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A SENTENTIAL SUBJECT ASYMMETRY IN ENGLISH AND ITS IMPLICATIONS FOR COMPLEMENT SELECTION

Peter Alrenga

Abstract. In this article, I defend a particular solution to a long-standing problem concerning the syntactic behavior of the verb *seem*—namely, its failure to take a sentential subject (**That the Giants lost the World Series seems*). I show that this restriction follows straightforwardly if, following Koster (1978), sentential subjects are analyzed as topic phrases linked to a phonetically null DP in Spec,IP. I further suggest that this DP is an argument (not an expletive) and that it eventually undergoes A′-movement, making sentential subject constructions a species of the null operator constructions discussed in Chomsky 1977. The analysis is supported by (i) active/passive asymmetries involving sentential subjects, (ii) agreement phenomena, (iii) restrictions on A′-movement across sentential subjects, (iv) parallels between sentential subject and CP-topicalization constructions, and (v) the distribution of embedded sentential subjects. The analysis also correctly predicts certain facts concerning the co-occurrence of *seem* and sentential subjects in raising constructions. An interesting consequence of the analysis is that some form of idiosyncratic selection for DP complementation must be available within the lexicon, contrary to what has been suggested elsewhere.

1. Introduction

The examples in (1) illustrate a long-standing problem concerning the syntactic behavior of the verb *seem*, as well as the similar verbs *happen*, *appear*, and *turn out*.

(1) a. It {seems/happens/appears/turns out} that the Giants lost the World Series.
b. *That the Giants lost the World Series {seems/happens/appears/turns out}.

Although *seem* (and *happen*, *appear*, and *turn out*) may occur with a CP complement and the expletive DP *it* in subject position, *seem* cannot occur with a sentential subject.[1] The ungrammaticality of (1b) is rather puzzling,

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[1] I use the terms "sentential subject" and "sentential subject construction" in a pretheoretical way to refer to preverbal CPs like those in (1b) and (2b), and examples like (1b) and (2b), respectively. As will become obvious, I do not intend to suggest with these terms that these CPs occupy a structural subject position at any point during the derivation of, for example, (2b).

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since the alternation in (1) is otherwise quite productive. Consider, for instance, the behavior of verbs like *suck*.

(2) a. It really {sucks/blows/bites/stinks} that the Giants lost the World Series.
b. That the Giants lost the World Series really {sucks/blows/bites/stinks}.

The contrast between (1) and (2) is problematic for the assumption that pairs like (2a) and (2b) are transformationally related to a common base-generated structure; one must then treat the ungrammaticality of (1b) as an exceptional property of *seem*.

This assumption is rejected by Koster (1978), who argues that the sentential subject in (2b) is not a true structural subject. Rather, this CP is claimed to be base generated in a left-peripheral topic position and linked to a phonetically null DP that occurs in Spec,IP. A major goal of this paper is to provide further evidence for Koster's analysis of sentential subjects. In particular, I argue that a null DP is indeed implicated in the analysis of (2b), a claim that receives little support in Koster's original paper. I then show that this analysis provides a straightforward account of the inability of verbs like *seem* to occur with a sentential subject. The analysis also has an interesting consequence for our understanding of complement selection. In particular, it apparently requires that some form of idiosyncratic selection for DP complementation be available within the lexicon, contrary to what has been suggested elsewhere.

This paper is structured as follows: in section 2, I summarize the evidence for taking sentential subjects as topic phrases and present Koster's proposal. In section 3, I provide evidence for the claim that a null DP occurring in Spec,IP is implicated in sentential subject constructions. I further argue that this null DP is a thematic argument rather than an expletive, and (again following Koster) that it is marked [+wh] and eventually moves to an A′-position. The difference between *seem* and *suck* is addressed in section 4. In section 5, I consider the relevance of sentential subject constructions to the theory of complement selection. I conclude that my account of the difference between *seem* and *suck* is incompatible with the notion that DP complementation is determined entirely by semantic selection and Case theory (Pesetsky 1982, 1993), so that some form of idiosyncratic selection for DP complements must persist under this account. Section 6 contains a brief conclusion.

2. Sentential Subjects as Topic Phrases: Koster 1978

Consider the following examples:

(3) a. It really sucks that the Giants lost the World Series.
b. It surprised me that the Giants lost the World Series.
c. It was expected (by most columnists) that the Giants would lose.
d. It would be terrible for the Giants to lose the World Series.

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(4) a. That the Giants lost the World Series really sucks.
b. That the Giants lost the World Series surprised me.
c. That the Giants would lose was expected (by most columnists).
d. For the Giants to lose the World Series would be terrible.

Each example in (3) contains a CP complement and the expletive DP *it* in subject position. In the corresponding examples in (4), the CP occurs as a sentential subject, and expletive *it* is absent. Early generative analyses such as Rosenbaum 1967 and Emonds 1972 took the CPs in (4) to indeed be structural subjects occurring in the position standardly occupied by DP subjects (Spec,IP in this paper). A problem for this assumption is that sentential subjects in fact obey a much more restricted distribution than that demonstrated by DP subjects, an observation first made by Ross (1967/1984:sect. 3.1.1.3.1) and further developed by many others (see, e.g., Emonds 1972, 1976:sect. 4.2.4; Hooper & Thompson 1973; and Kuno 1973). At the root level, sentential subjects, unlike DP subjects, cannot appear after sentence-initial topics or preposed auxiliaries.[2]

(5) a. *John, that the Giants lost the World Series shouldn't have bothered.
b. *Would for the Giants to lose the World Series really suck?
c. *Never before has that you are unqualified for this job been so obvious.

(6) a. John, the story shouldn't have bothered.
b. Did that story really suck?
c. Never before has your lack of qualifications been so obvious.

These restrictions are somewhat puzzling if the sentential subjects in (5) occur in Spec,IP, since this position is also occupied by the DP subjects in (6).[3]

[2] Interestingly, interrogative CPs fare much better after preposed auxiliaries; compare (5b) to (i):

(i) Was who is coming ever decided?

There is at least one other way in which the distribution of interrogative CPs more closely resembles that of DPs, rather than noninterrogative CPs: both DPs and interrogative CPs may occur as complements of prepositions, whereas noninterrogative CPs cannot do so:

(ii) the discovery of a new life form
(iii) the discovery (*of) that life exists on Mars
(iv) the discovery *(of) how human beings evolved

[3] One might argue that the examples in (5) are ungrammatical because CPs are typically "heavier" than DPs and thus resist sentence-internal positions. Observe, though, that, whereas the DPs in (i) and (ii) are heavier than the CPs in (5) under any plausible notion of grammatical weight, (i) and (ii) are significant improvements over (5a) and (5b).

(i) John, the fact that the Giants lost the World Series shouldn't have bothered.
(ii) Does the article that reported that the Giants lost the World Series really suck?

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Turning to subordinate clauses, sentential subjects are generally degraded in most kinds of embedded contexts that permit DP subjects. In particular, sentential subjects are not fully acceptable when they occur in adjunct clauses (7a,b), clausal complements of nouns (7c), clausal topics (7d), or other sentential subjects (7e). Of course, DP subjects are possible in each of these environments.

(7) a. ?*Mary is unhappy because for her to travel to Tahiti is no longer necessary.
b. ?*Although that the house is empty depresses you, it pleases me.
c. ?*Jim raised the possibility that for the house to be destroyed would upset you.
d. ?*That for us to smoke would bother her, I didn't expect.
e. ?*That for us to smoke bothers her is quite obvious.

(8) a. Mary is unhappy because her trip to Tahiti is no longer necessary.
b. Although the house's emptiness depresses you, it pleases me.
c. Jim raised the possibility that the house's destruction would upset you.
d. That our smoking would bother her, I didn't expect.
e. That our smoking bothers her is quite obvious.

Sentential subjects are sometimes fully acceptable in clausal complements of verbs and adjectives, but their occurrence here is still restricted and depends on the governing predicate. Whereas (9a) is grammatical with the verbs *think*, *say*, and *believe*, the closely parallel examples (9b,c) containing the verbs *regret* and *wish* are significantly less acceptable. This sort of lexical sensitivity is not displayed by embedded DP subjects.

(9) a. I {think/said/believe} that for us to smoke really bothers her.
b. ?*I regret that for us to smoke bothers her so much.
c. ?*Mary wishes that for us to smoke bothered her more than it did.

(10) a. I {think/said/believe} that our smoking really bothers her.
b. I regret that our smoking bothers her so much.
c. Mary wishes that our smoking bothered her more than it did.

Furthermore, it appears that sentential subjects cannot function as subjects of infinitival complements, whether or not these are introduced by the complementizer *for*.

(11) a. ?*John believes that the cult members cloned a human baby to be true.
b. *I {planned/intended/expected/hoped/prayed} for that the cult members cloned a human baby to be discovered.

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(12) a. John believes their claims about human cloning to be true.
b. I {planned/intended/expected/hoped/prayed} for our cloning attempts to be discovered.

