How subjects and possessors can obviate phasehood

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Abstract

Recent proposals on phases claim that locality restrictions are obviated when the subject of a clausal phase has certain syntactic or discourse properties, suggesting that phasehood is acquired over the course of a derivation. I evaluate these claims with acceptability judgment experiments and argue that these phase-related locality effects can be derived from independently motivated principles, such as Feature Inheritance / Value–Transfer Simultaneity or the Principle of Minimal Compliance. I further point out similar effects with possessors and nominals in English, expanding the empirical domain. The nominal data constitute a novel argument for treating nominals as phases and strengthen the case for a general theory of phases that can account for these effects.

Keywords

1 Introduction

Phases play an important role in recent theories of locality. A conventional assumption holds that phasehood is a property inherent to certain lexical items or their maximal projections. For instance, Chomsky (2000) suggests that phases are characterized by "propositional[ity]"; this definition identifies CPs and vPs as phases. In recent work, Grano & Lasnik (2018) and Barros & Frank (2017, also 2020) put forward novel data and ideas challenging this view, essentially claiming that phasehood can be derived and is not necessarily an inherent property of certain syntactic categories. Key evidence comes from what I will call "phase obviation effects" where a finite clause fails to behave like a phase. To account for these effects, both proposals claim that clausal constituents may enter a derivation as nonphases, only becoming phases under specific conditions related to the subject of the clause.

This article addresses two issues related to these proposals: what the actual range of these effects is and how and why subjects come to have such an effect on phasehood. I give a more precise description of these effects, bringing in evidence from formal acceptability judgment experiments. Anticipating the discussion in Section 2, I suggest that obviation effects only appear with bound pronoun subjects, providing evidence supporting Grano & Lasnik's account over Barros & Frank's. I further argue, in Section 3, that Grano & Lasnik's analysis can be derived from existing proposals that are independently motivated, namely, Feature Inheritance and Value–Transfer Simultaneity (Chomsky 2008; M. Richards 2007, 2011) or the Principle of Minimal Compliance (N. Richards 1997, 1998).

I also provide additional motivation for the kind of phase theory proposed here and in Grano & Lasnik's and Barros & Frank's papers. In Section 4, I present experimental evidence for similar effects in the nominal domain for gapping and *wh*-movement in English, building on observations by Davies & Dubinsky (2003). I extend the analysis of the bound pronoun subject effect to account for these effects, reframing Davies & Dubinsky's analysis in phasal terms. The extension of this analysis to the nominal domain thus constitutes a novel argument for analyzing (definite) DPs as phases.

2 Phase Obviation Effects in Clauses

2.1 Empirical Motivation

Grano & Lasnik and Barros & Frank observe that many dependencies in English, such as those that characterize the comparative deletion and *too/enough* constructions, cannot cross the boundary of a finite clause: compare (1a) and (1b), for instance. This clause-bound restriction is relaxed when the embedded finite clause (bracketed below) contains certain kinds of subject, for example, a bound pronoun subject (underlined below) (1c).

(1)   *Comparative deletion (Grano & Lasnik 2018:472 exx. 9-11) (Struck-out material is silent but interpreted.)*

    a.   More teachers gave the students pencils than ~~gave the students~~ pens.

    b.   *More teachers claimed that the principal gave the students pencils than ~~claimed [that the principal gave the students~~ pens].

    c.   ?More teachers$_1$ claimed that <u>they$_1$</u> gave the students pencils than ~~claimed [that they$_1$ gave the students~~ pens].

(2)   *Too/enough construction (ibid.)*

    a.   This book is too valuable for James to lend _ to Bill.

    b.   *This book is too valuable for James to claim [that Mark lent _ to Bill].

    c.   ?This book is too valuable for James$_1$ to claim [that <u>he$_1$</u> lent _ to Bill].

Making the reasonable assumption that these clause-bound restrictions follow from the Phase Impenetrability Condition (PIC), Grano & Lasnik and Barros & Frank conclude that the relative acceptability of (1c) and (2c) indicates the absence of a phase boundary. In other words, the embedded clauses here are not phases, contrary to standard assumptions. (This conclusion also requires the ancillary assumption that these dependencies are not formed by successive cyclic movement through the specifier of CP, as Grano & Lasnik and an anonymous reviewer point out. Successive cyclic movement would allow these dependencies to cross multiple finite clause boundaries.) Further, this obviation effect is apparently only observed with subjects. Grano & Lasnik report that it is absent when the object (3a) or a possessor inside a subject is a bound pronoun (3b).

(3)   a.   *More teachers$_1$ claimed that the principal gave <u>them$_1$</u> pencils than ~~claimed [that the principal gave them$_1$~~ pens].

    b.   *More teachers$_1$ claimed that <u>their$_1$</u> assistants gave the students pencils than ~~claimed [that their$_1$ assistants gave the students~~ pens].
        (Grano & Lasnik 2018:472–473 exx. 12c and 13c)

While Grano & Lasnik are concerned with bound pronoun subjects, Barros & Frank claim

that other kinds of subjects can also trigger phase obviation effects. They propose the notion of "nonshifty subjects," in the sense that the subjects do not "[shift] attention away from the most salient discourse referent mentioned in the matrix clause" (their example (7), p. 2, also see Grosz, Joshi, & Weinstein 1995). For comprehensiveness, I give a list of nonshifty subjects below, using Barros & Frank's labels.[1]

(4)   *Phase obviation effects beyond bound pronoun subjects (from Barros & Frank 2017:10 ex. 23, their judgments)*
   a.   More people claimed <u>there</u> was a problem with the economy than ~~claimed~~ ~~<u>there</u> was a problem~~ with illegal immigration.   [*"Expletive subjects"*]
   b.   More headhunters who interviewed $Jack_1$ claimed that {<u>he_1</u>/*Bill} would be a good fit for Google than ~~claimed that {<u>he_1</u>/*Bill} would be a good fit~~ for Facebook.   [*"Referential/nonshifty subjects"*]
   c.   More survey participants claimed that {<u>no politician</u>/*Trump} would address economic issues than ~~claimed that {<u>no politician</u>/*Trump} would address~~ environmental ones.   [*"Quantifier subjects"*]

Because of the differences in the empirical data they were considering, Grano & Lasnik and Barros & Frank differ in their analysis of phase obviation effects. Grano & Lasnik claim that these effects only occur with bound pronoun subjects, linking this to the idea that bound pronouns are defective in their ϕ-feature specification (for example, Kratzer 2009; see section 3 for more detail). In contrast, Barros & Frank claim that these effects occur more generally, when the subjects are nonshifty. They further note that Grano & Lasnik's ϕ-feature account does not predict the examples in (4) to be acceptable.

Adjudicating between these two proposals requires validating these observations. Doing so is important as judgments can be subtle, as reflected by the not-infrequent presence of judgment marks like "?" or "??" in Grano & Lasnik's and Barros & Frank's discussion of these effects. In their paper, Grano & Lasnik report formal experimental results showing that bound pronoun subjects do improve the acceptability of certain dependencies that are otherwise clause-bound. However, to the best of my knowledge, there is no equivalent investigation into the effects reported by Barros & Frank. While Barros

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[1]A bibliographic note is in order: An earlier proposal about bound pronouns obviating locality restrictions is found in Boyd 1992. Anticipating the phase-based approach of Grano & Lasnik, Boyd also proposes that the domain for the "binding of a *wh*-t[race]" in an embedded clause is expanded when its AGR node is coindexed with an NP in a higher clause, forming an "AGR-chain"; since AGR is assumed to be coindexed with its subject, this proposal entails that the domain is expanded when the embedded subject is bound (p. 51). It is interesting that domain expansion is stated in binding-theoretic terms, and not in terms of bounding nodes or barriers. As far as I can tell, Boyd does not discuss the impact of (non)shifty subjects like those discussed by Barros & Frank. I will not discuss Boyd's proposal in detail here: Grano & Lasnik's and Barros & Frank's proposals are no less well-motivated, and, importantly, framed in terms of phases.

& Frank report acceptability judgments for a variety of clause-bound dependencies, these judgments appear to be informal in nature. In the next two sections, I present two formal acceptability judgment experiments that address this empirical gap. To preview the results, the data indicate that these effects occur with bound pronoun subjects but not with other nonshifty subjects.

2.2 Experiment 1: Shiftiness

This experiment was largely modeled upon Grano & Lasnik's experiments and designed to evaluate three sets of predictions. The first two are predictions associated with Barros & Frank's shiftiness proposal: sentences with nonshifty subjects should have similar acceptability ratings, while being more acceptable than their shifty subject counterparts. The third is a prediction that follows from Grano & Lasnik's ϕ-feature-based proposal: sentences with bound pronoun subjects should be more acceptable than other shifty and nonshifty subject sentences.

2.2.1 Materials

I selected comparative deletion as the construction to use for stimuli sentences. There are two reasons for choosing this construction. First, Barros & Frank report fairly clear judgments for comparative deletion (4); we might therefore expect similarly clear judgments from native speaker participants. Second, as Grano & Lasnik pointed out, comparative deletion (among a subset of constructions) is not syntactically ambiguous. We can therefore be confident that a relatively high acceptability rating reflects obviation of the clause boundary, as opposed to the well-formedness of an alternative but irrelevant parse (cf. (5) for gapping).

(5)   John$_1$ said that he$_1$ likes apples, and Mary oranges.   [*Gapping*]
      a.   Bound pronoun subject parse: John$_1$ said that he$_1$ likes apples and Mary$_2$ said that she$_2$ likes oranges.
      b.   Well-formed but irrelevant parse: John$_1$ said that [he$_1$ likes apples and Mary likes oranges].

As a baseline, I constructed comparative deletion sentences with embedded nonfinite clauses, using eight sets of lexical items; an example is shown below (6).

(6)   More baristas claimed to drink tea than coffee.

