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7. Information Structure and Non-canonical Syntax

GREGORY WARD AND BETTY BIRNER

1 Introduction

One of the primary factors contributing to the coherence of a discourse is the existence of informational links between the current utterance and the prior context. These links facilitate discourse processing by allowing the hearer to establish and track relationships such as coreference between discourse entities. A variety of linguistic forms, in turn, mark these relationships. For example, the use of the definite article marks the referent of a noun phrase as being individuable within the discourse model (Birner and Ward 1994), and thereby cues the listener to the likelihood that the entity in question has been previously evoked and individuated; thus, the listener will look for an appropriate referent among his or her store of already evoked information rather than constructing a new discourse entity.

Similarly, speakers use a wide range of non-canonical syntactic constructions to mark the information status of the various elements within the proposition. These constructions not only mark the information status of their constituents, but at the same time facilitate processing through the positioning of various units of information. The speaker's choice of constructions, then, serves to structure the informational flow of the discourse. This dual function of structuring and marking the information in a discourse is illustrated in (1):

> (1). Beds ringed the room, their iron feet sinking into thick *shirdiks* woven in colorful patterns of birds and flowers. *At the foot of each bed rested a stocky wooden chest*, festooned with designs of cranes and sheep, horses and leaves. [D. L. Wilson, *I Rode a Horse of Milk White Jade*, 1998: 133]

Here, the NP *each bed* in the italicized clause has as its referent the set of beds already evoked in the first sentence; *the foot of each bed*, in turn, can be inferred on the basis of the generally known fact that a bed has a head and a foot. The inversion italicized here serves the dual function of, on the one hand, structuring the information so as to link up *the foot of each bed* with the previously mentioned *beds* for ease of processing and, on the other hand, marking the NP *the foot of each bed* as linked in this way, via its sentence-initial placement, so that the hearer knows to search for a previously evoked or inferrable entity rather than constructing a new entity for the beds.

The key factors that determine the structuring of information in English are the information's discourse-status and hearer-status (Prince 1992); additional factors include formal weight and the salience of particular "open propositions" (i.e., propositions containing an underspecified element) in the discourse. (All of these factors will be discussed below.) Because non-canonical constructions are used in consistent and characteristic ways to structure such information, formal features of a particular construction make it possible to infer the status of the constituents of the construction; in

this way the choice of construction for information-packaging purposes simultaneously marks the information so packaged as to, for example, its discourse- and hearer-status. Thus, we can construct a typology of non-canonical syntactic constructions and the information status of their constituents (as will be shown in the table in (2) below).

Many languages tend to structure discourse on the basis of an "old/new" principle – that is, in any given sentence, information that is assumed to be previously known tends to be placed before that which is assumed to be new to the hearer.[1]

English is such a language; indeed, this principle can be seen to be at work in (1) above, in that *the foot of each bed*, inferrable from the previously evoked *beds*, is placed before the new and unpredictable *stocky wooden chest*. Extensive research, however, has failed to identify a unitary notion of "oldness" or "givenness" at work in all of the non-canonical constructions that are sensitive to givenness. Rather, some constructions are sensitive to the status that the information has in the discourse – whether it has been previously evoked or can plausibly be inferred from something that has been previously evoked – whereas others are sensitive to the status that the information has for the hearer – that is, whether the speaker believes it is already known to the hearer (not in the sense of "known to be true," but rather present in the hearer's knowledge store). Moreover, certain constructions are sensitive to the status of a single constituent, whereas others are sensitive to the relative status of two constituents.

The type of information status to which a particular English construction is sensitive is partly predictable from its form. As we will show below, PREPOSING constructions (that is, those that place canonically postverbal constituents in preverbal position) mark the preposed information as familiar within the discourse, while POSTPOSING constructions (those that place canonically preverbal constituents in postverbal position) mark the postposed information as new, either to the discourse or to the hearer. Finally, constructions that reverse the canonical ordering of two constituents (placing a canonically preverbal constituent in postverbal position while placing a canonically postverbal constituent in preverbal position) mark the preposed information as being at least as familiar within the discourse as is the postposed information.

Thus, the situation we find in non-canonical syntactic constructions is as follows:

(2)

Single argument	Information status
Preposed	Old
Postposed	New
Two arguments reversed	Preposed at least as old as postposed

This situation will be shown to hold for all constructions in English that involve the non-canonical placement of one or more constituents whose canonical position is not filled by a referential element (such as an anaphoric pronoun). It is traditional to think of such constructions as involving the "movement" of the preposed or postposed constituents from their canonical positions (hence the absence of a referential constituent in that position), but we will take no position on how these constructions are best analyzed syntactically. Our interest, rather, will be in their functional properties, and specifically in their use by speakers for the purpose of structuring information in a discourse.

2 Background and Definitions

Since the early Prague School work on syntax and discourse function (e.g. Firbas 1966), researchers have accrued evidence for a correlation between sentence position and givenness in the discourse. How to define the relevant notion of givenness, however, has been controversial. Prince (1981a) frames the issue in terms of ASSUMED FAMILIARITY, on the grounds that the speaker structures information in discourse based on his or her assumptions concerning the familiarity of the information to the hearer. Prince offers a preliminary taxonomy of types of givenness, ranging from

brand-new information (either anchored to known information or not) through inferrable information (that which has not been evoked but can be inferred from the prior context or from a constituent contained within it) through "unused" information (not evoked in the current discourse but assumed to be previously known) to previously evoked information. Prince (1992) reframes this taxonomy in terms of a matrix of two cross-cutting distinctions – between, on the one hand, discourse-old and discourse-new information and, on the other hand, hearer-old and hearer-new information. Discourse-old information is that which has been explicitly evoked in the prior discourse, while hearer-old information is that which, regardless of whether it has been evoked in the current discourse, is assumed to be already known to the hearer. (See also Abbott, this volume, for a discussion of similar parameters with respect to definiteness.)

