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REVIEW ARTICLE

Any questions left? Review of Ginzburg & Sag's *Interrogative investigations*[1]

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Jonathan Ginzburg & Ivan A. Sag, *Interrogative investigations: the form, meaning, and use of English interrogatives* (CSLI Lecture Notes **123**). Stanford, CA: CSLI Publications, 2000. Pp. xii + 449.

1. An introduction to HPSG's ethos

For better or worse, linguistics is rife with frameworks, each with its own ethos. Two important aspects of Head-driven Phrase Structure Grammar's are: (1) the search for an explicit and exhaustive account of the intricate syntactic and semantic facts that constitute one's grammar and (2) the hypothesis that general/universal and specific aspects of one's grammar are not qualitatively distinct. This book stands as a superb example of this ethos. It illustrates the fecundity of Head-driven Phrase Structure Grammar (henceforth, HPSG) as a framework and advances our knowledge of the syntax and semantics of interrogatives. It is the most explicit description of the semantics and syntax of any area of English syntax of which this reviewer is aware. It thus sets up a healthy *empirical* benchmark for other theories of interrogatives. The sixty pages of appendices that detail the grammar discussed in the book and its almost complete implementation in the current version of the English Resource Grammar attest to this empirical bent. Any future theory will have to match it in accuracy before any metatheoretical issues (e.g. simplicity or explanatory adequacy) can be meaningfully discussed. Its precision and comprehensiveness will also, hopefully, lead to descriptions of unbounded dependencies and clause-types in other languages that are orders of magnitude more detailed than those currently available. Ginzburg & Sag's (G&S's) book also illustrates how possibly universal principles (such as the requirement that head-daughters and mothers of a local tree share information) and construction-specific requirements

[1] I gratefully acknowledge Bob Borsley, Jonathan Ginzburg, Ivan Sag, and two reviewers for comments on this review. All remaining errors are mine.

(such as the fact that the scope of a fronted *wh*-phrase cannot be wider than the local tree it is a part of) seamlessly interact to account for the intricate web of knowledge that underlies the use of English interrogatives. Finally, this book is a good example of how constraints on a single data structure (typed-feature structures) can, at the same time, capture the similarities between unbounded dependencies (basically, the *wh*-movement operation of Chomsky 1977) and their salient syntactic and semantic differences. Given the book's undeniable achievements, it is unfortunate that the authors' prose sometimes impedes one's understanding. Clearly, some of the book's arduousness reflects its level of precision, but not all of it. The chapters devoted to the description of the semantics of interrogatives, in particular, are a very difficult read. Still, for anybody interested in learning the state of the art in the syntax or semantics of English interrogatives, in assessing the value of HPSG's ethos, or in learning about what assuming non-lexically-driven language-specific syntactic patterns can buy you, this book is a must read.

After a brief introductory chapter, chapter 2 presents the prerequisite HPSG background. It is a terse introduction for readers not familiar with the framework as well as an introduction to the constructional version of HPSG, which the second author and his students have been pursuing over the last five years. It is clear that readers unfamiliar with HPSG are unlikely to fully grasp the consequences of the principles from reading this brief exposition. But the chapter will still give the uninitiated reader a feel for the framework. Of more interest to the HPSG-savvy readership is the presentation of two recent innovations: the use of multiple inheritance networks to capture cross-cutting similarities among phrases and the *pervasive* use of defaults to model expected similarities among categories. The hypothesis that a rich network of phrase-structure constructions is part of the grammars of natural languages is certainly at odds with many other syntactic frameworks (in particular Principles and Parameters) or even the version of HPSG presented in Pollard & Sag (1994). This constructional move is inspired by the work of Fillmore, Kay, and their students (see Fillmore et al. 1988 and Kay & Fillmore 1999). Sag (1997) was the first significant HPSG work to pursue a constructional approach for English relative clauses. In this book, G&S focus on English interrogatives and describe in detail the network of constructions which express questions (as semantic objects). By its breadth and coverage, this book constitutes the best examplar of a constructional approach to syntax.

The second respect in which this book differs from standard HPSG is its central use of default constraints. One important use of defaults in the context of this book is the replacement of a cluster of more specific 'percolation' principles by a single principle. This change has profound ramifications for grammar writers. Because grammatical composition in HPSG assembles one or more signs to form larger signs, composition rules or constraints must specify not only the coarse syntactic category of the resulting structure, but

