

# On the Linguistic Encoding of Information Packaging Instructions

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## 1. Introduction

The large literature on the linguistic encoding of what I will call *information packaging instructions* (term adapted from Vallduví 1992, following Chafe 1976) contains a number of proposed generalizations about the way such instructions are encoded in language, for example, Halliday's (1967:212) claim that "the theme is what comes first in the clause," or Greenbaum and Quirk's (1990:394ff.) affirmation (apparently inspired by Prague school thinking) that "it is common to process the information in a message so as to achieve a linear presentation from low to high information value," what they call "the principle of END-FOCUS." These attempts to predict the linguistic encoding of information packaging instructions have justly been criticized as circular, difficult to verify, or simply incorrect (see e.g. Prince 1988 and the papers in Payne 1992 for recent surveys).

In this paper, I defend an approach to information packaging instructions which takes them to be conventionally encoded presuppositions in a dynamic semantics (see e.g. Stalnaker 1978, Heim 1983 for such treatments of presupposition). While this approach, which I will call an "integrated" approach, is not new (see sections 2.2 and 3.2), it makes a rather surprising prediction which, to my knowledge, has gone unremarked upon: There may be considerable cross-linguistic variation in the encodings of all the information packaging instructions, and even in the natures of the instructions themselves, with one important exception: "Add Information", the instruction associated with what Vallduví and Vilkuna, this volume, call *focus/rheme*.<sup>1</sup> "Add Information," in sharp contrast to other possible types of instructions, is predicted to exist in all languages and *never* to be linguistically marked in any interesting way. In other words, focus/rheme, as defined by Vallduví and Vilkuna, should be considered the "default" or "elsewhere" informational category.

Although it is quite strong with respect to "Add Information" and the focus/rheme constituents that encode it, this prediction may seem undesirably weak in the sense that it says little about most other information packaging instructions, I believe this weakness *is* desirable for reasons involving the source of linguistic generalizations. On the view defended here, there is little inherent *in the linguistic system itself* that constrains the way information packaging instructions are encoded; this is a point that Ellen Prince has made (see, for example, Prince 1988, especially fn. 5); the pairing of packaging instructions with linguistic form is in principle just as arbitrary as the pairing of lexical content with a word. Consequently, if significant generalizations such as those proposed by Halliday or the Prague School are eventually uncovered, they must be explained in terms of iconicity,<sup>2</sup> facts about our cognitive system, or communicative principles, phenomena which I take to lie outside the discipline of linguistics as narrowly construed. It would not be at all surprising if such factors constrain the linguistic encoding of instructions other than informational focus, as many functionalists contend. However, determining the role of such factors requires the collaboration of specialists (such as psychologists) outside the field of linguistics and, consequently, is beyond the scope of the present work. In sum, the ostensible weakness of the claims advanced here should not be viewed as a flaw; rather, it implies a particular view of the ways in which linguistic phenomena should be explained.

The claims made here have another significant characteristic: The obviousness of the predicted asymmetry between "Add Information" and the other instructions on the integrated view of information packaging advocated here contrasts strikingly with its complete lack of obviousness on approaches which fail to integrate semantics and pragmatics. Consequently, even though the proposals arising out of the two approaches need not differ significantly, if this asymmetry is realized cross-linguistically, we have a very strong

argument for adopting the integrated approach on the basis of the superior insight it yields.

I proceed as follows. In section 2 I begin with a brief note on terminology and then describe in greater detail an integrated approach to information packaging. Section 3 illustrates the approach, taking the work of Vallduví 1992, Vallduví and Vilkkuna, this volume, as a starting point. I discuss the predictions it makes in section 4.

## 2. Some Preliminaries

### 2.1. A Note on Terminology

The definitions of the terms "topic", "focus", etc. are highly inconsistent in the literature. While I will not review all the ways these terms have been interpreted, one major parameter of variation deserves mention, namely, whether the terms refer to *linguistic expressions* (with particular accompanying interpretations), such as a left-dislocated phrase; or to *nonlinguistic notions*, such as "the entity the sentence is about," "what the speaker has in mind," etc. For example, Reinhart 1982 defines topic nonlinguistically, as a distinguished discourse referent associated with (though not necessarily explicitly represented in) the interpretation of a sentence. In contrast, Vallduví's 1992 notion of "link," which has been associated with topic (see e.g. Portner and Yabushita 1994, Butt and King 1996), refers to a class of linguistic expressions (which includes, for example, left-detached constituents in Catalan).

The following minimal pair from Catalan illustrates the difference between these two types of definitions. In a typical context, both (1)a and b have a topic in Reinhart's sense, namely the discourse referents corresponding to the NP *Núria* in (1)a and the implicit "hater" in (1)b, which is linguistically represented only trivially in the obligatory verbal agreement morphology. However, only (1)a contains a link in Vallduví's sense.

- (1) a. La Núria odia el bròquil.  
the Núria hate-3sg-pres the broccoli  
"Núria, she hates broccoli."
- b. Odia el bròquil.  
hate.3sg-pres the broccoli  
"She/he/it hates broccoli."

Thus, the task of identifying and interpreting constituents or constructions associated with labels such as "topic" yields different results than that of trying to determine, for any given sentence, what it is about, what is uppermost in the speaker's mind, etc. Crucially, the treatment of information packaging instructions to be presented in section 3.2 focuses on interpreting linguistically-marked constituents, and does not speak directly to characterizations of topic such as Reinhart's.