For each baseline sentence, seven variants involving embedded finite clauses were constructed. (A full list of experimental items can be found in the online appendix.) Care was taken in the choice of lexical items to ensure that the sentences described fairly plau-

sible scenarios. Four of the variants featured nonshifty subjects in the embedded clause (7a); the embedded subjects of these sentences were consciously modeled upon Barros & Frank's examples. More specifically, the expletive subject sentences involved existential *there* (7a-ii) (but not *it*; see Experiment 2), the "referential/nonshifty" subject sentences featured an embedded pronoun subject that was intended to be coindexed with an R-expression inside a relative clause modifying the main clause subject (in (7a-iii), this R-expression is *the barista*), and the quantifier subject sentences featured the negative existential *no* (7a-iv). The other three variants were control sentences featuring shifty subjects (7b); these were previously found to be less acceptable in Grano & Lasnik's experiments.

(7)   a.   *Nonshifty subjects*
        (i)   More baristas claimed that <u>they</u> drink tea than coffee.   [*Bound pronoun subject*]
        (ii)   More baristas claimed that <u>there</u> is tea than coffee in the pot. [*Expletive subject*]
        (iii)   More customers who know the barista claimed that <u>he</u> drinks tea than coffee.   [*Referential/nonshifty subject*]
        (iv)   More baristas claimed that <u>no customer</u> drinks tea than coffee. [*Quantifier subject*]
    b.   *Shifty subjects (control)*
        (i)   More baristas claimed that <u>the cafe owner</u> drinks tea than coffee.   [*R-expression subject*]
        (ii)   More baristas claimed that <u>I</u> drink tea than coffee.   [*Indexical subject*]
        (iii)   More baristas claimed that <u>their</u> coworkers drink tea than coffee. [*Bound possessor in subject*]

There are two points of note for these sentences. First, the sentences with embedded third person pronoun subjects are ambiguous in principle. It is possible that the pronoun receives another reading where it is not coindexed with the main clause subject or some part thereof. However, as Grano & Lasnik noted (their footnote 9), since participants read these sentences in isolation without any context, the coindexed reading is likely to be far more salient, and therefore more likely to be the reading that is judged for acceptability.

Second, as an anonymous reviewer rightly points out, the expletive subject sentences do not perfectly replicate Barros & Frank's examples. The sentences here feature a contrast in the pivots, so it is the pivot of the existential construction whose dependency crosses a clause boundary (8a). However, in Barros & Frank's examples, which were judged acceptable by Barros & Frank's native speaker consultants and the reviewer, the constituent whose dependency crosses a clause boundary is the coda of the existential construction (8b). The reviewer further reports perceiving (8a) as worse than (8b). That said, as far as I can tell, Barros & Frank's discussion did not suggest that the distinction between

pivot and coda should matter. I return to this point in sections 2.2.4 and 2.4.

(8) a. More baristas claimed that there is [$_{pivot}$ tea] than [$_{pivot}$ coffee] [$_{coda}$ in the pot].

b. More people claimed there was [$_{pivot}$ a problem] [$_{coda}$ with the economy] than [$_{coda}$ with illegal immigration].

The sentences were distributed across eight lists in a Latin Square design, so that each list contains one sentence for each of the eight conditions, and no two sentences in the list were variants of each other. Each participant therefore rated only eight items, one per condition, for this experiment. These items were then combined with the stimuli for Experiments 2 and 4 as well as 22 filler sentences of comparable syntactic complexity and of varying degrees of acceptability.

2.2.2 Participants and Experimental Set-up

Forty participants were recruited over Amazon Mechanical Turk. All participants were required to be based in the United States, above the age of 18, and have passed an online English native speaker screening test. The goal of these criteria is to maximize the likelihood that participants were native speakers of standard American English. The screening test involves nine multiple-choice questions that test for familiarity with subtler aspects of standard American English syntax, such as tense in embedded finite clauses. Participants pass the test when they answer seven or more questions correctly. Participants were paid US$4 for their participation.

Sentences were presented in a randomized fashion and rated using Ibex (created by Alex Drummond). Participants were instructed to rate sentences along a Likert scale, such that a rating of 1 indicated the lowest acceptability, and 7 the highest. A sentence was described as acceptable if it was "something that a native speaker of English would say, even if the situation the sentence describes sounds implausible" (following Grano & Lasnik). Before starting the experiment proper, participants rated six practice sentences.

2.2.3 Results and Discussion

A summary of raw ratings is provided in table 1. Generally, participants assigned high ratings to the nonfinite and bound pronoun subject sentences (median = 7), which broadly replicates Grano & Lasnik's findings. Participants assigned lower ratings to all the other nonshifty subject conditions (medians = 3–5). Somewhat surprising was the fact that shifty subject conditions generally received high ratings, although the median rating for each of these conditions is consistently lower than the median rating for the baseline and bound pronoun subject conditions (6 vs. 7).

I next analyzed these results for statistical significance. For this experiment, a

7

Table 1: Results of Experiment 1

Condition	Frequency of ratings							Median rating
	1	2	3	4	5	6	7	
Baseline: nonfinite		2			2	9	27	7
Nonshifty subjects								
Bound pronoun subjects		3	1		4	11	21	7
Referential/nonshifty subjects		4	9	8	10	7	2	4
Expletive subjects	4	5	6	4	3	10	8	5
Quantifier subjects	5	8	13	8	3	2	1	3
Shifty subject controls								
Indexical subject		3	5	5	4	14	9	6
Bound possessor in subject		2	4		6	11	17	6
R-expression subject	1	3	4	3	4	12	13	6

Table 2: Mixed effects analysis for Experiment 1 (bound pronoun subject condition = reference level)

Condition	Estimate	Std. error	z	p
Baseline				
Nonfinite	0.76	0.49	1.56	0.12
Nonshifty, non-bound pronoun subjects				
Referential/nonshifty subjects	-2.65	0.45	-5.92	<0.01
Expletive subjects	-2.34	0.46	-5.07	<0.01
Quantifier subjects	-3.99	0.48	-8.25	<0.01
Shifty subject controls				
Indexical subject	-1.50	0.44	-3.38	<0.01
Bound possessor in subject	-0.61	0.45	-1.34	0.18
R-expression subject	-1.17	0.44	-2.64	0.01

cumulative link mixed-effects regression analysis was done with the R package `ordinal` (Christensen 2019). This analysis featured random intercepts for both participants and test sentences, which controls for idiosyncratic effects they might have on acceptability ratings. Results are summarized in table 2; note that the ratings for the bound pronoun subject condition were used as the reference level. Bound pronoun subject sentences were slightly less acceptable than their nonfinite counterparts, although the difference is not significant (estimate $= 0.76$, $z = 1.56$, $p = 0.12$). Bound pronoun subject sentences were also significantly more acceptable than the other conditions. The exception here was the bound possessor in subject condition, which was slightly less acceptable, but not significantly so (estimate $= -0.61$, $z = -1.34$, $p = 0.18$).

Models with more complex combinations of random effects and slopes were also tried and evaluated, following the procedure outlined by Baayen et al. (2008). These mod-

els were rejected because they either had too many parameters to estimate, or resulted in very high correlations between intercept and slopes that suggest overparametrization, and/or turned out to fit the data no better than the model with only random intercepts. (Similar remarks apply to the statistical analyses for the other experiments.)

Following steps outlined by Dean, Voss, & Draguljić (2017), I next used the model and the `emmeans` package in R (Lenth 2019) to test a set of contrasts corresponding to the predictions mentioned at the start of section 2.2. Results are presented in table 3; p-values reported have been corrected with the Bonferroni method.

Table 3: Contrasts for Experiment 1

Contrast	Estimate	Std. error	z	p
Contrasts within nonshifty conditions				
Bound pronoun - Referential/nonshifty	2.65	0.45	5.92	<0.01
Bound pronoun - Expletive	2.34	0.46	5.07	<0.01
Bound pronoun - Quantifier	3.99	0.48	8.25	<0.01
Referential/nonshifty - Expletive	-0.31	0.40	-0.77	1.00
Referential/nonshifty - Quantifier	1.34	0.39	3.42	<0.01
Expletive - Quantifier	1.65	0.42	3.93	<0.01
Nonshifty - shifty	-1.15	0.24	-4.88	<0.01
Bound pronoun - Non-bound pronouns	2.04	0.36	5.59	<0.01

p-value adjustment: Bonferroni method for 8 tests

The first set of contrasts looked at differences between all six possible pairings of the four nonshifty subject conditions (bound pronoun subjects, referential/nonshifty subjects, expletive subjects, and quantifier subjects); the shiftiness hypothesis predicts these conditions to have similar acceptability. Contrary to this prediction, for all but one of these pairings, the coefficient estimates (which track acceptability ratings) were found to be significantly different from each other ($p < 0.01$).

The next contrast was for the prediction that nonshifty conditions should be more acceptable than shifty subject conditions (indexical subjects, subjects with bound possessors, and R-expression subjects), which also follows from the shiftiness hypothesis. Contrary to this prediction, the average nonshifty subject turned out to have a significantly lower mean estimate than the average shifty subject (difference in estimates $= -1.15$, $z = -4.88$, $p < 0.01$).

The third contrast was for the prediction that the bound pronoun condition should be more acceptable than the average non-bound subject condition (namely, the other three nonshifty subject conditions and all three shifty subject conditions), which follows from the ϕ-feature specification hypothesis. Consistent with this prediction, the analysis found that the estimate for the bound pronoun condition was significantly higher than the mean estimate for the other conditions (difference in estimates $= 2.04$, $z = 5.59$, $p < 0.01$).

9

2.2.4 Discussion

Overall, the results of this experiment echo previous findings by Grano & Lasnik. Compared to the other types of target sentences, bound pronoun subject sentences were judged to be highly acceptable, consistent with a scenario in which embedded clauses with bound pronoun subjects are not phases.