In summary, the distribution of sentential subjects diverges in substantial ways from the distribution of DP subjects.

Importantly, the distributional characteristics of sentential subjects are mirrored by sentence-initial topic phrases such as those in (13).

(13) a. John, the article really bothered.
b. Mary, the committee members were impressed with.

Like sentential subjects, such topic phrases cannot occur after other topic phrases or preposed auxiliaries, and their occurrence in embedded contexts is limited to the complements of certain verbs and adjectives.

(14) a. *John, the book, I gave to.[4]
b. *Did John, the article really bother?

(15) a. *Mary is unhappy because her trip to Tahiti, I've had to cancel.
b. ?*Although Mary, this may depress, it pleases me.
c. *John raised the possibility that Mary, your antics would upset.
d. *That Mary, our antics would upset, I didn't expect.
e. *That Mary, your antics will upset is obvious.

(16) a. Mary {thinks/said/believes} that John, the article really bothered.
b. ?*I regret that Mary, my antics upset as much as they did.
c. ?*Mary wishes that John, the article bothered more than it did.

(17) a. *I expected Mary, the committee members to be impressed with.
b. *I {planned/intended/expected/hoped/prayed} for our cloning attempts, you to discover.

These distributional parallels led Koster (1978) to conclude that sentential subjects in fact are not structural subjects at all but topic phrases. Under his analysis, the CPs in (4) do not occur in Spec,IP but are base generated in the left-peripheral position occupied by topic phrases. Koster further assumes that a phonetically null DP occupies Spec,IP and is bound by the CP topic. This DP is presumably a thematic argument rather than an expletive, because in his analysis it eventually undergoes A′-movement to Spec,CP, which is generally excluded for expletives. This results in the

[4] Note here the grammaticality of both *John, I gave the book to* and *The book, I gave to John*.

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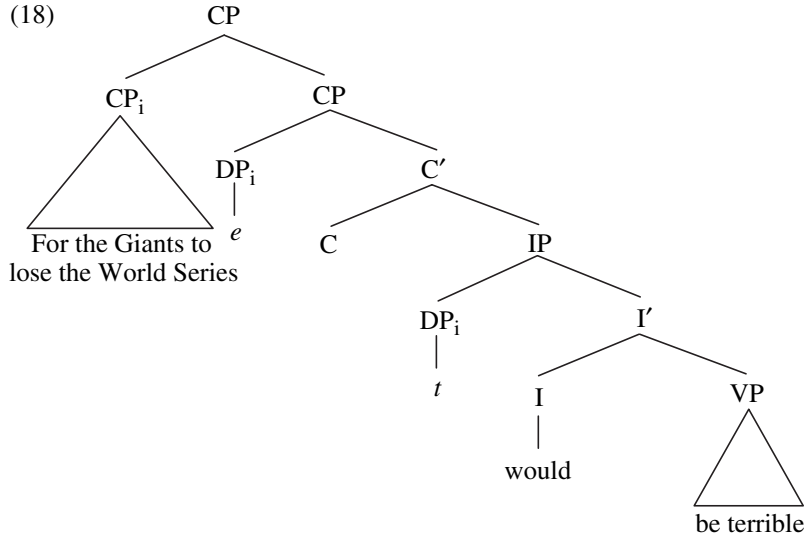
following structure for example (4d) *For the Giants to lose the World Series would be terrible*:[5]

(18)



As for the examples in (3), Koster assumes that these derive from entirely different base-generated structures than the ones posited for the corresponding examples in (4); under his analysis, each CP in (3) is base generated as a complement of the relevant verb or adjective, with expletive *it*-insertion occurring at some point during the derivation.

Setting aside for the moment Koster's claim regarding the presence of a null DP in (18), we can see that his proposal straightforwardly accounts for the similarities between sentential subjects and topic phrases observed above. The fact that sentential subjects display the distributional characteristics of topic phrases follows because sentential subjects simply are topic phrases. Thus, whatever mechanisms account for the examples in (14)–(17) should also extend to the analogous examples in (5), (7), (9), and (11). (I return to these data in section 3.4.)

3. Further Evidence and Elaboration

Although many researchers have accepted the claim that sentential subjects actually occupy a left-peripheral topic position at surface structure (see, e.g., Emonds 1976:sect. 4.2.4; Williams 1980:sect. 3.3.2; Stowell 1981:sect. 3.4; Safir 1985:sect. 3.4; Bresnan 1994:119, n. 66; Postal 1998:110–111), Koster's claims that the structural subject position (Spec,IP) in (18) is occupied by a null DP, and that this null DP subsequently moves to Spec,CP, are more controversial.

[5] I have altered the node labels in (18) from those assumed by Koster to comply with more recent assumptions regarding phrase structure.

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This may be due in part to the fact that Koster provides no direct evidence for these claims with respect to English examples like those in (4).[6] Moreover, the claim that sentential subjects are topic phrases in English is consistent with a number of positions regarding the status of Spec,IP in such constructions. For instance, Emonds (1976:sect. 4.2.4) and Stowell (1981:sect. 3.4) both account for the restricted distribution of sentential subjects by proposing that these CPs undergo movement from Spec,IP to their final topic position. For Stowell, this movement leaves behind a CP trace in Spec,IP, whereas for Emonds, whose analysis is couched in a framework that does not assume traces, the movement from Spec,IP completely vacates this position. Stowell's analysis assigns the following structure to example (4c) *That the Giants would lose was expected*:

(19) $[_{CP}$ That the Giants would lose$]_i$ $[_{IP}$ $[_{CP}$ $t]_i$ was expected $[_{CP}$ $t]_i]$

Alternatively, one could assume that the CP in (4c) moves directly from its base-generated position within the VP to the topic position. Under this account, Spec,IP could remain empty, or else a null expletive could be posited to fill this position.

(20) a. $[_{CP}$ That the Giants would lose$]_i$ $[_{IP}$ was expected $[_{CP}$ $t]_i]$
b. $[_{CP}$ That the Giants would lose$]_i$ $[_{IP}$ $[_{DP}$ $e_{exp}]$ was expected $[_{CP}$ $t]_i]$

Both (20a) and (20b) are thematically well formed, given that passive verbs do not combine with external arguments.

Although I know of no extant analyses of sentential subjects that posit either structure in (20) for (4c), parallel analyses have been proposed for locative inversion in English, which displays an alternation similar to the one seen in (3) and (4).

(21) There sat a large purple gorilla near the fountain.

(22) a. Near the fountain there sat a large purple gorilla.
b. Near the fountain sat a large purple gorilla.

[6] Koster does supply an argument for these claims from Dutch, where an optional pronoun may intervene between the sentential subject and the verb phrase.

(i) Dat hij komt (dat) is duidelijk.
that he comes (that) is clear
'That he will come is clear'.

English examples like (i) are acceptable when the pronoun *that* (*much*) bears sufficient emphatic stress.

(ii) That the Giants will lose the World Series, *that* (*much*) is now clear.

A reviewer points out that CP-topicalizations like (iii) are also grammatical for many speakers. In section 3.3, I address additional connections between sentential subject and CP-topicalization constructions.

(iii) That the Giants lost the World Series, *that*, it took me a long time to accept.

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In (21), the locative PP *near the fountain* occurs postverbally, and the expletive DP *there* occupies subject position. In (22), the locative PP is sentence initial; the expletive *there* may optionally intervene between the PP and the verb phrase. Postal (1977) argues that *there* in (22a) occurs in the structural subject position and may be either deleted or unexpressed, thus deriving the grammaticality of (22b). Bresnan (1994) proposes to distinguish the two cases in (22); under her analysis, the structural subject position in (22b) remains unfilled. Both authors assume that the locative PP in (22b) occupies a topic position outside of IP. Given the superficial resemblance between the alternations in (3)/(4) and (21)/(22b), it certainly seems reasonable to extend either analysis of locative inversion to sentential subject constructions. Such an endeavor would assign either (20a) or (20b) as the structure of (4c).

In the remainder of this section, I argue that despite this range of possibilities, Koster's original analysis is in fact the correct one. Specifically, I argue for the following claims regarding the examples in (4): (i) the sentential subjects in these examples are base-generated topic phrases linked to a null DP; (ii) this null DP originates in a thematic position of the matrix predicate in these sentences, and so is a thematic argument rather than an expletive; (iii) the null DP occupies Spec,IP during the derivations of these examples; and (iv) the null DP is marked [+wh] and eventually moves to Spec,CP. The structure of (4c) is then the following one:

(23) $[_{CP}$ That the Giants would lose$]_i$ $[_{CP}$ $[_{DP}$ $e]_i$ C^0 $[_{IP}$ $[_{DP}$ $t]_i$ was expected $[_{DP}$ $t]_i]]$

I also show that the structure in (23) is related in a natural way to the structure in (24), which was proposed by Chomsky (1977) for topicalization constructions.