### 2.2. An "Integrated" Approach to Information Packaging

What I call an integrated approach to information packaging has two essential features. First, it entails treating information packaging as an interpretive problem which can be handled in much the same way as any other interpretive problem. For example, consider left dislocation in English: What conventional significance does it have? This question is not different in kind from one addressing the semantics of a lexical item, with the exception that information packaging is sometimes encoded by a constructional template or intonational contour rather than a word or morpheme, and it does not directly affect truth conditions.<sup>3</sup> Such a treatment of the discourse function of linguistic form has long been advocated and pursued by Ellen Prince (and see Prince, this volume, for a specific answer to the question concerning left dislocation in English); it is also now current in a large part of the formal

semantics literature concerned with topic, focus, etc. (Rooth 1985 being an early example).

The second central feature of the integrated approach is a dynamic semantics which treats the denotation of a sentence as its ability to update a discourse model (see section 3.2 below). Adopting a dynamic semantics makes it possible to establish a connection between focus/rheme constituents, the packaging instruction "Add Information," and the denotation of sentences, which will clarify the notion of focus and lead to the predictions about the linguistic encoding of information packaging mentioned above.

In addition, I associate with the integrated approach a deemphasis on informational primitives such as topic and focus. Although this characteristic is not inherent to the approach, such terms are naturally of limited interest when one views the analysis of the discourse function of linguistic form as something to be investigated on a case-by-case basis. At their most useful, they can constitute hypothesized information packaging universals, or serve as rough approximations of interpretations for cross-linguistic comparison. However, one often gets the impression (from the fact that such notions are often proposed as the primitives of a distinct module of the grammar, or as the heads of nodes in a syntactic tree) that the universality of such primitives is presupposed rather than hypothesized, or that fine-grained distinctions among constituents that roughly correspond to e.g. topic are not considered important. Nonetheless, I will argue below that such distinctions are, in fact, important, and will point out one respect in which labels do as much harm as good.

Since approaches to information packaging that lack one or more of these features fail to form a homogeneous class, I will avoid making generalizations about them as a whole, and will focus instead on the specific consequences of specific aspects of the integrated approach.

### **3. Characterizing the Content of Information Packaging Instructions**

In order to illustrate an integrated approach to information packaging, I proceed in two steps. First, I briefly introduce the proposal in Vallduví and Vilkkuna, this volume, which, at least implicitly, has the two essential features of an integrated approach mentioned above, but which also employs a set of information packaging primitives that are now well known and will therefore be useful in the discussion below. I then slightly recast certain parts of the proposal so as to make it more explicitly integrated.

#### **3.1. Vallduví and Vilkkuna**

The proposal by Vallduví and Vilkkuna, this volume, consists of a small set of fundamental packaging instructions which manifest themselves cross-linguistically, though via different linguistic encodings and with certain other degrees of parametric variation. It assumes a dynamic semantic/pragmatic model in which there is something like a Stalnakerian (1978) common ground or a discourse representation structure (DRS) of the sort used in Discourse Representation Theory (Kamp 1981), though this model is taken to correspond to the speaker's model of the hearer's knowledge store. The model is richer than either Stalnaker's common ground or a classical DRS; it is a complex data structure consisting of addresses, each address typically corresponding to a discourse referent.<sup>4</sup> Under these addresses may appear entries which allow for a more sophisticated organization of information. In addition, in order to account for contrastive expressions (see below), Vallduví and Vilkkuna assume that conversation participants have access to alternative sets of the sort used in Rooth 1985, although they do not specify exactly how these fit into the dynamic model.

The theory contains four distinct instructional primitives which a speaker can use in various combinations so that hearers can update their knowledge stores in a maximally efficient

manner with the information contained in the speaker's utterances. Each instruction is associated with a distinct constituent type, as summarized in (2):

(2) <b>Instruction</b>	<b>Constituent Type/Label</b>
Add information	Focus (Vallduví 1992), Rheme (Vallduví and Vilkkuna, this volume)
Go to address <i>X</i>	Link (which identifies <i>X</i> )
Go to entry <i>X</i> under some given address	Tail (which identifies <i>X</i> )
Contrast <i>X</i> with alternatives	K(ontrast)

"Add Information" is the most fundamental of these instructions; every sentence must contain a constituent of the focus/rheme type. The effect of "Add Information" is just what one would expect: as a result of processing an utterance *U*, a hearer will go from knowledge state  $K_1$  to knowledge state  $K_2$ , where  $K_2$  is more informative than  $K_1$ . If knowledge states are modeled as a set of propositions, for example,  $K_2$  will be a superset of  $K_1$ .<sup>5</sup> For any given language, the hearer can identify which information to add to his/her knowledge store by looking for the constituent marked as focus/rheme in that language. In Catalan, for example, Vallduví argues that all and only the focus/rheme material occurs within the basic root sentential structure (or minimal root IP, in the Government-Binding framework he uses). (1)b, repeated in (3) with a simplified version of the syntactic analysis Vallduví assigns to it, is typical (see Vallduví 1992 for additional details on the syntax, including arguments that Catalan has a basic VOS word order; note the sentence-final null subject pronoun):

(3)    |-----FOCUS/RHEME-----|  
       [<sub>s</sub> Odia            el bròquil *pro*. ]  
           hate-3sg-pres    the broccoli  
       "She/he/it hates broccoli."