The mixed effects regression analysis provided further support for this generalization, with one exception: while bound pronoun subject sentences received higher ratings than sentences with subjects with bound possessors, the difference was not significant. However, there are reasons to think that this might be a false negative. For one, there are informal reports that subjects with bound possessors reduce acceptability, backed up by experiment results in Grano & Lasnik 2018. It is also instructive to compare these two types of sentences with other shifty subject sentences (namely, indexical and R-expression subject sentences), which are by hypothesis ill-formed. Compared to these two shifty subject conditions, bound pronoun sentences had higher median ratings (7 vs. 6); a post-hoc contrast analysis indicates that the difference is statistically significant (estimate $= 1.34$, standard error $= 0.39$, $z = 3.40$, $p < 0.01$). In contrast, subjects with bound possessors did not have higher median ratings (median rating $= 6$), nor was there a statistically significant difference in ratings (estimate $= 0.73$, standard error $= 0.38$, $z = 1.94$, $p = 0.10$).

In addition, as noted earlier, the expletive subject sentences were not a perfect replication of Barros & Frank's examples; the sentences tested here featured a contrast between pivots, while Barros & Frank's featured a contrast between codas. Technically, this leaves open the possibility that an expletive subject can obviate phasehood, as long as the dependency that crosses the phase boundary is that of a coda, and not that of a pivot. While an interesting possibility, this interpretation faces a few theoretical challenges. It implies that the coda versus pivot distinction matters for locality, although why that should be the case is unclear. It also suggests that bound pronoun subjects and expletive subjects are to be distinguished somehow from other kinds of subjects, a scenario that does not follow from existing proposals.

With these caveats in mind, I note that the analysis of contrasts provided clear support for the ϕ-feature specification hypothesis over the shiftiness hypothesis. As a class, sentences with nonbound pronoun subjects were distinctly less acceptable than sentences with bound pronoun subjects. Within the class of sentences with nonshifty subjects (bound pronouns, referential/nonshifty subjects, etc.), there was variation in acceptability, suggesting that not all nonshifty subjects obviate phasehood. Finally, on average, nonshifty subject sentences were also not more acceptable than shifty subject sentences. These contrasts follow straightforwardly from the ϕ-feature specification account.

2.3 Experiment 2: Expletive *there* vs. *it*

Experiment 1 did not yield clear evidence that expletive *there* subjects obviate clause boundaries. In this experiment, I sought to determine whether expletive *it* subjects have this effect, a scenario that was not explicitly considered by Barros & Frank (2017). If *it*-sentences show such an effect, that would provide some novel (although limited) support for Barros & Frank's claim that expletive subjects obviate clause boundaries.

2.3.1 Materials

To ensure that *there*- and *it*-sentences were directly comparable, I used weather verbs and their noun counterparts, so that the *there*- and *it*-sentences were semantically and lexically as close as possible.[2] Because the set of weather verbs and nouns is relatively small, in order to have more datapoints for analysis, I constructed sentences for not one, but three constructions that are sensitive to clause boundaries: comparative deletion, multiple *wh*-questions, and antecedent-contained deletion. For each construction, I created two different *there*-sentences, as well as their *it* counterparts. In total, twelve sentences were constructed; examples are presented in (9).

(9) a. *Comparative deletion*
         (i)   More meteorologists thought <u>there</u> would be snow than rain the next day.
         (ii) More meteorologists thought <u>it</u> would snow than rain the next day.
     b. *Multiple* wh-*questions*
         (i)   Tell me who claims <u>there</u> will be how many inches of rain tomorrow.
         (ii) Tell me who claims <u>it</u> will rain how many inches tomorrow.
     c. *Antecedent-contained deletion*
         (i)   Rachel said that <u>there</u> would be snow in every city that Liz did.
         (ii) Rachel said that <u>it</u> would snow in every city that Liz did.

The sentences were distributed across two lists, so that each list contained three *there*- and three *it*-sentences, there were two sentences of each construction, and no two sentences were variants of each other. Each participant therefore rated six items for this experiment.

2.3.2 Participants and Experimental Set-up

The participants and overall experimental set up were the same as those for Experiment 1.

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[2]I am grateful for an anonymous reviewer for discussion on these issues.

Table 4: Results of Experiment 2

Condition	Frequency of ratings							Median rating
	1	2	3	4	5	6	7	
There-sentences	20	16	17	11	16	21	19	4
It-sentences	16	24	16	12	13	27	12	4
By construction								
Antecedent-contained deletion/*there*	7	5	3	3	6	13	3	5
Antecedent-contained deletion/*it*	5	9	7	6	4	6	3	3
Comparative deletion/*there*	1	3	2	5	6	8	15	6
Comparative deletion/*it*	1	1	2	2	6	19	9	6
Multiple *wh*-questions/*there*	12	8	12	3	4		1	2.5
Multiple *wh*-questions/*it*	10	14	7	4	3	2		2

2.3.3 Results and Discussion

A summary of raw ratings is given in table 4. The median rating for both *there-* and *it*-conditions was 4, comparable to the median rating (= 5) for the *there*-sentences in Experiment 1. The same table also gives a breakdown of ratings by construction. Generally, there was substantial variation in acceptability across the three constructions: comparative deletion was relatively acceptable, but multiple *wh*-questions were not. Looking at raw ratings within a construction, there was little to suggest that *it*-sentences were more acceptable than *there*-sentences. In fact, *there*-sentences appeared to be more acceptable in antecedent-contained deletion sentences and multiple *wh*-questions.

A two-factor cumulative link mixed-effects analysis was run on these ratings, with type of subject (*it* vs. *there*, with *there* as the reference level) and construction (antecedent-contained deletion as the reference level) as fixed main effects. As was the case for the analysis in Experiment 1, the model also contained random intercepts for both participants and test sentences. Overall, the results (table 5) showed no main effect for type of subject; *it*-sentences were less acceptable than *there*-sentences, although not significantly so (estimate $= -0.57$, $z = -1.40$, $p = 0.16$). There were statistically significant effects for construction, as one might expect given the median ratings (estimate for comparative deletion $= 1.51$, $z = 3.48$; estimate for multiple *wh*-questions $= -1.62$, $z = -3.84$; both $p < 0.01$). Interaction effects were not statistically significant: *it*-sentences did not significantly improve the acceptability for any of these constructions (estimate for comparative deletion $= 0.57$, $z = 0.98$; estimate for multiple *wh*-questions $= 0.53$, $z = 0.93$; both $p \approx 0.3$).

To sum up, the results of Experiment 2 provide no evidence for the hypothesis that expletive *it* subjects are more acceptable than expletive *there* subjects.

Table 5: Mixed effects analysis for Experiment 2 (*There*-subjects and antecedent-contained deletion = reference level)

Condition	Estimate	Std. error	z	p
Main effects				
It expletive subjects	-0.57	0.41	-1.40	0.16
Comparative deletion	1.51	0.43	3.48	<0.01
Multiple *wh*-questions	-1.62	0.42	-3.84	<0.01
Interaction effects				
Comparative deletion/*it*	0.57	0.58	0.98	0.33
Multiple *wh*-questions/*it*	0.53	0.56	0.93	0.35

2.4 Interim Summary

The results of both experiments show that bound pronoun subjects can obviate clause boundaries, echoing previous findings by Grano & Lasnik (2018). Importantly, however, they did not yield evidence that other nonshifty subjects have the same effect, *pace* Barros & Frank (2017).

These findings provide further support for a theory like Grano & Lasnik's, which is based on the generalization that phase obviation effects occur only with bound pronoun subjects. These findings also raise questions about why informal judgments like those given by Barros & Frank might diverge from formal experimental data. As an anonymous reviewer pointed out, in the case of the expletive subject condition, the divergence might be attributed to the fact that the structures considered were not completely the same; Barros & Frank's examples contrasted codas, while the sentences tested here contrasted pivots. Why this might produce an acceptability difference is at present unclear, and warrants further investigation. As formulated, the shiftiness hypothesis does not predict an acceptability difference: both pivots and codas are part of an embedded clause, and so should be subject to the same locality conditions.

Another explanation is that informal judgments were based on a relatively smaller set of examples; the choice of lexical items in these examples might have had an idiosyncratic effect on acceptability. In addition, for some of the conditions tested, the acceptability contrasts were small and therefore possibly difficult to detect through informal introspection. For instance, in Experiment 1, excluding the bound pronoun subject condition, there was only a one to two point difference in median ratings between the various nonshifty subject conditions.

3   Deriving Phase Obviation Effects

Having presented experimental data in favor of Grano & Lasnik's generalizations, I next review their account of how bound pronoun subjects can obviate phasehood. I argue that their analysis can be plausibly reframed either as a special case of Feature Inheritance and Value–Transfer Simultaneity (Chomsky 2008, M. Richards 2007, 2011) or as a case of the Principle of Minimal Compliance (N. Richards 1997, 1998). The broader point I wish to make here is that there are independently-motivated proposals that can be adapted to account for these effects, and that these adaptations have the advantage of eliminating or explaining away some of the more stipulative elements of Grano & Lasnik's proposal, such as the idea that CPs enter a derivation as nonphases and acquire phasehood in the process of the derivation.

3.1   An Evaluation of Grano & Lasnik's Proposal

I begin with a summary of Grano & Lasnik's proposal (pp. 482ff.), outlined in (10).

(10)   a.   A bound pronoun can enter a derivation as a "minimal pronoun" with unvalued ϕ-features; these features can get valued by a binder in the matrix clause (Kratzer 1998, 2009; Rullmann 2004; Heim 2008; Landau 2016).
         b.   When such a bound pronoun appears in a subject position, T fails to get its own ϕ-features valued via subject–verb agreement.
         c.   C enters the derivation as a "candidate phase head" (cf. Felser 2004).
         d.   CP becomes a phase only if the ϕ-features on T, the head of C's complement, are valued.

As an illustration, consider the following *too/enough* construction examples in (11a) and (11b). Grano & Lasnik assume that these sentences involves movement of a phonologically-null operator to the left edge of the clause headed by *for*. The operator moves to this position in one single movement step, without any intermediate movement to the embedded finite CP (11c). They further assume that the "strong" Phase Impenetrability Condition (PIC) holds (12) and that vP is not a phase (*pace* Legate 2003 and Chomsky 2001, for instance).

