

Squibs and Discussion

INDIVIDUATION AND QUANTIFICATION

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Judging from the way people talk, the number of entities in a given situation that are recognized as distinct individuals seems to depend on the specific communicative goals of a particular discourse. Admitting that semantic interpretation needs to provide a limited degree of ontological variability can resolve some empirical difficulties associated with Krifka's (1990) treatment of examples like (1).

- (1) Four thousand ships passed through the lock last year.

The proposition expressed by this sentence will be true in any situation in which there are 4,000 distinct ships, each of which passed through the lock during the previous year. However, as Krifka points out, (1) can also be used to describe a situation in which fewer than 4,000 ships are involved, provided that some of the ships pass through the lock more than once and the total number of lock traversals is at least 4,000.

We will need a way of talking about the two types of construals that is neutral with respect to the theoretical status of the objects being counted.

- (2) a. *One-to-one reading*
One ship for each counted thing
b. *One-to-many reading*
One ship for several counted things

I first presented a version of this material at the annual meeting of the Linguistic Society of America in Boston, 1994. I gratefully acknowledge valuable comments from Manfred Krifka, Louise McNally, and two anonymous *LI* referees.

Unfortunately, I only became aware of Doetjes and Honcoop 1997 in the final stage of revision. In the course of extending and revising Krifka's (1990) analysis, Doetjes and Honcoop conclude that the many-to-one reading involves quantification over ordered pairs consisting of an individual and an event, a result that is strikingly similar to the position advocated here. However, unlike me, they do not associate these pairs directly with nominal denotations, nor do they interpret them as stages (though see their footnote 17). Consequently, their analysis inherits from Krifka's both of the empirical difficulties discussed in this squib; see especially their notions of standardization and generalization, which they explicitly intend to do the work of Krifka's additivity requirement.

The one-to-one reading is what any garden-variety theory of semantics would predict for (1). The one-to-many reading is problematic, however. Krifka (1990) gives a compositional analysis on which the readings of (1) arise from a polysemous zero determiner. As an alternative, following the lead of Gupta (1980), Carlson (1982), and Nunberg (1984), I will propose that what is going on here is a form of ontological variability: the semantics allows operators to quantify either over individuals or over stages of individuals, subject to pragmatic appropriateness.

In what follows I will describe Krifka's analysis, point out two empirical shortcomings, motivate a stage-based account, respond to Krifka's objections to stage-based approaches, and explain how the proposed account solves the two empirical puzzles.

1 Krifka's Analysis

I take Krifka's (1990) main hypothesis to be that a number phrase such as *4,000 ships* either can be used to identify entities in the normal fashion (the one-to-one interpretation), or can denote a degree of a measure function, in which case it does not describe entities directly. When construed as specifying a degree, number phrases can be coerced into measuring entities such as lock traversals that are not in the domain of the original measure function (which measures ships), provided there is a systematic relation between the measured objects and the objects in the original domain. If so, then the one-to-many interpretation is just another example of a natural language construction exploiting a systematic correspondence between the ontological structure of objects and events.

In Krifka's specific analysis, the coercion work is accomplished through the mediation of a determiner meaning.

$$(3) [\emptyset_{\text{Det}} [4,000 \text{ ships}]_{\text{Nom}}]_{\text{NP}} [\text{pass through the lock}]$$

The syntactic structure for both readings is sketched in (3). The zero determiner is hypothesized to be polysemous, having the two interpretations given in (4). (As explained below, *OEMR* stands for *object-induced event measure relation*.)

(4) a. *Object-related zero determiner*

$$\lambda Q \lambda R \lambda e \exists u [R(e, u) \wedge Q(u)]$$

b. *Event-related zero determiner*

$$\lambda Q \lambda R \lambda e [\text{OEMR}(R)(e, Q)]$$

(5) a. *One-to-one reading*

$$\lambda e \exists u [\text{pass_through_the_lock}'(e, u) \\ \wedge \text{ship}'(u) = 4,000]$$

b. *One-to-many reading*

$$\lambda e [\text{OEMR}(\text{pass_through_the_lock}') \\ (e, \lambda u [\text{ship}'(u) = 4,000])]$$

Applying the definitions in (4) to the example in (1) yields the interpretations in (5). The nominal property *Q* is instantiated in (5) as the

property of being an ontologically complex entity whose parts are (sets of) ships and that has a measure of 4,000. R is a verb phrase meaning, which for Krifka is a relation between a subject argument and an event. Thus, in (5) the verb phrase denotation **pass_through_the_lock'** holds of u and e just in case u is the subject of a passing-through-the-lock event e .

The first determiner meaning, given in (4a), requires the existence of a (nonatomic) entity u that consists of 4,000 distinct ships and that collectively passes through the lock (Krifka gives a semantics for complex events). This produces the one-to-one reading in (5a). The second determiner meaning, given in (4b), appeals to the operation **OEMR**, which takes a normal verb phrase meaning and returns an object-induced event measure relation: if R is the verb phrase relation of passing through the lock, then **OEMR**(R) is a relation between an event e and a quantized measure Q that is guaranteed to hold if e can be decomposed into nonoverlapping subevents whose measures add up to the measure specified by Q . That is, if there are 2,000 distinct ships that passed through the lock from January to June, and there are also 2,000 distinct ships that passed through the lock between July and December, that is sufficient to satisfy the truth conditions given in (5b), even if there is no set of 4,000 distinct ships that passed through the lock.

Krifka 1990 makes many deep and genuine contributions, not least among which is noticing the importance of examples like (1) in the first place. Nevertheless, Krifka's specific explanation for the phenomenon illustrated in (1) has at least two empirical problems that motivate considering an alternative account.

The first problem, also discussed by Krifka (1990:516), is the problem of discourse anaphora. Consider the short discourse in (6) under a one-to-many interpretation.

- (6) a. Four thousand ships passed through the lock last year.
 b. They each tooted their horn when they cleared the last gate.

What does the pronoun *they* refer to? Under the OEMR analysis, (6a) can be true even if there are only 2,000 ships in existence worldwide. If so, then given Krifka's ontological assumptions, the largest collection of ships that the pronoun can refer to numbers at most 2,000. Yet intuitively (6b) requires at least 4,000 tooting events, one for each of the passing-through events entailed by (6a). Krifka tentatively suggests that pronouns like *they* in (6b) can refer to the concept of ships, rather than to specific ships; yet the distributive *each* and the nature of the predicate (tooting) indicate that there must be some way to get from the referent of the pronoun to actual ships. This is by no means an insurmountable difficulty for the OEMR account, but at the very least it requires extending the analysis in a way that is not immediately obvious.

The second problem involves adjectives like *different*. As far as I know, this problem has not been observed before.

- (7) Four thousand different ships passed through the lock last year.

According to Krifka's semantics, the nominal expressions *4,000 ships* and *4,000 different ships* must denote the same property. In particular, even without the adjective *different*, the predicate *4,000 ships* will be true of an entity *x* only if *x* consists of 4,000 distinct ships. This is an entailment of Krifka's additivity requirement on measure relations (p. 494, ex. (5d); see also p. 504). Indeed, if the ships were not required to be distinct at the level of the nominal meaning, the one-to-many reading of (1) would not be a problem in the first place, since the nominal predicate *4,000 ships* could simply be true of some smaller number of ships. In some sense, then, the goal of Krifka's analysis is to provide a way of circumventing the distinctness requirement under certain controlled circumstances.

But the same mechanism that provides the one-to-many reading for (1) also predicts that (7) ought to have a one-to-many reading. However, intuitions are quite clear that such a reading simply is not available. That is, (7) can be true only if there are at least 4,000 distinct ships in the world that each passed through the lock.

As a referee puts it, what we would like to say is that *different* somehow blocks the OEMR interpretation. Unfortunately, the fact that Krifka locates the ambiguity of (1) in the determiner means that there is no way to do this without violating the principle of compositionality. That is, for the presence of *different* to affect the interpretation of the larger noun phrase (and therefore the sentence) as a whole in a compositional way, the nominal *4,000 different ships* must be capable of denoting something different from *4,000 ships*, contra Krifka's explicit analysis.