also what its meaning is and what its unresolved dependencies are (including non-local dependencies). Until recently, several principles of HPSG regulated the various syntactic and semantic properties of mother nodes, e.g. the Semantics Principle, the Nonlocal Feature Principle, the Valence Principle, and the Head-Feature Principle. These principles constrained *all* headed expressions they were meant to apply to. Expanding Pullum's (1991) and Borsley's (1993) ideas that the Head Feature Principle applies by default, G&S replace this collection of principles with a single principle, the Generalized Head Feature Principle (GHFP). It says that, unless otherwise stated, *all* semantic and syntactic properties of the mother are identical to those of the head daughter. Now, clearly, it cannot always be the case that the head daughter and the mother of a phrase have identical properties (for instance, the combinatorial properties of a VP typically differ from those of its head verb). So, in contrast to the collection of principles it replaces, the GHFP does not always have to hold for *all* syntactic and semantic properties. The task of appropriately restricting the purview of the GHFP, i.e. of saying which properties are not shared in particular circumstances, falls to constructions. The book's two major theoretical innovations are thus intimately linked. A constructional approach makes the GHFP an important simplification as it reduces the complexity of each construction's description and constructions are critical in properly limiting the purview of the GHFP.[2]

2. The (layered) ontology of questions

Chapter 3 is devoted to a study of the semantic ontology of questions. This is by far the book's most difficult chapter and is rather poorly written. The reader gets the impression that one-book-worth of material was condensed into 70 pages. Furthermore, the chapter is written in a style that is too abstract (from 'first principles', one is tempted to say). Definitions are given long before any examples, so that the reader has to hold metalanguage formulas in memory for a while before knowing how to apply them to a particular example. Some theoretical constructs are not illustrated by a worked-out example. For example, *no actual example* is given of the crucial structural relations **Abstr** and **PlaceHolder**. These stylistic shortcomings are a shame because of the intrinsic interest of G&S's theory of questions. Fortunately, understanding the nitty-gritty of the situation-theoretic semantics of questions is not necessary to follow the constructional analysis proposed in the rest of the book. The constructional approach needs *a* semantics for it to have some bite and an ontology to suit (in particular some kind of layered ontology, e.g. questions are formed out of propositions which are formed out of states-of-affairs), but it is pretty lenient on which precise model-theoretic

[2] G&S's use of the default nature of the GHFP may at times weaken the notion of headedness beyond recognition, as when they analyze fragment phrases as clauses whose heads are NPs.

interpretation these notions receive or which metalanguage constructs represent them.

In this review, I can only give a brief overview of the semantics of questions that is proposed. In line with Asher (1993), Peterson (1997), and others, questions, in G&S's view, are part of a rich ontology of semantic types. Not only does the authors' theory countenance states-of-affairs (basically, situation-types), but they argue that propositions, facts (a subclass of possibilities), outcomes, and questions are all ontological categories in their own right. In typical situation-theoretic fashion, they show how to construct propositions and outcomes out of states-of-affairs, and facts and questions out of propositions. This ontological 'layering' is not only of semantic relevance, it affects the syntax of interrogative clauses as the task of introducing the relevant additional semantic complexity is left to syntactic constructions rather than lexical material. Interrogative clauses, in particular, are phrasal constructions that build questions out of propositions, which are themselves built by declarative clause constructions out of the states-of-affairs denoted by verbs. Admitting situations and propositions in our inventory of objects will not raise eyebrows among most linguists, but adding facts and outcomes might. The authors, therefore, are at pains to justify their ontological riches. Simplifying somewhat, they give two kinds of arguments (I only discuss arguments supporting the ontological category of *facts*). First, certain predicates (factives) select for expressions which denote facts (the distinct semantic type of their sentential complement's denotation is itself argued for on the basis of various inference patterns); second, some linguistic expressions suggest that facts have causal powers that propositions and situations lack. The analysis leads to a nice cross-classification of clause-embedding predicates and overall the argumentation is solid. But it is not always entirely convincing. The selectional evidence and the inference patterns that support it only show that there is some class of objects one can label *fact* in English, as illustrated in (1) (their (27a)).

(1) Jean is aware of/reported/revealed an alarming fact.

This evidence does not show that facts are a new kind of objects built out of propositions, since one can paraphrase the notion of fact involved in (1) through a conjunction of properties which only commit us to the existence of representations: Jean has a representation and believes that this representation is true, and the speaker endorses this representation (or at least does not challenge its validity). The purported evidence for the causal powers of facts is not cogent either. G&S claim that the following two sentences illustrate that facts and possibilities have causal powers (which propositions lack).

(2) (a) The fact that Tony was ruthless made the fight against her difficult.
    (b) The possibility that Glyn might get elected made Tony's hair turn white.