The resulting matrix corresponds to Prince's earlier formulations as shown in (3):

(3)

	Hearer-old	Hearer-new
Discourse-old	Evoked	(non-occurring)
Discourse-new	Unused	Brand-new
		Brand-new anchored

Thus, in an utterance like *The President gave a speech today, and in it he offered a new tax plan*, the NP *the President* represents information that is discourse-new but hearer-old, the NP *a speech* represents information that is both discourse-new and (assumed to be) hearer-new, and the pronoun *it* represents information that is both discourse-old and hearer-old. Information that is discourse-old but hearer-new is predicted not to occur, on the grounds that a speaker typically believes that the hearer is paying attention and thus that what has been evoked in the discourse is also known to the hearer.

Prince (1992) leaves the status of inferrable information unresolved, but later studies have shown that in those constructions sensitive to discourse-old status, inferrable information consistently patterns with discourse-old information (Birner 1994, Birner and Ward 1998). As will be demonstrated below, research has shown that the hearer- vs. discourse-status distinction is an important one for distinguishing among functionally distinct syntactic constructions, and it will form the basis of our functional typology of constructions.

In addition, many constructions require a particular open proposition to be salient in the discourse. An open proposition (OP) is a proposition in which a constituent is left OPEN or unspecified; thus, a question such as (4a) will render the OP in (4) salient.

(4)a. Where are your mittens?

(b). Your mittens are X:X∈[places]

That is, asking someone about the location of their mittens evokes the proposition that their mittens are in some location, i.e. some member of the set of places. Declarative statements likewise give rise to open propositions; for example, utterance of (5a) renders the OPs in (5b–d), among others, salient.

(5)a. I found your mittens.

(b). I found X:X∈[objects]

(c). X:X∈[people] found your mittens

(d). I did X:X∈[activities]

Uttering *I found your mittens* renders salient the notions that I found something, that someone found your mittens, and that I did something, inter alia (cf. Wilson and Sperber 1979). The felicitous use of certain constructions requires that a particular OP be salient in the discourse context, the classic

example being clefts (Prince 1978, Delin 1995), as illustrated in (6)–(7):

(6)a. Two sets of immigration bills currently before this session of Congress are giving observers both hope and worry. What is at stake are the immigration rights of gay people, and though gay legislation generally moves slowly, voting is expected soon.
[Au Courant]

(b). Triggs is a lexicographer.
Over his desk hangs the 18th-century dictionary maker Samuel Johnson's ironical definition: "A writer of dictionaries; a harmless drudge that busies himself in tracing the original, and detailing the signification of words."
What Triggs actually does is find alert readers who recognize new words or new usages for ordinary ones.
[New York Times News Service]

The *wh-cleft* in (6a), *what is at stake are the immigration rights of gay people*, is felicitous only in a context in which it is salient that something is at stake (i.e., the OP *X:Xϵ[issues] is at stake* must be salient). Likewise, the *wh-cleft* in 4b, *what Triggs actually does is find alert readers who recognize new words or new usages for ordinary ones*, is felicitous only in a context in which it is salient that Triggs does something (i.e., the OP *Triggs does X:Xϵ[activities]* must be salient). The contexts given in (6) clearly do render these OPs salient; conversely, if such an OP is not salient, the *wh-cleft* is infelicitous. Thus, compare (7a) and (7b), uttered in, say, a grocery store:

(7)a. Hey, look! That's my friend Jeremy Triggs over there. He's a lexicographer. What he does is find alert readers who recognize new words or new usages for ordinary ones.

(b). Hey, look! That's my friend Jeremy Triggs over there. #What he does is find alert readers who recognize new words or new usages for ordinary ones.

In (7a), the mention of Triggs's occupation gives rise to the issue of what he does, rendering the OP salient. In (7b), however, merely sighting a friend in a grocery store does not render the OP salient, and the *wh-cleft* is correspondingly infelicitous.

The instantiation of the variable in the OP corresponds to the FOCUS, or NEW INFORMATION, of the utterance. In (7a), the focus is *find alert readers who recognize new words or new usages for ordinary ones*, corresponding to the instantiation of the OP. This packaging of information into an open proposition and a focus corresponds closely to the FOCUS/PRESUPPOSITION distinction of Chomsky (1971), Jackendoff (1972), and Rochemont (1978, 1986), inter alia (see also Vallduví (1992), Lambrecht (1994), Gundel and Fretheim (this volume)).

Finally, many constructions are sensitive to the formal weight of their constituents. That is, just as more informative (i.e. newer) information tends to appear late in the sentence, likewise longer or more syntactically complex constituents tend to appear late in the sentence. The correlation between the two, of course, is not coincidental. Information that has been previously evoked can frequently be identified on the basis of a relatively short phrase, with the limiting case being a pronoun or null argument for highly salient information; brand-new information, correspondingly, requires a sufficiently long or complex linguistic realization to enable the hearer to construct an appropriate discourse referent. Because formal weight is only tangential to the structuring of information, it will not be among our central concerns in this chapter.