(11)   a.   *This book is too valuable for James to claim [that Mark lent _ to Bill].
         b.   ?This book is too valuable for James$_1$ to claim [that he$_1$ lent _ to Bill].
         c.   This book$_1$ is too valuable [Op$_1$ for James to claim [$_{CP}$ that … t$_1$]].

(12)   *"Strong" PIC (Chomsky 2000)*
         In the configuration [… [$_{HP}$ α [H YP]]], where HP is a phase, the domain of the phase head H, namely, YP, is not accessible to operations outside of HP; only H and its edge α are.

I first discuss what happens to the embedded finite CP for the R-expression subject example (11a). By hypothesis, the R-expression subject *Mark* bears valued ϕ-features; as a matter of notation, I indicate this with $_{+\phi}$ in (13). T agrees with the subject, and CP becomes a phase. By the strong PIC, TP becomes inaccessible to operations outside of CP, as indicated by the box. Movement of Op out of CP is blocked by the PIC.

(13) $[_{CP}$ that $\boxed{[_{TP} \text{Mark}_{+\phi} \text{ T}_{+\phi} \text{ lend Op} \dots]}]$ [Mark *values T, CP becomes a phase*]

As for the bound pronoun subject example (11b), the bound pronoun enters the derivation without valued ϕ-features (notated as $pro_{-\phi}$ in (14)), so T's features cannot get valued. As a result, CP stays as a candidate phase, and Op can move out of it.

(14) $[_{CP}$ that $[_{TP}$ *pro*$_{-\phi}$ T$_{-\phi}$ lend Op $\dots]]$ [*No valuation for T*]

As an anonymous reviewer points out, this phase-based analysis also can explain why some bound pronoun subjects fail to make such sentences acceptable. For example, in (15), *James* binds *he*, but the sentence is unacceptable.

(15)   *This book is too valuable [for James$_1$ to claim [that Mary believes [that he$_1$ lent _
       to Bill]]].

In this example, the bound pronoun ensures that the most deeply-embedded clause stays a candidate phase. However, the next higher clause is a phase: the subject of this higher clause is *Mary*, which values T. The higher clause ends up blocking movement of Op.

(16) $[_{CP}$ that $\boxed{[_{TP} \text{Mary}_{+\phi} \text{ T}_{+\phi} \dots [_{CP} \text{that } pro_{-\phi} \text{ T}_{-\phi} \text{ lend Op} \dots]]}]$

While this approach captures the facts, it poses two conceptual problems.

The first is what I will call the mechanism problem. It is unclear why the mechanism by which CP becomes a phase should be mediated by ϕ-features on T: why does T matter? As far as I can tell, this is stipulated. Grano & Lasnik, building on a suggestion by Hisa Kitahara, propose that T is privileged because TP is C's complement, but this still leaves unaddressed why the phasal status of CP should be linked to T's properties.

A second related problem involves spelling out exactly what changes when a candidate phase (or nonphase) becomes a phase, so that we get the observed locality effects; call this the "phasehood problem." The intuition presented by Grano & Lasnik (and by Barros & Frank) is along the lines of "a functional head agrees with some feature of the subject." While the intuition is important, ideally, a more explanatory, "deeper" account should explain *how* and *why* that should be the case.

3.2 Deriving Phase Obviation Effects via Feature Inheritance and Value–Transfer Simultaneity

In this section, I argue that Grano & Lasnik's proposal can be derived from Feature Inheritance and Value–Transfer Simultaneity, as set out by Chomsky (2008) and M. Richards (2007, 2011). This reframing leads to a more principled solution of the two problems.

More precisely, under Feature Inheritance, uninterpretable features originate on phase heads; when a phase head like C is merged, its features are inherited by nonphase heads like T and valued accordingly (Chomsky 2008). Value–Transfer Simultaneity ("VTS"), on the other hand, states that feature valuation happens together with transfer to the interfaces (M. Richards 2007:566; see also Epstein & Seely 2002). The argument for VTS is an argument by elimination: If valuation happens before transfer, the semantic component will encounter uninterpretable features that are valued, which it cannot remove because they are indistinguishable from valued interpretable features. If transfer happens before valuation, the interfaces will encounter (unvalued) uninterpretable features. In both scenarios, the derivation crashes. The logical conclusion is that valuation and transfer take place simultaneously.

I would like to suggest that we might integrate these two ideas with the PIC in the following way: when T inherits C's features and values them, VTS demands that these features be transferred right away. A natural way of satisfying VTS is by transferring TP, C's complement (for conceptual reasons why CP's edge might not be transferred, see M. Richards 2007 and references therein, among others). If Feature Inheritance and valuation happen right after C is merged (an instance of Earliness, Pesetsky 1989, also Chomsky 1995), then so would transfer of TP, effectively giving us the strong PIC.[3]

At the same time, with the assumption that the interfaces cannot cope with unvalued features, we might entertain the principle in (17) as a corollary of VTS; very similar principles have also been proposed by Felser (2004), Wurmbrand (2011:69), and Juan Uriagereka (as cited by Grano & Lasnik).

(17)   Unvalued features of a phase head delay transfer.

By hypothesis, delaying transfer entails that the complement of the phase head remains accessible to higher syntactic operations. There is thus no need to posit that C enters the derivation as a "candidate phase head" and only becomes a phase head under specific conditions, *pace* Grano & Lasnik. By linking valuation directly to transfer, this approach directly resolves the phasehood problem. Further, these assumptions (in particular, feature inheritance) derive Grano & Lasnik's intuition that CP's status as a phase is related to feature valuation on T, thus also resolving the mechanism problem.

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[3]To be clear, there are other ways to integrate these ideas. For instance, M. Richards (2007) proposes deriving Feature Inheritance from the VTS and PIC; I will not review the argument in detail here.

To illustrate how this analysis works, I will use examples involving the *too/enough* construction, repeated below as (18a) and (18b). Since my goal here is to show how Grano & Lasnik's analysis can be derived from Feature Inheritance and VTS, I will adopt their assumptions about operator movement and vP not being a phase.

(18)   a.   *This book is too valuable for James to claim [that Mark lent _ to Bill].
            b.   ?This book is too valuable for James$_1$ to claim [that he$_1$ lent _ to Bill].

Again, I first discuss what happens to the embedded finite CP for the R-expression example (18a). First, the complementizer *that* is merged. Its unvalued features are inherited by T, indicated by the subscripted $_{-\phi}$ (19a). These features are valued by the subject, *Mark* (19b). Transfer of these features and TP happens right away, as indicated by the box. As a result, Op cannot move out of the CP.[4]

(19)   a.   that [$_{TP}$ Mark$_{+\phi}$ T$_{-\phi}$ lend Op ...]   [*T inherits C's features*]
            b.   that $\boxed{\text{[}_{TP}\text{ Mark}_{+\phi}\text{ T}_{+\phi}\text{ lend Op ...]}}$ [*Feature valuation and transfer of TP*]

We may contrast the above derivation with the derivation for (18b). Following Grano & Lasnik, I assume that the bound pronoun subject is a minimal pronoun with unvalued ϕ-feature, notated as *pro*$_{-\phi}$. The ϕ-features on T, inherited from C, cannot be valued by this minimal pronoun. By the principle in (17), transfer of TP is delayed.

(20)   that [$_{TP}$ *pro*$_{-\phi}$ T$_{-\phi}$ lend Op ...]   [*Feature inheritance, but no valuation nor transfer*]

We may next ask how, in such a system, the subject of the higher clause, *James*, might value the ϕ-features on the minimal pronoun and embedded T and what consequences that might have on the movement of Op to the specifier of *for*. Following Grano & Lasnik, I assume that there is a syntactic operation like Feature Transmission (Kratzer 2009) that allows this "downward" valuation of features. If valuation were to occur early, such as when *James* is merged with v, the embedded TP would be transferred to the interfaces before *for* even enters the derivation (21). Consequently, Op-movement would be blocked.

(21)   a.   [$_{vP}$ James$_{+\phi}$ v ... that [$_{TP}$ *pro*$_{-\phi}$ T$_{-\phi}$ lend Op ...]]   [*Merge* James]
            b.   [$_{vP}$ James$_{+\phi}$ v ... that $\boxed{\text{[}_{TP}\text{ }pro_{+\phi}\text{ T}_{+\phi}\text{ lend Op ...]}}$] [*Feature valuation and*

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[4]This derivation also explains why long-distance binding, where a subject binds a doubly-embedded pronoun subject (i), does not produce phase obviation effects. In (i), the complementizer *that* is merged before *James* enters the derivation. *That*'s features are inherited by T and valued by the subject *Mary*, causing the features and TP to be transferred immediately. In such a derivation, Op-movement is also blocked.

(i)   This book is too valuable Op$_2$ for James$_1$ to claim [$_{CP}$ that [$_{TP}$ Mary believes he$_1$ lent t$_2$ to Bill].

transfer of TP]

The implication, then, is that we need to assume that valuation happens relatively late, at least simultaneously with Op-movement, after the complementizer *for* is merged (22). This analysis suggests that the higher subject *James* cannot directly value the features on the minimal pronoun and T of the embedded clause; otherwise it could have done so earlier.[5] More speculatively, late valuation suggests that the valuation process is mediated via functional heads like C (*for*). I note that in Kratzer's account (2009:201), minimal pronouns are valued by functional heads, and not directly by a higher subject (but see Grano & Lasnik's footnote 20 for potential complications relating to Kratzer's analysis).

(22)   a. $[_{CP}$ for $[_{TP}$ James$_{+\phi}$ ... that *pro*$_{-\phi}$ T$_{-\phi}$ lend Op ...]]   [*Merge* for]

         b. $[_{CP}$ Op$_1$ for $\boxed{[_{TP}\text{ James}_{+\phi} \ldots \text{that } pro_{+\phi} \text{ T}_{+\phi} \text{ lend t}_1 \ldots]}$]   [*Op-movement, feature valuation and transfer of higher TP*]

3.3   An Alternative Analysis Based on the Principle of Minimal Compliance

Alternatively, we can resolve the mechanism and phasehood problems by appealing to the Principle of Minimal Compliance (PMC, N. Richards 1997, 1998, 2001).