I suggest that the surface similarities between (2a) and (2b) hide a significant difference. Sentence (2b) requires Tony's mental representation of the possibility for the effect to occur. What has causal powers, then, is the *representation* of possibilities, whatever they are. In contrast, no such mental representation is needed for the effect to occur in (2a). What causes the difficulty is Tony's behavior (more precisely, the eventuality consisting of his behavior), not any facts, whatever those might be. (The expression *the fact that* in sentence (2a) thus seems to exemplify a use of the word *fact* other than the one present in sentence (1).) Finally, the definition of facts that the authors propose leaves this reader unsatisfied. Their situation-theoretic approach consists in elucidating facts by showing how to construct them as structured objects. However, the resulting constructs are still too much like 'mentalese'. Possibilities are constructed through the structural relation **Possibility**(p, f), where p is a proposition and f a possibility. Facts are possibilities whose constituent propositions are true. The authors do tell us that, in Russellian accents, 'a proposition is true in virtue of the existence of a fact' (p. 95), but if facts are constructed out of true propositions, it is hard to see that facts *make* propositions true in Russell's sense. Such difficulties illustrate how the kinds of structural definitions the authors provide for basic ontological categories do not necessarily tell us how to recognize a fact were one to meet one, so to speak.

The bulk of the chapter is devoted to reviving the view that questions are propositional abstracts and not sets of propositions. G&S argue that the conventional view of the meaning of questions as its set of exhaustive answers (see Groenendijk & Stokhof 1997 for a summary) is wrong-headed. The book gives examples of several mundane-looking questions which are claimed to have no single exhaustive answer, and of other questions whose exhaustive answer(s) might vary with the context. Rather than defining questions through answers they might receive, the authors resuscitate the view that the meaning of interrogatives can be characterized through the use of λ-abstracts. But the meaning of such abstracts is not the traditional sets or functions typically associated with λ-abstracts. Rather, a λ-abstract is a structured situation-theoretic object that contains place-holders; in other words, abstracts are part of the universe! Such a view of abstracts avoids the problems that plagued previous views of questions as open propositions, but what introducing lambda-structures *into the universe of discourse* amounts to is never made entirely clear. Similarly, the model-theoretic import of G&S's claim that place holders (variables bound by λ-operators in more traditional settings) are part of the universe is never discussed. As in the case of their analysis of facts, readers used to thinking in more traditional model-theoretic terms will be left with the uneasy feeling of not being sure what questions really *are*, according to G&S, at least before reading some of the vast situation-theoretic literature on abstract objects (see Cooper 1993 and Crimmins 1993 for good introductions, or Seligman & Moss 1997 for

a briefer discussion). Average readers should not need to consult such works to understand notions central to the book's analysis of the meaning of questions.

G&S's argumentation against the standard view of the semantics of questions is very suggestive, but some of their arguments are marred by the fact that they do not provide independent criteria for deciding which (pragmatic) responses are true answers (as semantic objects). The fact that differences in the questioner's expected state of mind will lead to distinct characterizations of the list of individuals that might be an appropriate response to *Who attended the lecture?* might mean, as the authors suggest, that the notion of a question's *resolvedness* (and the semantics of questions) partially depends on the state of mind of speech participants. But, it might be taken to mean that one and the same semantic answer might not always be pragmatically felicitous and therefore lead to various responses, very much as Grice showed that a single true proposition might be expressed differently in different pragmatic contexts. Similarly, the fact that responses to the question *Where is Bill?* contextually vary does not necessarily mean that there are multiple resolving answers to the question. It might merely indicate that there are multiple ways of characterizing Bill's *single* location and that the choice of response will vary with the level of granularity the speaker believes the questioner is expecting.

The author's discussion of polar questions faces the same difficulty. It is true that upon being asked *Is there a gas station around?* one might respond *Possibly/It's unlikely* and that such responses do not constitute answers in Groenendijk & Stokhof's analysis of the meaning of questions. But, to support the claim that such responses argue against Groenendijk & Stokhof's theory, one must provide good grounds for believing these responses are indeed answers. The fact that such responses contain 'information that any competent speaker of the language associates with the question in virtue of their knowledge of meaning' (p. 106) is hardly enough, since such a description can characterize any conversationally implicated information. A more convincing argument for their view – only implicit in what G&S say – is that some responses can constitute exhaustive answers even if no list of individuals is available (see Burhans's 2002 notion of generic answers). Consider the following dialogue:

(3) A: Who can sell bio-hazardous substances according to the new law?
B: Any company that has been accredited by the EPA.

B's answer does not presuppose the existence of a list of individual companies that she could answer with. One could retort that a list is available for at least some possible worlds, but given that none of these companies might yet exist, it is unclear whether the existence of this putative list of currently nonexistent companies is what B was trying to convey in her response. In the end, I think the authors make a good case that the standard

view of the semantics of questions is flawed, even if some of their arguments are not entirely convincing.

A final, very nice aspect of the authors' theory of questions deserves a mention. Their theory of questions as structured objects (propositional abstracts) provides them with *several* different possible notions of answerhood: simple answers (a positive or negative proposition that results from substituting objects for place holders), exhaustive answers (the maximal conjunction of simple answers), decidedness (i.e. whether there is a true proposition that is a simple answer to a question), potentially resolving answers (propositions which narrow down the set of possible answers), and aboutness (propositions which entail the disjunction of simple answers, but do not necessarily exclude any).