(24) $[_{CP}$ That the Giants would lose$]_i$ $[_{CP}$ $[_{DP}$ $Op]_i$ C^0 $[_{IP}$ John never expected $[_{DP}$ $t]_i]]$

In particular, I suggest that the null DP in (23) is the same null [+wh] operator implicated in Chomsky's analysis of topicalization. In both (23) and (24), the CP *that the Giants would lose* is base generated in its surface topic position and is linked to this null DP, which eventually undergoes A′-movement to Spec,CP.

3.1 Active/Passive Asymmetries

It has been observed by several authors that the occurrence of sentential subjects with passive verbs is subject to unexpected restrictions. Taken together, these observations suggest that the possibility of a sentential subject appearing with a passive verb does not depend on the possibility of a CP occurring in the gap position in the corresponding active sentence, as might be expected. Rather, it appears that the generalization in (25) is correct.

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(25) A passive verb may appear with a sentential subject only if the position of the gap is one in which a DP is licensed by the verb's active form.

Evidence for (25) comes from consideration of the following postverbal environments: (i) those in which CPs but not DPs can occur, (ii) those in which DPs but not CPs can occur, and (iii) those in which both CPs and DPs can occur. If (25) is correct, then it should only be possible for sentential subjects to antecede passivization gaps occurring in the latter two environments. Below, I provide evidence from each environment that confirms this expectation, and show how this evidence supports the view that sentential subjects are topic phrases linked to a null DP. The evidence also suggests that this DP is an argument rather than an expletive.

Environment (i) is instantiated by verbs like *hope*, *feel*, *wish*, *insist*, and *reason*. In their active forms, these verbs require CP complements and cannot appear with DP complements.

(26) Most baseball fans {hoped/felt/wished/insisted/reasoned} that the Giants would win the World Series.

(27) *Most baseball fans {hoped/felt/wished/insisted/reasoned} that.

When passivized, these verbs may not appear with sentential subjects, a fact noted by Williams (1981:95–96), Grimshaw (1982:sect. 4), and Postal (1986:sect. 3.2).

(28) *That the Giants would win the World Series was {hoped/felt/wished/insisted/reasoned} (by most baseball fans).

Note that examples like (28) cannot be ruled out with the assumption that these verbs do not passivize, since corresponding passives derived by expletive *it*-insertion are possible.[7]

(29) It was {hoped/felt/wished/insisted/reasoned} (by most baseball fans) that the Giants would win the World Series.

The ungrammaticality of (28) thus counts as evidence for (25), given that the position of the postverbal gap is not one in which DPs are licensed by the verbs' active forms.

Alongside verbs like *hope*, there also exist verbs that instantiate environment (ii). In their active forms, these verbs take DP complements but do not permit

[7] Not every verb that only takes a CP complement possesses a corresponding passive form:

(i) Their fans prayed {*that/that the Giants would win the World Series}.
(ii) *That the Giants would win the World Series was prayed by many of their fans.
(iii) *It was prayed (by many of their fans) that the Giants would win the World Series.

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CP complements. Surprisingly, certain of these verbs may appear with sentential subjects when passivized.[8] Members of this class of verbs are noted by Kuno (1973:370), Grimshaw (1982:sect. 4), and Jacobson (1992:284), and include *express*, *reflect*, *capture*, *bring out*, *contemplate*, *attribute*, and *give*.[9]

(30) a. This formulation of the rule {expresses/captures/reflects/brings out} the fact that these nouns behave differently.
b. Even Aristotle contemplated the possibility that the moon is made of cheese.
c. We can attribute the observed behavior of these consonants to the fact that they are coronals.
d. We have given the possibility that Jack is a double agent serious consideration.

(31) a. *This formulation of the rule {expresses/captures/reflects/brings out} that these nouns behave differently.
b. *Even Aristotle contemplated that the moon is made of cheese.
c. *We can attribute that these consonants behave exceptionally to the fact that they are coronals.
d. *We have given that Jack might be a double agent serious consideration.

(32) a. That these nouns behave differently is {expressed/captured/reflected/brought out} by this formulation of the rule.
b. That the moon is made of cheese was even contemplated by Aristotle.

[8] Not every verb that licenses a DP complement in its active form may occur with a sentential subject when passivized.

(i) Mary hugged Sandy.
(ii) *That the Giants lost the World Series was hugged by Mary.

The ungrammaticality of (ii) can be given a semantic account, because presumably what is denoted by the CP *that the Giants lost the World Series* is not something that can be hugged. However, as two anonymous reviewers observe, there are other, more puzzling cases to consider, such as the verb *want*:

(iii) Harry wanted {this/*that everyone like him}.
(iv) {This/*That everyone like him} was wanted by Harry.

A semantic explanation of (iv) appears unavailable, given grammatical examples like *What Harry really wants is that everyone like him*. In anticipation of the examples in (34)–(41) and their accompanying discussion, consider also (v)–(viii) (also due to the two reviewers):

(v) We spoke about {that/*that Harry kissed Sally}.
(vi) {That/?*That Harry kissed Sally} was spoken about.
(vii) Quentin heard {your plea for help/that you are a doctor}.
(viii) {Your plea for help/*That you are a doctor} was heard (by Quentin).

Here again, a semantic explanation for (vi) and (viii) is unlikely. Why these cases should pattern differently than the ones discussed in the text is still mysterious to me.

[9] Not all speakers find all versions of (31a,b) (and (33a,b) unacceptable; for these speakers, the relevant verbs instead class with the verbs in (38)–(41), which take both CP and DP complements.

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c. That these consonants behave exceptionally can be attributed to the fact that they are coronals.
d. That Jack might be a double agent has been given serious consideration.

Notice that corresponding passive sentences derived by *it*-insertion are ungrammatical.

(33) a. *It is {expressed/captured/reflected/brought out} (by this formulation of the rule) that these nouns behave differently.
b. *It was even contemplated (by Aristotle) that the moon is made of cheese.
c. *It can be attributed that these consonants behave exceptionally to the fact that they are coronals.
d. *It has been given that Jack might be a double agent serious consideration.

The grammaticality of the examples in (32) again supports (25), because the postverbal gaps here occur in positions where DPs are licensed by the verbs' active forms.

Two other positions in which DPs, but not CPs, may occur are the subject positions of infinitival or small clause complements of exceptional Case marking (ECM; raising to object) verbs like *believe* and *consider* and after prepositions (though see fn. 2).

(34) a. John believes their claim to be true.
b. Many people now consider that outcome unlikely.
c. This assumption accounts for the fact that these nouns behave differently.
d. The panel deliberated over John's offer to represent them.

(35) a. *John believes that the cult members cloned a human baby to be true.
b. *Many people now consider that the Giants will win the World Series unlikely.
c. *This assumption accounts for that these nouns behave differently.
d. *The panel deliberated over that John would represent them.

Rosenbaum (1967:83), Higgins (1973:174–175), and Kuno (1973:370) have all noted that gaps in these positions resulting from passivization can take sentential subjects as their antecedents.

(36) a. That the cult members cloned a human baby is believed to be true.
b. That the Giants will win the World Series is now considered unlikely.

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c. That these nouns behave differently is accounted for by this assumption.
d. That John would represent them was deliberated over by the panel.

Notice again that corresponding passive sentences derived by *it*-insertion are ungrammatical:

(37) a. *It was believed that the cult members cloned a human baby to be true.
b. *It is now considered that the Giants will win the World Series unlikely.
c. *It is accounted for (by this assumption) that these nouns behave differently.
d. *It was deliberated over (by the panel) that John would represent them.

The grammaticality of the examples in (36) further supports (25), given that the postverbal gaps are in positions where DPs are licensed by the verbs' active forms.

Finally, instances of environment (iii) are provided by verbs like *believe*, *expect*, *predict*, and *recognize*, which in their active forms can occur with both CP and DP complements. When passivized, these verbs may appear with sentential subjects; corresponding passive sentences derived by *it*-insertion are also grammatical.

(38) Most baseball fans {believed/expected/predicted/recognized} that the Giants would lose.

(39) Most baseball fans {believed/expected/predicted/recognized} that.

(40) That the Giants would lose was {believed/expected/predicted/recognized} by most baseball fans.

(41) It was {believed/expected/predicted/recognized} by most baseball fans that the Giants would lose.

The grammaticality of (40), in which the postverbal gap occupies a position where DPs are licensed by the verbs' active forms, is again in accordance with (25).

In summary, the active/passive facts considered here support the generalization in (25). These facts follow rather straightforwardly from the view that sentential subjects are base-generated topic phrases linked to a null DP argument. In passive sentences, this DP will be base generated

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either as a complement of the verb, or, in the case of ECM constructions like (36a,b), in an embedded position governed by the higher verb. Examples like (28) can then be ruled out with the assumption that verbs like *hope*, *wish*, and *reason* simply do not license DP complements—an assumption that is already necessary to account for (27). Specifically, we can assume that these verbs only subcategorize for CP complements and do not subcategorize for DP complements (e.g., *hope*: [__ CP]). A null DP consequently cannot be base generated as a complement of these verbs, thus excluding (28). Verbs like *reflect*, *capture*, and *contemplate* demonstrate the opposite subcategorization restrictions; as shown by (30) and (31), these verbs must subcategorize for DP complements but not for CP complements (e.g., *reflect*: [__ DP]). Because these verbs license DP complements, a null DP can be base generated in their complement positions in (32). For now, I will simply assume that the null DP subsequently raises to Spec,IP, just as overt DP complements do in passive sentences; some support for this assumption is provided later in this paper. The sentential subjects in these examples are base generated in the topic position and eventually enter into the appropriate linking relation with the null DP. The ungrammatical examples in (33) again reflect the failure of these verbs to subcategorize for a CP complement.