2 Individuation

So how can we explain the variance in the interpretation of (1) without running into the problems just described? Consider a simple one-to-many interpretation of (1): there are only 2,000 ships in the world, and they each pass through the lock twice, once in the spring and once in the fall. When we assert (1), we speak as if there were 4,000 distinct ships. I want to suggest that this is exactly what we are doing: we evaluate (1) against a model in which there are 4,000 ship entities.

What determines how we individuate ships? Nunberg (1984:207) provides a target to aim at: "[T]he unified concept of identity that we are after is not hard to describe. When we say that *a* and *b* are 'the same', we mean simply that they are 'the same for purposes of argument': that the differences between them are not material to the point we are after." Nunberg makes these remarks in connection with a related but different phenomenon, what we might call a many-to-one reading: why is the definite article in *My dog bit the postman's leg* felicitous in a situation in which the postman has two legs? Despite differences in many particulars, the approach advocated here is very much in the same spirit as Nunberg's.

I will lead up to a more specific proposal by way of previous work that approaches what I would like to suggest without quite arriving at it. Gupta (1980), following Geach (1962:63), argues that we must distinguish between predicates that merely specify a property of individuals and “substantival” predicates. Only substantival predicates are suitable for expressing the meanings of common nouns. These predicates supply two independent sets of criteria:

(8) a. *Criterion of application*

Necessary and sufficient conditions required for membership in the extension of a property

b. *Criterion of identity*

Necessary and sufficient conditions required for determining whether two entities in the extension of a property are the same or distinct

In general, criteria of identity can be quite complex. For instance, the criterion of identity for the common noun *river* must be capable of recognizing the body of water we are rowing on today as the same river as the body of water we rowed on a year ago even though it consists of an entirely new collection of water molecules and may even have changed its width and course. (For a philosophical introduction to these issues, see, for example, Brennan 1988.)

Gupta expresses these notions formally in terms of individual concepts, which are usually treated as functions from world/time pairs to individuals. For present purposes, we can factor out possible worlds, in which case we are left with relations over times and individuals. As we will see, members of such relations can be interpreted as stages of individuals. Like Gupta, Carlson (1982) argues that stages are crucial for distinguishing the meanings of some common nouns. Consider the difference between nouns like *player* and *batter*: in a typical game of baseball a pitcher might face 35 batters, even though there are only 9 players on the opposing team. Thus, the batters corresponding to a particular player are stages of that individual. Carlson suggests that some nouns have stages in their extension rather than individuals.

At first glance, such contrasts are reminiscent of the phenomenon we are trying to explain. But as Krifka notes (p. 488), they depend on a difference in lexical meaning between two different nouns. If we wanted to use such distinctions to explain the two uses of (1), we would have to suppose that the noun *ship* is ambiguous, which is not plausible.

3 Counting Stages

What I would like to suggest is that although criteria of application are determined by the lexical meaning of a noun (modulo vagueness), criteria of identity are partly determined by lexical meaning (as for *passenger* or *batter*) and in addition at least partly determined by context.

- (9) *ship*
 - a. *Criterion of application*
Must float, must be big, etc.
 - b. *Criterion of identity*
[Lexically unspecified]
- (10) *Additional possible criteria of identity supplied by semantics*
 - a. *One-to-one reading (general default)*
Long-term self-identity in the real world
 - b. *One-to-many reading*
Stage-identity in the real world

The one-to-one reading results when context supports keeping track of which ship is which over several months' time. The one-to-many reading arises when context favors (as discussed below) considering two stages of the same ship as distinct entities. In both cases there must be 4,000 ship entities present in the model—but several of those discourse entities (stages, if you prefer) may correspond to the same ship in the world of experience.

Krifka cautions (p. 489) that counting stages can be a tricky business. If the ship *Eleonore* passes through the lock twice, we not only have stages s_1 and s_2 (one for each traversal), we also have $s_3 = s_1 + s_2$, the complex stage corresponding to the mereological sum of the individual stages. But this is no different from the perils of counting plain individuals: if Link's twin girls made a mess in his living room, the number of children is two (one for each girl), not three (spuriously counting the sum of the twins as a third participant) (Link 1984, discussed in Landman 1989). The solution in this domain is the same as well: cardinals and other quantifiers presuppose (at a minimum) a partition on the set of entities they quantify over, whether those entities are individuals or stages. More specifically, suppose we model a stage as an ordered pair $\langle x, e \rangle$ associating an individual x with a specific (possibly stative) event e . Then if $s_1 = \langle El, e_1 \rangle$ and $s_2 = \langle El, e_2 \rangle$, where El is the ship *Eleonore* and e_1 and e_2 are nonoverlapping events of passing through the lock, we have $s_3 = s_1 + s_2 = \langle El, e_1 + e_2 \rangle$, where $e_1 + e_2$ is the mereological sum of two events. Just as the sum of Link's children does not count as a third distinct individual, the stage s_3 is not distinct from s_1 or s_2 , because its characterizing event $e_1 + e_2$ overlaps the events that characterize s_1 and s_2 .

But there is still a problem: how do we know which events to use for distinguishing stages? The explanation in the previous paragraph works correctly only if we choose lock traversals as our stage-characterizing events e_1 and e_2 . In Krifka's analysis, the fact that lock traversals are the relevant events comes compositionally, based on the meaning of the verb phrase. In any case, (1) simply cannot be true in a world with fewer than 4,000 lock traversals, and any responsible semantic analysis should guarantee this (as does Krifka's).

Fortunately, this constraint follows from well-known logical properties of cardinal determiners. For instance, Barwise and Cooper (1981:189–191) classify cardinals as having the intersection property

(often discussed in later work under the rubric of symmetry): if \mathcal{D} is the denotation of a cardinal determiner, then \mathcal{D} satisfies the intersection condition just in case $\mathcal{D}(P)(Q) = \mathcal{D}(P \cap Q)(Q)$ for all choices of P and Q , where P is the property denoted by the nominal and Q is the property denoted by the verb phrase. (Note that the intersection condition is the mirror image of conservativity, the property that Barwise and Cooper call ‘‘lives on.’’) The fact that cardinals obey this condition explains why the following two sentences have identical truth conditions:

- (11) a. Four thousand ships passed through the lock.
- b. Four thousand ships that passed through the lock passed through the lock.

In the present context P and Q must be properties of stages (as defined above) rather than properties of plain individuals, but that is straightforward enough. In effect, the semantics of the cardinal determiner discards ship stages whose characterizing event is not either a lock traversal or an event containing a lock traversal as a subpart. Thus, any account that gets the basic semantics of cardinals right will predict that the verb phrase denotation in effect supplies the set of relevant nominal stages.

We are now in a position to address the first of the two empirical difficulties mentioned above in connection with the polysemous-determiner account. The anaphora displayed in (6b) now has a natural explanation: the pronoun *they* simply evokes the witness set that verifies (6a). This turns out to be a collection of (at least) 4,000 ship stages, each of which tooted its horn immediately after clearing the last gate of the lock. Difficulties remain; for instance, it is not clear how far beyond the minimal lock traversal the component events in the ship stages may extend (e.g., consider the continuation *They each had to pay a fee at the next harbor*). Nevertheless, the stage approach seems to have a head start over the OEMR account in explaining this type of anaphora.

When will a situation favor a stage-level criterion of identity? One rule of thumb seems to be that an interpretation should fail to recognize that two entities are stages of the same individual roughly in the same situations in which a human being might plausibly fail in the same way. It is no accident that the best examples of this phenomenon concern situations in which there are too many individuals to keep track of easily, in which the individuals involved are so similar that they are difficult to distinguish, or in which events are typically widely separated in time from each other or from the utterance time. In (1), for example, logistical facts guarantee that a given ship will return to the lock only after several weeks’ worth of similar vessels have passed through. It is much more difficult to get a many-to-one reading of (1) when only a small number of ships are involved. A referee suggests considering the Chicago River–Lake Michigan sightseeing route, which we can assume is plied by just four sightseeing ships. It would

be odd to say that *Four thousand sightseeing ships passed through the lock last year* even if each of the four ships did go through 1,000 times. This asymmetry is a mystery if the readings arise from a polysemous determiner—why should the availability of the event-based determiner meaning depend on the number of ships involved? On the explanation given here, in contrast, the connection between semantic individuation and individuation in the world of experience is the very foundation of the analysis.