3. What generalized quantifiers?

Chapter 4 discusses the meaning of *wh*-phrases. G&S's basic claims – on which they differ from most scholars – is that *wh*-phrases do not introduce quantifiers into semantic representations but, rather, parameters, and that *wh*-phrases *always* scope wider than Generalized Quantifiers. Think of parameters as abstracted argument positions in traditional λ-calculus with the proviso that restrictions can be attached to these abstracted argument positions. Semantically, restrictions on parameters are facts and their scope is a proposition (not a state-of-affairs, as for quantifiers). Because questions are represented through a *set* of parameters, questions involving multiple or single *wh*-phrases and polar questions are handled uniformly. They each simply correspond to a different kind of set (empty set, singleton set, or set of cardinality 2 or more). Three main arguments are presented against the hypothesis that *wh*-phrases are (generalized) quantifiers. First, they show that multiple *wh*-questions such as (4a) below are not semantically equivalent to so-called pair-list readings of *wh*-questions containing a universally quantified NP such as (4b). The two classes of sentences differ in the availability/necessity of a pair-list answer and only the latter class of sentences receives functional readings as short answers.

Second, they argue that the pair-list readings of (4b) are reducible to functional readings.

(4) (a) Who proved what?
    (b) Who proved each theorem?

If true, the function introduced by the *wh*-phrase's parameter can in fact have wide scope over Generalized Quantifiers, despite what a pair-list paraphrase of (4b) would suggest. Roughly speaking, then, sentence (4b) is asking about the identity of the function that, given a theorem, returns the person that proved it. The HPSG architecture is here of some help to G&S, as it distinguishes between a sign's semantic content and its semantic store

(basically, yet unscoped quantifiers and parameters). In the case of functional readings of *wh*-phrases, the *value* of the function – their semantic content – satisfies the predicate's argument position (the prover in (4b) is not a function but an individual), while their semantic store contributes the function itself (the question concerns the function, not a particular individual).

Third, the fact that questions containing multiple *wh*-phrases such as sentence (5) receive a so-called bijective reading[3] and carry an unscoped uniqueness presupposition remains unexplained if *wh*-phrases are quantifiers, but it is consonant with the hypothesis that each *wh*-phrase contributes a parameter to an unscoped list of parameters. (This argument is somewhat weakened by the fact that the alternative analysis, proposed in Higginbotham & May (1981), involves absorption – the process of turning a sequence of unary quantifiers into a polyadic quantifier, a process widely believed to be independently needed; see Keenan & Westerståhl 1997 and de Swart & Sag 2002.)

(5) Which student read which book for which course?

4. Interrogative constructions

Chapter 5 presents an overview of HPSG's approach to unbounded dependencies that follows Bouma et al.'s (2001) theory of extraction, suitably revised to take advantage of defaults. The proposed theory is in the spirit of much work in HPSG, but for a few wrinkles. The introduction of unbounded dependencies is done lexically (i.e. a verb collects the SLASH specifications of its subcategorized complements; see Sag 1997); the transmission of the unresolved dependency is covered by the GHFP, rather than by a particular SLASH principle; the dependency's termination is effected by a wide network of subtypes of the *head-filler-phrase* construction, rather than by a single Head-Filler schema. This last difference is the most significant one in the context of the book's theory of interrogatives, since this allows for more fine-grained control over the syntactic and semantic constraints characteristic of particular types of interrogatives or of pied-piping. As in the case of G&S's account of functional readings, the understated style of the book (a welcome relief from linguistic hyperbole) might unfortunately make readers not familiar with HPSG miss some of the benefits of the HPSG theory of extraction, for example, the fact that explaining the contrast between (6a) and (6b) crucially depends on the hypothesis that fillers and 'gaps' only share part of their semantic and syntactic information.

[3] More precisely, as they show, an n-jective reading. For each n − 1-tuple of entities – every student-and-book pair in the case of (5) – it is presupposed that there is a unique n-tuple extension that is part of an answer to the question – hence a unique course for (5).

(6) (a) *I wonder about what this book is.
(b) I wonder what this book is about.

The rest of the chapter is devoted to an exposition of their analysis of scope, which follows closely Manning et al. (1999). Finally, let me note that the claim that the *unusual* semantics introduced by exclamatives such as *How tall Johanne is!* is a Generalized Quantifier (GQ) seems unjustified. This *unusual* relation is of a different semantic cloth than typical GQs and it is not clear that it obeys typical constraints on GQs, such as conservativity or extensionality.