3 Preposing

Following Birner and Ward (1998) and Ward (1988), a PREPOSING is a sentence in which a lexically governed, or subcategorized, phrasal constituent appears to the left of its canonical position, typically sentence-initially. Preposing is not restricted to any particular phrasal category, as illustrated by the examples of a preposed NP, PP, VP, and AP in (8) through (11), respectively:

(8). NP
To illustrate with a simple analogy, consider a person who knows arithmetic, who has mastered

the concept of number. In principle, he is now capable of carrying out or determining the accuracy of any computation. Some computations he may not be able to carry out in his head. Paper and pencil are required to extend his memory. [N. Chomsky, *Rules and Representations*, 1980: 221]

(9). PP
But keep in mind that no matter which type of equipment you choose, a weight-training regimen isn't likely to provide a cardiovascular workout as well. For that, you'll have to look elsewhere.
[*Philadelphia Inquirer*, 8/28/83]

(10). VP
They certainly had a lot to talk about and talk they did.
[*The New Republic*, 4/23/84]

(11). AP
Interrogative *do* should then be classed as a popular idiom. Popular it may indeed have been, but I doubt the different origin. [A. Ellegård, *The Auxiliary* Do, *the Establishment and Regulation of Its Use in English*, 1953: 168]

In each case, a single argument appears in preposed position and thus, following the generalization we outlined earlier, that argument is constrained to be old information. More specifically, felicitous preposing in English requires that the information conveyed by the preposed constituent constitute a discourse-old anaphoric link to the preceding discourse (see Reinhart 1981, Horn 1986, Vallduví 1992).

This information can be related to the preceding discourse in a number of ways, including such relations as type/subtype, entity/attribute, part/whole, identity, etc. These relations can all be defined as partial orderings (Hirschberg 1991) and, as we have argued (Ward 1988, Birner and Ward 1998), the range of relations that can support preposing are all of this type. Items (e.g. discourse entities) that are ordered by means of a partial ordering constitute partially ordered sets, or POSETS. Some typical partial orderings include, for example, type/subtype (*pie* and *desserts*), greater-than (*five* and *six*), and simple set inclusion (*apples* and *oranges*). The notion of a poset subsumes both coreferential links, where the linking relation between the preposed constituent link and the corresponding poset is one of simple identity, and non-coreferential links, where the ordering relation is more complex. Consider for example (12):

(12). *Customer:* Can I get a bagel?
Waitress: No, sorry. We're out of bagels. A bran muffin I can give you.

Here, the link (*a bran muffin*) and the previously evoked *bagels* stand in a poset relation as alternate members of the inferred poset [breakfast baked goods]. However, note that the link could also have been explicitly mentioned in the prior discourse, as in (13):

(13)

A: Can I get a bagel?
B: Sorry – all out.
A: How about a bran muffin?
B: A bran muffin I can give you.[2]

Here, although the link *a bran muffin* is coreferential with the entity explicitly evoked in A's second query, the salient linking relation is not identity. Rather, the link is related via a type/subtype relation to the evoked poset [breakfast baked goods], of which both bagels and bran muffins are members.[3]

Thus, both (12) and (13) illustrate preposings whose posets contain multiple set members. However, some types of preposing also permit links to posets containing only a single set member. Consider

(14):

> (14). Facts about the world thus come in twice on the road from meaning to truth: once to determine the interpretation, given the meaning, and then again to determine the truth value, given the interpretation. This insight we owe to David Kaplan's important work on indexicals and demonstratives, and we believe it is absolutely crucial to semantics. (J. Barwise and J. Perry, *Situations and Attitudes*, 1983: 11)

Here, the link *this insight* stands in a relation of identity to the evoked poset, consisting of a single member. By virtue of this poset relation, the link serves as the point of connection to the prior discourse.

Another case of an identity link to the prior discourse is a type of preposing called PROPOSITION AFFIRMATION, illustrated in (15) (see Ward 1990; Birner and Ward 1998; Ward and Birner 2002):

> (15). With her new movie, called "Truth or Dare" in America, and "In Bed with Madonna" in Europe, Madonna provides pundits with another excuse to pontificate. And, on both sides of the Atlantic, pontificate they have – in reviews, essays, magazine features and on television chat shows. (*The Economist*, July 27, 1991)

Here, the link *pontificate* is evoked in the immediately preceding sentence. Thus, as in (14), the relevant poset in (15) consists of a single member, evoked in the prior context and repeated in the link.

In addition, preposing is a focus/presupposition construction involving a salient or inferrable open proposition in the discourse. Preposings can be classified into two major types based on their intonation and information structure: FOCUS PREPOSING and TOPICALIZATION. The preposed constituent of focus preposing contains the focus of the utterance, and bears nuclear accent; the rest of the clause is typically deaccented.[4] Topicalization, on the other hand, involves a preposed constituent other than the focus and bears multiple pitch accents: at least one on the preposed constituent and at least one on the (non-preposed) focus.[5] Nonetheless, both types of preposing require a salient or inferrable OP at the time of utterance for felicity.[6]

Consider first the focus preposing in (16), where the focus is contained within the preposed constituent:

> (16). Colonel Kadafy, you said you were planning on sending planes – M-16s I believe they were – to Sudan. (Peter Jennings on ABC's "World News Tonight")

The preposed constituent in this example, *M-16s*, contains the nuclear accent, which identifies it as the focus of the utterance.

To construct the OP, the preposed constituent containing the focus is first placed in its canonical argument position. The focus is replaced with a variable representing a member of some contextually licensed poset (17a). (A gloss of the OP is provided in (17b).) The focus, provided in (17c), instantiates the variable in the OP.

