Question/Answer Congruence and the Semantics of
wh-Phrases

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Abstract

This paper is about the semantics of wh-phrases. It is argued that wh-phrases should not be
analyzed as indefinites as, for example, Karttunen (1977) and many others have done, but
as functional expressions with an indefinite core —their function being to restrict possible
focus/background structures in direct or congruent answers. This will be argued for on the
basis of observations made with respect to the distribution of term answers in well-formed
question/answer sequences. This claim having been established, it will then be integrated
into a variant of Schwarzchild’s (1999) information-theoretical approach to F-marking and
accent placement, and —second— its consequences with respect to the focus/background
structure of wh-questions will be outlined.

1 Direct Answers, Focus, Background Deletion

Since the work of Hermann Paul (1920) and M.A.K. Halliday (1967) it has been com-
monly assumed that in well-formed, i.e., congruent, question/answer sequences (Q/A-
sequences) there is a systematic correlation between the wh-question \(Q\) and the
focus/background structure (F/B-structure) of its direct sentential answers \(A\), cf. (1).

\[
(1) \text{ If } A \text{ is a direct/congruent answer to } Q, \text{ then every constituent in } A \\
\text{that corresponds to a wh-phrase in } Q \text{ is focused (i.e., F-marked).}
\]

This generalization can be illustrated by the Q/A-sequences given in (2).\(^1\)

\[
(2) \begin{align*}
\text{a.} & \quad \text{Who likes John? [MARY]}_f \text{ likes John, ... } \\
\text{b.} & \quad \text{Who likes whom? [MARY]}_f \text{ likes [JOHN]}_f, ... \\
\text{c.} & \quad \text{What did Sandra say? Sandra said [that Mary kissed [JOHN]}_f]_f, ...
\end{align*}
\]

In (2a) the constituent Mary corresponds to the wh-phrase who, and Mary must be
focused; in (2b) Mary corresponds to who, John corresponds to whom, and both must be
focused. Given that the generalization in (1) is in fact basically correct, then (2c) shows
that the property of being focused does not coincide with the property of being accented
in a strict sense, but that a focused and accented constituent may license an abstract
focus (F-marking) on a larger constituent containing it. Dynamically speaking, the focus
on John (the ‘focus exponent’) in (2c) ‘projects up to the that-clause’ in a way to be
specified.

\(^*\) I would like to thank Marga Reis, Manfred Krifka, and two anonymous reviewers of “Theoretical
Linguistics” for valuable comments and suggestions.

\(^1\) As is usual, pitch accents are indicated by capitals.
It should be emphasized that the generalization given in (1) does not entail that every focused constituent in a direct answer $A$ needs to correspond to a $wh$-phrase in the respective $wh$-question $Q$. Actually, such a claim would be far too strong, for one always has to reckon with the presence of so-called ‘contrastive topics,’ cf. (3).

(3)  
   a. Whom do John and Mary like?  

For reasons of space, however, the possibility of contrastive topics will be almost completely ignored in the remainder of this paper.²

As presented here, the generalization in (1) is intended in the first instance as a generalization about sentential answers. Typically, however, questions are not answered by sentential answers but by ‘short’ or so-called ‘term answers,’ cf. (4) and (5).

(4)  
   b. Who likes whom? Mary, John; …  
   c. What did Sandra say? That Mary kissed John.

(5)  
   a. Whom do John and Mary like?  
   b. Mary, John and John, Sandra.

This immediately raises the question of whether, and —if so— in what way, sentential answers and term answers are related to each other. Apart from the obvious parallel between the F/B-structures of sentential answers in (2) and (3) and the term sequences in (4) and (5), there are good reasons to assume that the latter are derived from the former by some kind of elliptical process. To mention just two arguments, term answers and the respective $wh$-phrases must agree in case, cf. (6), and term answers may occur in the form of reciprocals, cf. (7). Both phenomena, however, are known to be strictly local, confined more or less to the minimal clause they are contained in.³,⁴

(6)  
   Who met Hans? *[A man]-nom / *[A man]-gen / *[A man]-dat / [A man]-acc  
   ‘Who did Hans meet? A man.’

(7)  
   Wem vertrauen Schröder und Blair? Einander.  
   Whom trust Schröder and Blair? Each other.  
   ‘Who do Schröder and Blair trust? Each other.’

The way term answers are derived from sentential ones seems to be quite straightforward: starting from a well-formed sentential answer everything is phonologically reduced (p-reduced) that is not embedded in an F-marked node. Thus, this kind of elliptical process has to be conceived of as an instance of background deletion, and can be stated in a maximally theory neutral (and descriptive) manner as indicated in (8).