Chapters 6 and 7 constitute the bulk of the constructional contribution of the book. G&S present the network of interrogative and exclamative constructions whose subtle interactions are suggestive of the constructional approach's benefits. A crucial underlying hypothesis of the authors' constructional analysis is that the semantic and syntactic aspects of questions must be partially dissociated. Interrogatives that involve *wh*-words do not necessarily involve overt *or* covert movement to a particular SPEC position. Some questions are tied to a head-filler schema (i.e. are involved in the termination of an unbounded dependency), but the same semantic import can be associated with different surface strings or structures. Conversely, the syntactic schemata involved in interrogative clauses do not necessarily convey the meaning of questions. The head-filler schema serves to terminate many unbounded dependencies, some of which have a particular semantic import (questions), some which have an information-structure import (so-called topicalization and its variants; see Prince 1981 and Lambrecht 1994). What is common to all interrogative clauses, according to G&S, then, is the kind of meaning they convey, and what is common to all unbounded dependencies is the free introduction of gaps and the transmission of information about their presence in some of a phrase's daughters. What is specific to particular kinds of interrogative clause constructions is whether or not they involve termination of unbounded dependencies, how parameters are stored or scoped, and how the question is built out of the construction's head daughter's semantic content.

To gain an idea of the constructional network's descriptive and explanatory role, consider the set of sentences in (7).

(7) (a) Did John see Martha?
(b) What did John see?
(c) I wonder what John saw.
(d) Who saw Martha?
(e) (Context: A: I'm annoyed.) B: Aha. You are annoyed with WHOM?
(f) #WHOSE recipe for what they were impressed by?
(g) Whose recipe for WHAT were they impressed by?

The sentences in (7) are all interrogative clauses, i.e. they convey a *question* (a particular semantic type for G&S, as discussed above). Some of them

require subject-auxiliary inversion in non-embedded contexts. Some are polar interrogatives whereas some include a *wh*-phrase. Some have fronted *wh*-phrases; some have *wh*-phrases in situ. Of the latter, some are used to ask the hearer to repeat a piece of information, which they call reprise interrogatives (e.g. (7g)), whereas some (non-reprise) in situ interrogatives ask the hearer to clarify the identity of an implicit argument or adjunct (e.g. (7e)). The set of constructions that G&S describe in chapters 6 and 7 to model these similarities together with some of the more general constructions they are instances of is represented in figure 1.

As this portion of the multiple inheritance network of interrogative constructions shows, G&S classify clauses along two dimensions: headedness and clause-type. (Dimensions, indicated by square boxes in the figure, are not themselves constructions, or linguistic objects, as discussed in Pollard & Sag 1987 and Carpenter & Pollard 1991.) The headedness dimension corresponds to the 'old' HPSG phrase-structural schemata. But, whereas the old schemata were subtypes of *a portion* of the information defining phrases (the value of the DAUGHTERS attribute in Pollard & Sag 1994), they are now subtypes of phrases and can therefore record the syntactic and semantic effects that the combining of signs induces. The clausality dimension classifies phrases on the basis of their semantic type and syntactic structure. Clauses are defined semantically, as conveying a *message* (i.e. something more than a relation between entities that defines a state-of-affairs), as well as syntactically, as being saturated phrases (i.e. their complements and subject requirements have been satisfied, one way or another).[4] There is a tight dependency between the layered ontology that underlies G&S's semantic analysis of questions and the constructional approach that underlies their syntactic analysis of interrogatives. For interrogative clause constructions to cover both embedded and root interrogatives, the meaning of interrogative clauses cannot reside in their illocutionary force, on the standard assumption that illocutionary force is only expressed by root clauses. Declarative clauses convey either propositions or outcomes; the message of imperative clauses is an outcome, that of exclamative clauses, a fact. Interrogative clauses convey a question and further require that some of the stored parameters (the abstracted argument positions) be retrieved, i.e. scoped at the clause's root node.

Despite its semantic definition, the interrogative clause construction has some syntactic bite. Since interrogative clauses denote questions, some other partially syntactically defined constructions must effect the type-shift between

[4] *Define* means here that any string categorized as a clause must convey a message. More generally, constructional categories are unidirectional implicational constraints that members of the category must satisfy. Note that some non-clauses are saturated phrases, such as the embedded VP of *Who did Martha say showed up late*, and some non-clauses convey messages, such as the concealed question NP in *Martha asked Bill's name*.