         The PMC (23) formalizes the intuition that a constraint, once satisfied by a particular syntactic operation applying in a certain domain, can be violated by subsequent operations applying in the same domain.

(23)   *Principle of Minimal Compliance (Richards 1998:601 exx. 6 and 7 (see N. Richards 2001:199 for an alternative definition)*

         a.   For any dependency D that obeys constraint C, any elements that are relevant for determining whether D obeys C can be ignored for the rest of the derivation for purposes of determining whether any other dependency D$'$ obeys C.

         b.   An element X is relevant to determining whether a dependency D with head A and tail B obeys constraint C if

                (i)   X is along the path of D (that is, X=A, X=B, or A c-commands X and X c-commands B) and

                (ii)   X is a member of the class of elements to which C makes reference.

The PMC is relevant to phase obviation effects in the following way. Suppose that certain dependencies are clause-bound; crossing a finite clause boundary would violate the Phase

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[5]For thoroughness, I note that Grano & Lasnik assume that bound pronouns are bound and valued by their antecedent (p. 491, footnote 20). As an anonymous reviewer points out, this assumption is potentially problematic for Grano & Lasnik, for essentially the same reason; if the binder can value a bound pronoun (and presumably the associated T head), one might expect it to do so early, which would block Op-movement. Some kind of late binding and valuation is perhaps also needed on that assumption.

Impenetrability Condition, as defined in (12). Phase obviation effects reflect exceptional violations of the PIC. Assume further that the binding of the embedded pronoun subject happens relatively early in the syntax in a way that satisfies the PIC before the dependencies in question are built. The PIC being satisfied, we can invoke the PMC to explain why these dependencies may subsequently violate the PIC.[6]

Put differently, this analysis resolves the mechanism and phasehood problems by subsuming them under the PMC. It also does away with the need to postulate candidate phases and the idea that phasehood is acquired in a derivation.[7]

I return once more to the *too/enough* examples for illustration (24).

(24)   a.   *This book is too valuable for James to claim [that Mark lent _ to Bill].
       b.   ?This book is too valuable for James$_1$ to claim [that he$_1$ lent _ to Bill].

For concreteness, I will continue to adopt Grano & Lasnik's assumptions about phases (25); these assumptions yield a phase-specific variant of the PMC, as stated in (26).

(25)   a.   *"Strong" PIC (Chomsky 2000)*
            In the configuration [. . . [$_{HP}$ α [H YP]]], where HP is a phase, the domain of the phase head H, namely, YP, is not accessible to operations outside of HP; only H and its edge α are.
       b.   C is a phase head, v is not.

(26)   *Principle of Minimal Compliance, in a PIC context*
       For any dependency D that obeys the PIC, the phase heads that are relevant for determining whether D obeys the PIC — any C head that lies between, or serves as, D's head and tail — can be ignored for the rest of the derivation for purposes of determining whether any other dependency D′ obeys the PIC.

I will further assume that the binding of the embedded minimal pronoun is the reflex of a syntactic operation like Feature Transmission. To derive the desired contrast,

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[6]N. Richards (2001:274–275) discusses *wh*-movement from *wh*-questions (i), which we can take to be another example of the bound pronoun subject effect (in this case, the bound pronoun is PRO). However, he presents what appears to be another analysis. Citing Boyd 1992, he notes that there is a dependency between the embedded (nonfinite) T and the (finite) matrix T in (ia). He argues that forming the dependency between the two Ts "extends the domain," making *wh*-movement out of the *wh*-island possible, although he does not specify what dependency this is or how it is absent in (ib).

(i)   a.   What$_1$ were you wondering how to fix t$_1$?
       b.   *What$_1$ were you wondering how Mary fixed t$_1$?
            (N. Richards 2001:274, ex. 140)

[7]Superficially, this analysis seems to imply that the PMC causes a constituent to lose its phasal qualities. However, technically, this is not what the PMC does; rather, the PMC allows the derivation to selectively ignore them.

Feature Transmission must apply in the bound pronoun subject example (24b) in a way that satisfies the PIC, and not at all in the R-expression example (24a).

More specifically, given the strong PIC, Feature Transmission from a binder to the bound pronoun must proceed indirectly through C, since the binder lies outside the phase and the bound pronoun is inside the phase head's complement (see Grano & Lasnik for empirical arguments against a weaker version of the PIC). Modifying Kratzer's (2009) account somewhat, then, suppose that the main clause subject *James* first transmits its features to *that*, the embedded C head. C then transmits these features onto the embedded subject and T .

(27) $[_{vP}$ James$_{+\phi}$ ... $[_{CP}$ that *pro*$_{+\phi}$ T$_{+\phi}$ lend Op ...]]

These feature transmission operations create two dependencies involving the embedded C *that*. These dependencies do not violate the PIC, so C can be ignored for subsequent Op-movement.

The unacceptable R-expression case (24a) (repeated below) presents a slight complication. Although there is presumably no feature transmission from the embedded C to the R-expression subject *Mark*, an anonymous reviewer points out that it is still logically possible that the main clause subject *James* can transmit its features to C (28). The resulting dependency would obey the PIC and allow Op to move out of CP. (I discuss additional overgeneration challenges in the next section.)

(28)   a.   *This book is too valuable for James to claim [that Mark lent _ to Bill].
          b. $[_{vP}$ James$_{+\phi}$ ... $[_{CP}$ that Mark T lend Op ...]]

Clearly, some independent principle is needed to prevent Feature Transmission to C in (28). One possibility is to appeal to economy considerations, especially if we were to adopt a teleological view of Feature Transmission: it takes place only so that minimal pronouns can acquire the necessary morphological features. Since there is no bound pronoun in (28), Feature Transmission is not necessary, and is in fact blocked.

3.4   Discussion

The two accounts presented above offer solutions to the mechanism and phasehood problems associated with Grano & Lasnik's theory of phases. But is there any reason to favor one account over the other? To a large extent, this depends on one's assumptions about mechanisms such as Feature Inheritance and the transmission of ϕ-features from binders, as well as one's positions on the validity of principles like VTS or the PMC. Evaluating the overall merits of these mechanisms and principles is beyond the scope of this article.

Instead, in this section, I will restrict myself to evaluating these two accounts from the perspective of phase obviation effects. I will argue that from this perspective, the Feature Inheritance/VTS account presents some advantages over the PMC account.

Conceptually speaking, the Feature Inheritance/VTS account presents a "deeper" explanation than the PMC account, offering an explanation of locality effects associated with the PIC as well as obviation effects. In contrast, for the PMC account to work, one needs to assume both the PIC and the PMC. However, the PMC account does not provide a way to understand why these principles should exist in the first place.

Empirically, one challenge for the PMC account lies in constraining our theory of bound pronouns and Feature Transmission so that the PMC account does not overgenerate. Earlier, I discussed a complication relating to R-expression subjects (24a)/(28). Here, I would like to mention a few more problematic cases.

First, recall the generalization that only bound pronoun subjects exhibit a phase obviation effect; bound pronoun objects and bound possessors inside subjects do not. Applying the logic of the PMC, one must conclude that only the binding of a subject satisfies the PIC, while the binding of an object or a possessor does not (29). (Since bound objects and possessors can appear in well-formed sentences, these pronouns must have entered the derivation as regular pronouns with ϕ-features; see Grano & Lasnik 2018:491–493.)

(29)   a.   This book is too valuable for James$_1$ to claim that he$_1$ lent to Bill.   [*Bound pronoun subject; satisfies PIC*]
   b.   *This book is too valuable for James$_1$ to claim that Bill lent to him$_1$.   [*Bound pronoun object; does not satisfy PIC*]
   c.   *This book is too valuable for James$_1$ to claim that his$_1$ father lent to Maria. [*Bound possessor inside subject; does not satisfy PIC*]
      (from Grano & Lasnik 2018:472–473, exx. 11–13)

It is relatively easy to account for the subject/object difference. Suppose that the binding of bound pronouns depends on a feature transmission operation from binder to bound pronoun. In the case of a bound pronoun object (29b), feature transmission might fail because the subject intervenes between the matrix subject (the binder) and the object.

However, it is more difficult to explain why there is a subject/possessor difference. In fact, proposals on bound pronouns and fake indexicals like Kratzer's are explicitly designed to generate examples like (30), where the subject *I* is argued to (indirectly) cause the valuation of features on the possessor to derive *my*.

(30)   Only I look after my children. ("No one else looks after their children.")

An anonymous reviewer points out another challenge, namely, with explaining the low acceptability of long-distance binding, in which a subject binds a pronoun subject via multiple

Feature Transmission operations through C heads (31). Such sentences are unacceptable, suggesting that there are constraints ruling out this feature transmission process. Following Grano & Lasnik 2018:493 (footnote 24), one might presume that the intermediate subject *Mary*, being a subject itself, somehow intervenes and blocks feature transmission from *James* to the pronoun.

(31) a. *This book is too valuable [for James$_1$ to claim [that Mary believes [that he$_1$ lent _ to Bill]]].
      b. [$_{vP}$ James$_{+\phi}$ ... [$_{CP}$ that Mary ... [$_{CP}$ that *pro*$_{+\phi}$ T$_{+\phi}$ lend Op ...]]

In contrast, overgeneration is less of an issue for the Feature Inheritance/VTS account. Standard assumptions about feature inheritance generally hold that C's ϕ-features are inherited by T, and not by other functional heads associated with objects or subject-internal possessors. As a result, while a minimal pronoun in a subject position can plausibly delay transfer of TP, there is no expectation that minimal pronouns in object or possessor positions (to the extent that they are licensed) have the same effect. Similarly, as discussed in section 3.2, the Feature Inheritance/VTS account rule out the long-distance binding cases quite straightforwardly, without needing additional assumptions about Feature Transmission.