> (17)a. OP = The planes were of type X, where X is a member of the poset [types-of-military-aircraft].
>
> (b). The planes were of some type.
>
> (c). Focus = M-16s

Here, *M-16s* serves as the link to the preceding discourse. It is a member of the poset [military aircraft], which is part of the inferrable OP in (17a). In this example, the OP can be inferred on the basis of the prior context; from the mention of military planes, one is licensed to infer that those planes are of some type. While the anchoring poset [military aircraft] is discourse-old, the preposed constituent itself represents information that has not been explicitly evoked in the prior discourse. In

the case of focus preposing, then, the related poset must be discourse-old while the link – as focus – is new. Thus, it follows that the poset must contain at least one other member in addition to the link. The focus in a topicalization, on the other hand, is not contained in the preposed constituent but occurs elsewhere in the utterance. Intonationally, preposings of this type contain multiple accented syllables: (at least) one occurs within the constituent that contains the focus and (at least) one occurs within the preposed constituent, which typically occurs in a separate INTONATIONAL PHRASE (Pierrehumbert 1980). Consider (18):

>   (18). G: Do you watch football?
>   E: Yeah. Baseball I like a lot BETTER.
>   (G. McKenna to E. Perkins in conversation)

Here, it is the postverbal adverb *better* – and not the preposed NP *baseball* – that serves as the focus of the utterance. *Baseball* serves as the link to the poset [sports], inferrable on the basis of the evoked set member *football*. Note that *baseball* is accented in (16) not because it is the focus but because it occurs in a separate intonational phrase.

The OP is formed in much the same way as for focus preposing, except that the poset member represented by the preposed constituent is replaced in the OP by the relevant poset, as in (19):

>   (19)a. OP = I like-to-X-degree [sports], where X is a member of the poset [degrees].
>
>   (b). I like sports to some degree.
>
>   (c). Focus = better

In (19a), the OP includes the variable corresponding to the focus, but note that the link *baseball* has been replaced by the set [sports], i.e. the poset that includes both the previously evoked set member and the link. In other words, the OP that is salient in (18) is not that the speaker likes baseball per se, but rather that he likes sports to some degree.

Thus, the focus of a preposing may appear either in preposed or canonical position. However, in both cases the preposed constituent serves as the discourse-old link to the preceding discourse via a salient linking relation.

4.Left-dislocation

Before we leave preposing, it is important to distinguish it from a superficially similar – but functionally distinct – construction with which preposing is often confused. Left-dislocation (LD) is superficially similar to preposing in that a non-subject appears in sentence-initial position, but in left-dislocation a corefer-ential pronoun appears in that constituent's canonical position. Consider (20):

>   (20). One of the guys I work with, he said he bought over $100 in Powerball tickets. (JM to WL, in conversation)

Here, a subject pronoun *he* – coreferential with the sentence-initial constituent – appears in canonical subject position; therefore, unlike preposing, there is no "empty" argument position. It is the presence of this coreferential pronoun that distinguishes LD from preposing in terms of sentence structure, and it is also what distinguishes the two constructions in terms of information structure. As we have seen, the preposed constituent of preposing uniformly represents discourse-old information in context. In the case of LD, however, it is possible for the initial constituent to be not only discourse-new, but even hearer-new, as in (20), where the guy in question is being mentioned for the very first time and therefore not linked in any way to the previous discourse. Prince (1997) argues that there are three types of left-dislocation (LD), distinguishable on functional grounds. Type I LD is what Prince calls SIMPLIFYING LDs:

>   A "simplifying" Left-Dislocation serves to simplify the discourse processing of

> Discourse-new entities by removing them from a syntactic position disfavored for Discourse-new entities and creating a separate processing unit for them. Once that unit is processed and they have become Discourse-old, they may comfortably occur in their positions within the clause as pronouns.

> (1997: 124)

That is, LDs of this type involve entities that are new to the discourse and would otherwise be introduced in a non-favored (i.e. subject) position. Contrast (21a) with (21b-c):

> (21)a. Two of my sisters were living together on 18th Street. They had gone to bed, and this man, their girlfriend's husband, came in. He started fussing with my sister and she started to scream. The landlady, she went up and he laid her out. (*Welcomat*, December 2, 1981)

> b. She had an idea for a project. She's going to use three groups of mine. One she'll feed them mouse chow. Just the regular stuff they make for mice. Another she'll feed them veggies. And the third she'll feed junk food. [SH in conversation, 11/7/81 (=Prince 1997, ex. 9e)]

> c. That woman you were just talking to, I don't know where she went.

In (21a), the landlady is new to the discourse (and presumably to the hearer as well); however, the speaker is introducing her via an NP in subject position – a position disfavored for introducing new information. The dislocated NP creates a new information unit and thus, according to Prince, eases processing.[7] The other two types of LD – triggering a poset inference (21b) and amnestying an island violation (21c) – typically do, according to Prince, involve discourse-old information. This stands in stark contrast to true preposing constructions, in which the preposed constituent must represent a discourse-old link to the prior discourse.

5 Postposing

Whereas preposing constructions serve to place relatively familiar information in preverbal position (via the preposing of a discourse-old link), postposing constructions preserve the old-before-new information-structure paradigm by presenting relatively unfamiliar information in postverbal position. That is, when canonical word order would result in the placement of new information in subject position, postposing offers a way of placing it instead toward the end of the clause, in the expected position for new information. Nonetheless, different postposing constructions serve this function in slightly different ways. In this section we will discuss existential *there*, presentational *there*, and extraposition. These postposing constructions will then be contrasted with right-dislocation, which is structurally and functionally distinct.

Two postposing constructions in English place non-referential *there* in subject position while placing what would be the canonical subject into postverbal position. These constructions are illustrated in (22):

> (22)a. In Ireland's County Limerick, near the River Shannon, there is a quiet little suburb by the name of Garryowen, which means "Garden of Owen". (Brown Corpus)

> b. After they had travelled on for weeks and weeks past more bays and headlands and rivers and villages than Shasta could remember, there came a moonlit night when they started their journey at evening, having slept during the day. (C. S. Lewis, *The Horse and His Boy*, (1954), p. 23)

Example (22a) presents an instance of existential *there*, defined by the presence of non-referential *there* occurring in subject position while the NP that would canonically appear in subject position instead appears postverbally, and finally by the presence of *be* as the main verb. Presentational *there*, as in (22b), is similar in that non-referential *there* appears in subject position while the NP that would canonically appear in that position instead appears postverbally; it differs, however, in having a main verb other than *be* (here, *came*). Note that (22a) also admits a second reading, in which *there* is referential; under this reading *there* receives an H* pitch accent (see Pierrehumbert 1980) and is

coreferential with the previously evoked location in County Limerick. It is only the non-referential reading that concerns us here.