² For further discussion, cf. e.g. Büring (1997), Krifka (1998), Reich (2001).
³ For further evidence, cf. e.g. Schwabe (1994), Reich (2001).
⁴ In the following, I will always switch to German data if the point to be made can be better illustrated using German examples, or if the data is rather subtle.
Background deletion in Q/A-sequences (optional)
Let \(\langle Q, A \rangle\) be a well-formed Q/A-sequence and let the F/B-structure of sentential A be of the form \(\alpha_0 \ [\beta_0]_F \ \alpha_1 \ [\beta_1]_F \ \alpha_2 \ ... \ [\beta_{n-1}]_F \ \alpha_n\) (where \(n \geq 1\), \(\alpha_i\), \(0 \leq i \leq n\), possibly null), then p-reduce \(\alpha_i\) for \(0 \leq i \leq n\):
\[\alpha_0 \ [\beta_0]_F \ \alpha_1 \ [\beta_1]_F \ \alpha_2 \ ... \ [\beta_{n-1}]_F \ \alpha_n.\]

As recent research on ellipsis has shown, background deletion plays a crucial role in presumably all kinds of elliptical processes, and may thus be considered as a general strategy underlying elliptical phenomena in general.\(^5\) Typically, this process is further restricted by additional syntactic and/or semantic requirements like, for example, ‘directionality requirements’ in RNR-constructions (cf. e.g. Klein 1993, Hartmann 1999) or ‘correspondence requirements’ in VP-ellipsis phenomena (cf. e.g. Fiengo & May 1994, Merchant 1999). However, apart from the implemented maximality condition, background deletion in Q/A-sequences seems to be fairly —though not completely— unrestricted (cf. Kuno 1982).\(^6\)

2 The Problem

Keeping this in mind, consider the following discourse (cf. Schwarzchild 1999:161).

(9) (John drove Mary’s red convertible.)
   a. What did he drive before that?
   b. He drove her [BLUE] convertible.

As I will show below in some detail, ‘standard’ projection theories on F-marking like, for example, that in Selkirk (1996), as well as information-theoretical approaches like that developed in Schwarzchild (1999), predict —first— that the prenominal adjective blue in (9b) is F-marked, and —second— that no other constituent is. However, given that the assumptions about the derivation of term answers made above are basically


\(^6\) There are at least two restrictions on background deletion in Q/A-sequences that should be mentioned here. First, term answers of category VP need to contain the uninflected part of the verbal predicate, cf. (ia) vs. (ib); as a consequence, term answers of category VP are confined to the perfective forms of tense in German.

(i) a. Was machte Peter? *Peter kaufte, [Anna ein FAHRrad t_i]_F
   What did Peter? *Peter bought, [Anna a bike t_i]_F
   ‘What did Peter do? Peter bought a bike for Anna.’
   
   b. Was hat Peter gemacht? Peter hat [Anna ein FAHRrad gekauft]_F
   What has Peter done? Peter has [Anna a bike bought]_F
   ‘What has Peter done? Peter has bought a bike for Anna.’

   Second, as an example shows to which my attention was drawn by one of the anonymous reviewers, there are certain cases in which a constituent can be phonologically reduced without all the non-focused parts of the answer having to be phonologically reduced, cf. (ii).

(ii) What did John drive to Martha’s funeral?
   a. He drove [a CABrio]_F to Martha’s funeral.
   b. He drove [a CABrio]_F.
   c. [A CABrio]_F.

   These cases, however, seem to be restricted to a certain class of adjuncts, and thus are not crucial for the argument presented here.
correct, the F/B-structure of the answer in (9b) together with the generalization in (8) predict that (10b) is a well-formed term answer in the context of (10a). But in fact it is not. The correct term answer is that given in (10c) — it is the whole constituent corresponding to the \textit{wh}-phrase.

\begin{enumerate}
\item What did he drive before that?
\item *[BLUE]$_F$.
\item Her [BLUE]$_F$ convertible.
\end{enumerate}

Actually, it turns out that this contrast is not restricted to the nominal domain, but can be observed with respect to the sentential and the verbal domain, too, cf. (11) and (12).

\begin{enumerate}
\item (John said that he likes to drive conVERtibles.)
\item What else did he say?
\item *[OLDtimers]$_F$.
\item That he likes to drive [OLDtimers]$_F$.
\end{enumerate}

\begin{enumerate}
\item (Peter hat Anna ein CAbrio gekauft)
\item ‘Peter bought a conVERtible for Anna’
\item What has he else Part done
\item ‘And what else did he do?’
\item Er hat [SANdra]$_F$ ein Cabrio gekauft.
\item he has Sandra a convertible bought
\item ‘He bought a convertible for SANdra.’
\item *[SANdra].
\item SANdra ein Cabrio gekauft.
\end{enumerate}