This leads us to an explanation for the second empirical problem discussed above, namely, the need to account for the truth-conditional effect of *different*.

- (12) If a common noun phrase *N* has criterion of application *C* and criterion of identity *I*, then the common noun phrase [*different N*] has criterion of application *C* and a criterion of identity that is the disjunction of *I* with the property of long-term self-identity in the actual world.

According to (12), the presence of *different* enforces a relatively coarse-grained condition of self-identity. The effect of (12) on nominal extensions will be to clump stages together into equivalence classes. Assuming that what cardinals (and quantifiers in general) count are equivalence classes, (12) guarantees that in the presence of *different*, there will be at most one equivalence class per long-term individual. Thus, quantifiers rely on conditions of identity in order to know what to count.

In sum, recognizing that nominal identity conditions sometimes are determined lexically, and sometimes semantically and pragmatically, provides a simple and direct account of the ambiguity of (1) without postulating multiple meanings for a silent determiner. Unlike Krifka's (1990) analysis, it also provides a natural account of the anaphora facts and gives adjectives like *different* appropriate truth-conditional work to do.

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HOW STRICT IS THE CYCLE?

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Chomsky (1995) proposes two ways of capturing cyclicity effects, which we will refer to as the *Extension Condition* and the *strength conception of the cycle*.¹ Chomsky (1995:248, 254) requires that both Merge and Move take place at the root only (the Extension Condition).² This conception of the basic syntactic operations of Merge and Move rules out all acyclic movement, lexical insertion, and assembling of separately built trees. In addition, Chomsky (1995:233–234) proposes to derive at least some cyclicity effects through the definition of “strength,” the notion developed to force overt movement. He defines strong features as elements that are not tolerated by the derivation and therefore must be eliminated from the tree (almost) immediately upon insertion into the structure. More precisely, he defines strength in the following way:

- (1) Suppose that the derivation D has formed Σ containing α with a strong feature F . Then, D is canceled if α is in a category not headed by α .

This conception of strength disallows acyclic checking of heads with strong features.

The Extension Condition and strength clearly overlap in their effects. For example, if in order to void Relativized Minimality effects with superraising and *wh*-islands we acyclically insert the intervening specifiers in (2) (*whether* and *it*), we violate both the Extension Condition and (1), an undesirable redundancy.

- (2) a. ??Who_i do you wonder whether John likes t_i ?
 b. *John_i seems it was told t_i that Peter likes Mary.

For helpful comments and thought-provoking questions, we thank two anonymous reviewers and the participants of a 1997 syntax seminar at the University of Connecticut.

¹ Chomsky (1995:254) (see also Collins 1997) actually hints at an additional way of obtaining cyclicity effects based on Kayne’s (1994) Linear Correspondence Axiom and Epstein’s (1995) view of *c*-command.

² The Extension Condition was originally proposed in Chomsky 1993. On the Extension Condition, see also Kitahara 1995.

Moreover, the Extension Condition (at least its application to Move) is problematic in several respects. In particular, LF movement and head adjunction appear to freely violate the condition; as a result these operations have been exempted from it (see Chomsky 1993), another conceptually undesirable move. Given the problematic nature of the Extension Condition, we suggest eliminating the redundancy between it and the notion of strength with respect to cyclicity effects by simply dispensing with it. Head adjunction and LF movement are thereby brought in line with the cycle. For example, no additional stipulations are now needed to accommodate overt V-to-I movement in French, which we assume is driven by strong feature checking. Also, since LF movement is by definition not driven by strong feature checking, it is automatically consistent with the strength conception of the cycle.³

An interesting property of this conception of the cycle is that it does not in principle ban elements that do not have any strong features from entering the structure acyclically. In this squib we will explore some empirical consequences of this effect of the strength conception of the cycle, suggesting that the effect may be empirically desirable.⁴

1 French *Wh*-in-Situ

We will start by examining the distribution of *wh*-in-situ in French. Consider the paradigm in (3)–(5).⁵

- (3) a. Tu as vu qui?
 you have seen whom
 ‘Who did you see?’
 b. Qui as-tu vu?
- (4) a. Pierre a demandé qui tu as vu.
 Pierre has asked whom you have seen
 ‘Pierre asked who you saw.’
 b. *Pierre a demandé tu as vu qui.

³ Occasional arguments have been made for a separate cycle in LF (see Bures 1993, Branigan and Collins 1993, Jonas and Bobaljik 1993, and Watanabe 1995). The existence of a separate LF cycle is inconsistent with minimalist approaches to cyclicity, which relate cyclicity to other independently motivated mechanisms (phrase structure building and strength) and therefore will not be assumed here. (Needless to say, this move requires reevaluation of arguments for an LF cycle, which to us do not seem overwhelming.) Ensuring the existence of a separate LF cycle would require postulating the cycle as an independent principle along the lines of the definition of the cycle given in Chomsky 1973, which would be greatly redundant with the minimalist approaches discussed above. Furthermore, we will suggest below that under certain well-defined conditions syntactic operations can take place acyclically, which makes rigid definitions of the cycle such as that in Chomsky 1973, intended to rule out all acyclic operations, simply empirically inadequate.

⁴ Another recent work that appeals to acyclic lexical insertion in certain well-defined contexts is Hegarty 1994.

⁵ Note that overt C questions like (5a) are not acceptable in all dialects of French.

- (5) a. Qui que tu as vu?
 whom c you have seen
 ‘Who did you see?’
 b. *Que tu as vu qui?

Bošković (in press c) shows that the distribution of *wh*-in-situ in French can be accounted for rather straightforwardly under the minimalist view of lexical insertion, that is, the operation Merge.

Merge, which includes lexical insertion, generally takes place in overt syntax. Chomsky (1995) observes that this follows without stipulation. Thus, if an NP such as *John* is inserted in LF, the derivation crashes because LF cannot interpret its phonological features. If, on the other hand, *John* is inserted in PF, PF does not know how to interpret its semantic features. The only way to derive legitimate structures in PF and LF is for *John* to be inserted before the “S-Structure” is reached. PF then strips off the phonological features of *John*, and its semantic features proceed to LF. This line of reasoning allows lexical insertion to take place in PF and LF under certain conditions. To be more precise, it allows PF insertion of semantically null elements and LF insertion of phonologically null elements. Focusing on the second possibility, notice that phonologically null elements could in principle enter the structure in LF even if they bear a strong feature under Chomsky’s (1995) definition of strength.

Bošković (in press c) argues that this is exactly what happens in the French constructions under consideration. In particular, he argues that C with a strong [+wh] is inserted in the LF structure of (3a). *Wh*-movement then does not take place in (3a) overtly for a trivial reason: its trigger is not present overtly. The LF insertion of the strong [+wh] C triggers LF *wh*-movement, which checks the strong [+wh] of C.⁶ The LF insertion of the strong [+wh] C, whose availability is a prerequisite for *wh*-in-situ in French under Bošković’s (in press c) analysis, fails in (4b) because it results in a violation of (1), and in (5b) because the complementizer is not phonologically null (i.e., the very fact that the complementizer is pronounced indicates that it has been inserted overtly, which should trigger overt *wh*-movement).⁷

Now consider the following data from Bošković, in press c:

- (6) a. *Jean et Pierre croient que Marie a vu qui?
 Jean and Pierre believe that Marie has seen whom
 ‘Whom do Jean and Pierre believe that Marie saw?’

⁶ According to Chomsky (1995:382, n. 17), strength must be removed for convergence even if not embedded. We assume that this holds for both interface levels.

⁷ See footnote 6. Bošković (in press c) presents a slightly different analysis of (4b) and (5b). Notice that we cannot assume that the interrogative C in French is inserted overtly but that its [+wh] can be either strong or weak. If we were to do that, we would never be able to enforce the *wh*-movement option, which would leave the ungrammaticality of (4b) and (5b) (see also (6) and (7)) unaccounted for.