The explanation for the examples in (36), where the gap occurs within a complement (infinitival, small clause, or PP) of the passive verb, proceeds similarly. For each example, we need only say that the null DP is base generated in the gap position—a possibility necessary for the examples in (34)—and then moves to (matrix) Spec,IP with the sentential subject again base generated in a topic position. Finally, for verbs like *believe* and *expect*, which take both DP and CP complements, this analysis groups the examples with a postverbal CP in (38) and (41) apart from those in (39) and (40). In (38) and (41), the CPs are base generated as complements, with expletive *it*-insertion deriving (41). In (39) and (40), a DP is base generated in the complement position. In (40), this DP is null and subsequently raises to Spec,IP, with the sentential subject base generated in topic position.

The active/passive asymmetries considered here also provide evidence against the alternative analyses sketched in (19), where a CP trace occurs in Spec,IP, and (20), where Spec,IP is either empty or occupied by a null expletive. A shared feature of those analyses is that sentential subjects of passive verbs are base generated in the position of the postverbal gap. One would then expect that this position must be one in which a CP can be base generated; that the gap must instead occur in a DP position is mysterious under these accounts. The analyses in (20) also predict a correlation between passive sentences containing sentential subjects and corresponding passive sentences derived by *it*-insertion; these sentences would share a common base-generated structure in which the CP occurs as a complement, with movement of the CP to the topic position deriving the

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sentential subject versions. The following example pairs demonstrate that there is no such correlation:

(42) a. It was expected that the Giants would lose the World Series.
b. That the Giants would lose the World Series was expected.

(43) a. *It has been given that Jack might be a double agent serious consideration.
b. That Jack might be a double agent has been given serious consideration.

(44) a. It was hoped that the Giants would win the World Series.
b. *That the Giants would win the World Series was hoped.

This failure is therefore a problem for those accounts. As seen previously, the assumption that a null DP argument must occur in (42b)–(44b) accounts for these differences without further stipulation; in each case, the grammaticality judgments follow from the verb's independently motivated subcategorization restrictions.

3.2 Agreement Phenomena

McCloskey (1991) observes that although plural verb agreement is sometimes possible with coordinate sentential subjects, corresponding sentences derived by expletive *it*-insertion must exhibit singular verb agreement.[10]

(45) That he'll resign and that he'll stay in office {are/*is} at this point equally likely.

(46) It {is/*are} at this point equally likely that he'll resign and that he'll stay in office.

The difference between (45) and (46) can be taken as support for the claim that a null DP is implicated in sentential subject constructions, given certain assumptions about the licensing of verbal agreement. To see this, consider first the agreement facts that obtain in constructions involving the expletive *there*.

(47) Some linguists {are/*is} in the garden again.

(48) There {are/*is} some linguists in the garden again.

[10] Specifically, McCloskey (1991:564–565) observes that "plural agreement is possible just in case the conjoined propositions are contradictory or incompatible, or, more generally, when they specify a plurality of distinct states of affairs or situation-types." Thus, (45) contrasts with (i), where the conjoined propositions are not contradictory; here, singular agreement is preferred:

(i) That UNO will be elected and that sanctions will be lifted {is/?are} now likely.

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As seen in (47) and (48), plural verb agreement in such constructions is possible regardless of whether the plural argument occurs preverbally or postverbally. One account of these facts (see Chomsky 2001) takes the plural DP *some linguists* to be base generated postverbally in both (47) and (48); it is from this postverbal position as well that the agreement relation between Infl, to which main verb *be* eventually raises, and the DP is established. The main difference between (47) and (48) is then that the plural DP moves to Spec,IP in (47) but remains in situ in (48), with *there* occurring in Spec,IP.

Notice now that a parallel analysis is not possible for (45) and (46). Under such an account, the coordinate CP in (45) would be base generated in a postverbal position. The plural verb morphology would in turn reflect an agreement relation established between Infl and the postverbal CP, with the CP subsequently moving to a preverbal position, and passive *be* raising to Infl. The problem is that this sort of analysis wrongly predicts that the in situ coordinate CP in (46) should also determine plural verb agreement, on par with the plural DP in (48); the only difference between (45) and (46) should then be that the CP in (46) does not undergo movement after entering into an agreement relation with Infl. Of course, this problem does not arise if what Infl agrees with in sentential subject constructions is not the CP but rather a null DP to which the CP is linked. In (45), this null DP is base generated as an argument of *likely* and enters into agreement with Infl from this position. We must further assume that the [+plural] feature of the null DP is determined by its anaphoric link to the coordinate CP, which is base generated in topic position. The derivation of (46) proceeds in an entirely different manner; here, no null DP is involved. The lack of agreement with the postverbal CP in this example then suggests that CPs are not marked for number, a position argued for in a rather different context by Iatridou and Embick (1997). The presence of singular verb morphology can be viewed as a case of default agreement or perhaps as agreement with the expletive DP *it*.

Given that agreement with a postverbal argument is possible in principle, as shown in (48), the plural verb agreement in (45) does not tell us anything about the structural position(s) occupied by the null DP during the derivation of sentential subject constructions. Some evidence that the null DP passes through Spec,IP comes from tag questions. Tag questions are illustrated in (49).

(49) a. Your students like you, don't they?
b. You are liked by your students, aren't you?
c. It was reported by several papers that the Giants won the World Series, wasn't it?
d. There are some problems for that theory, aren't there?

Crucially, the pronoun that occurs in a tag question must agree in person and number with the structural subject of the main clause to which it attaches. If the subject is an expletive, as in (49c,d), then that expletive must also occur in

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the tag question. These restrictions accounts for the ungrammaticality of the following examples:

(50) a. *Your students like you, don't you?
b. *You are liked by your students, {aren't they/don't they}?
c. *It was reported by several papers that the Giants won the World Series, {weren't they/didn't they}?
d. *There are some problems for that theory, aren't they?

Consider, then, the contrast illustrated in (51).

(51) That he'll resign and that he'll stay in office bother you equally, {don't they/*doesn't it/*don't you}?

The plural pronoun *they* occurs in the tag question here, which suggests that the [+plural] null DP occupies the structural subject position Spec,IP during the derivation of (51); it is this null DP that determines the form of the tag-question pronoun. Observe also that the contrast in (51) argues against the view that Spec,IP in sentential subject constructions is either occupied by a null counterpart of expletive *it* or else empty, as represented by the structures in (20). If this were so, one would expect **doesn't it?* to be the acceptable tag question in (51), on par with tag questions for locative inversion sentences, which contain the expletive *there* (Bowers 1976:237, Bresnan 1994:97).

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

The tag-occurrence of *there* in (52) supports the view that a thematic element does not occur in Spec,IP in locative inversion constructions, and is consistent with both the null expletive subject and empty subject analyses of locative inversion. The occurrence of the nonexpletive DP *they* in (51), rather than expletive *it* as in (49c), then makes sense only if Spec,IP is here filled with a thematic element (i.e., an argument).

3.3 Constraints on A′-movement across Sentential Subjects

In this section, I suggest that the null DP argument to which sentential subjects are linked is marked [+wh] and undergoes A′-movement. The resulting analysis of sentential subjects bears a close resemblance to the null operator analysis of topicalization proposed by Chomsky (1977) and provides a natural way of understanding the relation between these two constructions.

Zaenen and Pinkham (1976) and Iwakura (1976) independently observe that embedded sentential subjects seem to block A′-movement from within their c-command domain. This is illustrated by the examples in (53)–(55).

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(53) a. John said that {this/for you to stop smoking} would please Sandy.
b. I wonder who {this/*for you to stop smoking} would please.
c. I can't think of anyone that {this/*for you to stop smoking} would please.
d. Who did you expect John to say that {this/?*for you to stop smoking} would please?
e. Why did John say that {this/*for you to stop smoking} would please Sandy?[11]

(54) a. John thinks that {this/for her to say such things} shows that Kim wants a raise.
b. What does John think that {this/?*for her to say such things} shows that Kim wants?

(55) a. John said that {this/for Nora to resign} would be a surprise (for us).
b. How big a surprise did John say that {this/?*for Nora to resign} would be?
c. For whom did John say that {this/*for Nora to resign} would be a surprise?

If sentential subjects are topic phrases linked to a null DP, the failure of A′-movement in (53)–(55) can be attributed to the presence of those additional phrasal projections that are required to host topic phrases. Specifically, positing either structure in (56) for the embedded clause *for you to stop smoking would please Sandy* will account for these facts.