Both constructions constrain the postverbal NP (PVNP) to represent new information; in this way, both offer a way to preserve the given-before-new ordering of information in cases where canonical word order would violate this ordering. The specifics of the constraint, however, differ slightly in the two constructions: Existential *there* requires that the PVNP represent information that is hearer-new, while presentational *there* requires only that the PVNP represent information that is discourse-new. Thus, the constraint on presentational *there* is weaker than that on existential *there*, since it is possible for information to be new to the discourse while still being known to the hearer, and such information may felicitously occur in clauses containing presentational *there*. To see this, consider (23):

> (23)a. As soon as he laughed, he began to move forward in a deliberate way, jiggling a tin cup in one hand and tapping a white cane in front of him with the other. Just behind him there came a child, handing out leaflets. (Flannery O'Connor, *Wise Blood*, 1952)
>
> b. … Just behind him there came the mayor, handing out leaflets.

Here we see that both the variant with a hearer-new PVNP (23a) and the variant with a hearer-old PVNP ((23b), where towns are known to have mayors) are acceptable, because in both cases the PVNP represents an entity that is new to the discourse. If we alter the discourse so that the PVNP is discourse-old, presentational *there* becomes infelicitous:

> (24). As they laughed, John and the mayor began to move forward in a deliberate way. John jiggled a tin cup in one hand and tapped a white cane in front of him with the other. #Just behind him there came the mayor, handing out leaflets.

Existential *there* is likewise felicitous with a hearer-new, discourse-new PVNP, as in (22a) above; however, consider the hearer-old, discourse-new PVNP in (25), modeled after the corresponding presentational-*there* variant in

> (23)b. As soon as he laughed, he began to move forward in a deliberate way, jiggling a tin cup in one hand and tapping a white cane in front of him with the other. #Just behind him there was the mayor, handing out leaflets.

In this case, *the mayor* still represents hearer-old information, but unlike the presentational *there* in (23b), existential *there* in this sentence is infelicitous. That is, both constructions require a new PVNP, but the type of newness differs: presentational *there* requires only discourse-new status, whereas existential *there* also requires hearer-new status.

Notice that we cannot simply phrase the constraint in terms of definiteness; that is, the difference is not merely in whether the PVNP may be definite. Many authors (Milsark 1974, Safir 1985, Reuland and ter Meulen 1987, Lasnik 1992, inter alia) have assumed that there is a "definiteness effect" that prevents definite NPs from appearing in postverbal position in these sentences. However, as shown in Ward and Birner (1995) and Birner and Ward (1998), this illusion arises from the close similarity of the constraint on definiteness and that on the PVNP in a *there*-sentence. While the PVNP is constrained to be either discourse-new or hearer-new (depending on the construction), a definite NP in general is constrained to be, loosely speaking, identifiable; more specifically, it must be individuable within the discourse model (Birner and Ward 1994, 1998; cf. Gundel et al. 1990, 1993; Abbott 1993, this volume). While most referents satisfying the newness criterion for PVNP status will fail to meet this criterion for definiteness, the two sets are not totally distinct; thus there are a number of contexts in which a definite NP may appear in a *there*-sentence, as in, for example, hearer-new tokens of hearer-old (hence identifiable) types (26a), hearer-new entities with fully identifying descriptions that render them individuable (26b), and FALSE DEFINITES, which represent discourse-new, hearer-new information that does not in fact satisfy the usual criteria for definiteness (26c):

> (26)a. The Woody Allen-Mia Farrow breakup, and Woody's declaration of love for one of Mia's

adopted daughters, seems to have everyone's attention. There are the usual sleazy reasons for that, of course – the visceral thrill of seeing the extremely private couple's dirt in the street, etc. (*San Francisco Chronicle*, August 24, 1992)

b. In addition, as the review continues, there is always the chance that we'll uncover something additional that is significant. (Challenger Commission transcripts, March 18, 1986)

c. There once was this sharp Chicago alderman who also happened to be a crook. (*Chicago Tribune;* cited in Birner and Ward 1998: 139)

In (26a), the current set of sleazy reasons is hearer–new, but it represents an instance of a hearer–old type – the "usual" sleazy reasons for being interested in the troubles of celebrity couples. The hearer–new status of the current set of reasons justifies its postverbal placement in the existential, while the identifiability of the hearer–old type justifies the definite. In (26b), the definite is justified by the fact that the PVNP fully and uniquely individuates the chance in question, while its position in the existential is justified by the fact that this represents hearer–new information. Finally, in (26c), the NP *this sharp Chicago alderman* constitutes hearer–new information and hence is felicitous as a PVNP; in fact, this NP does not in any way represent identifiable or individuable information within the discourse model and hence is a "false definite" (Prince 1981b, Wald 1983, Ward and Birner 1995).

Notice that because the PVNPs in (26) are also discourse–new, they are equally felicitous in presentational *there* clauses:

(27)a. The Woody Allen–Mia Farrow breakup, and Woody's declaration of love for one of Mia's adopted daughters, seems to have everyone's attention. There exist the usual sleazy reasons for that, of course – the visceral thrill of seeing the extremely private couple's dirt in the street, etc.

b. In addition, as the review continues, there always exists the chance that we'll uncover something additional that is significant.

c. There once lived this sharp Chicago alderman who also happened to be a crook.