This "all focus/rheme" sentence would not necessarily be considered a sentence conveying "all new information" on other analyses. For example, it might be uttered in a context in which one asks "What about Núria? How does she feel about what's on today's menu?"—a context in which a Reinhart topic can be associated with the sentence. This point, mentioned in section 2.1, will become clearer now that we turn to the second instructional primitive.

This second instruction, "Go to address *X*," tells the hearer where to enter the information provided by the focus/rheme constituent. Specifically, this information goes under the address identified by the constituent labeled link. In Catalan, Vallduví (1992) argues, links are left detached constituents adjoined to the matrix clause, like the NP *La Núria* in (4) (note that left detachment is formally handled by coindexing the fronted constituent with a resumptive pronoun inside the core clause, in this case a null subject pronoun):

(4)    |----LINK----|-----FOCUS/RHEME-----|  
       [<sub>s</sub> La Núria<sub>i</sub> [<sub>s</sub> odia            el bròquil *pro*<sub>i</sub>.]]  
           the Núria    hate-3sg-pres the broccoli  
       "Núria, she hates broccoli."

(4) directs the hearer to look up the entry corresponding to the referent of the NP *La Núria*, and then add the information contributed by the focus/rheme under that entry. The interpretation of what it means to be a link should thus make clear why the discourse model Vallduví and Vilkkuna work with must be highly structured—such an operation cannot be modeled with the extremely simple Stalnakerian common ground or in Heim's File Change model.<sup>6</sup>

It is important to distinguish the issue of whether the information in a sentence is being added under a particular address from the issue of whether the sentence *encodes specific instructions to go to an address*. On this theory, sentences do not have to contain link constituents in the way that they must contain focus/rheme constituents. There may be two reasons for the absence of a link. One is that the speaker does not intend the information in the sentence to go under any particular address. Such is arguably the case in purported "all focus/rheme" sentences such as the well-known subject-accent sentence in (5):

(5) JOHNSON's died.

The other reason a link constituent may be absent is that an address for information update has already been specified in a previous utterance, as in e.g. (3). This additional detail concerning the treatment of links should underscore the difference between linguistically encoded "instructions" and characterizations of notions such as topic in terms of e.g. "what the speaker has in mind," which are cognitively or communicatively grounded but not necessarily correlated with any particular linguistic encoding.

The third instruction, associated with the constituent labeled tail, instructs the hearer to "Go to an entry *X* under a particular address," the address either being specified by a link constituent in the sentence, as in (6)a, or being previously established in the discourse, as in (6)b; "Add Information" will then enter the information indicated by the focus/rheme constituent under that entry. For example, the packaging instructions in (6)a would tell the hearer to go to the address corresponding to *La Núria* and, under the entry corresponding to *broccoli*, add the information "she hates it." Vallduví argues that tails in Catalan are, syntactically, the mirror image of links: right-detached and adjoined to the matrix clause, and separated from the core clausal material by an intonation break.

- (6) a. |-----LINK-----|---FOCUS/RHEME---|-----TAIL-----|  
 [s [s La Núria<sub>i</sub> [s l<sub>i</sub>'odia t<sub>j</sub> pro<sub>i</sub> ], el bròquil<sub>j</sub>.]  
 the Núria 3sg.acc-hate-3sg-pres the broccoli  
 "Núria, she HATES broccoli."  
 b. |-----FOCUS/RHEME---|-----TAIL-----|  
 [s [s l<sub>i</sub>'odia t<sub>j</sub> pro ], el bròquil<sub>j</sub>.]  
 3sg.acc-hate-3sg-pres the broccoli  
 "She/he/it HATES broccoli."

Like links, and unlike focus/rheme constituents, tails are optional.

Finally, Vallduví and Vilkuna posit an instruction to "Contrast *X* with its alternatives," an informal characterization of focus as understood in Rooth 1985 and related work. The proposal to add "Contrast" as an additional primitive instruction (encoded by constituents of type "K") reflects the recognition that what are typically referred to as focus phenomena vary across languages. In some languages, such as Catalan, those constituents that Vallduví 1992 called "focus" (and which are now called "rheme") do not involve contrast at all; they simply encode the fact that the marked constituent contains information that the speaker wants the hearer to add to his/her knowledge store, as described above. In others, such as Hungarian, the constituent typically called "focus" (what Vallduví and Vilkuna call "K") conveys the instruction to contrast the denotation of the marked constituent with some contextually salient set of alternatives, regardless of whether the information conveyed by the constituent constitutes the principal information to be added to the hearer's knowledge store. I will return to the interpretation of "K"-marked constituents in the next section; see also Vallduví and Vilkuna, this volume, and Roberts, this volume, for further details.

Because the constituents associated with information packaging primitives in this theory are

labeled, they may wrongly be taken to signify what the notions topic (mapped onto link) and focus traditionally have been taken to signify, with tail remaining a somewhat obscure, "elsewhere" notion.<sup>7</sup> The risk is that insufficient cross-linguistic work will be done to develop precise definitions of the language-specific functions of various linguistic encodings and, as a result, that there will be little evidence on the basis of which to evaluate universal claims such as those implied in e.g. Vallduví and Engdahl 1996 (see section 4.1, below, for more on this point). For this reason, I prefer to view Vallduví and Vilkkuna's instructions as proposed non-truth-conditional semantic interpretations for particular syntactic, morphological, or phonological markings. Though the use of labels is harmless insofar as they can be dispensed with, it nonetheless changes the nature of the questions that an investigator of information packaging is likely (though of course not forced) to pose, from *What is the significance of linguistic marking X?* to *Does linguistic marking X map onto link, focus, tail, or K?*

One could argue that such labels are useful in the same way that syntactic category labels such as "noun" or "verb" are useful.<sup>8</sup> Perhaps there simply need to be more instructional primitives, to cover a greater variety of functions, or perhaps only the four that Vallduví and Vilkkuna discuss are of typological interest. However, without adopting the sort of methodology that naturally accompanies the integrated approach, we will never know whether there need to be more primitives, what they should signify, or whether we have said all there is to say of typological interest.