(56) a. $[_{CP}\ [_{CP}$ for you to stop smoking$]_i$ C^0 $[_{IP}\ [_{DP}\ e]_i$ would please Sandy]]
b. $[_{CP}$ for you to stop smoking$]_i$ $[_{CP}\ [_{DP}\ e]_i$ C^0 $[_{IP}\ [_{DP}\ t]_i$ would please Sandy]]

In (56a), the sentential subject itself appears in Spec,CP. In (56b), the null DP bears the [+wh] feature and moves from Spec,IP to Spec,CP, with the sentential subject occurring as an adjunct; this is the structure proposed by Koster for sentential subject constructions. Under either account, the ungrammatical examples in (53)–(55) are, in effect, *wh*-island configurations: the illicit A′-movements cross a filled A′-position (Spec,CP), thus violating locality restrictions on such movement.

The analysis of sentential subject constructions given in (56b) closely resembles the null operator analysis of topicalization proposed by Chomsky (1977), in which the topic phrase is base generated in a left-adjoined

[11] The intended reading of (53e) is one in which *why* modifies the embedded VP. Note that both versions of (53e) are grammatical under the reading in which *why* modifies the matrix VP.

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position and linked to a null [+wh] operator that has moved to Spec,CP, as in (57).

(57) $[_{DP}$ Those problems$]_i$ $[_{CP}$ Op_i C^0 $[_{IP}$ John never expected $t_i]]$

One argument that at least some instances of topicalization are best analyzed in this way comes from examples of CP-topicalization. Examples (58)–(60) show that the gap in CP-topicalization constructions must occur in a context in which a DP argument can otherwise occur (see Kaplan & Bresnan 1982:242, Postal 1986:sect. 3.2, Jacobson 1992:286, n. 15, Postal 1998:110, 194, n. 12; see section 3.1 of this paper for discussion of the relevant properties of these contexts).

(58) a. That these consonants behave exceptionally, we can attribute to the fact that they are coronals.
b. That the Giants will win the World Series, I believe to be obvious.

(59) a. That the Giants would win the World Series, their fans have never stopped hoping *(for).
b. *That the Giants would probably win the World Series, (I think that) most baseball fans reasoned.

(60) a. That the moon is made of cheese, I've come to believe.
b. That the Giants would lose, John never expected.

These contrasts do not readily follow from an analysis of CP-topicalization in which the CP topic itself undergoes A′-movement from the gap position. As with the active/passive facts discussed in section 3.1, such an analysis leads to the expectation that the gap position in CP-topicalizations must be one in which a CP can otherwise occur, rather than a DP position. If, on the other hand, the relation between the CP topic and the gap in these sentences is mediated by the presence of a null [+wh] operator, the contrasts in (58)–(60) follow from the assumption that the operator is categorially a DP.[12]

Given that passive sentences with sentential subjects and CP-topicalization sentences display the same asymmetries regarding the categorial status of their gaps, I suggest that the null DP that is linked to sentential subjects is in fact the

[12] The assumption that the null operator implicated in (58)–(60) is a DP is further supported by the examples in (i) and (ii), which show that the gap must also occur in a DP position in *tough*-adjective (see Postal 1986:sect. 3.2, 1998:110, 194, n. 12; Jacobson 1992:286) and degree complements—two other constructions for which null operator analyses are frequently proposed.

(i) a. That these consonants behave exceptionally eventually proved impossible $[_{CP}$ Op_i to attribute t_i to their status as coronals].
b. That a nuclear weapon might be launched against us is too scary $[_{CP}$ Op_i to even contemplate $t_i]$.
(ii) a. That peace will come to that region of the world is worth $[_{CP}$ Op_i hoping *(for) $t_i]$.
b. That the Giants will win the World Series is too unlikely $[_{CP}$ Op_i to even wish *(for) $t_i]$.

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same null [+wh] operator implicated in CP-topicalization, so that the structure in (56b), with the null DP undergoing A′-movement to Spec,CP, is the correct one for sentential subject constructions. As shown in (61), the structures of the passive example (4c) *That the Giants would lose was expected* and the CP-topicalization example (60b) *That the Giants would lose, John never expected* are then virtually identical. The chief differences between them are that (i) Spec,IP contains an overt DP in (61b) but not (61a), and (ii) the verb *expect* occurs in its passive form in (61a) but not (61b).

(61) a. $[_{CP}$ That the Giants would lose$]_i$ $[_{CP}$ $[_{DP}$ *Op*$]_i$ C^0 $[_{IP}$ $[_{DP}$ *t*$]_i$ was expected $[_{DP}$ *t*$]_i]]$

b. $[_{CP}$ That the Giants would lose$]_i$ $[_{CP}$ $[_{DP}$ *Op*$]_i$ C^0 $[_{IP}$ John never expected $[_{DP}$ *t*$]_i]]$

These differences can be related in a natural way with the further assumption that the null operator in (61), like other DPs, requires Case. Given that passive verbs do not assign Case, the only way the Case requirements of this operator can be satisfied in (61a) is through nominative Case assignment from Infl. This means, though, that nominative Case will not be available to be assigned to any other DP. This assumption thus accounts for Higgins's (1973:159) observation that CP-topicalization is incompatible with expletive *it*-insertion.

(62) a. *That the moon is made of cheese, it has come to be believed.

b. *That the Giants would lose, it was expected.

In (62), both the null DP[+wh] operator and the expletive DP *it* require Case, but there is only one Case (nominative) available to be assigned; one of these DPs will thus invariably fail to receive Case. Note also that the ungrammaticality of (62b) constitutes evidence against the proposal that Spec,IP in sentential subject constructions is either empty or occupied by a null expletive (see the structures in (20) and the surrounding discussion). If this were the case, we would expect (62b) to be grammatical, since the only difference between it and example (4c) *That the Giants would lose was expected* would then be whether (or what sort of) an expletive is inserted in Spec,IP (recall that (22a), the analogue of (62b) in locative inversion constructions, is grammatical).

3.4 Sentential Subjects in Embedded Contexts

Recall from section 2 that the distribution of sentential subjects in embedded contexts is highly restricted. Some of the relevant examples are repeated here.

(63) a. ?*Mary is unhappy because for her to travel to Tahiti is no longer necessary.

b. ?*Although that the house is empty depresses you, it pleases me.

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c. ?*Jim raised the possibility that for the house to be destroyed would upset you.
d. ?*That for us to smoke would bother her, I didn't expect.
e. ?*That for us to smoke bothers her is quite obvious.

(64) a. I {think/said/believe} that for us to smoke really bothers her.
b. ?*I regret that for us to smoke bothers her so much.
c. ?*Mary wishes that for us to smoke bothered her more than it did.

Before considering these data further, I must first say something about the structure of grammatical examples like (64a). For these, I adopt the CP-recursion analysis that Authier (1992) proposes for parallel instances of embedded topicalization. The structure of (64a) is then the following one:

(65) I think $[_{CP}$ that $[_{CP}$ $[_{CP}$ for us to smoke$]_i$ $[_{CP}$ $[_{DP}$ *Op*$]_i$ C^0 $[_{IP}$ $[_{DP}$ *t*$]_i$ really bothers her]]]]

An alternative approach would be to adopt the "split-CP" analysis of embedded topics developed in Rizzi 1997, in which the topic phrase occupies the specifier position of a TopicP projection that is c-commanded by the complementizer *that*; I refer the reader to that paper for further details.

One advantage of assuming the structure in (65) for examples like (64a) is that it ties the distribution of embedded sentential subjects to the availability of a CP-recursion structure in a given context. In their study of CP-recursion, Iatridou and Kroch (1992) observe that phenomena for which a CP-recursion structure is well motivated or commonly assumed show essentially the same distributional pattern as that seen in (63) and (64) for sentential subjects. In Danish, for instance, embedded verb-second word order, which is standardly taken to reflect CP-recursion, is limited to the complements of so-called bridge verbs such as *think* and *say* and is impossible in adjunct clauses, clausal complements of nouns, clausal topics, and sentential subjects.[13] Positing a CP-recursion structure for embedded sentential subjects in English as well then makes their distribution follow

[13] Iatridou and Kroch conclude that CP-recursion is also impossible in complements of bridge verbs when these are negated. They observe contrasts like the following from Danish, where embedded V2 word order is possible only when *ikke* 'not' is absent in (i).

(i) Jeg tror (*ikke) at de der briller får du svært ved at sælge.
I think not that those there glasses get you hard by to sell
'I (don't) think you'll have a hard time selling those glasses.'

Note, however, that sentential subjects readily occur in complements of negated bridge verbs.

(ii) I didn't think that for us to smoke would bother you so much.

I have no account of this difference.

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from the independently needed constraints that generally limit the possibility of such structures.[14]

Consider now the examples in (66).

(66) a. ?*John believes that the cult members cloned a human baby to be true.
b. *I {planned/intended/expected/hoped/prayed} for that the cult members cloned a human baby to be discovered.