In each case in (27), presentational *there* is licensed by the discourse–new status of the PVNP. Other cases in which a definite PVNP may occur in an existential or presentational *there*-sentence include hearer–old information treated as hearer–new, as with certain types of reminders, and hearer–old information newly instantiating the variable in an OP; see Ward and Birner (1995) for details.

The last type of postposing construction to be discussed is extraposition. In extraposition, a subordinate clause is postposed from subject position, while its canonical position is filled by non-referential *it*. Consider the canonical sentences in (28) and their variants with extraposition in (29):

(28)a. That a bloodthirsty, cruel capitalist should be such a graceful fellow was a shock to me. (Davis, *The Iron Puddler;* token courtesy of Philip Miller)

b. Yet to determine precisely to what extent and exactly in what ways any individual showed the effects of Christianity would be impossible. (Brown Corpus; token courtesy of Philip Miller)

(29)a. It was a shock to me that a bloodthirsty, cruel capitalist should be such a graceful fellow.

b. Yet it would be impossible to determine precisely to what extent and exactly in what ways any individual showed the effects of Christianity.

In both (29a) and (29b), the clause appearing as an embedded subject in the canonical version is instead extraposed to the end of the matrix clause. As shown by Miller (2001), extraposition, like the other postposing constructions discussed above, serves to preserve an old-before-new ordering in the discourse. In particular, Miller shows that the canonical variant is felicitous only if the embedded subject clause represents familiar information; if it represents new information, it must be extraposed (cf. Horn 1986). To see this, consider the constructed examples in (30–31):

(30)a. *A:* Jeffrey didn't turn in his term paper until a week after the deadline.
B: It's a miracle that he turned in a term paper at all.

b. *A:* Jeffrey didn't turn in his term paper until a week after the deadline.
B: That he turned in a term paper at all is a miracle.

(31)a. *A:* Jeffrey isn't a very good student.
B: Yeah; #that he turned in a term paper at all is a miracle.

b. *A:* Jeffrey isn't a very good student.
B: Yeah, it's a miracle that he turned in a term paper at all.

In (30), the fact that Jeffrey turned in a term paper is discourse-old, having been presupposed in A's utterance, and both variants are felicitous. In (31), on the other hand, this fact is new to the discourse, and only the extraposed variant is felicitous. Notice that unlike each of the other constructions we have dealt with, in which the non-canonical version is subject to some constraint on its felicity, in the case of extraposition it is the canonical variant that is constrained; that is, the canonical variant is infelicitous when the embedded subject represents new information, and in such cases extraposition becomes obligatory. Although Miller frames this constraint in terms of discourse-old vs. discourse-new status, it appears that in fact it is hearer-status that is relevant – i.e., that non-extraposed subject clauses are felicitous when they represent hearer-old information. Consider (32):

(32). His act takes on lunatic proportions as he challenges female audience members to wrestling matches, falling in love with one while grappling it out on the canvas. How he and feminist Lynne Margulies (Courtney Love) became life partners is anyone's guess. (*Man on the Moon* movie review; token provided by Rodney Huddleston)

Here the fact that the referent of *he* (comedian Andy Kaufman) and Lynn Margulies became life partners is treated as shared background knowledge, despite not having been evoked in the prior discourse. Hence it is hearer-old rather than discourse-old, yet the utterance is nonetheless felicitous. Thus, extraposition is required only when the embedded clause represents hearer-new information, and the extraposition in that case serves once again to preserve the ordering of old before new information within the utterance.

6 Right–dislocation

Just as left-dislocation is functionally distinct from preposing, so is right-dislocation functionally distinct from postposing, despite the fact that both constructions involve the rightward placement of information that would canonically appear earlier in the clause. In existential and presentational *there-sentences*, for example, the PVNP is required to represent information that is new, either to the discourse (for presentational *there*) or to the hearer (for existential *there*). For right-dislocation, no such requirement holds:

(33). Below the waterfall (and this was the most astonishing sight of all), a whole mass of enormous glass pipes were dangling down into the river from somewhere high up in the ceiling! They really were ENORMOUS, those pipes. There must have been a dozen of them at least, and they were sucking up the brownish muddy water from the river and carrying it away to goodness knows where. (R. Dahl, *Charlie and the Chocolate Factory*, 1964: 74-5)

Here, the pipes in question have been explicitly evoked in the previous sentence and therefore are both hearer-old and discourse-old; in fact, discourse-old status is not only permitted but indeed required:

(34). Below the waterfall (and this was the most astonishing sight of all), a whole mass of enormous glass pipes were dangling down into the river from somewhere high up in the ceiling! #They really were ENORMOUS, some of the boulders in the river.

Here we see that when the right-dislocated NP represents discourse-new information, the utterance is infelicitous; thus, none of the requirements placed on postposing constructions (all of which permit or in fact require new information in postposed position) hold for right-dislocation. Notice, however,

that the two are structurally distinct as well, paralleling the structural distinction seen above to hold between preposing and left-dislocation; specifically, whereas all of the above postposing constructions place a semantically empty element (*there* or *it*) in subject position while placing the canonical subject in postverbal position, right-dislocation instead places a coreferential pronoun in the right-dislocated NP's canonical position. That is, instead of non-referential *there* or *it*, we get the referential pronoun *they* in subject position in (33). This pronoun, like anaphoric pronouns in general, represents familiar information – and because the pronoun is coreferential with the dislocated constituent, that constituent too will therefore represent familiar information. In this way, the form of the right-dislocation – specifically, the presence of an anaphoric pronoun – constrains its information-packaging function.