4   Phase Obviation Effects in Nominals

The discussion so far has been restricted to clause-bound phenomena. However, it has long been recognized that clauses are not the only constituents whose boundaries dependencies are sensitive to. In this section, I consider locality effects in nominals.

The focus on nominals is motivated in part by classic claims that clauses and nominals are locality domains (for instance, Chomsky 1973) and the DP Hypothesis literature, which provides a rich set of arguments that possessive DPs are structurally analogous to clauses; I present one view of this structural parallelism in (32) (for example, Szabolcsi 1994, see also Abney 1987). Note that in (32) "Poss" is intended as a syntactic category, although not necessarily one with possessive semantics.

(32) CPs and DPs are isomorphic. Subjects and possessors are structurally analogous. (cf. other analyses where possessors are in Spec,DP, or are of the category D.)

a. CP
C   TP
Subject
T   VP

b. DP
D   PossP
Possessor
Poss   NP
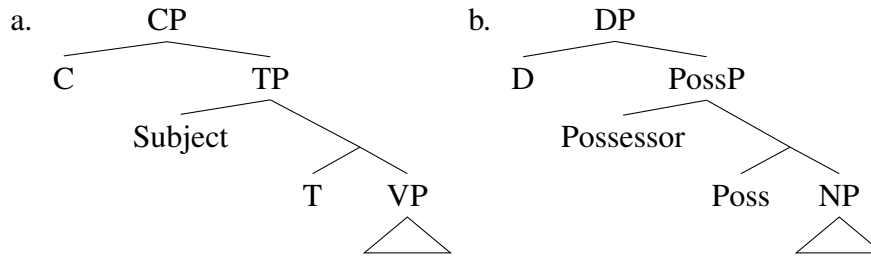
To the extent that the structural parallels extend to locality effects, we expect these DPs to be phases like finite clauses, exhibiting similar obviation effects. In this section, I argue that this prediction is borne out, citing examples from gapping and *wh*-movement (for prior discussion of the latter phenomena, see Davies & Dubinsky 2003). In support of these observations, I provide evidence from formal acceptability judgment experiments. While the data do not provide new evidence for adjudicating between the Feature Inheritance/VTS and PMC accounts above, they do constitute a new argument for treating (some) DPs as phases, providing support to the idea that both clauses and nominals are locality domains. They further underscore the need for a theory of locality as developed in Grano & Lasnik 2018, Barros & Frank 2017, and this article.

4.1   Generalizations

As the a and b examples of (33) and (34) show, the dependencies in gapping and *wh*-movement cannot cross the boundary of a definite DP. Interestingly, as Davies & Dubinsky (2003) observed for *wh*-movement, this restriction is relaxed when the definite DP has a bound possessor (c examples).

This is not to claim that a bound possessor is sufficient to ensure the acceptability of gapping and *wh*-movement involving definite DPs. Davies & Dubinsky observe that in *wh*-movement, there is an additional requirement that the main verb be a "verb of creation," for example, *to tell* rather than *to hear* and *to write* rather than *to edit*. I will set aside the question about why the choice of verb matters, leaving that for future research. In this article, I will be concerned with the effect attributable to the bound possessor, which I will call the "bound possessor effect" for ease of reference.

(33)   *Gapping*
   a.   John joked about Obama, and Mary ~~joked~~ about Trump.
   b.   *John told Colbert's joke about Obama, and Mary ~~told Colbert's joke~~ about Trump.
   c.   John$_1$ told his$_1$ joke about Obama, and Mary$_3$ ~~told her$_{3/*2/*1}$ joke~~ about Trump.

(34)   Wh-*movement (Davies & Dubinsky 2003)*

23

a. [Which president]$_1$ did Mary joke about t$_1$?
b. *[Which president]$_1$ did Mary$_3$ tell Colbert's$_2$ joke about t$_1$?
c. [Which president]$_1$ did Mary$_3$ tell her$_{3/*2}$ joke about t$_1$?

Davies & Dubinsky (2003) also observe that, if the main verb is a verb of creation, *wh*-movement from a definite DP also becomes more acceptable when there is a demonstrative in the DP (35); I will call this contrast as the "demonstrative effect." Davies & Dubinsky account for this effect by positing a PRO possessor in the demonstrative, thus assimilating it with the bound possessor effect; I review their argument later in this section.

(35)   [Which president]$_1$ did Mary tell [$_{DP}$ those jokes about t$_1$]?

4.2   Experiment 3: Gapping

4.2.1   Materials

To the extent that the bound possessor effect is real, it can be seen as the nominal version of the bound pronoun subject effect. In this section and the next one, I report two experiments to confirm this effect.

The goal of Experiment 3 was to verify the observation that gapping involving a definite DP is possible only when the possessive pronoun is bound by the local subject (what I will call a sloppy reading, to borrow a term of Ross 1969), and not when the pronoun is coindexed with the subject of the previous clause (a strict reading), a reading that an anonymous reviewer suggested might be acceptable.

(36)   a.   John$_1$ told his$_1$ joke about Obama, and Mary$_2$ ~~told her$_2$ joke~~ about Trump.
             [*"Sloppy" (bound possessor) reading*]
        b.   John$_1$ told his$_1$ joke about Obama, and Mary$_2$ ~~told his$_1$ joke~~ about Trump.
             [*"Strict" reading*]
             (note: no judgments given for these examples)

To test this claim, I constructed four potentially ambiguous gapping sentences. For each sentence, paraphrases for the sloppy and strict readings were constructed (37). To ensure that the sentences were maximally plausible, I only used the predicates *told someone's joke about something* and *sang someone's song about something*. I did not use the predicate *wrote someone's paper/book about something*; under a strict reading, this predicate would imply academic fraud or ghostwriting. In my judgment, such sentences require additional context to be felicitous, complicating the way stimuli sentences are presented.

(37)   Alex told his joke about the senator, and Joe about the governor.
        a.   Sloppy paraphrase: Alex told Alex's joke about the senator, and Joe told Joe's

Table 6: Results of Experiment 3

| Condition | Frequency of ratings | | | | | | | Median rating |
	1	2	3	4	5	6	7	
Sloppy paraphrases			1	1	4	7	19	7
Strict paraphrases	7	3	6	3	7	4	2	3.5

    joke about the governor.
  b. Strict paraphrase: Alex told Alex's joke about the senator, and Joe told Alex's joke about the governor.

Eight other filler sentences were also created. Each of these sentences featured VP ellipsis, where the elided VP contained a pronoun. Sloppy and nonsloppy paraphrases were created for each of these sentences.

4.2.2 Participants and Experimental Set-up

Sixteen participants were recruited over Amazon Mechanical Turk. All participants were based in the United States, above the age of 18, and passed a English native speaker screening test. Participants were paid US$2 for their participation.

  Sentences were presented in a randomized fashion using Ibex. For each sentence, one of the two possible paraphrases was selected, so that for both the gapping and filler sentences, half of the paraphrases had the sloppy reading. Participants saw each sentence only once.

  Sentences and paraphrases were presented as shown in (38). Participants were instructed to rate each sentence–paraphrase pair along a Likert scale, such that a rating of 7 indicated that the sentence "can describe the situation" in the paraphrase, while 1 indicated that it cannot. Before starting the experiment proper, participants rated four practice items.

(38) *Example stimulus*
  Alex told his joke about the senator, and Joe about the governor.
  Can the above sentence describe the following situation? — Alex told Alex's joke about the senator, and Joe told Alex's joke about the governor.

4.2.3 Results and Discussion

A summary of raw ratings for the gapping examples is reported in table 6. Overall, the sloppy (bound possessor) paraphrases received a higher rating than the strict paraphrases (median ratings 7 and 3.5 respectively).

  A cumulative link mixed-effects analysis was also run on the ratings of this experiment, with strict and sloppy readings as fixed effects, random intercepts for both partici-

Table 7: Mixed effects analysis for Experiment 3 (Sloppy reading = reference level)

Condition	Estimate	Std. error	z	p
Strict reading	-5.88	1.62	-3.64	<0.01

pants and test sentences, and random slopes for participants. The results indicate that the strict reading was significantly less acceptable (estimate = -5.88, $z = -3.64$, $p < 0.01$).

To sum up, the results of this experiment support the claim that the dependencies in gapping can cross the boundary of a definite DP when the definite DP has a possessor bound by the local subject. The results also show that these dependencies become less acceptable when the possessor is coindexed with the subject of the previous clause. This finding provides a parallel with Grano & Lasnik's report that gapping dependencies can only cross a finite clause boundary if the clause's subject is a bound pronoun.

4.3   Experiment 4: Wh-*Movement from Possessive and Demonstrative DPs*

4.3.1   *Materials*

Experiment 4 was designed to investigate how shifty/nonshifty possessors and the demonstrative influence the acceptability of *wh*-movement, in the same way that Experiment 1 investigated the influence of shifty/nonshifty subjects on comparative deletion.

For this experiment, eight different sentences were created. One limitation of this design is that some main verbs and objects had to be repeated across sentences (e.g. *sing a song* and *tell a joke* each appeared in two sentences); the requirement for verbs of creation and the desire to have relatively naturalistic scenarios imposed constraints on what verbs and objects can be used.

For each sentence, eight variants were constructed (39); most of these conditions of interest have analogues in Experiment 1. These sentences were distributed across eight lists in a Latin Square design, so that each list contains one sentence for each of the eight conditions, and no two sentences were variants of each other. Each participant therefore rated only eight items for this experiment.