The assumption that the infinitival complements of ECM verbs like *believe* are IPs immediately accounts for the status of (66a); given that clauses containing sentential subjects are minimally CPs, they cannot occur as complements of *believe*. This account does not extend to (66b), because here the infinitival complement is a CP. I suggest that the ungrammaticality of (66b) instead be given a Case-theoretic account. Given the assumption that the complementizer *for* assigns Case to the subject DP *our cloning attempts* in (67), (66b) will be ruled out if the presence of the intervening sentential subject disrupts the locality relation that must obtain between *for* and Spec,IP[–fin] for successful Case assignment; the null DP in (66b) would then fail to receive Case.

(67) I planned for our cloning attempts to be discovered.

This assumption would also account for the nonoccurrence of embedded topicalization in infinitival CPs, as seen in (68).

(68) *I {planned/intended/expected/hoped/prayed} for our cloning attempts, you to discover.

In (68), the intervening topic phrase prevents *for* from assigning Case to *you*.

Observe finally that the ungrammaticality of (64b,c) on the one hand, and (66b) on the other, are here accounted for in different ways. The former examples are ruled out by the assumption that CP-recursion structures are not possible for the complements of *regret* and *wish*, whereas the latter is ungrammatical for Case-related reasons. However it is achieved, some amount of separation seems desirable here: whereas the acceptability of sentential subjects in *that*-clause complements depends on the governing predicate, sentential subjects in infinitival *for-to* complements appear to be uniformly disallowed (nowhere in the literature on sentential subjects does one find cited

[14] This analysis of embedded sentential subjects does not account for the fact that sentential subjects headed by *that* seem marginal when they occur in *that*-clause complements, even those of verbs like *think*.

(i) ?*I think that that you did this is wonderful.

Kuno (1973) proposes that the status of (i) reflects the adjacent occurrences of the complementizer *that*.

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acceptable analogues to (66b); by contrast, the possibility of examples like (64a) has been recognized at least since Hooper & Thompson 1973). Under the account defended here, this difference will follow if the locality restrictions on successful Case assignment from *for* to Spec,IP[–fin] are not sensitive to the choice of governing predicate in the same way that the possibility of CP-recursion is.

4. The Difference between *Seem* and *Suck*

Recall the contrast between *seem* and *suck* observed at the beginning of this paper: although both verbs may occur with a CP complement and expletive *it*, only *suck* may alternatively occur with sentential subject.

(69) a. It seems that the Giants lost the World Series.
b. *That the Giants lost the World Series seems.

(70) a. It really sucks that the Giants lost the World Series.
b. That the Giants lost the World Series really sucks.

The analysis defended here readily accounts for this difference. Consider first the verb *suck* (and similar verbs like *bite*, *blow*, and *stink*). As seen in (70), *suck* selects a single argument, which is realized as a CP. The examples in (71) show that *suck*, like the other predicates in (3) and (4), also permits this argument to be a DP.

(71) a. This party really sucks.
b. His comments surprised me.
c. The downpour wasn't expected (by the picnickers).
d. This dinner is terrible.

Thus, the ability of these predicates to take sentential subjects is a consequence of the fact that their relevant arguments can be realized as DPs; in (4)/(70b), this DP is the null [+wh] operator identified previously and is linked to a CP in topic position.

There are at least two ways to account for the argument-taking properties of these predicates. One possibility is that, for example, *suck* is unaccusative and subcategorizes for either a CP or a DP complement (*suck*: [__ {CP | DP}]). Then, the (possibly null) DP arguments in (70b) and (71a) would be base generated as complements of *suck* and subsequently raise to Spec,IP; in (70b) the DP would undergo A′-movement as well. This option is generally assumed for passive verbs like *expected* and has been argued for by Belletti and Rizzi (1988) for psych verbs like *surprise*. Another possibility is that *suck* is ambiguous between unaccusative and intransitive (unergative) argument structures. In (70a), the verb appears in its unaccusative guise with a CP complement. In (70b) and (71a), its intransitive version occurs,

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with the (possibly null) DP arguments in these examples base generated as subjects.

A crucial difference between *suck* and *seem* is illustrated in (72).

(72) a. *{This/the Giant's loss} (really) seems.
b. {This/the Giant's loss} (really) sucks.

Like *suck*, the verb *seem* selects an argument that can be realized as a CP complement, as in (69a). However, the ungrammaticality of (72a) demonstrates that *seem* does not permit this argument to be realized as a DP. This shows that unlike *suck*, *seem* only subcategorizes for a CP complement (*seem*: [__ CP]), and its argument structure is unambiguously unaccusative. From these conclusions about the argument-taking properties of *seem*, the ungrammaticality of (69b) follows as well. Because *seem* does not subcategorize for a DP complement, it is impossible for a null DP to be base generated as its complement and subsequently raise to Spec,IP. And, since *seem* is unambiguously unaccusative, this null DP cannot be base generated as a subject, either. Given that sentential subjects must be linked to a null DP argument, it follows that *seem* cannot take a sentential subject. Thus, the difference between *suck* and *seem* follows from their independently motivated argument-taking properties: *suck*, unlike *seem*, allows its argument to be realized as a DP.[15]

The verb *seem* can occur with a sentential subject in raising constructions.

(73) a. That the Giants lost the World Series seemed to bother him.
b. That the Giants would lose the World Series seemed obvious.

The examples in (73) do not constitute counterexamples to the analysis defended here. In these examples, the null DP argument is base generated within the infinitival or small clause complement of *seem*; it then raises out of this complement to the matrix Spec,IP position and finally moves to an A′-position. The resulting structure is shown in (74).

[15] Williams (1980:223) briefly notes the correlation between (69b) and (72a) that is predicted by this analysis, though he does not provide any additional evidence for the specific claims of the analysis, nor does he consider the potential problem that is posed by the verbs *happen* and *appear* (see below for discussion of this problem). Webelhuth (1992) also notes this correlation and derives the ungrammaticality of (69b) from the assumptions that CP movement actually creates DP traces and that DP traces are licensed only in those positions in which a DP can be base generated. These assumptions are also deployed to account for some of the active/passive facts in section 3.1, as well as the CP-topicalization facts in (58)–(60). A problem with this account, though, is that it requires the sentential subjects in (32) and (36), and the CP topics in (58) and the grammatical version of (59a), to be base generated in positions in which they cannot appear overtly. Some other mechanism is then necessary to explain why CPs cannot remain in situ in these positions. Note also that this proposal cannot unify the CP-topicalization asymmetries in (58)–(60) with the parallel asymmetries detected for *tough*-adjective and degree complements in footnote 12, given the assumption that a null-operator analysis is required for these latter constructions.

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(74) $[_{CP}$ That the Giants lost$]_i$ $[_{CP}$ $[_{DP}$ *Op*$]_i$ C^0 $[_{IP}$ $[_{DP}$ *t*$]_i$ seemed $[_{IP}$ $[_{DP}$ *t*$]_i$ to bother him]]]

The analysis further predicts that the occurrence of sentential subjects with *seem* in raising constructions can depend on the subcategorization restrictions of the embedded predicate. In particular, this should be impossible if the position of the gap anteceded by the sentential subject is one in which a DP cannot be base generated. This prediction is borne out by the following examples:

(75) That the Giants would win the World Series seems to have been {hoped *(for)/*felt/wished *(for)/*insisted/*reasoned} (by most baseball fans).

In the ungrammatical versions in (75), the required null DP cannot be base generated as a complement of *hoped*, *felt*, *wished*, and so on. If *hoped* or *wished* is followed by the preposition *for*, a sentential subject becomes possible, since the gap position is now one in which a DP can be base generated.

The verbs *happen*, *appear*, and *turn out* also exhibit the pattern in (69).

(76) a. It {happens/appears/turns out} that the Giants lost the World Series.
b. *That the Giants lost the World Series {happens/appears/turns out}.

The prediction here is that these verbs also should not permit their arguments to be DPs. This prediction is correct for *turn out* but is apparently falsified by *happen* and *appear*.

(77) a. The accident happened last week.
b. The sun suddenly appeared from behind the clouds.
c. *{This/the Giant's loss} turned out.

If the occurrences of *happen* and *appear* in (76) and (77) correspond to the same lexical items, the grammaticality of (77a,b) is problematic for this analysis.[16] However, there are several reasons to believe that *happen* and *appear* in (76) correspond to lexical items ($happen_{CP}$ and $appear_{CP}$) that are distinct from those instantiated by *happen* and *appear* in (77) ($happen_{DP}$ and $appear_{DP}$). Most obviously, there is a difference in meaning between the occurrences of *happen* and *appear* in (76) and (77). Whereas $happen_{CP}$ in (76) means something very similar to the meaning of the phrase *by happenstance*, the meaning of $happen_{DP}$ in (77a) is closer to the meaning of the verb *occur* in sentences like *The accident occurred last week*. Likewise, whereas $appear_{CP}$ in (76) is essentially synonymous with the verb *seem*, the meaning of

[16] This assumption is made explicitly by Cinque (1990:3–4) for the verb *happen*.