Two anonymous reviewers raise the question why the LF C-insertion deri-

- b. Qui Jean et Pierre croient-ils que Marie a
whom Jean and Pierre believe-they that Marie has
vu?
seen
(same)
- (7) a. ?*Jean ne mange pas quoi?
Jean NEG eats NEG what
'What doesn't Jean eat?'
- b. Que ne mange-t-il pas?
what NEG eats-he NEG
'What doesn't he eat?'

Notice first that under the LF C-insertion analysis of French *wh*-in-situ, French *wh*-in-situ constructions must involve LF *wh*-movement. Unselective binding is not an option in such constructions because it would leave the strong [+wh] of C, inserted in LF, unchecked (see footnote 6). Given this, the contrasts in (6) and (7) appear to indicate that LF *wh*-movement is more local than overt *wh*-movement, which is the conclusion drawn in Bošković, in press a. That LF *wh*-movement is responsible for the ungrammaticality of (6a) and (7a) is confirmed by (8a–b).⁸

- (8) a. Qui croit que Marie a vu qui?
who believes that Marie has seen whom
'Who believes that Marie saw whom?'

vation is not allowed in English. (The derivation would incorrectly yield *John bought what?* as a well-formed true nonecho question.) Bošković (in press c) claims that the LF C-insertion derivation is blocked in English because the English matrix interrogative complementizer is lexically specified as a phonological affix, which must be attached to a verbal element in PF. The presence of phonological information in the lexical entry prevents the complementizer from entering the structure in LF. (For an alternative analysis, see Chomsky 1995. Lasnik (1999) and Bošković (in press c) show that the analysis is seriously flawed both empirically and conceptually and therefore cannot be maintained.) Evidence that the matrix interrogative complementizer in English is a verbal affix comes from the fact that the complementizer must always be adjacent to a verbal element in PF. (For discussion of the embedded interrogative complementizer in English, which superficially appears not to be subject to the adjacency requirement, see Bošković, in press c.) This is not the case in French, where the interrogative complementizer is not a verbal affix. Thus, French (i) strongly contrasts with its English counterpart.

- (i) Qui tu as vu?
whom you have seen
'Who did you see?'

The LF C-insertion analysis raises other interesting questions (e.g., why both *wh*-in-situ and overt *wh*-movement are available in matrix null C questions in French) that we cannot go into here for reasons of space. They are discussed in detail in Bošković, in press c.

⁸ Notice that French differs from Iraqi Arabic, which never allows *wh*-

- b. Qui ne mange pas quoi?
 who NEG eats NEG what
 'Who doesn't eat what?'

Bošković (in press c) observes that (8a–b) are acceptable on the true question, pair-list reading. They crucially differ from (6a) and (7a), which are degraded on the true question, nonecho reading, in that they contain another *wh*-phrase that is located overtly in the interrogative [Spec, CP]. This *wh*-phrase can check the strong [+wh] of C, so that there is no need for the *wh*-phrase in situ to move in LF. The *wh*-phrase in situ can then be unselectively bound. In (6a) and (7a), on the other hand, the *wh*-phrase in situ is the only element that can check the strong [+wh] of C and is therefore forced to undergo LF *wh*-movement. Unselective binding by C is not an option in these constructions, since it would leave the strong [+wh] of C unchecked. (The *wh*-phrase would never enter the checking domain of C.) The contrasts under consideration indicate that (at least in French) movement to [Spec, CP] is driven by an “inadequacy” of the interrogative C, as suggested by Chomsky (1995). When this inadequacy is taken care of, as in (8a–b), the *wh*-phrase in situ does not have to move in LF. When the inadequacy of C is not taken care of, as in (6a) and (7a), the *wh*-phrase must move in LF. Given that the *wh*-phrase in situ needs to undergo LF *wh*-movement in (6a) and (7a) but not in (8a–b), it seems plausible to attribute the ungrammaticality of (6a) and (7a) to locality restrictions on movement. (6a) and (7a), which contrast with (3a), seem to indicate that, in contrast to V and I, C and negation have a blocking effect on LF *wh*-movement. Bošković (in press a,c) appeals to Move F to account for this blocking effect.

Chomsky (1995) observes that a natural consequence of the standard minimalist assumption that movement is driven by feature checking is that, all else being equal, the operation Move should apply to features and not to syntactic categories. Overt movement, which feeds PF, still has to apply to whole categories, given the natural assumption that lexical items with scattered features cannot be interpreted/pronounced at PF. Since considerations of PF interpretability are not relevant to LF, in LF the operation Move should apply only to features. Chomsky instantiates this feature movement as adjunction to X^0 elements. He argues that in LF formal features (FFs) move to heads bearing matching features. Under a natural interpretation of this analysis, all LF movement necessarily involves head movement. Given this,

phrases in situ within finite clauses (the counterparts of both (6a) and (8a) are ill formed in Iraqi Arabic; see Wahba 1991). As a result, Ouhalla's (1996) analysis of Iraqi Arabic that treats Iraqi Arabic *wh*-phrases as *wh*-anaphors, subject to Condition A (this is the reason why *wh*-phrases in Iraqi Arabic must *all* be close to their antecedent, [+wh] C), cannot be extended to French. Notice also that Ouhalla's analysis of Iraqi Arabic was prompted by a similarity in the morphological makeup of Iraqi Arabic *wh*-phrases and reflexive anaphors, which is not found in French.

LF *wh*-movement involves movement to C, and not to [Spec, CP]. If we adopt Rivero's (1991) and Roberts's (1992) proposal that Relativized Minimality applies to head as well as phrasal movement, LF *wh*-movement is movement to an \bar{A} -head position. It is then no surprise that it is blocked by intervening \bar{A} -heads, such as C and Neg, but not by intervening A-heads, such as V and I (see Bošković, in press a, for technical details of the analysis). Bošković's (in press a,c) analysis thus accounts for the contrast between (3a) and (6a)/(7a). However, the analysis is inconsistent with Chomsky's (1995, MIT lectures 1995) conceptually appealing proposal to reduce all checking configurations to the FF-head relation. Chomsky proposes that every time movement motivated by feature checking takes place, checking FFs adjoin to the head that induces the movement. This holds for both overt and covert syntax. Chomsky proposes that, in addition to the feature-checking chain, in overt syntax a derivative category chain is formed, whose purpose is to ensure PF convergence—more precisely, to ensure that we do not end up with scattered lexical items in PF. In this system FFs and categories form separate chains: FF chains, which are constructed to satisfy the requirements of Attract F, being created in both covert and overt syntax, and category chains, which are constructed to ensure PF convergence, being created only in overt syntax (see Ochi, in press, and Agbayani, in press, for interesting empirical evidence for this approach). Since feature movement takes place in both covert and overt syntax, we can then reduce all checking configurations to a single configuration, FF-head, an appealing move conceptually.

At first sight it appears that in this system we would not expect to find instances of LF movement that are more local than the corresponding overt movements, since both LF and overt movement involve Move F.⁹ The French facts discussed above thus appear to pose a challenge for Chomsky's (1995) two-movements hypothesis.¹⁰ The strength conception of the cycle, which allows acyclic insertion of weak heads, eliminates the challenge. Under this analysis LF movement and overt movement in French long-distance and negative questions take place in different structural environments. Whereas complementizer *que* and the negation must be present in the structure when LF movement takes place, they can be absent from the structure when overt movement takes place. Consider first (6). Since complementizer *que* plausibly does not have any strong features, nothing prevents it from entering the structure acyclically. In particular, nothing prevents it from entering the structure after overt *wh*-movement takes place.¹¹

⁹ The converse situation (overt movement being more local than covert movement) would not be unexpected since overt movement involves an additional operation, namely, category pied-piping movement. For much relevant discussion on this point, see Ochi, in press.

¹⁰ Bošković (in press a,c) in fact explicitly rejects the two-movements hypothesis.