(39)   a.   *Baseline conditions*
    (i)   A few people asked which old hotel Alex wrote about.   [*No DP*]
    (ii)   A few people asked which old hotel Alex wrote <u>an</u> article about.   [*Indefinite DP*]
    b.   A few people asked which old hotel Alex wrote <u>his</u> article about.   [*Bound possessor*]
    c.   A few people asked which old hotel the ghostwriters working with the author wrote <u>his</u> article about.   [*Referential/nonshifty possessor*]
    d.   A few people asked which old hotel Alex wrote <u>that</u> article about.   [*Demon-*

26

strative that]

e. *Shifty possessor conditions (control)*
  (i) A few people asked which old hotel Alex wrote <u>my</u> article about. [*Indexical possessor*]
  (ii) A few people asked which old hotel Alex wrote <u>his</u> daughter's article about. [*Bound possessor in possessor*]
  (iii) A few people asked which old hotel Alex wrote <u>the reporter's</u> article about. [*R-expression possessor*]

There are two conditions tested in Experiment 1 whose analogues were not tested here. The first is the "expletive subject" condition (involving the expletive *there*), for which there is arguably no immediately apparent nominal analogue. The second is the "quantifier subject" condition. In Barros & Frank's examples, quantifier subjects feature the negative existential *no* (40a). The analogue in the nominal domain involves *wh*-movement from a DP with a negatively-quantified possessor (40b), which is pragmatically odd. Because of this confound, such examples are unlikely to be judged as acceptable, and I did not seek to test this condition in this experiment.

(40) a. More baristas claimed that <u>no customer</u> drinks tea than coffee.
      b. #A few people asked which old hotel Alex wrote <u>no one's</u> article about.

Setting aside these two conditions, this experiment was designed to evaluate three distinct sets of predictions, on the assumption that (definite) DPs are phases in the same way that (finite) CPs are. Grano & Lasnik's ϕ-feature-based proposal predicts the contrast in (41a); this is also the contrast expected, given the contrasts observed in Experiment 1. Barros & Frank's shiftiness proposal, on the other hand, predicts that the bound possessor and referential/nonshifty possessor conditions should pattern together (41b). Finally, of course, Davies & Dubinsky (2003)'s observations and proposal predict that the bound possessor and demonstrative *that* condition should pattern together (41c).

(41) *Predicted contrasts for DPs*

a. Grano & Lasnik's proposal: Bound possessor > Referential/nonshifty possessor and shifty possessors
b. Barros & Frank's proposal: {Bound possessor ≈ Referential/nonshifty possessor} > Shifty possessors
c. Davies & Dubinsky's proposal: {Bound possessor ≈ Demonstrative *that*} > Referential/nonshifty possessor and shifty possessors

Table 8: Results of Experiment 4

Condition	Frequency of ratings							Median rating
	1	2	3	4	5	6	7	
Baselines								
No DP					2	9	29	7
Indefinite DP			1	1	4	11	23	7
Bound possessor			1	4	4	7	24	7
Referential/nonshifty possessor	4	13	7	5	4	4	3	3
Demonstrative *that*	2	2	3	5	2	13	13	6
Shifty possessor controls								
Indexical possessor	2	7	7	1	4	11	8	5
Bound possessor in possessor	3	2	5	8	6	8	8	5
R-expression possessor	2	3	5	4	7	9	10	5

4.3.2 Participants and Experimental Set-up

The participants and experimental set-up were the same as those for Experiments 1 and 2. Participants rated sentences along a Likert scale, such that a rating of 1 indicated the lowest acceptability and 7 the highest; they were instructed to ignore plausibility in rating the sentences.

4.3.3 Results and Discussion

A summary of raw ratings is presented in table 8. Overall, participants assigned high ratings to the baseline conditions as well as the bound possessor and the demonstrative conditions (median ratings 7, 7, and 6 respectively). As a first approximation, these results support Davies & Dubinsky's observations about the bound possessor and demonstrative effects. Participants assigned lower ratings to the referential/nonshifty possessor condition (median rating = 3) and shifty possessor conditions (median ratings = 5).

To test these results for statistical significance, the data was first fitted with a cumulative link mixed-effects regression, with the various conditions as fixed effects and random intercepts for both participants and test sentences. Results are summarized in table 9. Overall, compared to the bound possessor condition, the baseline conditions had no significantly different ratings, while all other conditions were significantly less acceptable (all estimates negative, with $p < 0.01$).

A set of five contrasts was then tested, corresponding to the predictions in (41). Results are presented in table 10; p-values have been corrected with the Bonferroni method.

The first contrast compared bound possessors to the average non-bound possessor condition (that is, aggregating over referential/nonshifty possessor and the three shifty possessor conditions: indexical possessors, possessors with bound possessors, and R-expression

Table 9: Mixed effects analysis for Experiment 4 (bound possessor = reference level)

Condition	Estimate	Std. error	z	p
Baselines				
No DP	0.94	0.52	1.82	0.07
Indefinite DP	0.05	0.47	0.11	0.91
Referential/nonshifty possessor	-3.88	0.50	-7.83	<0.01
Demonstrative *that*	-1.57	0.46	-3.43	<0.01
Shifty possessor conditions				
Indexical possessor	-2.54	0.47	-5.42	<0.01
Bound possessor in possessor	-2.32	0.45	-5.11	<0.01
R-expression possessor	-2.16	0.45	-4.75	<0.01

Table 10: Contrasts for Experiment 4

Contrast	Estimate	Std. Error	z	p
Bound possessor - nonbound possessors	2.73	0.39	6.92	<0.01
Nonshifty possessors - shifty possessors	0.40	0.28	1.42	0.78
Bound possessor - Referential/nonshifty	3.88	0.50	7.83	<0.01
Bound possessor/*that* - non-bound possessors	1.94	0.29	6.78	<0.01
Bound possessor - *that*	1.57	0.46	3.43	<0.01

p-value adjustment: Bonferroni method for 5 tests.

possessors). Grano & Lasnik's ϕ-feature-based proposal predicts that bound possessors should be more acceptable. Consistent with this prediction, the estimate for bound possessors (which tracks acceptability) was significantly higher than the mean estimate for the other conditions (difference in estimates $= 2.73$, $z = 6.92$, $p < 0.01$).

The second contrast was for the prediction that nonshifty possessors (bound possessors and referential/nonshifty possessors) on average are more acceptable than shifty possessors, as predicted by Barros & Frank's shiftiness hypothesis. Although the estimate for nonshifty possessors was indeed higher, this difference was not significant (difference $= 0.40$, $z = 1.42$, $p = 0.78$).

The third contrast was for the prediction that nonshifty possessors on average should be similarly acceptable, also as the shiftiness hypothesis predicts. Contrary to expectation, the estimate for bound possessors was found to be significantly higher (difference $= 3.88$, $z = 7.83$, $p < 0.01$). The second and third contrasts collectively do not provide clear evidence for the shiftiness hypothesis, similar to what was seen in Experiment 1.

The fourth contrast compared bound possessors and demonstrative *that* to referential/nonshifty possessors and shifty possessors; Davies & Dubinsky's account predicts the former conditions to be more acceptable. Consistent with this prediction, the mean estimate for bound possessors and demonstrative *that* conditions was significantly higher

(difference $= 1.94$, $z = 6.78$, $p < 0.01$).

The last contrast compared the bound possessor condition to the demonstrative *that* condition; Davies & Dubinsky's account predicts them to have similar acceptability. The estimate for bound possessors was significantly higher, contrary to expectation (difference $= 1.57$, $z = 3.43$, $p < 0.01$). To the best of my knowledge, such a contrast has not been reported previously in the literature.

That said, I caution against taking this contrast to mean that the demonstrative *that* condition is ungrammatical. In numerical terms, like bound possessors, this condition was rated more acceptable compared to the referential/nonshifty and shifty possessor conditions. A post-hoc analysis of estimates suggested that the difference is significant (difference $= 1.15$, standard error $= 0.34$, $z = 3.41$, $p < 0.01$). For these reasons, I conclude tentatively, essentially following Davies & Dubinsky, there is likely to be a grammatical distinction between the demonstrative *that* condition and the shifty possessor and referential/nonshifty possessor conditions.[8]

4.4 A Formal Analysis of the Bound Possessor Effect

In this section, I show how an analysis of the bound pronoun subject effect can be extended and integrated with Davies & Dubinsky's (2003) account of the bound possessor and demonstrative effects; for ease of reference, I repeat the critical examples below.

(42)   a.   *Gapping* (from (33))
       (i)   *John told Colbert's joke about Obama, and Mary ~~told Colbert's joke~~ about Trump.
       (ii)   John$_1$ told his$_1$ joke about Obama, and Mary$_3$ ~~told her$_3$ joke~~ about Trump.
   b.   Wh-*movement* (from (34) and (35))
       (i)   [Which president]$_1$ did Mary$_3$ tell her$_3$ joke about t$_1$?
       (ii)   [Which president]$_1$ did Mary tell those jokes about t$_1$?

For the purpose of exposition, I will present a Feature Inheritance/VTS-based account, with the assumption that definite D is a phase head. D's ϕ-features are inherited by Poss and in turn valued (or not) by the possessor in the same way the ϕ-features on T are inherited from C and valued by the subject. (A PMC account can also be adapted to produce the desired

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[8]An anonymous reviewer asks whether this conclusion about the demonstrative *that* condition poses a problem for an earlier conclusion, namely, that sentences with bound possessors inside subjects (**More baristas$_1$ claimed that their$_1$ coworkers drink tea than coffee*) are ill-formed. In Experiment 1, for instance, these sentences also received a median rating of 6. However, a direct comparison is not entirely appropriate, as Experiments 1 and 4 test different constructions with different lexical items. Instead, a more appropriate comparison would be to compare these sentences with other shifty subject sentences in Experiment 1, which are by hypothesis ungrammatical, as presented in section 2.2.4.

contrasts, on the same assumption that definite D is a phase head.)

I assume that gapping in this context involves a "remnant" moving from the DP phase. In the examples in (42a), the remnant is *about Trump*. When the possessor bears valued ϕ-features, as *Colbert's* does in (42a-i), it values the ϕ-features on Poss (43a). PossP, as the complement of DP, gets transferred to the interfaces (43b). The movement of the remnant is then blocked, thus explaining the low acceptability. However, if the possessor is bound, it may enter the derivation as a minimal possessive pronoun with unvalued ϕ-features. In that event, the ϕ-features on Poss remain unvalued, thus delaying transfer (44). The remnant is then free to move out of the DP phase.