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appear$_{DP}$ in (77b) is akin to the meaning of the phrase *become visible*. For the pair *happen*$_{CP}$ and *happen*$_{DP}$, there is also a difference in their selectional properties (apart from the subcategorization difference illustrated in (76) and (77))—namely, that only *happen*$_{DP}$ licenses a dative PP.

(78) a. Bad things always happen (to me).
b. It happens (*to me) that my classes were cancelled because of Advising Day.

Selectional differences are generally taken to diagnose distinct lexical items, so the contrast in (78) suggests the existence of *happen*$_{CP}$ and *happen*$_{DP}$ as distinct lexical items.

Another difference between *happen*$_{CP}$ and *happen*$_{DP}$, as well as *appear*$_{CP}$ and *appear*$_{DP}$, is that these occur in nonidentical morphosyntactic environments. Only *happen*$_{DP}$ and *appear*$_{DP}$ can occur with the progressive suffix *-ing*.

(79) a. As we speak, bad things are happening in that area of the world.
b. *As we speak, it is happening that the Giants will lose the World Series.
c. At this moment, the sun is appearing from behind the clouds.
d. *At this moment, it is appearing that the Giants will lose the World Series.

Also, only *happen*$_{DP}$ and *appear*$_{DP}$ may be embedded under the aspectual verb *continue*.[17]

(80) a. The problems continued to happen until we called a repairman.
b. *It continued to happen that the Giants lost the World Series.
c. Even though we hired a psychic, the ghost continued to appear in our bedroom.
d. *It continued to appear that the Giants lost the World Series.

The contrasts in (79) and (80) show that the members of both verb pairs differ in their aspectual properties, with *happen*$_{DP}$ and *appear*$_{DP}$ patterning with nonstatives, and *happen*$_{CP}$ and *appear*$_{CP}$ with statives.

On the basis of these differences, I conclude that *happen*$_{CP}$ and *happen*$_{DP}$, as well as *appear*$_{CP}$ and *appear*$_{DP}$, exist as distinct lexical items. The grammaticality of (77a,b) is then no longer a problem; we can assume that neither *happen*$_{CP}$ nor *appear*$_{CP}$ subcategorizes for a DP complement (*happen*$_{CP}$: [__ CP] and *appear*$_{CP}$: [__ CP]), and that both verbs are unambiguously unaccusative. These assumptions are sufficient to derive the nonoccurrence of sentential subjects with *appear* and *happen* (outside of raising constructions), just as they are for *seem* and *turn out*.

[17] See Perlmutter 1970 for evidence that temporal aspect verbs like *continue* are raising verbs.

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5. Sentential Subjects and Complement Selection

In this section, I turn to the implications of this analysis of sentential subjects for the theory of complement selection. Specifically, I consider Grimshaw's (1979, 1981) theory of complement selection and Pesetsky's (1982, 1993) arguments that the function performed by subcategorization (c-selection) in Grimshaw's theory can be subsumed by Case theory, at least for DP complementation, and that c-selection should thus be eliminated from the theory of grammar. I conclude that neither Case-theoretic approach to DP complementation that has been proposed can account for the full range of facts considered here without admitting mechanisms that essentially reintroduce c-selection for DP complements under a different guise. It appears, then, that some form of idiosyncratic selection for DP complements must be maintained under this analysis of sentential subjects.

5.1 C-Selection and Its Elimination

Grimshaw (1979) argues that predicates can impose two distinct types of restrictions on their complements. Subcategorization, or categorial selection (c-selection), captures those restrictions that a predicate imposes on the syntactic category of its complements. Semantic selection (s-selection) captures those restrictions that a predicate imposes on the semantic category of its complements. One of Grimshaw's arguments for this distinction comes from example pairs like the following:

(81) a. Nora asked what the time was.
b. Nora asked {the time/it}.

(82) a. Nora inquired what the time was.
b. *Nora inquired {the time/it}.

The verbs *ask* and *inquire* both s-select a question. This fact alone does not determine the possible syntactic realizations of their complements; although each verb takes a CP complement, only *ask* alternatively takes a DP complement. Verbs that s-select a proposition display similar differences.

(83) a. I will concede that she is intelligent.
b. I will concede {her intelligence/it}.

(84) a. I complained that she is incompetent.
b. *I complained {her incompetence/it}.

From such contrasts, Grimshaw concludes that c-selection must exist independently of s-selection in the lexicon: whereas *ask*, *inquire*, *concede*,

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and *complain* all c-select a CP, only *ask* and *concede* alternatively c-select a DP.

Grimshaw (1981) subsequently refines this view by suggesting that certain combinations of c-selection and s-selection are excluded by general principles of Canonical Structural Realization (CSR), which specify for some s-selectable category S the syntactic category that canonically realizes S (i.e., "the CSR of S"). A predicate that s-selects S always c-selects the CSR of S; the predicate may c-select for other syntactic categories as well, but it need not do so. In this way, a predicate's c-selectional properties are partially determined by its s-selectional properties. This provides an account for an apparent lexical gap noted by Grimshaw in her earlier paper (see Grimshaw 1979:317, n. 33): among those predicates that s-select a proposition or question, there appear to be none that do not also c-select a CP. If the CSR of both propositions and questions is CP, then the existence of this gap follows immediately.

Pesetsky (1982:sect. 2.5) points out that positing such implicational relations between s-selectable categories and their syntactic realizations actually renders c-selection superfluous in the account of (81)–(84), given the presence of Case theory as a grammatical subsystem. His reasoning runs as follows: suppose first that both CP and DP are equally canonical realizations of questions and propositions (certainly plausible, since DPs can denote [concealed] questions and propositions), so that the CSR of questions/propositions is either CP or DP. The differences between *ask*, *concede*, *inquire*, and *complain* can then be made to follow from certain assumptions about their Case-licensing abilities: whereas *ask* and *concede* can assign accusative Case to their complements, *inquire* and *complain* cannot.[18] Examples (82b) and (84b) are then ungrammatical because the DP complements here do not receive Case, not because *inquire* and *complain* do not c-select a DP. The lexical gap observed by Grimshaw is still predicted, given that CPs need not receive Case: any predicate that s-selects a proposition or a question will occur with a CP complement, regardless of its Case-assigning properties. Pesetsky suggests that c-selection be eliminated, with its function instead subsumed by the interaction of CSR principles and independently needed grammatical subsystems. For DP complementation, this subsystem is Case theory.

[18] Pesetsky supports the claim that only *ask* assigns accusative Case with the following contrast:

(i) It was {asked/*inquired} when Mary would be there.

Given the assumption that only those verbs that license accusative Case may passivize, (i) suggests that only *ask* can assign accusative Case. Note, though, that there are verbs that s-select a question and only take CP complements (and thus should not assign accusative Case) that nonetheless passivize, such as *wonder* (as Pesetsky notes) and *tell*. Similarly, the verbs in (26)–(29), which presumably s-select a proposition, also only take CP complements but can appear in passive sentences derived by *it*-insertion (though see also fn. 7); Rothstein (1992:123) observes parallel behavior for *exclaim* and *pretend*.

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5.2 Problems for the Case-Theoretic Approach to DP Complementation

One potential problem for the proposals considered above is the existence of verbs like *capture* and *contemplate*, which only take DP complements (see (30)–(31)).

(85) a. The grammar captures *(the fact) that the rule is obligatory.
b. Even Aristotle contemplated *(the possibility) that the moon is made of cheese.

If these verbs s-select a proposition, they directly falsify Grimshaw's (1981) and Pesetsky's (1982) proposals, as both intend to derive the nonexistence of such predicates. Of course, the problem disappears if these verbs in fact do not s-select a proposition but rather some other semantic category (call it S). If (following Grimshaw) each s-selectable category can only be associated with a single CSR, and the CSR of S is DP, then it does not follow that *capture* and *contemplate* must take CP complements.

The possibility that CPs can be used in noncomplement positions to specify the semantic content of these verbs' complements, as in (86), remains, so long as CP is in principle capable of realizing S.

(86) a. That the rule is obligatory is captured by the grammar.
b. That the moon is made of cheese, Aristotle never should have contemplated.

Assuming the analyses of sentential subjects and CP-topicalization defended here, in neither of these examples is the CP base generated as a verbal complement.

It is less clear how well the Case-theoretic account of DP complementation fares here. Recall that under this account, an s-selectable category can in principle be associated with multiple CSRs. Nonetheless, to exclude the possibility of CP complementation in (85), it must still be assumed that CP is not a CSR of S. This assumption raises an interesting question regarding the notion "canonical structural realization." If, as the examples in (86) suggest, CP is a possible realization of the semantic category S, then why shouldn't CP be a CSR of S, just as DP is taken to be a CSR of propositions/questions? If a semantic category's CSRs are all of the syntactic categories that can possibly realize it, then CP should be a CSR of S. Otherwise, some distinction must be drawn between the CSRs of propositions/questions and those of whatever category S ultimately corresponds to.