¹¹ Interestingly, Chomsky (1973) and Lasnik and Uriagereka (1988) suggest that English complementizer *that* can be inserted acyclically.

- (9) a. Qui_i Jean et Pierre croient-ils Marie a vu t_i?
 b. Qui_i Jean et Pierre croient-ils que Marie a vu t_i?

Although *que* can enter the structure acyclically, being phonologically realized it clearly must have entered the structure in (6) before LF. We then have a very simple explanation why *que* induces a blocking effect for LF movement, but not for overt *wh*-movement. *Que* must be present in the structure when LF *wh*-movement takes place, but not when overt *wh*-movement takes place. As a result, even if both overt and covert syntax involve Move F, as argued by Chomsky, and even if complementizer *que* indeed has a blocking effect on *wh*-feature movement, as argued by Bošković (in press a,c), the contrast between (6a) and (6b) can still be accounted for.¹²

The analysis of the contrast in (6) can be readily extended to (7) if French negation does not have any strong features, a lack that would

¹² A potential problem for this analysis is raised by certain facts concerning infinitival complementation in French. Bošković (in press a) shows that there is a dialectal split with respect to constructions such as (i) (see also Boeckx, in preparation).

- (i) (*)Avoir convaincu ses amis, Pierre le croit.
 to-have convinced his friends Pierre it believes
 (cf. *Pierre croit avoir convaincu ses amis* 'lit. Pierre believes to-have convinced his friends')

Bošković (in press a) suggests that for the speakers who reject (i) the infinitival complement is a CP, and for those who accept (i) it is an IP. The ungrammaticality of (i) for the first group of speakers would then reduce to the ungrammaticality of English (iia–b). (For accounts of these, see Stowell 1981, Pesetsky 1992, and Ormazabal 1995, among others, where it is argued that moving a complement headed by a null C results in a violation of licensing conditions on the null C.)

- (ii) a. *John likes Mary is believed by everyone.
 (cf. *That John likes Mary is believed by everyone*)
 b. *John likes Mary Peter never believed.
 (cf. *That John likes Mary Peter never believed*)

Bošković further observes that the speakers for whom *croire* takes a CP infinitival complement reject constructions such as (iii) on the true question reading of the *wh*-phrase, whereas the speakers for whom *croire* takes an IP infinitival complement accept such constructions.

- (iii) (*)Tu crois avoir vu qui?
 you believe to-have seen whom

These facts indicate that the null C, as well as the overt C, has a blocking effect on LF *wh*-movement. This is unexpected under the current analysis (though not under Bošković's (in press a) analysis). Assuming that the infinitival complementizer does not have any strong features, since the complementizer is phonologically null it should be possible to delay its insertion until LF; that is, it should be possible to insert it even after LF *wh*-movement. Since the complementizer then would not be present in the structure at the point when *qui* moves in (iii), it would not be expected to affect the movement of *qui*. Clearly, we need a way of preventing the complementizer from entering the structure in LF. To do that, following a suggestion by Masao Ochi (personal communica-

enable it to enter the structure acyclically. Since French negation is phonologically realized, we know that it has entered the structure before Spell-Out in (7). It then must be present in the structure when LF movement takes place, but not necessarily when overt movement takes place, giving rise to the now familiar asymmetry.¹³

We conclude, therefore, that the strength conception of the cycle enables us to account for Bošković's (in press a,c) data concerning French *wh*-in-situ while still maintaining Chomsky's two-movements hypothesis, which reduces all checking configurations to the FF-head relation.

Having shown how the proposal to capture cyclicity effects through (1) deals with French *wh*-in-situ constructions, in the next section we discuss further consequences of this proposal. In particular, we show how the proposal enables us to account for some previously unexplained Empty Category Principle/Subjacency asymmetries.

2 Empty Category Principle/Subjacency Asymmetries

Quite generally, traditional Empty Category Principle (ECP) violations with extraction of adjuncts go hand in hand with Subjacency violations with extraction of arguments. More precisely, quite generally, in the contexts in which extraction of adjuncts leads to an ECP violation, extraction of arguments leads to a Subjacency violation. This is illustrated in (10) with respect to several different types of islands.

- (10) a. ??What_i do you wonder [whether Peter bought t_i]?
 b. *How_i do you wonder [whether Peter fixed the car t_i]?
 c. ??Who_i did Mary leave for London [after Peter had visited t_i]?
 d. *Why_i did Mary leave for London [after Peter had visited her t_i]?
 e. ??What_i did you see [a tall man who fixed t_i]?
 f. *How_i did you see [a tall man who fixed your car t_i]?

Continuing the research program that originated with Chomsky 1986, Chomsky and Lasnik (1993) develop a system in which traditional ECP violations with adjuncts and Subjacency violations with arguments reduce to the same economy condition, the only distinction between the two being that with argument Subjacency violations the offending trace is deleted in LF, whereas with adjunct ECP violations it remains present in the final LF representation. In this system we would not expect to find a configuration in which extraction of adjuncts

tion), we speculate that the complementizer is lexically specified as a phonological affix. (The same proposal has been made by Ormazabal (1995).) The presence of phonological information in the lexical entry of the complementizer prevents it from entering the structure in LF.

¹³ We assume here that *ne* either is base-generated in its surface position, or is generated in some lower position and then undergoes PF cliticization.

would lead to an ECP-type violation, but extraction of arguments would not lead to a Subjacency-type violation. It is well known, however, that such configurations exist. For example, as discussed by Rizzi (1990), pseudo-opacity effects and inner island effects obtain with adjunct extraction, but not with argument extraction. We illustrate this in (11) with respect to pseudo-opacity.¹⁴

- (11) a. [Combien de livres]_i a-t-il beaucoup consultés t_i?
 how-many of books has he a-lot consulted
 ‘How many books did he consult a lot?’
 b. *Combien_i a-t-il beaucoup consultés [t_i de livres]?
 (cf. *Combien_i a-t-il consultés [t_i de livres]?*)

The way of capturing cyclicity effects adopted above can explain this asymmetry between the ECP and Subjacency, which is unexpected in light of (10), provided that we adopt Lasnik and Saito’s (1984, 1992) proposal that adjunct traces are checked with respect to locality restrictions only in LF, whereas argument traces can be checked in overt syntax.¹⁵ Assuming that *beaucoup* does not have any strong features to check and is not required to be present in the structure to check strong features of another element, rather plausible assumptions, it could enter the structure acyclically in the current system. However, since *beaucoup* is phonologically realized, it must have entered the structure in overt syntax. Given Lasnik and Saito’s proposal, *beaucoup* then does not have to be present in the structure when argument chains are checked with respect to locality restrictions, but it does have to be present in the structure when adjunct traces are checked with respect to locality restrictions. The surprising asymmetry between the ECP and Subjacency exhibited by pseudo-opacity is thus captured in a way that, as far as we can tell, does not have any undesirable consequences for (10).¹⁶

3 Superiority

One potential problem for the view of the cycle adopted above is raised by superiority effects.

¹⁴ As far as we can tell, our discussion of pseudo-opacity carries over straightforwardly to inner islands. For relevant discussion, see also Takahashi 1994.

¹⁵ See Lasnik and Saito 1984, 1992 for motivation for this proposal, and for a potential way to deduce this difference between adjuncts and arguments from independent mechanisms of the grammar. It remains to be seen how Lasnik and Saito’s proposal can be incorporated into current approaches to locality of movement and trace licensing. The argument-adjunct asymmetry in grammaticality judgments, as well as extraction out of nonrelativized minimality islands in general, is actually very difficult to capture in the current system. For a survey of issues and problems associated with them, see Lasnik, in press.

¹⁶ It seems plausible to assume that the postverbal clause in (10c–d) would be considered an adjunct even without the presence of *after*, in which case

(12) ?*What_t did John persuade who to buy t_i?