Again, it is the constituent corresponding to the \textit{wh}-phrase that constitutes the term answer and not the constituent in focus. Thus, this data together with the generalization about the derivation of term answers stated in (8) strongly suggests that it is not only the prenominal adjective that is F-marked, but in fact the whole constituent corresponding to the \textit{wh}-phrase.\footnote{Following a different line of argumentation, Drubig (1994) draws similar (although not identical) conclusions with respect to the F/B-structure of so-called ‘negative contrastive constructions’ like not ..., but ... in English or nicht ..., sondern ... in German. For further discussion, cf. Reich (2001).} Moreover, it suggests that this effect is due to some property of the \textit{wh}-phrases involved. This is what I will call the functional character of \textit{wh}-phrases. The major claim I wish to argue for in this paper is that this property has to be located in the semantics of \textit{wh}-phrases.

Obviously, it may be immediately objected that this data merely shows that the above assumptions behind the derivation of term answers are too simplistic and must be revised or restricted in one way or another. The crucial point, however, is that there would seem to be no straightforward way of doing so without merely stating the facts;\footnote{Examples like (10) suggest that the derivation of term answers has to respect the ‘minimal functional complex’ containing the focus. This restriction may in fact lead to correct results in examples like (10), but it won’t do so in more complex cases like (11) — cf. *Her BLUE convertible. vs. That he likes to drive her BLUE convertible.— or in cases where the term answer is constituted by a lexical projection, cf. (12).} and even if someone came up with a proposal, (8) still seems to be the null hypothesis.
and is, therefore, the theoretically preferred option. Hence, I will assume from now on that the constituents corresponding to a \textit{wh}-phrase are in fact F-marked. Then, obviously, the question emerges, why ‘standard approaches’ to F-marking do not permit this F-marker, and whether there is any straightforward and natural way of modifying (one of) them in such a way that they do.  

2.1 The Problem within Projection Approaches

First of all, let’s have a look at so-called ‘projection theories,’ the most prominent representative of which is presumably Selkirk (1984, 1996). Selkirk (1996) assumes that F-marking is controlled by the set of rules given in (13) and (14).

(13) \textit{Basic Focus Rule}
An accented word is F-marked.

(14) \textit{Focus Projection}
\begin{itemize}
  \item F-marking of the \textit{head} of a phrase licenses the F-marking of the phrase.
  \item F-marking of an \textit{internal argument} of a head licenses the F-marking of the head.
\end{itemize}

Now reconsider Schwarzschild’s example (9) in the light of (13) and (14). The prenominal adjective \textit{blue} is accented; hence it is F-marked by the Basic Focus Rule (13). However, being an adjunct, it cannot license F-marking of the non-accented head of the DP, cf. (14b). Since there is no other candidate that could license F-marking of the head, it must be concluded that the head is not F-marked. But since the head is not F-marked, F-marking of the DP isn’t licensed either.

Is there a straightforward way of modifying this approach? As far as I can see, the answer is no. The crucial problem is that any mechanism that allows F-markers to project from prenominal adjectives to the DP containing them cannot prevent the F-marker from projecting to VP if the DP is an internal argument of the verbal head; i.e., the Q/A-sequence in (15) would be predicted to be well formed in general, especially in an out-of-the-blue utterance.

(15) \begin{itemize}
  \item What did John do?
  \item *He [drove Mary’s [RED] convertible].
\end{itemize}

2.2 The Problem within Information-Theoretical Approaches

The other prominent approach, which can be traced back to the work of Arnim von Stechow (cf. von Stechow 1981) but became well known with the work of Schwarzschild (1999), assumes a more direct connection between the information-theoretical notion of being ‘given’ and F-marking. Schwarzschild (1999) provides us with two basic information-theoretical principles, the first stating that non-F-marked constituents must be \textit{GIVEN}, cf. (16), the second taking the form of an instruction to F-mark as little as possible, cf. (17).

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9 To my knowledge, the only approach to F-marking and accent placement that, in principle, allows for F-structures of the required kind is the one proposed in Jacobs (1988, 1991). However, since this approach crucially relies on the assumption that syntactic F-marking is dependent on semantic focusing, it is certainly not an option in a framework in which syntax is assumed to precede semantic interpretation, like, e.g., the Chomskyan generative framework presupposed here.
(16) **Givenness**  
If a constituent is not F-marked, it must be **Given**.