On the integrated approach, evaluating proposals such as Vallduví and Vilkkuna's becomes a question of evaluating specific semantic claims which can be tested according to the standard methodology semanticists use. This is the approach to understanding information packaging instructions to which I now turn.

### 3.2. Packaging Instructions as Presuppositions in a Dynamic Semantics

Roberts 1996, this volume, presents an explicit characterization of information packaging instructions as presuppositions in a dynamic semantics.<sup>9</sup> Here I will describe only the general idea behind this approach without going into the details of her proposal.

By dynamic semantics, I mean any semantics in which the denotation of a sentence is characterized in terms of its ability to affect the discourse model, i.e. a model of the presumed shared knowledge of the participants in a conversation (or, alternatively, the speaker's model of the hearer's knowledge store). Though a variety of different dynamic theories have been proposed, I will simply assume that a discourse model  $D$  consists of a set of referents which are familiar in the discourse (represented by indexed variables), along with a set of conditions, namely all and only those which represent the propositions that the conversation participants behave as if are true. As a result of the assertion of a (declarative) sentence  $S$ , a discourse model  $D$  changes to  $D^{\#}$ , where  $D^{\#}$  is the result of adding to  $D$  any new discourse referents and conditions contributed by  $S$ . Generalizing, the denotation of  $S$  (③ $S$ ④) can be formalized as a function from discourse models  $D$  to discourse models  $D^{\#}$ . For example, if  $S$  is the sentence *A student left*, the denotation of  $S$  could be informally represented as in (7):

(7)	③	<i>A student<sub>i</sub> left</i>	④
$D$			$D^{\#}$
$\langle \{\}, \{\} \rangle$			$\langle \{x_j\}, \{\mathbf{student}(x_i), \mathbf{left}(x_i)\} \rangle$
$\langle \{x_j\}, \{x_j = \mathbf{s}, \mathbf{arrived}(x_j)\} \rangle$			$\langle \{x_j, x_i\}, \{x_j = \mathbf{s}, \mathbf{arrived}(x_j), \mathbf{student}(x_i), \mathbf{left}(x_i)\} \rangle$
.....			

Essentially following Stalnaker 1978 and Heim 1982, 1983, we can characterize the presuppositions of a sentence  $S$  as conditions on the discourse models which  $S$  can update:

sentences carrying presuppositions will denote not total functions, but rather *partial* functions. Consider the case of the definite article as an example. Simplifying considerably, if we assume that definite NPs presuppose the familiarity of their referents, then a sentence containing a definite NP can be felicitously added only to those discourse models which contain the referent of that NP. Correspondingly, the denotations of sentences containing definite NPs will give well-defined outputs only for certain inputs. The example in (8) illustrates:

(8)	③ <i>The student<sub>i</sub> left</i> ④	
<i>D</i>		<i>D</i> ☒
<{ }, { }>		No output
<{ <i>x<sub>j</sub></i> , { <i>x<sub>j</sub></i> =s, arrived( <i>x<sub>j</sub></i> )}>		No output
<{ <i>x<sub>j</sub></i> , { <b>student</b> ( <i>x<sub>j</sub></i> )}>		<{ <i>x<sub>j</sub></i> , { <b>student</b> ( <i>x<sub>j</sub></i> ), <b>left</b> ( <i>x<sub>j</sub></i> )}>
.....		

On this analysis, the difference between (7) and (8) is not truth conditional: both sentences make exactly the same addition to any discourse model they update. Rather, the discourse models to which the two sentences can be added are simply different.

Now consider information packaging in the context of this approach to presupposition. Since the information packaging of a sentence does not directly affect its truth conditions but does clearly affect the contexts in which the sentence is felicitous, it seems a very good candidate for treatment as a presuppositional phenomenon. Take Vallduví and Vilkuna's "K"-marked constituent as an example. As examples of such constituents, they cite, among others, immediately preverbal phrases in Hungarian (namely, those in what has been referred to as the "Focus" position, see (9)a); to this list we could also add those phrases in English bearing what Jackendoff 1972 called "A" accent (roughly, a non-canonical H\* nuclear accent in the system of Beckman and Pierrehumbert, (9)b).<sup>10</sup>

- (9) a. SZÁNDÉKOSAN olvas lassan ez a gyerek.  
on purpose 3sg-read slowly this the child  
"It is on purpose that this child reads slowly."
- b. Andy: What size monitor did Ted buy?  
Bob: Ted bought a fifteen-inch monitor.  
|-----K-----|  
Carla: (No,) he bought a SEVENTEEN-INCH one.

Recall that Vallduví associates K-marking with the instruction to "Contrast X (the denotation of the K-marked constituent) with its alternatives." In (9)b, for example, the property of measuring seventeen inches diagonally is contrasted with the contextually salient alternative property of measuring fifteen inches along the same dimension.