A potentially problematic derivation involves *wh*-movement of *what* followed by acyclic insertion of *who*. At least under some approaches to superiority (in particular, derivational approaches), including Chomsky's (1973) original Superiority Condition and the economy account of superiority (see, e.g., Chomsky 1995, Bošković 1997, in press b, Cheng 1997, Kitahara 1997), we would not expect any superiority effects in (12) on this derivation.¹⁷ However, the potential problem disappears if, as argued extensively by Bošković and Takahashi (1998) and Lasnik (1995c) (see also Hornstein 1998, 1999), θ -roles are features and they are strong in English. This would prevent acyclic insertion of *who*, a θ -bearing element. Lasnik's (1995a,b,c) claim that Agr_O in English has a strong D-feature would have the same effect, given that the relevant feature of the matrix Agr_O would have to be checked by *who*. Thus, either the strong-features view of θ -roles or the obligatoriness of overt object shift in English would force *who* in (12) to enter the structure cyclically, since *who* would be involved in

the acyclic insertion of *after* would not void the Adjunct Condition effect in (10c–d).

An anonymous reviewer observes that under our analysis we might expect *beaucoup* to block LF movement of *wh*-arguments in constructions like (i).

- (i) Il va beaucoup consulter quoi?
 he is-going a-lot to-consult what

Our informants disagree about the status of (i) on the true question, nonecho reading. (For help with judgments, we thank Michèle Bacholle, Cédric Boeckx, and Viviane Déprez.) Accounting for the speakers who reject (i) on this reading is straightforward. We speculate that for the speakers who accept it, the direct object *wh*-phrase can undergo A-movement for accusative Case checking while crossing *beaucoup*, which would void the blocking effect of *beaucoup*, an \bar{A} -element, given Relativized Minimality. Notice that the lack of the blocking effect of *beaucoup* on overt movement of argument *wh*-phrases cannot entirely be attributed to the possibility that movement for Case checking across *beaucoup* feeds *wh*-movement, as indicated by (ii). The construction is accepted by all our informants, including the one who accepts (i) on the true question reading. (Our informants do not find a significant difference in grammaticality between (ii) and *Qui soupçonne-t-il beaucoup?* 'Who does he suspect a lot?', involving short-distance *wh*-extraction.)

- (ii) Qui soupçonne-t-il beaucoup que Marie a/ait vu?
 who suspects he a-lot that Marie has/has(SUBJUNCT) seen
 'Who does he suspect a lot that Marie saw?'

It is clear that the accusative Case-checking position for the direct object *wh*-phrase in (ii) is below *beaucoup*. The *wh*-phrase then must be undergoing *wh*-movement when crossing *beaucoup*. (The same test cannot be applied for covert movement since covert movement of *wh*-phrases can never take place long-distance, as discussed in section 1.)

¹⁷ Under representational approaches (e.g., Lasnik and Saito's (1992) account), the possibility of acyclic insertion of *who* in (12) would not void the superiority violation in (12).

checking strong features.¹⁸ The potential problem raised by constructions such as (12) is thus resolved.

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¹⁸ The θ -theoretic approach might be necessary to account for the lack of the matrix clause reading of *when/where* in (i), presumably a superiority effect.

(i) What did you prove John to have stolen when/where?

We can then prevent acyclic insertion of *when/where* by assuming that *when* and *where* are arguments, as argued convincingly by Murasugi (1991, 1992) and Murasugi and Saito (1993). (According to these authors, who argue against Huang's (1982) empty P analysis of *when* and *where*, *when* and *where* are arguments of I or the event predicate associated with V.)

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A NOTE ON PARASITIC GAPS AND
SPECIFICITY

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1 Data

The following data, taken from Modern Persian, exhibit a sharp contrast between specific and nonspecific objects licensing a parasitic gap (PG).¹ The objects in the (a) sentences are NPs followed by the specificity marker *râ*.² Those in the (b) sentences are nonspecific. Only the former license a PG.³

- (1) a. Kimea [_{NP} *in ketâb ro*]_i [_{CP} *ghablaz inke pro e_i*
Kimea this book RÂ before that
be-xun-e] be man *dâd*.
SUBJ-read-3SG to me gave
'Kimea gave me this book before reading (it).'
- b. *Kimea [_{NP} *ketâb*]_i [_{CP} *ghablaz inke pro e_i be-xun-e*] be
man *dâd*.
- (2) a. Kimea [_{NP} *xânanda ro*]_i [_{CP} *ghablaz inke pro e_i*
Kimea singer RÂ before that
mo'arrefi be-kon-e] ru-ye sahne ferestâd.
introduction SUBJ-do-3SG on-EZ stage sent
'Kimea sent the singer to the stage before introducing
(her).'
- b. *Kimea [_{NP} *xânande*]_i [_{CP} *ghablaz inke pro e_i mo'arrefi*
be-kon-e] ru-ye sahne ferestâd.
- (3) a. Kimea [_{NP} *ye kârgar ro*]_i [_{CP} *ghablaz inke pro e_i*
Kimea a worker RÂ before that
estexdâm be-kon-e] be kâr vâdâsht.
hiring SUBJ-do-3SG to work forced
'Kimea forced a (specific) worker to work before hiring
(her).'
- b. *Kimea [_{NP} *ye kârgar*]_i [_{CP} *ghablaz inke pro e_i estexdâm*
be-kon-e] be kâr vâdâsht.

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¹ The dialect under discussion in this squib is the standard Tehrani dialect spoken in Iran.

² The particle *râ*, which appears as *o* and *ro* in the colloquial language, marks an NP for specificity (Karimi 1990). Elsewhere I have suggested that it is the head of a functional projection that takes an NP as its complement (Karimi 1996). This analysis concerns the internal structure of the specific object and does not affect the phrase structure rules provided in (27).

³ Abbreviations: SG = singular, SUBJ = subjunctive, HAB = habitual, PART = particle, PL = plural, NEG = negation, PRED = predicate, EZ = Ezafe particle. An *Ezafe construction* is an NP consisting of the head (an element with the feature [+N]), its modifier(s), an optional possessive NP, and the Ezafe particle *e* that is structurally utilized as a link between the head and its modifier(s). See Samiiian 1983, 1994, Karimi and Brame 1986, and Ghomeshi 1997 for discussion.

The object NPs in (1a) and (2a) are definite NPs.⁴ The one in (3a) is a specific indefinite followed by the specificity marker *râ*. I am employing *specificity* in the following terms:⁵

- (4) A specific NP is either *definite* or *indefinite*.
 - a. A definite NP denotes a given discourse referent.
 - b. A specific indefinite NP either
 - i. denotes inclusion, or
 - ii. is singled out in discourse (e.g., by a relative clause).
- (5) A nonspecific NP either
 - a. lacks a referent (= kind-level), or
 - b. denotes existence (= indefinite).

The specific NP, definite or indefinite, is always followed by *râ* in Persian. Its nonspecific counterpart lacks this element. The statements in (4a)/(4bi) and (5a) represent a reformulation of Enç's (1991) definition of specificity. Those in (4bii) and (5b) are not part of her definition. Relevant to our discussion is the distinction between the two types of nonspecific NPs. According to Enç, nonspecific NPs lack a referent altogether. The following examples show that only kind-level NPs are compatible with her definition:

- (6) Kimea tunest *mâhi* be-gir-e.
 Kimea managed fish SUBJ-catch-3SG
 'Kimea managed to catch fish.'
 (What Kimea was able to do was *fish catching*)
 *Un xeyli çâgh-e.
 it very fat-be.3SG
 '*It is very fat.'
- (7) Kimea tunest *ye âpârtêmân* peydâ kon-e.
 Kimea managed an apartment find do-3SG
 'Kimea managed to find an apartment.'
 Un xeyli ghashang-e.
 it very pretty-be.3SG
 'It is very pretty.'

The bare NP in (6) is a kind-level NP, lacking a discourse referent. The indefinite NP in (7), although nonspecific, denotes *existence*: 'Kimea has found an apartment, not a particular one, but it exists'. Enç's definition of nonspecific NPs is compatible with the one in (6), but not the one in (7).⁶ Crucial to my analysis is that nonspecific NPs,

⁴ Persian does not have a definite article equivalent to *the* in English. The bare object NP in (2a) receives a definite interpretation only when followed by *râ*. Note that the change of past tense to present tense does not affect the patterns provided in (1)–(3) with respect to specificity.