7 Argument Reversal

We have seen how preposing places a single constituent to the left of its canonical position, where it is constrained to represent old information. We have also seen how postposing places a single constituent to the right of its canonical position, where it is constrained to represent new information. In this section, we examine argument reversal, a process that involves the displacement of two arguments and thus, we claim, imposes a relative rather than absolute constraint on the information status of the displaced constituents. Specifically, we have found that the preposed constituent must not represent information that is newer than that represented by the postposed constituent (Birner 1994, 1996, Birner and Ward 1998).

The English argument-reversing constructions we will consider are *by*-phrase passives and inversion, which we discuss in turn.

7.1 Passives

By-phrase passives are passive constructions with a *by*-phrase containing the logical subject, as in (35):

> (35). Connaught said it was advised that the Ciba-Geigy/Chiron offer would be increased to $26.51 a share from $25.23 a share if the company adopted a shareholder-rights plan that facilitated the Swiss and US firms' offer. That offer was rejected by Connaught, which cited its existing pact with Institut Merieux. (*Wall Street Journal*, September 12, 1989)

Note that in this construction the canonical order of the two major NP constituents is reversed. As is the case with argument-reversing constructions in general, *by*-phrase passives are constrained in that the syntactic subject must not represent newer information within the discourse than does the NP in the *by*-phrase (Birner 1996).

We will restrict our discussion to passives with *by*-phrases containing the logical subject, as exemplified in (36):[8]

> (36). The mayor's present term of office expires January 1. He will be succeeded by Ivan Allen Jr. ... (Brown Corpus)

In referring to the preverbal NP in a *by*-phrase passive (e.g., *he* in (36)) as the syntactic subject, and to the postverbal NP (e.g., *Ivan Allen Jr.*) as the *by*-phrase NP, we break with the tradition of calling the *by*-phrase NP an "agent" and the construction itself an "agentive passive" (e.g., Siewierska 1984). Such terminology is misleading given that in many cases the *by*-phrase NP does not act as a semantic agent (in the sense of Fillmore 1968). In (36), for example, *Ivan Allen Jr.* is not an agent.

As an argument-reversing construction, this type of passivization requires that its syntactic subject represent information that is at least as familiar within the discourse as that represented by the *by*-phrase NP. Thus, when the information status of the relevant NPs is reversed, infelicity results. Consider again (36), as compared with (37):

> (37). Ivan Allen Jr. will take office January 1. #The mayor will be succeeded by him.

The subject *he* in (36) represents discourse–old information, while the *by*–phrase NP, *Ivan Allen Jr.*, represents discourse–new information, and the token is felicitous. In (37), on the other hand, the syntactic subject, *the mayor*, represents discourse–new information while the NP in the *by*–phrase, *him*, represents discourse–old information, and the passive is infelicitous. Thus, the subject NP in a *by*–phrase passive must not represent less familiar information within the discourse than does the NP within the *by*–phrase.

7.2 Inversion

Like *by*–phrase passives, the logical subject of inversion appears in postverbal position while some other, canonically postverbal, constituent appears in preverbal position (Birner 1994). As with preposing, any phrasal constituent can be preposed via inversion:

(38). PP
He, the publisher, is twenty–six. Born in Hungary, he emigrated to Canada after the revolution. He is as informal as the others. On his lapel is a large "Jesus Loves You" button; on his feet, sneakers. His dog scrounges about on a blanket in this inner office. (S. Terkel *Working* (1974), p. 583)

(39). AdjP
Along US Route 6, overscale motels run by the national chains have started to supplant the quaint, traditional transients' cottages. Typical of these new giants is the Sheraton Ocean Park at Eastham, which boasts an indoor swimming pool with cabanas in a tropic–like setting. (*Philadelphia Inquirer*, p. 2–A, September 6, 1983, article "On Cape Cod, charm ebbs as numbers grow")

(40). NP
She's a nice woman, isn't she? Also a nice woman is our next guest.[9] (David Letterman, May 31, 1990)

(41). VP
Discussion of the strategy began during this year's General Assembly and will conclude next year. Dropped from consideration so far are the approaches of the past, which The Economist recently described as "based on the idea that the rules of orthodox economics do not hold in developing countries." (*New York Times Week in Review*, November 5, 1989, p. 2)

As with argument–reversal in general, felicitous inversion in English depends on the discourse–status of the information represented by the preposed and post–posed constituents. According to Birner (1994), the most common distribution of information is for the preposed constituent to represent discourse–old information while the postposed constituent represents discourse–new information, as in (42):

(42). We have complimentary soft drinks, coffee, Sanka, tea, and milk. Also complimentary is red and white wine. We have cocktails available for $2.00. (Flight attendant on Midway Airlines)

Here, the preposed AdjP *also complimentary* represents information previously evoked in the discourse, while the postposed *red and white wine* is new to the discourse. In a corpus study of over 1,700 tokens, 78 percent of the tokens exhibited this distribution of information, while not a single example was found in which the situation was reversed – i.e., in which a preposed discourse–new element combined with a postposed discourse–old element.

Moreover, information that was merely inferrable (Prince 1981a) behaved as discourse–old, occurring in the same range of contexts as explicitly evoked information. Finally, the corpus study showed that among discourse–old information, that which has been mentioned more recently in general is treated as more familiar, in the sense of being more salient, than that which has been mentioned less recently.