(43)   *Deriving the low acceptability of* *John told Colbert's joke about Obama, and Mary ~~told Colbert's joke~~ about Trump.

    a.   D [$_{PossP}$ Colbert's$_{+\phi}$ Poss$_{-\phi}$ jokes about Trump] [*Poss inherits D's features*]

    b.   D $\boxed{\text{[}_{PossP}\text{ Colbert's}_{+\phi}\text{ Poss}_{+\phi}\text{ jokes about Trump]}}$ [*Feature valuation and transfer of PossP*]

(44)   *Deriving the acceptability of* John$_1$ told his$_1$ joke about Obama, and Mary$_3$ ~~told her$_3$ joke~~ about Trump.

    D [$_{PossP}$ *pro*$_{-\phi}$ Poss$_{-\phi}$ jokes about Trump]   [*Poss inherits D's features, but no transfer of PossP*]

A similar analysis applies to the bound possessor effect for *wh*-movement (42b-i), on the assumption that *wh*-phrases do not move to Spec,DP in English. Following McCloskey 2002, I further assume that movement to the specifier of a head must be triggered by features on the head. In English, lexical idiosyncracies mean that features that trigger *wh*-movement are found on C (maybe also v), but not on definite D. Consequently, there is no "escape hatch" in a DP that enables successive cyclic movement of a *wh*-phrase.

Davies & Dubinsky also give a bound possessor analysis of the demonstrative effect (42b-ii) that can be adapted in a similar fashion. In this analysis, demonstrative expressions consist of a null possessor (notated as PRO, following Chomsky 1986) modifying a NP (45); this null element is bound by the main clause subject and interpreted as the creator of the NP's referent.

(45)   [$_{DP}$ that [$_{PossP}$ PRO letter]]

This analysis is based on the observation that in typical contexts, a demonstrative-modified DP in object position can occur with either a reflexive or a pronoun that is bound by the subject (46). They further observe that the binding facts correlate with the interpretation of the DP (also see Chomsky 1986). In (46a), with the pronoun, the letter in question is understood to be written by someone else other than the listener. In contrast, in (46b), with the reflexive, the letter is understood to be written by the listener. Davies & Dubinsky argue

the author is actually syntactically represented in the DP, as PRO, which can be coindexed (or not) with the overt pronoun or reflexive.

(46)   a.   Why did you send me [that letter about you]?
          b.   Why did you send me [that letter about yourself]?
              (Adapted from Davies & Dubinsky 2003:25 ex. 60)

As further support for this analysis, Davies & Dubinsky observe that when the main verb is a verb of creation like *to write*, PRO must be coindexed with (and bound by) the subject, since the subject of the verb must be the creator of the letter. If so, one predicts that in these contexts, the demonstrative-modified DP can contain the reflexive but not the pronoun, to avoid a Principle B violation. (47) shows that this prediction is borne out.

(47)   a.   Why did you write me [that letter about yourself/*you]?
          b.   Why did you$_1$ write me [that PRO$_1$ letter about yourself$_1$/*you$_1$]?
              (ibid., also ex. 65)

Adopting this proposal, we can explain why demonstrative DPs in such configurations allow *wh*-movement: PRO is a minimal possessive pronoun with unvalued ϕ-features, and so does not value Poss's ϕ-features. Until these ϕ-features get valued, *wh*-movement out of such a DP phase does not violate the PIC.[9]

4.5   *Additional Comments*

4.5.1   *LF Noun Incorporation (Davies and Dubinsky 2003)*

The above analyses of gapping and *wh*-movement in nominals offer several conceptual advantages over Davies & Dubinsky's original analysis of the bound possessor and demonstrative effects in *wh*-movement. In Davies & Dubinsky's proposal (pp. 28–29), nouns can "incorporate" at LF from a definite DP onto the verb under specific circumstances: when the definite DP is a result nominal, modified with a bound possessor or a demonstrative that is hypothesized to contain a PRO (interpreted as the creator of the result nominal),[10] and when it is the object of a verb of creation. They further assume that a definite DP blocks government, and is thus a blocking category for *wh*-movement. However, when the noun incorporates at LF, the blocking effect is undone, according to the Government

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[9]An anonymous reviewer asks why Poss's ϕ-features do not get valued by the NP complement (such as *letter* in (45)). One possibility, which builds on the idea that clauses and nominals are isomorphic, is that the possessor PRO originates in a position between Poss and the NP, in the same way that subjects are thought to originate between T and the VP (the VP-internal subject hypothesis). If the valuation of Poss's ϕ-features is achieved by probing downward (like T), PRO might intervene and prevent NP from valuing Poss's ϕ-features.

[10]Boyd (1992) also suggests a similar analysis involving a PRO for acceptable *wh*-movement of arguments from clausal complements of definite deverbal NPs like *claim* (pp. 91–92).

Transparency Corollary of Baker 1988.

Adopting a phase-based analysis eliminates the need to appeal to blocking categories or government, yielding an account more consistent with standard Minimalist assumptions. In addition, if one assumes a Y-model of syntax where overt operations precede covert ones, Davies and Dubinsky's proposal presents a potential ordering paradox: incorporation, a covert operation, feeds *wh*-movement, which occurs in the overt syntax. In contrast, this proposal does not depend on LF incorporation and so avoids any paradox.

4.5.2 *The Complex NP Constraint*

Like the theory of subjacency, phase theory provides a way to derive the Complex NP Constraint (Ross 1967). A complex NP consists of two phases: a (definite) DP and a clause. Supposing that there is no intermediate *wh*-movement to Spec,DP, a *wh*-phrase must move directly out of the DP from the clause, violating the PIC (or whatever principle that derives it). However, according to the current proposal, there are also circumstances where movement out of a DP does not violate the PIC: when the DP has a demonstrative or a bound possessor and the main verb is a verb of creation. We predict *wh*-movement from complex NPs to be acceptable when these conditions are met.

This prediction is partially supported. As Davies and Dubinsky themselves noted (pp. 31–32, also Boyd 1992 and Ross 1967), under these circumstances, *wh*-movement of arguments is possible out of these complex NPs (48a). However, I note that *wh*-movement of adjuncts remains impossible; in (48b), the adjunct *how angrily* can only be understood as modifying the matrix VP *write his report . . .* , and not the VP in the complex NP *criticized the assistant*. This argument–adjunct asymmetry suggests that the Complex NP Constraint cannot be reduced to the PIC. Instead, a principle like the Empty Category Principle appears to be needed to account for the contrast.

(48)   a.   ?Who$_1$ did John$_2$ write [$_{DP}$ his$_2$ report [$_{CP}$ t$_1$ that the mayor criticized t$_1$]]?
       b.   *[How angrily]$_1$ did John$_2$ write [$_{DP}$ his$_2$ report [$_{CP}$ t$_1$ that the mayor criticized the assistant t$_1$]]?

4.5.3 Wh-*Movement from Indefinite Nominals*

An anonymous reviewer asks how the phase-based analysis presented above can be extended to explain why *wh*-movement from indefinite objects is acceptable (49).

(49)   What did you write a paper about?

Ultimately, an analysis within a phase-based framework must posit some syntactic difference between indefinite and definite nominals. As I see it, several options are available.

However, they are difficult to tease apart due to the relatively impoverished morphosyntax of English, and I will not be able to address this question definitively in this section.

The first option is one in the spirit of the VTS/Feature Inheritance analysis presented in section 3.2. Recall that in that analysis, locality effects arise from Transfer, which is in turn a by-product of feature valuation. One solution, then, is that indefinite nominals, unlike their definite counterparts, are headed by a D head that lacks ϕ-features altogether. If there are no ϕ-features to be inherited from D and valued, there is no transfer to the interfaces. To the extent that phase heads should be defined by the presence of uninterpretable ϕ-features, this hypothesis also entails that indefinite Ds are not phase heads.

A second option is to challenge the (implicit) assumption that indefinite nominals are always DPs; perhaps some of them are a PossP or some smaller nominal projection, which, by hypothesis, are not phases.[11] Unconventional as it may be, this analysis has a precedent in the literature on restructuring phenomena. In restructuring contexts, dependencies that are usually clause-bound, such as clitic climbing, can exceptionally cross clause boundaries in the presence of certain control predicates. Recent proposals on restructuring have suggested that these dependencies can do so when the control predicate takes a clausal complement smaller than a CP (a TP or even a vP, for instance) (see Wurmbrand 2001, 2014, Cinque 2006, Grano 2015, Huang 2018, among others, for further discussion and caveats). In the same way, then, perhaps *wh*-movement from indefinites becomes possible when the indefinite nominal complement is smaller than a DP.

5 Conclusion

This article sought to make two contributions to existing research on locality. The first contribution is empirical, evaluating existing claims about phase obviation effects. Experiments 1 and 2 provided evidence for a bound pronoun subject effect but not nonshifty subject effects (Grano & Lasnik 2018, *pace* Barros & Frank 2017). Experiments 3 and 4 provided evidence for similar effects in the DP domain, supporting prior observations by Davies & Dubinsky (2003) about *wh*-movement, for instance.

The second contribution is theoretical: I argued that Grano & Lasnik's account of the bound pronoun subject effect can be derived from proposals like Feature Inheritance/Value–Transfer Simultaneity (Chomsky 2008; Richards 2007, 2011) or the Principle of Minimal Compliance (Richards 1997, 1998). I also showed how this analysis can be combined with the proposal of Davies & Dubinsky (2003) to account for effects observed in the DP domain. This extension constitutes a new argument for the phasehood of DPs and underscores the relevance of these effects to our theories of locality.

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[11]The same reviewer also wondered whether it is possible that all Ds are phase heads. This could follow under the second hypothesis, where indefinite nominals are ambiguous between DPs and some smaller projection.

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