In order to analyze these facts in terms of presupposition, we must first identify the linguistic marking that will convey the presupposition in question, and then characterize the presupposition itself. The first step has already been done for us: the presupposition carriers are the K-markings themselves—in the case of Hungarian, a particular syntactic configuration; in the case of English, a particular intonational contour. Now, to characterize the presupposition, let us begin with the instruction, "Contrast X (the denotation of the K-marked constituent) with its alternatives"; more specific proposals can be found in e.g. Rooth 1992 and Roberts 1996. For example, simplifying considerably, Roberts proposes adding the abstract notion of a *question under discussion* (QUD) to the discourse model, a QUD (building on Hamblin's 1973 semantics for questions) being a set of propositions that could constitute answers to some particular (and perhaps only implicit) question which is driving the conversation. For example, the QUD which could be expressed by the English question

*Where did Robin go?*, in a model in which Robin's possible destinations were the zoo and the aquarium, is the following informally represented set of propositions: {Robin went to the zoo, Robin went to the aquarium}. For now, it is not important to elaborate on this proposal (see Roberts 1996, this volume, for details); it is enough to know that the QUD in a discourse model is the salient set of alternative propositions for the purposes of evaluating the felicity of K-marking. Now assume that the interpretation of a non-canonical H\* nuclear accent (K-marking) in English is the following presupposition:

- (10) A non-canonical instance of H\* nuclear accent on a constituent *C* of an utterance *U* induces the presupposition that *U* can be added only to those discourse models in which the set of alternatives associated with *U* is identical to the QUD.

The set of alternatives associated with an utterance *U* containing a non-canonical H\* nuclear accent on a constituent *C* is that set of propositions obtained by replacing *C* with a variable and then interpreting the result with respect to all assignment functions which vary at most in the value they assign to that variable.

To see how (10) accounts for (9)b, assume for the sake of discussion that the set of alternatives associated with Carla's utterance in (9)b is (again, informally represented): {Ted bought a 15" monitor, Ted bought a 17" monitor}.<sup>11</sup> Given (10), this utterance can update only those discourse models *D* in which the QUD is identical to this set. For any other discourse model input, the denotation of Carla's utterance will not yield any output. For example, it is infelicitous following the question *Who bought a seventeen-inch monitor?* (under any intonation of the latter) because there is no way of associating this question with a QUD identical to the set of alternatives demanded by the presupposition of Carla's utterance. In contrast, in the context of Andy's question and Bob's response (which Carla corrects), it should be intuitively clear that the QUD concerns the possible dimensions of the monitor, and that the set of its possible answers could be {Ted bought a 15" monitor, Ted bought a 17" monitor}—exactly what the presupposition of Carla's utterance demands.

While brief and informal, this sketch of a presuppositional, dynamic approach to characterizing information packaging instructions should give the reader some idea of how a theory like the one discussed in section 3.1. could be recast. I now turn to the issue I am primarily concerned with, namely the predictions of an integrated approach to information packaging.

#### **4. Predictions for the Linguistic Encoding of Information Packaging**

##### **4.1. The Primacy of Focus/Rheme-Type Constituents**

I begin with the prediction that every sentence will have a constituent carrying the instruction "Add Information," while all other instruction types may be optionally manifest in principle. Although claims such as "every sentence must have a focus/rheme" are common, analyses that do not integrate information packaging into a larger, dynamic interpretive system generally fail to *predict* this fact.

It should be obvious why a focus/rheme type constituent is obligatory if we assume a dynamic semantics: the instruction "Add Information" is, at least on one possible construal, simply an informal characterization of the basic denotation of a sentence. As long as we assume that every sentence has the same type of denotation sketched in section 2.2,<sup>12</sup> every sentence will denote a potentially "information adding" function (more precisely, it will *not* denote an information *losing* function) from discourse models to discourse models. Note that the informal characterization "Add Information" is misleading in that not all uttered sentences actually contribute (or are even intended to contribute) to a net increase in the information in the discourse model. Nothing in the basic semantic rule for sentences



excludes the content of a sentence from being added, with no net effect, to a discourse model which already entails everything the sentence might contribute. On the contrary, speakers often utter sentences whose *content* is completely uninformative in order to contribute *informative messages* via Gricean implicature.<sup>13</sup> Nor is it true that speakers must always *intend* to be informative; I can find all kinds of ways of telling you what you already know in order to avoid having to tell you something new that I wish to conceal. Nonetheless, any sentence I utter in such a situation, if well formed, will have exactly the same sort of denotation as a sentence which is truly informative (though you may wonder why I bothered to utter it).