It is not the case, however, that the preposed constituent need always be discourse–old, or that the postposed constituent need always be discourse–new. The pragmatic constraint on argument reversal disallows only a preposed constituent being *less* familiar in the discourse than the postposed

constituent. Felicity is indeed possible when both constituents represent discourse-old information. However, in these cases the preposed element is consistently the more recently mentioned of the two, as in (43):

(43). Each of the characters is the centerpiece of a book, doll and clothing collection. The story of each character is told in a series of six slim books, each $12.95 hardcover and $5.95 in paperback, and in bookstores and libraries across the country. More than 1 million copies have been sold; and in late 1989 a series of activity kits was introduced for retail sale. Complementing the relatively affordable books are the dolls, one for each fictional heroine and each with a comparably pricey historically accurate wardrobe and accessories …
(*Chicago Tribune* story on "American Girl" dolls)

Here, although the dolls have been evoked in the prior discourse, they have been evoked less recently than the books. Reversing the preposed and postposed constituents in the inversion results in infelicity:

(44). Each of the characters is the centerpiece of a book, doll and clothing collection. The story of each character is told in a series of six slim books, each $12.95 hardcover and $5.95 in paperback, and in bookstores and libraries across the country. More than 1 million copies have been sold; and in late 1989 a series of activity kits was introduced for retail sale. #Complementing the relatively affordable dolls are the books, one for each fictional heroine. …

Thus, even in cases where both constituents have been previously evoked, the postposed constituent nonetheless represents less familiar information, where familiarity is defined by prior evocation, inferrability, and recency of mention. Therefore, what is relevant for the felicity of inversion in discourse is the relative discourse-familiarity of the information represented by these two constituents. The relative (vs. absolute) information status to which argument reversal is sensitive, we argue, is a direct consequence of there being a displacement of two constituents. The transposition of arguments found in passivization and inversion imposes a relative constraint on the information status of those constituents, unlike the absolute constraint found for the non-canonical constructions that displace but a single constituent.

8 Conclusion

We have argued that discourse-status and hearer-status serve as key elements by which speakers structure their utterances, and in particular that non-canonical constructions are used in predictable ways in order to preserve a general old-before-new ordering of information in English. We have presented a general typology of non-canonical syntactic constructions based on the information status of their constituents, as shown above in (2). As shown in that table, whether a construction is sensitive to the absolute or relative status of its constituents is predictable from the number of non-canonically positioned constituents; and whether those constituents are constrained to represent old or new information is predictable from their position (preverbal or postverbal) in the construction. Whether it is discourse-status or hearer-status to which the constraint is sensitive, on the other hand, is an arbitrary fact associated with each construction. These generalizations have been shown to hold for non-canonical English constructions in which some constituent is placed in a non-canonical position, leaving its canonical position either empty or filled by a non-referential element, as in postposing, or a displaced argument, as in argument reversal. Crucially, this leaves out constructions like right- and left-dislocation, in which a constituent is similarly placed in a non-canonical position but its canonical position is filled by a referential pronoun. As predicted, such constructions place very different constraints on their non-canonically positioned constituents. Thus, we have found that preposing constructions are constrained to prepose only information that is discourse-old, while postposing constructions postpose information that is either discourse-new (for presentationals) or hearer-new (for existentials). Extraposition likewise serves to postpose hearer-new information, but there it is the canonical-word-order variant that is constrained; specifically, extraposition is obligatory where the embedded clause that would canonically appear in subject position represents hearer-new information.

Because both preposing and postposing involve only a single non-canonically positioned constituent, each of these constraints is an absolute constraint on that constituent's information status. In the case of passivization and inversion, on the other hand, the relative position of two arguments is reversed, and the constraint on these is a relative one: the preverbal argument must be at least as familiar within the discourse as is the postverbal argument. In each of the above cases, however, the non-canonical construction provides speakers with a way of ensuring that old information precede new; and just as importantly, we have shown that the constraints associated with these constructions are largely non-arbitrary, i.e. that information-packaging rules apply across a broad spectrum of constructions in predictable ways.

1 This "given precedes new" principle of information structure may only apply to SV languages; at least some languages in which the verb canonically precedes the subject have been argued to display the reverse order, i.e. of new information preceding given (see Tomlin and Rhodes (1979, 1992), Creider and Creider (1983), Siewierska (1988), inter alia). For extension of the information-theoretic principles discussed here to other SV languages, see Birner and Ward (1998), inter alia.

2 We are glossing over important prosodic differences between the two renditions of *A bran muffin I can give you* in (12) and (13), e.g. the fall-rise contour that would naturally accompany the preposed constituent in (12) and the deaccenting of the verb in (13). However, these differences are not relevant to the point at hand.

3 See Ward and Birner (1988) for a more detailed discussion of links, linking relations, and posits as they relate to non-canonical syntax.

4 By ACCENT, we mean INTONATIONAL PROMINENCE in the sense of Terken and Hirschberg (1994): "a conspicuous pitch change in or near the lexically stressed syllable of the word" (1994: 126); see also Pierrehumbert (1980).

5 Of course for both topicalization and focus preposing, other constituents may bear pitch accents. Intonationally speaking, the difference between focus preposing and topicalization is that only the former requires that the nuclear accent be on the preposed constituent.

6 As noted in Ward (1988) and Birner and Ward (1998), there is one preposing construction – locative preposing – that does not require a salient OP but does require a semantically locative element in preposed position.

7 Prince is not alone in claiming that at least some types of LD serve to introduce new entities into the discourse: Halliday (1967), Rodman (1974), and Gundel (1974, 1985) propose similar functions.

8 This restriction excludes such passives as that in (i): (i) A car was stolen right outside our house yesterday.

9 Although the linear word order in this example (NP – *be* – NP) is the same as that of a canonical-word-order sentence, it is nonetheless an inversion, given that the postverbal NP (*our next guest*) represents the logical subject, of which the information represented by the preverbal NP (*a nice woman*) is being predicated. See Birner (1994) for discussion.

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