⁵ See Karimi, in preparation, for a discussion of specificity. See also Ghomeshi and Massam 1994 for a similar classification of specific/nonspecific NPs in Persian.

⁶ Karttunen (1976) discusses the two types of nonspecific NPs at some length.

kind-level or existential, do not license a PG, as the (b) examples in (1)–(3) indicate.

Persian is an SOV language in which the specific object precedes the indirect object and the nonspecific object is adjacent to the verb in unmarked word order, as illustrated by (8) and (9), respectively.

- (8) Kimea *un ketâb ro* barâ man xarid.
 Kimea that book RÂ for me bought
 ‘Kimea bought that book for me.’
- (9) Kimea barâ man (*ye*) *ketâb* xarid.
 Kimea for me (a) book bought
 ‘Kimea bought (a) book for me.’

Moreover, all phrasal categories are subject to scrambling that is motivated by the rules of scope assignment, topicalization, focus, and contrast.⁷ Finally, sentential adverbs and PG constructions mark the VP boundary in this language. Thus, all object NPs in (1)–(3), specific or nonspecific, are outside the VP, creating an \bar{A} -chain and c-commanding the PG.⁸ That a nonspecific object can appear in a position external to VP is evidenced by the following example, where it receives a contrastive topic interpretation:

- (10) Kimea *film-e xâreji* hichvaght negâh ne-mi-kon-e.
 Kimea movie-EZ foreign never look NEG-HAB-do-3SG
 ‘Kimea never watches foreign movies.’ (She watches domestic movies.)

Thus, the ill-formedness of the (b) sentences in (1)–(3) cannot be attributed to the surface position of the nonspecific objects in these sentences.

As the data in (1)–(3) indicate, only the specific NP can license the gap. How does the grammar account for this fact?

2 Previous Analyses

Chomsky (1982) suggests that a PG is a pronominal element at D-Structure and becomes a variable bound by the operator of the real gap at S-Structure. Cinque (1990) partially agrees with Chomsky, arguing that a PG is an empty resumptive pronoun (*pro*) not only at D-Structure, but also at S-Structure, and is \bar{A} -bound by a base-generated operator in the specifier position of CP at both levels. Cinque further states (p. 102) that ‘[w]hereas in ordinary *wh*-constructions *Wh*-Movement applies in principle to any maximal projection, in parasitic gap constructions, . . . , *Wh*-Movement appears to be strictly limited to NPs.’ Therefore, PG constructions of a category other than NP are quite generally impossible.

⁷ See Karimi, in preparation, for detailed discussion of scrambling in Persian.

⁸ The licensing chain in (1)–(3) consists of the scrambled object and the real gap it creates.

- (11) * $[_{AP}$ Quanto importanti] $_i$ si può diventare t_i
 how important can one become
 $[_{senza\ sentirsi\ e_i}]?$
 without feeling (Cinque 1990:102)

This is a position that has been taken by other authors as well (see, e.g., Emonds 1985, Aoun and Clark 1985, Koster 1987, Postal 1993). Consider the following data:

- (12) *How $_i$ sick did John look t_i without actually feeling e_i ?
 (Emonds 1985:91)
- (13) *Sick $_i$ though Frank was t_i without looking e_i , he didn't
 visit a physician. (Postal 1993:736)

Cinque's suggestion rests on the referential property of the antecedent. That is, the element licensing a PG must be an NP since only NPs can be referential, as the ungrammaticality of (11)–(13) indicates.

Previous analyses show that only an NP can license a PG. The contrast in (1)–(3) further indicates that only a specific NP counts as the antecedent of a PG, a fact that partially follows from Cinque's insight since nonspecific kind-level NPs are nonreferential. However, nonspecific indefinite NPs reveal existence, and are thus referential.

Since pronouns are specific, could we argue that the pronominal nature of PGs is responsible for the contrast in (1)–(3)? In other words, does this contrast merely rest on the semantic clash between the non-specific object and the PG?

Chomsky (1986a) provides a compositional rule to account for the interpretation of PGs. This rule, suggested to apply at S-Structure, is restated in (14).

(14) *The Operation of Chain Composition*

If $\mathcal{C} = (\alpha_1, \dots, \alpha_n)$ is the chain of the real gap and $\mathcal{C}' = (\beta_1, \dots, \beta_m)$ is the chain of the parasitic gap, then the 'composed chain' $(\mathcal{C}, \mathcal{C}') = (\alpha_1, \dots, \alpha_n, \beta_1, \dots, \beta_m)$ is the chain associated with the parasitic gap construction and yields its interpretation. (Chomsky 1986a:56)

Given Cinque's argument, $(\beta_1, \dots, \beta_m)$ in (14) is the PG chain consisting of the empty resumptive pronominal in an argument position and the empty operator that binds it from an \bar{A} -position. In order for this rule to work, the licensing chain and the PG chain must be semantically compatible, as evidenced by the following examples: the sentence in (15) can receive only the interpretation in (16), not the one in (17).

- (15) [Which books about himself] $_i$ did John $_i$ file t_j [$_{CP}$ before Bill $_k$ read e_j]?
 (16) which books about himself $_i$ did John $_i$ file [which books about himself $_i$] before Bill $_k$ read [which books about himself $_i$]
 (17) *which books about himself $_i$ did John $_i$ file [which books

about himself_i] before Bill_k read [which books about himself_k]

The discussion so far suggests that the ill-formedness of the (b) sentences in (1)–(3) is due to a semantic clash, namely, the specificity factor: the nonspecific NP cannot license the PG since it is semantically not compatible with the inherently specific pronominal. In fact, the nonspecific kind-level NP does not allow coreferentiality with a pronoun, as in (5). The examples in (18) illustrate the same restriction in English.⁹

- (18) a. *I was *grocery* shopping so I could eat *them*.
 b. *I was *house* hunting for my mother so that I could buy *it* for her.

The following example, like the one in (7), contradicts this conclusion, indicating that a nonspecific indefinite NP does allow coreferentiality with a pronoun:

- (19) I was looking for *a pencil* so that I could draw some pictures with *it*.

The NP *a pencil* in (19) receives either a nonspecific or a specific reading. On both readings, however, it can be referred to by the pronominal *it* in a lower clause. This example indicates that a pronominal can in fact be coreferential with at least one type of nonspecific NP. Nevertheless, nonspecific NPs, kind-level or indefinite, fail to license a PG, as in the (b) sentences in (1)–(3). What accounts for this fact?

3 Specific versus Nonspecific Objects in Persian

A closer look at the syntactic and semantic properties of the nonspecific object in Persian opens the door to recognition of another crucial distinction between nonspecific and specific objects. There is evidence indicating that the nonspecific object, kind-level or indefinite, is semantically closer to the verb than its specific counterpart. That is, the nonspecific kind-level object forms a unified event with the verb and thus *is part of the event*. The nonspecific indefinite object is a new entity introduced into the discourse by the verb. Thus, its presence *asserts the existence* of an object. In both cases the *event*, rather than *the participants in the event*, is the focus of attention. By contrast, the specific object is a particular individual that is singled out and undergoes the event described by the verb (see also Ghomeshi and Massam 1992). In this case the *object*, rather than the *event*, is the focus of attention. These differences suggest a tight semantic bond between the verb and its nonspecific object, a relationship that does not hold between the verb and its specific object. The following observations

⁹The example in (18a) was provided by one of the *LI* reviewers. The one in (18b) was suggested by Rudy Troike (personal communication).

support these claims. They also demonstrate a close syntactic relation between the verb and its nonspecific object, reflecting the semantic bond between these two.

First, the nonspecific kind-level object constitutes a semantic unit with the verb, as in (20a). The specific object is external to the verbal concept, as in (20b).

- (20) a. Kimea be bachche-hâ ghazâ dâd.
 Kimea to child-PL food gave
 'Kimea fed the children.'
 (What she did was *food giving*)
 b. Kimea ghazâ ro be bachche-hâ dâd.
 Kimea food RÂ to child-PL gave
 'Kimea gave the food to children.'