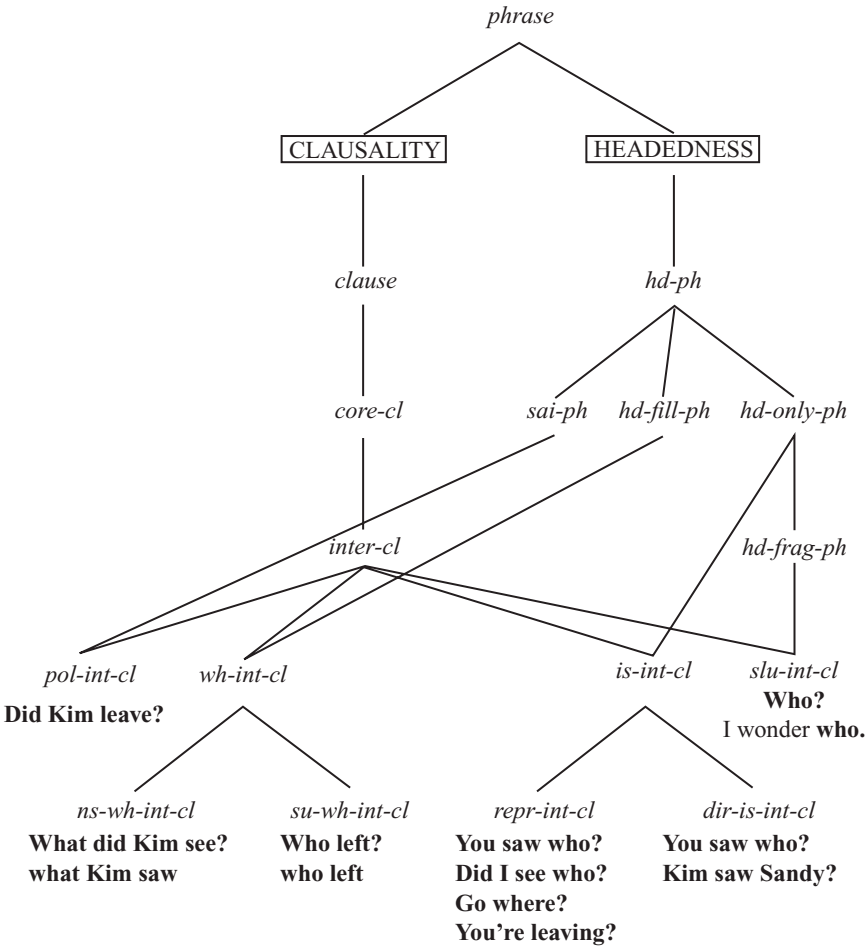

Figure 1
The network of interrogative constructions, from G&S, p. 371

the relational state-of-affairs denotata of verbs and the message denotata of interrogatives. This is the role of the five basic *subtypes* of interrogative clauses (polar, subject and non-subject *wh*-, in situ, and sluiced interrogatives) that G&S's theory recognizes. Polar interrogatives, exemplified in (7a), are defined by their empty parameter lists and the fact that they are built through the subject-auxiliary inversion (*sai*) construction. *Wh*-interrogatives, exemplified in (7b)–(7d), are syntactically built through the head-filler construction and semantically build a question from the proposition *p* expressed by the head and the parameter of the fronted *wh*-word whose scope is *p*. Among *wh*-interrogatives, subject and non-subject *wh*-interrogatives differ

in whether the head daughter may be an inverted subject auxiliary phrase (non-subject interrogatives) and whether the filler corresponds to the verb's subject valence requirement.

In situ interrogatives, exemplified in (7e)–(7g), are basically unary branching constructions that build question meanings out of non-question meanings (in particular, declarative clause meanings) and require at least some of the stored parameters to be retrieved. Direct in situ interrogatives additionally require the question to bear on the proposition contributed by the semantic content of the construction's sole head daughter. This constraint properly constrains non-reprise (or direct) in situ interrogatives to have as head daughter a clause which denotes a proposition. It thus accounts for the absence of non-reprise uses of the imperatives and polar interrogatives in (8):

(8) (a) Give WHO the book.
(b) Do I like WHO?

(9) Bill saw WHO.

The question conveyed by *reprise* uses of the in situ interrogatives in (8) and (9) is not as closely tied to the semantic content of their head daughter. Sentences (8) and (9) ask a question about the speaker's *perceived content* of a previous utterance (the addressee's assertion that Bill saw somebody in (9) or her request that the speaker give a book to somebody or tell who he likes in (8)).

The English-specific hierarchy of interrogative clause constructions interacts with both lexical and universal constraints to help describe the interrogatives exemplified in (7). Lexical constraints insure the right number of arguments and the right semantics for these arguments (e.g. that *wh*-words contribute a parameter to be scoped). Partially underspecified lexical constraints also insure that a lexeme's arguments are freely marked as either having to be realized locally (within the lexeme's maximal projection as subject, complement, or specifier) or having to be not realized at all, or realized non-locally. The universal Generalized Head Feature Principle insures that information regarding any argument marked as having to be realized non-locally is passed up the tree and that, as a default, the semantics of a phrase is entirely built out of the lexical requirements of the head's meaning (basically, through some loose equivalent of functional application and Cooper storage). Realization of these locally unrealized dependencies and/or any non-lexically conveyed meaning component is then insured through particular constructions like the ones I have just described.