Although to my knowledge Vallduví has never said so in these terms, his justification for the claim that all sentences have a focus/rheme constituent seems to be similar, as seen in the following comment: "The FOCUS[/rheme] is defined as the actual update potential of a sentence S, i.e. the only contribution that (according to the speaker) S makes to the information state of the hearer at the time of utterance. *Since all sentences have some update potential, they all have a focal segment*" (Vallduví and Engdahl 1996:9, italics added).<sup>14</sup> Presumably, what it means to have update potential is that in at least some context, the denotation of the sentence could produce a net increment in the information contained in the discourse model.<sup>15</sup>

However, it is not at all obvious that other linguists take the same view, partly because their definitions of focus as a nonlinguistic notion are slightly different (in particular, they do not make reference to instructions), and partly because their claims appear to concern not focus/rheme *constituents*, but rather what Lambrecht 1994 calls *focus meaning*, which he defines as "that portion of a proposition which cannot be taken for granted at the time of speech....the UNPREDICTABLE or pragmatically NON-RECOVERABLE element in an utterance" (1994:207; other, similar definitions of focus from the literature are cited in the same passage). For example, Sgall, Hajičová, and Panevová (1986:180) claim that "every sentence has a focus (since otherwise it could not convey relevant information, or have any illocutionary force)...." The problem of evaluating such claims is compounded by the fact that these authors do not posit a direct relationship between focus meaning and what Lambrecht calls *focus marking* (see e.g. Lambrecht 1994:206ff for additional discussion). But let us set aside this problem for the moment and concentrate on what these claims about focus/rheme as a pragmatic notion lead us to expect about focus marking, on the assumption that every sentence containing a focus also contains *some* form of focus marking.<sup>16</sup>

The basic predictive weakness these analyses have arises because their notions of focus (unlike Vallduví's, which seems ultimately tied to semantic content) involve informativeness in a communicative sense. This is evident in the above quote from Sgall, et al., and is equally clear in Lambrecht's discussion (1994:59ff.) of sentences whose literal content is uninformative but which are used to convey informative messages (e.g. the utterance *You lied to me!*). In such cases, according to Lambrecht, the message conveyed, and nothing in the literal content of the sentence itself, constitutes the focus of the utterance.<sup>17</sup> But on this view, it is surprising that the linguistic encoding of information packaging can correlate so poorly with the actual information the speaker intends to communicate. For example, the sentence *It's raining* can be felicitously pronounced in exactly the same way whether or not the hearer is already aware of the fact that it is raining. Moreover, if informative messages can arise by inference on the basis of the fact that the entire content of a sentence is presupposed to be true, it would be more helpful from a communicative perspective if such sentences were marked as lacking an informational focus altogether, in order to emphasize the fact that an implicature is being made. As far as I know, this does not happen. In other words, it does not follow from these communicatively-grounded characterizations of focus that a *linguistically-marked focus constituent* should be present in every sentence.

One might respond that perhaps all that is necessary is that the speakers at least *pretend* to be

informative every time they utter a sentence, and for that reason we might expect a focus/rheme constituent to appear in every sentence. But this doesn't make sense from a communicative perspective, either. For example, it is difficult to see how Gricean implicatures could be calculated from trivially true or otherwise entirely presupposed utterances if the hearer was not convinced that the speaker did not intend the literal content of the message to provide the conveyed information. A pretense to be informative on the part of the speaker would therefore most likely confuse the hearer, resulting in failed communication.

To conclude, while the obligatoriness of focus/rheme type constituents follows directly from taking the interpretation of these constituents to correspond simply to the basic interpretation of a sentence in a dynamic semantics, it does not follow from characterizations of focus which fail to integrate information packaging into a dynamic model of semantic interpretation. Thus, while the primacy of focus/rheme constituents is not news, the integrated approach to information packaging places it in a new perspective.

#### **4.2. Cross-linguistic Manifestations of Instruction Types**

I now consider the first of the two central predictions made in this paper, namely that all languages will have the instruction "Add Information," while, in contrast, there may be variation, if slight, in the exact nature of the other packaging instructions that individual languages encode.

I think it is fair to say researchers in pragmatics (and perhaps linguists in general) widely assume that a small, universal or near universal set of information packaging instructions is attested across languages.<sup>18</sup> For example, Sgall, Hajičová, and Panevová (1986:176) state that "[o]ne of [their] aims is to substantiate [the] claim that a relatively simple framework suffices to enumerate the set of all grammatical sentences of a natural language with their different word orders...." Vallduví and Engdahl summarize this view even more clearly:

The comprehensive but limited set of instructional primitives and their combinations afforded by this approach has proven advantageous in establishing correspondences across languages. This paradigm has allowed us to identify informationally equivalent sentences in a variety of languages and bring out important differences in the way different languages realise information packaging. (1996:40)

See also e.g. Lambrecht 1994:335ff. for another example of a small proposed set of information packaging primitives.

Taking an integrated approach to information packaging instructions favors a more neutral position on this issue (see Rooth 1995 for related comments): the only way to determine the presupposition(s) associated with any given linguistic marking is to determine the crucial characteristics of those contexts in which the marking is and is not felicitous. While similar or identical presuppositions might manifest themselves in various languages, just as one finds near or exact synonyms for lexical items cross-linguistically, there is no guarantee that such equivalences will exist (and, indeed, the fact that translation is so difficult attests to the rarity of exact synonyms). Let me emphasize that we should not be surprised if every language has a constituent encoding an instruction similar to that associated with e.g. link, just as most or all languages probably have one or more words for types of rain. The general type of instruction encoded in links is perhaps cognitively very useful, and therefore very reasonable to encode, just as it is useful to have one or more words for such an important phenomenon as rain. My point is that, in treating information packaging instructions as the semantic interpretations for linguistic markings, we are immediately confronted with the realization that, just as we cannot take it for granted that Catalan has a word whose sense is identical to that of the English word *thundershower*, neither can we take it for granted that English

encodes exactly the same information packaging instruction as Catalan left detachment.