(20a) and (20b) can answer questions like 'What did Kimea do for the children?' and 'What did Kimea give the children?', respectively.

Second, Persian exhibits a growing set of complex verbs consisting of a nonverbal element and a *light verb* (Mohammad and Karimi 1992, Karimi 1997). Although these constructions differ in many ways from predicates that consist of a nonspecific object and a real verb, they share a number of similar properties. For one thing, the surface position of the nominal element with respect to the verb in the two constructions is the same. That is, the nonverbal element of a complex verb, being part of the semantic construction of the predicate, can never follow the verb, as evidenced by (21b).

- (21) a. Kimea mehmun-â ro [_{Complex v} *da'vat* kard].
 Kimea guest-PL RÂ invitation did
 'Kimea invited the guests.'
 b. *Kimea mehmun-â ro kard *da'vat*.

Similarly, the nonspecific object, kind-level or indefinite, may not follow the verb. This restriction, however, does not hold for the specific object. This fact indicates a tight semantic and syntactic relation between the verb and its nonspecific object.

- (22) To *da'vat* kard-i mehmun-â ro/*mehmun/
 you invitation did-2SG guest-PL RÂ/*guest/
 *ye mehmun?
 *a guest
 'Did you invite the guests/*guest/*a guest?'

Third, the nonverbal element and the nominalized light verb can constitute a compound noun. The same is true of the nonspecific object and the verb. The italicized elements in (23) and (24) represent a nonverbal element plus a nominalized light verb and a nonspecific object plus a nominalized heavy verb, respectively.

- (23) *Da'vat kardan-e* Kimea dorost na-bud.
 invitation doing-EZ Kimea right NEG-was
 'Inviting Kimea was not right.'

- (24) (*Se-tâ*) *nâme neveshtan enghadr vaght*
 (three-PART) letter writing this much time
ne-mi-gir-e.
 NEG-HAB-take-3SG
 'Lit. (Three) letter writing does not take that much time.'

Fourth, binding relations clearly indicate an asymmetry between the specific and nonspecific objects, and the inability of the nonspecific object to bind an anaphor.

- (25) a. *Se-tâ bachche-hâ ro be hamdige mo'arrefi*
 three-PART child-PL RÂ to each other introduction
kard-am.
 did-1SG
 'I introduced the three children to each other.'
 b. **Se-tâ bachche be hamdige mo'arrefi kard-am.*

Fifth, the specific object can bind a clitic possessor in the same simple clause. The nonspecific object, kind-level or indefinite, cannot.

- (26) a. *Ostâd [ye dâneshtu-ye tâza ro]_i be*
 professor a student-EZ new RÂ to
hamkelâsi-hâ-sh_i mo'arrefi kard.
 classmate-PL-her/his introduced did
 'The professor introduced a new student to her/his classmates.'
 b. **Ostâd [(ye) dâneshtu-ye tâze]_i be hamkelâsi-hâ-sh_i*
mo'arrefi kard.

The indefinite NP *ye dâneshtu-ye tâza* 'a new student' is followed by *râ* in (26a) and therefore is specific. Its counterpart in (26b) lacks *râ* and hence is nonspecific. Only the former can bind the clitic possessor *esh*, as the ill-formedness of (26b) attests.

In Karimi 1998 I have proposed that the contrast between the specific and nonspecific objects is structurally expressed by two distinct phrase structures, restated in (27). The specific object is base-generated in the specifier position of VP, as in (27a); its nonspecific counterpart is base-generated as a sister to the verb, as in (27b).¹⁰

- (27) a. [_V^{max}[_{V'}[_{VP} NP_[+specific] [_{V'} PP V]]]]
 b. [_V^{max}[_{V'}[_{VP}[_{V'} PP [_{VP}^{pred} NP_[-specific] V]]]]]]

The specific object is the subject of VP in (27a). The nonspecific object is part of the lower predicate because of its close syntactic and semantic connection with the verb.¹¹

¹⁰ Rapoport (1995) takes a similar position in discussing nonspecific objects in other languages, including Hebrew. Mohammad and Karimi (1992) propose two distinct object positions in Persian. Ghomeshi and Massam (1994: 190) suggest that the nonspecific object is a sister to V⁰ under V⁰ and that the specific object is dominated by V'.

¹¹ The projection V^{pred} in (27b) is licensed by the presence of a nonspecific object. Thus, its presence is independent of the indirect object. Note also that

The phrase structures in (27) violate Baker's (1988) Uniformity of θ -Assignment since the two NPs that represent the θ -role Theme are base-generated in two different positions in these structures. As shown above, however, Persian nonspecific objects have a tight syntactic and semantic relationship with the verb. Following Hale and Keyser (1993), I assume that structures that express the relations among the arguments of the verb are characterized by the operation of two fundamental principles. These principles, which Hale and Keyser borrow from Kayne (1984) and Chomsky (1986b), are stated in (28a) and (28b), respectively.

(28) *Lexical Relational Structure* (Hale and Keyser 1993:77)

a. Unambiguous Projections

b. Full Interpretation

The principle in (28a) states that lexical syntactic projections must be unambiguous. The one in (28b) requires that linguistic structures be fully interpretable. The phrase structures in (27) satisfy both requirements. They express the semantic and syntactic differences between specific and nonspecific objects, which in turn justify the inability of the nonspecific object to license a PG. That is, the nonspecific object is part of the lower predicate. A PG, on the other hand, is the subject of the VP because it is specific. The former cannot license the latter since they occupy different syntactic positions owing to their different semantic connections with the verb. The specific object and the PG are compatible, however, since each one of them is the subject of its own VP. In other words, the phrase structures in (27) provide a syntactic explanation for the contrast in (1)–(3). That is, they offer a structural explanation that is triggered by the semantic distinctions between the specific and nonspecific objects in this language.¹²

(27b) explains the ungrammaticality of (25b) since the nonspecific object is not in an A-position in this case and thus cannot bind an anaphor from that position. The case of (26b) is different, however, since a clitic pronoun, including a clitic possessor, can be bound by an element preceding it, as in (i).

- (i) Kimea be Rahjou_i ketâb-esh_i ro pas-dad.
 Kimea to Rahjou book-his RÂ return-gave
 'Kimea returned to Rahjou his book.'

Thus, (26b) is ill formed because of a semantic clash between the nonspecific object and the pronominal, since the nonspecific object cannot license a pronominal (specific NP) within the same clause.

¹² An *LI* reviewer has suggested that the distinction between the specific and nonspecific objects would be supported more convincingly if the specificity distinction were correlated with distinct functional positions in order to provide the interface to semantic interpretation. It seems to me that the two distinct base positions in (27) do in fact reflect the inherent semantic differences between these two elements, and provide the necessary interface to their semantic interpretation. Furthermore, they independently account for anaphoric binding relations and anti-weak crossover effects in Persian and similar languages without the need to resort to a functional projection. See Karimi 1998 for elaborated discussion.

Cinque's (1990) insight has led us to recognize that only an NP can license a PG, owing to its referential property. The contrast in (1)–(3) further indicates that only specific NPs are able to do so. The analysis of Persian nonspecific objects takes us one step further, showing that the nonspecific NP is part of the lower predicate and thus fails to be coreferential with the PG, since it denotes a different semantic role and occupies a distinct syntactic position. Thus, the analysis in this squib shows that the licenser of a PG must be in the same structural position as the PG in order to serve as an antecedent. The specific object satisfies this requirement since it is the subject of VP, like the PG. The nonspecific object does not satisfy this requirement since it is in a lower position and therefore structurally distinct from the PG.¹³

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¹³ Postal (1993) shows that a predicate nominal cannot license a PG, as in (i).

(i) *What_i he became t_i without wanting to become e_i was a traitor. (Postal 1993:746)

It seems to me that (i) is ruled out by the same arguments advanced in the text: a predicate nominal is part of the predicate and therefore cannot be coreferential with a pronominal, namely, the PG. This claim is supported by the fact that predicate nominals can be neither passivized nor pronominalized, as discussed by Postal.

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