Let me finish this discussion of the various types of interrogative clauses with a more detailed discussion of two interesting aspects of G&S's analysis, the simultaneous abstraction analysis of questions and the authors'

discussion of multiple interrogatives and so-called superiority effects. Thanks to the notion of multiple simultaneous abstraction, nothing needs to be said to semantically differentiate between yes–no questions and unary or multiple *wh*-questions. More interestingly, because the meaning of a question does not reduce to what constitutes its (exhaustive) answer, positive and negative questions can receive the same answers and still not carry the same meaning. This semantic distinction between answerhood and meaning provides for a simple explanation of the morphosyntactic fact that positive and negative polar questions can be differentially selected by response particles in several languages (e.g. French *oui*/*si*). A slightly inelegant aspect of G&S's analysis of root-clause polar and *wh*-interrogatives is that subject-auxiliary inversion is stipulated slightly differently for the two different classes of interrogatives. The *pol-inter-cl* stipulates that root polar interrogatives are built through the subject-auxiliary inversion construction. In contrast, the stipulated feature co-variation in the definition of the *ns-is-wh-int* construction insures that the head daughter of non-subject root clause *wh*-interrogatives is an instance of *sai-ph*. Thus, G&S's analysis does not directly capture the correlation between subject-auxiliary inversion and matrix clause questions across the polar/*wh*-question divide. Polar interrogatives are a subtype of *sai-ph*, whereas it is the head-daughter of *wh*-interrogatives, not *wh*-interrogatives themselves, which is a subtype of *sai-ph*. Moreover, the *sai-ph* has distinct semantic effects in the two cases. The *sai-ph* construction constructs the *question* meaning in the case of polar interrogatives, whereas it only constructs the propositions that the question is about in the case of *wh*-interrogatives. How much the analyses of interrogative and *sai-ph* constructions would have to change to capture the perceived parallel role of subject-auxiliary inversion in polar and *wh*-interrogatives is hard to tell. That G&S's analysis does not model this common role – which various other frameworks take for granted (P&P's I-to-C movement in root clauses or Role and Reference Grammar's illocutionary force marking through linear precedence rules in root clauses; cf. Van Valin & Lapolla 1997) – is worth noting.

G&S's account of multiple interrogatives is based on three fundamental ideas. First, the attribute which keeps track of unresolved dependencies is set-valued and therefore directly allows for multiple *wh*-phrases. Second, fronted *wh*-words include a featural specification which percolates to the entire *wh*-phrase whereas non-fronted *wh*-words do not. Third, the *wh*-interrogative construction scopes the parameter of the fronted *wh*-word. This last hypothesis correctly predicts an asymmetry between the possible scope of in situ and fronted *wh*-words. Fronted *wh*-words can never outscope the local tree (clause) within which they are realized, whereas the scope of in situ *wh*-words can be larger than the local tree or clause within which they appear. G&S's analysis of multiple interrogatives does not account for so-called superiority effects (i.e. the contrast between the entirely felicitous

Who ate what? and the unfelicitous/ungrammatical #*What did who see?*). Their answer to this apparent inadequacy is two-fold. First, they argue, quite convincingly, that superiority effects are not structural in nature (i.e. the result of an asymmetric hierarchical relation between subjects and objects), and that there is no plausible difference between D-linking and other mechanisms of interpretation of *wh*-interrogatives that can explain all counter-examples to a structural analysis of superiority effects (contra Pesetsky 1987). Second, G&S propose that non-fronted *which wh*-phrases allow the presence of a pitch accent, but other non-fronted *wh*-phrases require the presence of a pitch accent. This last hypothesis begs the question of why all but the first *wh*-phrases in multiple questions must be accented and why *which wh*-phrases in the same positions only allow, but do not require, such an accent. They suggest that the notion of focus is involved but do not articulate this view in any detail (see Lambrecht & Michaelis 1998 for more details on sentence accents in questions).

Chapter 8 discusses short answers, the similarities and differences between positive and negative polar questions, and the subcategorization properties of verbs selecting for questions and concealed questions. G&S's theory of short answers and sluicing is embedded in a more global theory of dialogue. Briefly, the interpretation of short answers and sluices is not assumed, as in Chung et al. 1995, to require syntactic reconstruction. Rather, they are sentences formed out of single NPs. The 'reconstruction' involved in their understanding stems from the inclusion in the fragment of two classes of constraints on the context, one semantico-pragmatic – the presence in the context of a question under discussion – and the other, syntactic – the presence in the context of a salient utterance whose syntactic properties and referential index match that of the construction's sole NP daughter. G&S convincingly show that the range of interpretations of short answers does not equal that of unreduced answers, a fact which is hard to account for if *syntactic* reconstruction of an unreduced answer is involved in understanding short answers. G&S's analysis of negative questions is simply that they are questions that are abstracted from a proposition which describes a negative state-of-affairs. This allows positive and corresponding negative questions to have different contents but the same set of simple answers (something that is impossible for theories of questions which identify the meaning of questions with the set of their possible answers). As mentioned before, this analysis of negative questions allows for a nice account of the contrast between negative words such as *no* in English, which are ambiguously used to answer positive or negative questions, and word pairs such as *non/si* in French or *nein/doch* in German, which can only be used as negative answers to positive or negative questions, respectively.