However, the single and important exception here is "Add Information." "Add Information" is different from the other construction types because, as discussed in the previous section, it reduces to the basic semantic interpretation rule associated with sentences. Therefore, unlike the instructions associated with e.g. link or tail, "Add Information" will not be characterized in terms of presupposition, and focus/rheme type constituents will not be given presuppositions as their interpretations. The consequences of this asymmetry between "Add Information" and the other instructions are important and will be discussed further in section 4.3. For now, we need only recognize that, if all languages have sentences or constituent types of the same semantic type as sentences in e.g. English, it will follow that "Add Information" (understood as the basic interpretive rule for the sentence) will be manifest in all languages.

This perspective on the universality of information packaging instructions has an important advantage: it fosters close investigation of the precise felicity conditions on the use of forms such as left dislocation, certain intonational patterns, etc., and therefore ensures proper evaluation of claims concerning the universality of packaging instructions. Vallduví and Engdahl 1996 provide an example which underscores why this is so important. In a discussion of Turkish word order and information packaging, they observe that "Turkish tails may appear in a number of configurations....prefocally [(11)a, their (74)a],...in their canonical position,...[or] in a right-hand position [(11)b, their (75)a]...." (1996:26).

- (11) What did a servant put on the table?
- a. Bir hizme<sup>ç</sup>i yemek-ten önce masa-n<sup>n</sup> üzer-i-ne [<sub>F</sub> NOT-u] b<sup>ı</sup>rak-t<sup>ı</sup>.  
a servant meal-abl before table-gen top-poss-dat note-acc leave-pst-3s  
"A servant put the note on the table before lunch."
- b. [<sub>F</sub> NOT-u] b<sup>ı</sup>rak-t<sup>ı</sup> bir hizme<sup>ç</sup>i yemek-ten önce masa-n<sup>n</sup> üzer-i-ne.  
note-acc leave-pst-3s a servant meal-abl before table-gen top-poss-dat  
"A servant put the note on the table before lunch."

They further note that Erguvan<sup>ı</sup> 1984 proposes that the right detachment in examples like (11)b conveys "backgrounded information" and then observe "[i]f Erguvan<sup>ı</sup>'s 'backgrounded information' can be equated with our notion of tail, we see that the postverbal strategy is just one of three options available in Turkish." (ibid.) However, they also point out that "Erguvan<sup>ı</sup> claims that prefocal tails are different from backgrounded information in that they are neutral with respect to pragmatic function." (1996:fn. 16). It is impossible for both Vallduví and Engdahl and Erguvan<sup>ı</sup> to be correct. However, the linguist who posits a small set of universal primitives to be associated with linguistic expressions may have little incentive to explore potentially fine-grained distinctions such as these for lack of sufficient analytical vocabulary. In contrast, for one adopting an integrated approach to information packaging, the Turkish facts present just another ordinary problem to solve.

In sum, the integrated approach has the methodological advantage of fostering thorough investigation into the interpretive import of specific linguistic markings. Such research is essential to the understanding of the linguistic encoding of information packaging; without it, this area of linguistics can only remain tentative and imprecise.

### 4.3. Linguistic Encodings of Instruction Types Within and Across Languages

I now turn to the most interesting prediction made by the integrated approach to information packaging: Given that the instruction "Add Information" corresponds to the fundamental semantic rule for sentences in a dynamic semantics, we expect that, cross-linguistically,

constituents of the focus/rheme type will not be marked in any interesting way, while those constituents associated with the other instruction types will in all likelihood be explicitly marked, though we can make no predictions about what form that marking will take. No previous characterization of information packaging or topic/focus articulation has made this prediction,<sup>19</sup> and the existence of evidence supporting its correctness highlights the methodological advantage of the integrated approach.

Let us first see exactly why this prediction is made. As mentioned several times above, the instruction "Add Information" can be mapped directly onto the standard dynamic semantic interpretation rule for sentences. Since there is nothing "Add Information" conveys as an instruction that the ordinary semantic interpretation rule does not achieve, "Add Information" should not be treated as a special presupposition on an integrated analysis of information packaging instructions. This is of course not true for any other instructional primitive; they must all be characterized as specific presuppositions, along the lines of the treatment of the "Contrast" instruction sketched in section 3.2, above. Thus, there is an important asymmetry between "Add Information" and the other instructional types.

Now consider the implications of this for linguistic encoding. Most of the time in natural language, specific semantic units are associated with specific, phonologically manifest bits of structure. Presumably, information packaging instructions qua presuppositions will be no different from any other kind of semantic stuff, and will in the vast majority of cases be marked in some way. In other words, we should not be surprised to find link, tail, or K-type constituents marked, whether by non-canonical word order, morphology, or intonation. However, nothing in what we have assumed to this point will determine any particular marking or encoding for these constituents, although, as noted in the introduction, psychological or other nonlinguistic studies of human communication may make predictions in this regard.

Throughout this paper, I have perhaps given the impression that "Add Information" should be marked too, insofar as, following Vallduví and Vilkuna, I have talked about it as associated with a constituent of the focus/rheme type. If so, it is time to change this impression. If we identify "Add Information" with the ordinary semantic interpretation for a basic sentence, the basic syntactic and semantic composition rules for the language will be sufficient to identify the information that needs to be added to the discourse model as the result of using the sentence. Alternatively put, since "Add Information" does not correspond to a special presupposition (in contrast to the instructions associated with links, tails, and Ks), it needs no special linguistic encoding, since such encoding simply serves as a place to "hang" lexically given semantic content (where the lexicon might contain bits of phonology, sub-word morphemes, or constructional templates) and is totally superfluous in a case where the semantic content of a constituent is computed independently by composition rules. Of course, it should not be surprising if we can nonetheless identify those constituents comprising the focus/rheme of a sentence. At the very least, they should be identifiable by a process of elimination, as those constituents that are not marked in any particular way. More often, languages mark basic clausal domains in some default fashion (e.g. intonationally in English and Catalan, but morphology appears to be used in some languages, such as Daghestan, Mike Calcagno, personal communication, citing work by Konstanin Kazenin that I have not had access to).