The Case-theoretic approach also makes incorrect predictions about the unaccusative verbs *seem*, $happen_{CP}$, $appear_{CP}$, and *turn out*.

(87) a. It seems that the Giants lost the World Series.
b. *{This/The Giant's loss} seems.
c. *That the Giants lost the World Series seems.

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These verbs s-select a proposition, which can be realized as a CP complement. Recall now that the explanation for the ungrammaticality of (87b,c) given previously hinges on c-selection; in particular, it depends on the assumption that these verbs do not c-select a DP. The Case-theoretic approach, on the other hand, maintains that all verbs that s-select a proposition will in principle allow it to surface as a DP; ungrammaticality results when the DP fails to receive Case. However, it is then predicted that (87b,c) should be grammatical. Derivations should exist for these examples in which a (possibly null) DP realizing the s-selected proposition is base generated as a complement of *seem* and receives nominative Case from Infl; the DP would subsequently raise to Spec,IP, just as in other clauses built around unaccusative predicates. A formally analogous problem is found with passive verbs like *hoped* (see (26)–(29)). If *hoped* s-selects a proposition, then (88b,c) cannot be ruled out with an appeal to Case, given that all Case requirements are apparently met in these examples.

(88) a. It was hoped that the Giants would win the World Series.
b. *This was hoped.
c. *That the Giants would win the World Series was hoped.

More generally, the Case-theoretic approach predicts that the semantic category that is s-selected by an unaccusative or passive verb can be realized as a DP whenever DP is a CSR of the s-selected category; this is because nominative Case will always be available to be assigned by Infl to a base-generated DP complement of such verbs (which may then raise to Spec,IP). Verbs like *seem* and passive *hoped* are then unexpected.

5.3 Structural Case versus Inherent Case

Pesetsky's (1982) proposal is critiqued by Rothstein (1992), who cites resultative constructions like (89) as evidence that *complain* can assign accusative Case.

(89) He complained himself hoarse about the bad coffee.

Pesetsky (1993) suggests a refinement to his earlier proposal that accounts for the difference between (89) and (84b). The suggestion is that (84b) be viewed not as an indication that *complain* cannot assign accusative Case but rather that it imposes a special inherent Case requirement on its complement—namely, that "[its] thematic object bear no (morphological) Case whatsoever" (p. 558). This requirement is termed "selection for zero Case" and is akin to selection for an argument marked with oblique Case. The DP complement in (84b) then cannot satisfy its own Case requirements while simultaneously satisfying the verb's zero Case requirement. The CP in (84a) is still licensed because CPs need not receive Case. If verbs only impose inherent

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Case requirements on their arguments, it follows that the DP *himself* in (89), which is not an argument of *complain*, may bear Case. This DP receives (structural) accusative Case, which is assigned to any DP that stands in an appropriate configurational relation to the verb. Finally, the difference between *complain* and *concede* is that the latter does not impose any zero Case requirement on its complement.

The zero-Case proposal extends immediately to (87b) and (88b) if verbs like *seem* and passive *hoped* also select zero Case; the overt DPs in these examples, which receive nominative Case from Infl, then fail to satisfy this requirement. The proposal also suggests a possible account for the failure of CP complementation for verbs like *capture* and *contemplate*. Perhaps these verbs demonstrate the opposite sort of inherent Case requirement—namely, that their complements must bear Case. If CPs not only do not need Case, but in fact cannot bear Case, this requirement would exclude CP complementation for these verbs, regardless of whether CP is a CSR of the relevant s-selected category.

Consider now the status of (87c) and (88c) under the zero-Case proposal. What is predicted regarding these examples depends on one's interpretation of the restrictions that a verb imposes on its argument by selecting zero Case. Suppose first that inherent Case requirements are essentially selectional restrictions that a verb places on the visible realization of the Case borne by its arguments—for example, Case must be phonetically realized as dative, or for zero Case, not be phonetically realized at all. Under the analysis defended here, sentential subjects are linked to a DP argument that is phonetically null. As a result, the Case that this DP receives will never be phonetically realized, and it should therefore satisfy the zero Case requirement imposed by *seem* and *hoped*. Examples (87c) and (88c) are then incorrectly predicted to be grammatical.[19] It seems, then, that zero Case must instead be viewed as a prohibition against an argument's being assigned any Case at all, whether phonetically realized or not. This would correctly rule out (87c) and (88c), given that the null DP implicated in sentential subject constructions would here receive nominative Case from Infl. Under this conception, however, selection for zero Case is apparently tantamount to failure to c-select a DP, and vice versa. If all DP arguments must occur in a Case-licensing position at some point during a derivation, the imposition of a zero Case requirement on some complement amounts to a prohibition against realizing that complement as a DP (overt or null), whereas failure to do so permits the complement to be realized as a DP. This is exactly the function performed by c-selection for DP. So, it seems that in order to account for (87c) and (88c) in the way that has

[19] Parallel problems arise with the other null-operator constructions discussed in section 3.3.

(i) *That the Giants would win the World Series, [$_{CP}$ *Op*$_i$ I hoped t_i].
(ii) *That the Giants would win the World Series was difficult [$_{CP}$ *Op*$_i$ to hope t_i].
(iii) *That the Giants would win the World Series seemed too unlikely [$_{CP}$ *Op*$_i$ to hope t_i].

If *hope* selects for zero Case, then this interpretation of zero Case predicts that (i)–(iii) will be grammatical, since Case is not phonetically realized here on the null operator.

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been pursued here, some form of irreducible, idiosyncratic (non-)selection for DP complementation must persist, whether as c-selection or under the guise of zero Case.

6. Conclusion

I have argued in this paper that sentential subjects are best analyzed as base-generated topic phrases linked to a phonetically null DP in Spec,IP, as first suggested by Koster (1978). I have further argued that this null DP is an argument and that it is marked [+wh] and eventually undergoes A′-movement, making sentential subject constructions close relatives of corresponding CP-topicalization constructions (under a null-operator analysis of the latter). Besides being supported by a diverse set of facts, this analysis is able to derive the difference between *seem* and *suck* in (1) and (2) from independently motivated argument-taking properties of these verbs. An apparent consequence of the analysis is that some form of idiosyncratic selection for DP complementation must be available within the lexicon.

Assuming that this analysis of sentential subjects is on the right track, many questions still remain. One of them is why CPs are excluded from occurring in Spec,IP, as the analysis defended here implies. Previous discussions of this question have tied this property of CPs to some preference for non-Case positions, where (finite) Spec,IP is a Case position (see, e.g., Stowell's [1981] Case Resistance Principle).[20] Although the intuition behind these proposals certainly seems correct, I would like to suggest a slightly different way of viewing the problem. Rather than viewing the nonoccurrence of CPs in Spec,IP as resulting from some peculiarity of CPs alone, it may be fruitful to instead view this restriction as resulting from the interaction of some peculiarities of both CPs and Infl. In particular, suppose that the occurrence of some syntactic object in Spec,IP is ultimately motivated by some featural

[20] The Case Resistance Principle states that CPs cannot occur in Case-assigned positions and was taken by Stowell (1981) to be responsible for forcing sentential subjects to topicalize (see (19)). An anonymous reviewer points out that this principle was also intended to account for the ordering facts in (i) and (ii):

(i) Mary noted {the time/?*that the meeting was about to end} carefully.
(ii) Mary noted carefully {*the time/that the meeting was about to end}.

The analysis of sentential subjects defended here does not extend straightforwardly to such data. Johnson (1991) proposes an alternative account of (i) and (ii), under which DP (and only DP) complements must undergo VP-internal movement. This movement brings the DP *the time* to the left of *carefully* in (i); the base-generated position of this DP is reflected by the position of the CP complement in (ii), which does not undergo movement. Note that this proposal does not account for whatever restricts the relative ordering of the PP and CP complements in (iii) and (iv), since neither such phrase should move within the VP.

(iii) I said to the judge at my trial that I had been speeding.
(iv) ?*I said that I had been speeding to the judge at my trial.

However, these restrictions appear to be less strict; consider (v) in comparison to (iv):

(v) I {mentioned/explained/admitted} that I had been speeding to the judge at my trial.

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property of Infl. This property could be its ability to assign nominative Case, or perhaps a purely formal requirement that Infl occur with a filled specifier position (i.e., some analogue of the Extended Projection Principle). The inability of CPs to occur in Spec,IP can then be taken to reflect their inability to interact with this featural property of Infl in the same manner that DPs, the canonical occupants of Spec,IP, are able to. Under this view, it is not that CPs are somehow allergic to appearing in Spec,IP, but rather that they are not appropriately equipped to satisfy whatever requirements of Infl motivate the appearance of DPs in its specifier position. Although it remains to be seen whether this suggestion is viable, it provides an interesting avenue for further explorations of the topics considered here.

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Peter Alrenga
University of California, Santa Cruz
Department of Linguistics
Stevenson College
1156 High Street
Santa Cruz, CA 95064-1077
USA

palrenga@ucsc.edu

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