Finally, the chapter discusses how to model the fact that question predicates can select either interrogative clauses or question NPs as complements, (10a)–(10b), and how concealed questions, (10c), are interpreted.

(10) (a) Mary asked whether John left.
(b) Marc asked the same question for the tenth time.
(c) Marc asked her name.

They hypothesize that sentence (10b) exemplifies the 'true' subcategorization of the word *ask* and propose two non-branching constructions to model the fact that the complement of *ask* in sentences (10a) and (10c) is not an NP denoting a question parameter. They posit for sentence (10a) a nominalizing construction that maps embedded interrogative clauses expressing questions q into entities that are co-referential with q. For sentence (10c), they propose a non-branching construction that turns a definite NP with index y into a question that abstracts over the argument x of the proposition that says that x is identical to y. In both cases, unary-branching constructions map the meaning-type of the complement of *ask* into its meaning-type in sentence (10b).

5. Conclusion: why constructions?

I conclude this review with two general comments on G&S's constructional approach to the syntax of interrogatives. Clearly, similarities and differences among any set of objects (classes of interrogative clauses here) can be represented through a multiple inheritance network of categories (after all, that's the point of inheritance networks, see Quillian 1968). The question is whether any benefit follows from the network-of-constructions hypothesis when compared to the hypothesis that similarities among (a subset of) interrogative clauses stem from a common underlying structure later altered by various movement operations. The book never explicitly compares different approaches, except in the introduction, where meta-theoretical arguments are given for why a constraint-based theory of grammar is in general desirable. But what *descriptive* benefits does the constructional approach afford the grammarian? The authors do mention at times the fine-grained control that constructional approaches afford the syntactician, as when they discuss the possibility of tailoring extraction constraints to particular constructions. But one interesting, more general benefit is the fact that one can attach differential semantic effects to particular constructional patterns. In contrast to various forms of Categorial Grammar or Lambek Calculus, where only lexical items carry substantive meaning and a handful of combinatory rules (the equivalent of constructional types in HPSG) merely affect the semantic combinatorics of the material introduced by lexical items, constructions can introduce substantive semantic information that is implausibly assigned to lexical items. Fillmore et al.'s work illustrated this benefit in modeling idioms, G&S illustrate it more emphatically in the description of interrogative clauses. For example, the use of constructions allows them to assign reprise and direct question uses of in situ *wh*-phrases

a semantic content distinct from the one that their declarative syntax would otherwise provide them with. Now, one could lexicalize such type-shifting between a *propositional* semantics and a *question* semantics in, say, Combinatorial Categorial Grammar (Steedman 2000) by assuming that the shift is effected by the semantic content associated with a particular variant of the *wh*-word. But it is not easy to see how to restrict the use of these putative new *wh*-words' lexical entries to in situ contexts.

Finally, as in the work of Fillmore and Kay, the authors' constructional approach often leads to the introduction of unary branching constructions. Some of these are the phrasal equivalent of lexical rules and are used to modify the contexts in which the construction's daughter appears, just as a lexical rule can alter the syntactic environment in which a word appears (see G&S's description of fragment clauses). But it seems that the main motivation for positing other unary-branching constructions is the need to shift the meaning of their single daughters. This is the case with the *root-cl* construction, which builds an illocutionary act meaning out of a message meaning, somewhat à la Ross's (1970) performative hypothesis minus its syntactic aspects (that this root clause has a standard Subject–Predicate structure and a verb) and its concomitant problems (see Récanati 1981). This is also the case for the construction deriving factive clauses from proposition-denoting clauses or for the VP-to-gapped-S construction involved in licensing sentences such as (11).[5]

(11) Who does John think left?

It is not clear that constructions are needed to model what looks like mere semantic coercion. More flexible semantic composition rules (Pustejovsky 1995), semantic underspecification (Egg et al. 2001), or general correspondence rules (Jackendoff 1997) might provide more appropriate models of these semantic shifts. Of course, the best proof of a constructional approach's descriptive benefits is in the pudding. Whether the ubiquitous presence of constructions in the best description of a complex corner of the grammar of English is happenstance or not is hard to tell. Whether this approach, when applied to a wide variety of languages, will yield similar benefits is even harder to tell. But what remains is that constructions play a crucial role in this descriptive and theoretical *tour de force*.

[5] The VP-to-gapped-S construction has a further syntactic use according to G&S, namely 'cancelling off' the gapped synsem on the SUBJ list of the finite VP, but, as far as I can see, hypothesizing that verbs like *think* or the complementizer *that* take a finite verbal projection whose SUBJECT value is a (possibly empty) list of gapped synsems would have the same effect. The only irreducible use of the VP-to-gapped-S construction is, thus, to type-shift the embedded finite VP so that it denotes a proposition.

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