Consequently, as mentioned in the introduction, focus/rheme can be viewed as the default or "elsewhere" information packaging classification. This is quite a different picture than the one that naturally arises from the proposal in Vallduví and Vilkuna, where the "elsewhere" packaging classification is ostensibly tail. With the apparent exception of Catalan, tail constituents are never identified with any positive marking; rather, they are what remains when the link and focus constituents (whether focus/rheme or focus/contrast) are factored out. It is not surprising that tail comes across this way given the linguistic tradition out of this

work grows; the theory puts together and sharpens the traditional topic/comment (=link+other stuff) and focus/presupposition (=focus+other stuff) theories of information packaging. Since tail was never given an independent characterization either of these approaches to information packaging, it has remained something of an "informational wastebasket."<sup>20</sup>

While a serious testing of the predicted asymmetry in the encoding of focus/rheme type constituents vs. the rest will have to await future research (and, in particular, careful re-examination of all purported cases of focus/rheme marking in the literature), it is borne out by the data discussed in Vallduví and Vilkuña, this volume. The following inventory of the linguistic encodings for each of the various packaging primitives illustrates:<sup>21</sup>

(12) a. **Encoding of link-type constituents**

Catalan: left dislocation

English: L+H\* pitch accent, displacement to the left, or both together

Finnish: left-peripheral position (Specifier of IP, "T(opic)-field")

Hungarian: left-peripheral position (Specifier of TopicP)

Japanese: -*wa* morphology

b. **Tail-type constituents**

Catalan: right dislocation

c. **K-type constituents**

Catalan: specifier of IP (left of VP)

English: H\* pitch accent

Finnish: to the left of the link constituent (Specifier of CP, "K-field")

Hungarian: immediately preverbal (Specifier of FocusP)

d. **Focus/Rheme-type constituents**

Catalan: IP internally (Subject in Spec IP to the right),

H\* accent at right boundary

English: H\* pitch accent

Finnish: within VP, in "V field"

Hungarian: within VP, in "canonical" position

In every case, link and K constituents are explicitly marked (too little is known about the tail constituents to make any firm conclusions). In contrast, with the apparent exception of English, focus/rheme constituents are unmarked: they all appear in their canonical position in the sentence, and do not bear any special morphology or intonation other than the default intonational contour associated with the sentence. Since these preliminary facts strongly bear out the prediction made here, it is worth determining whether or not the English data can be accounted for.

Although I cannot draw any firm conclusions here, note that focus/rheme constituents are encoded in exactly the same way as K-type constituents; in all of the other languages Vallduví cites, the two types of constituents are distinguished. Perhaps, then, some supposed cases of focus/rheme marking can be reanalyzed as K-marking. Confusion over the two types of constituents would not be surprising given the long history of unclarity about them in the literature (see Vallduví and Vilkuña, this volume, for relevant discussion). The one obvious challenge to explaining away the English data comes from "all-new" subject-accented sentences such as (5), repeated below in (13):

(13) JOHNSON's died.

The accent on the subject in such cases is neither the canonical sentence accent, nor is it

obviously contrastive in nature. What we must explore is whether some specific presupposition could plausibly be associated with such an accent—one which could not be motivated for sentences lacking it— thus justifying its presence.

## 5. Concluding comments

To summarize, I have argued that treating information packaging instructions as presuppositions in a dynamic semantic framework has the following advantages:

- ☞ The fostering of research into more precise characterizations of information packaging instructions in particular languages;
- ☞ A better understanding of the primacy of focus/rheme type constituents with respect to the rest;
- ☞ A new, and typologically more promising, theory of the linguistic encoding of information packaging instructions, which distinguishes focus/rheme constituents from the rest and which promises a clarification of the status of tail-type constituents.

In addition, if the prediction made in section 4.3 concerning the linguistic encoding of information packaging instructions (and, in particular, the treatment of focus/rheme) is correct, it has important consequences for analyses in which focus is treated as a syntactic feature or projection. Specifically, it is misguided to have this feature handle focus qua rheme: I have argued that focus/rheme simply constitutes the core material for constructing the sentence denotation and should not be linguistically marked; and if it is neither semantically special nor linguistically marked, there is no motivation for associating a distinguished feature or projection with it. Rather, it only makes sense to associate such features/projections with focus qua contrast, since this is the only sort of focus that is marked. Consequently, it is as imperative for syntacticians as it is for linguists primarily concerned with semantics and pragmatics to pay careful attention to the semantic and pragmatic details of constituents encoding information packaging instructions—otherwise, there will be no guarantee that the formal devices encoding focus will be comparable in cross-linguistic analyses, and typological claims concerning the syntax of focus features/projections risk resting on shaky ground. Thus, while the material discussed in this paper does not speak to the limits of syntax as a subdiscipline of linguistics, it does point to one important limitation of a syntactic methodology that fails to take semantics and pragmatics seriously.

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