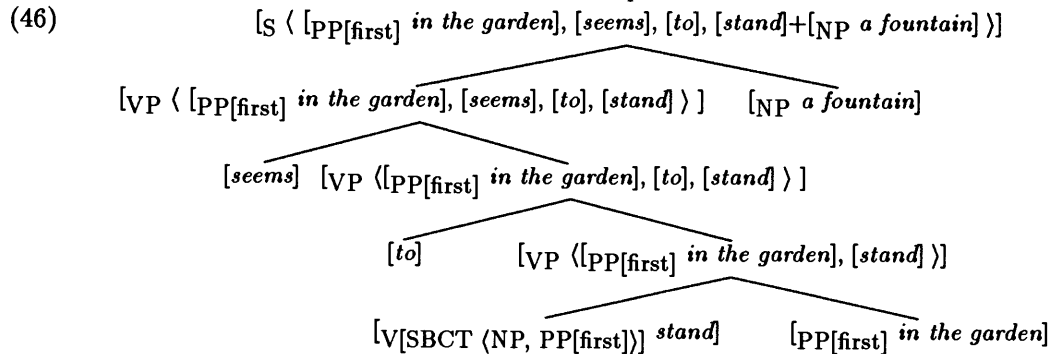
Under the approach advanced here, it should further be noted that we analyze inversion with Raising to Subject as a recursive merging of the domain containing the main verb's complements with that of each raising verb.[24] In each larger domain, the order of the arguments in the smaller domain remains unaffected, hence the PP marked as [+FIRST]

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[22]This conception of asymmetric conjunctive domain formation differs somewhat in its technical details from the one proposed in Kathol 1992 while the central idea is the same.

[23]Of course, the existence of such constructions provides yet more evidence that Ross' Coordinate Structure Constraint and Williams' original conception of Across-the-Board applications of syntactic operations cannot be maintained.

[24]Here, we adopt Pollard and Sag forthcoming's treatment of auxiliaries (including *to*) as raising verbs.

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will end up as initial in the clausal domain as well. As shown in (46), raising verbs are so to speak "transparent" to whatever linearization is specified on the main verb:[25]

(46)   [S ⟨ [PP[first] *in the garden*], [*seems*], [*to*], [*stand*]+[NP *a fountain*] ⟩]

[VP ⟨ [PP[first] *in the garden*], [*seems*], [*to*], [*stand*] ⟩]   [NP *a fountain*]

[*seems*] [VP ⟨[PP[first] *in the garden*], [*to*], [*stand*] ⟩]

[*to*]   [VP ⟨[PP[first] *in the garden*], [*stand*] ⟩]

[V[SBCT ⟨NP, PP[first]⟩] *stand*]   [PP[first] *in the garden*]

What has been called "subject" raising can therefore be regarded as merely a special case of a more general recursive domain formation mechanism involving raising verbs.

5   Conclusion

We have presented strong evidence that the NP constituents that immediately follow main verbs in English inversion constructions are indeed true subjects. This situation bears a striking similarity to the case of verb-second clauses in other Germanic languages. Indeed, one could go as far as regarding English as a degenerate verb-second language in which subjects are by far the "preferred" constituents in clause-initial position. Of course, there are a number of factors, including topicalization, that interfere with the enforcement of the verb-second pattern in English, but we believe that any analysis of inversion should make this fundamental similarity between English and Germanic explicit, rather than treat inversion essentially as a nuisance that requires unwelcome extensions of the mechanisms developed for the analysis of uninverted clauses.

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[25]For simplicity's sake, we have left out constraints that account for the placement of the raising verbs when added to a domain.

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