(17) **Avoid F**  
Do not F-mark.

Contrary to Selkirk’s conception, the existence of an F-marker is not due to a constituent being accenting; rather accenting is a consequence of F-marking. This is ensured by a constraint called Foc, cf. (18). The distinction between Foc-marked and F-marked phrases, however, is not important for our purposes, since in all the relevant examples discussed so far each F-marked constituent is at the same time a Foc-marked constituent.

(18) **Foc**  
A Foc-marked phrase contains an accent.

There are two more things to say. First, it must be determined precisely what it means for a constituent to be **Given**, cf. (19).

(19) **Definition of Given** (partial, informal version)  
a. An utterance U counts as **Given** iff it has a salient antecedent A and, modulo existential type-shifting, A entails the existential F-closure of U.  
b. Existential F-closure of U := the result of replacing F-marked phrases in U with variables and existentially closing the result, modulo existential type-shifting.

Second, it must be emphasized that the constraints Givenness, Avoid F and Foc are organized in an optimality theoretical manner, i.e., one is allowed to violate constraints according to the partial order given in (20).

(20) **Ranking ‘>>’ (‘overrules’) of constraints**  
a. **Givenness >> Avoid F**  
b. **Foc >> Avoid F**

Having introduced the most basic assumptions of Schwarzschild’s approach to F-marking, I can now show why in the convertible example (9) the DP *her [BLUE] convertible* must not be F-marked: as Schwarzschild (1999:161) himself shows, the DP in question is **Given** in the sense specified in (19); existential type-shifting of the DP results in the propositional expression $\exists P[P(her [BLUE] convertible)]; F$-closure, in turn, results in the propositional expression $\exists X \exists P[P(her X convertible)]$ that is entailed by previous discourse, cf. (21). Consequently, F-marking of the DP is optional; and since F-marking is optional, it is ruled out by Avoid F. Following exactly the same line of reasoning, it can be shown that VP and S do not carry an F-marker either, cf. (21b,c).

(21) John drove Mary’s red convertible ENTAILS  
a. $\exists X \exists P[P(her X convertible)]$, therefore DP is **Given**.

b. $\exists X \exists y[y drove her X convertible)]$, therefore VP is **Given**.

c. $\exists X[He drove her X convertible]$, therefore S is **Given**.
Again, the question to be answered is whether there is a straightforward way to modify this approach. This time the answer is 'yes, in principle.' The only reason why the DP must not be F-marked is a violation of AVOIDF. However, as is clear from (20), the constraint AVOIDF can be violated if there is another constraint that is ranked higher. Since neither GIVENness nor FOC will force F-marking on the DP, there must exist another, independently needed constraint allowing for violation of AVOIDF. In the following two sections, it will be argued that there is in fact good evidence for the existence of a constraint with this property, a constraint allowing for the presence of (focus-sensitive) rhetorical relations.

3 A Slightly Modified Hamblin Approach: Functional *wh*-Phrases

3.1 Questions and Answers

Since it will turn out that one of the rhetorical relations to be licensed by this constraint is the Q/A-relation, the semantics of focus and the semantics of *wh*-interrogatives I am assuming need to be outlined. To this end, consider the well-formed Q/A-sequence in (22).

(22) a. What did John drive?
   b. John drove [Mary’s red conVERtible]$_F$.

Without offering an argument, I will adopt the structured meaning approach to F/B-structures as developed in von Stechow (1981) and Cresswell & von Stechow (1982), i.e., the F/B-structure in (22b), repeated as (23a), is represented as a structured proposition consisting of the focus ‘Mary’s red convertible’ and the property ‘being driven by John,’ cf. (23b).

(23) a. John drove [Mary’s red conVERtible]$_F$
   b. ⟨Mary’s red convertible, λx.John drove x⟩

Following Hamblin’s (1973) dictum that ‘a question sets up a choice-situation between a set of propositions, namely, those propositions that count as answers to it,’” and taking the insight into account that F/B-structures are at the heart of the Q/A-relation, it is perfectly straightforward to construe a question like (22a), repeated here as (24a), as denoting a set of *structured* propositions, cf. (24b), and more precisely (24c).

(24) a. What did John drive?
   b. {⟨Mary’s red drive, λx.John drove x⟩}.

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10 Note that the assumption that the whole DP is F-marked does not influence the realization of the accent within the DP. This is simply because this assumption results in one Foc-phrase being embedded within another.

11 Cf. e.g. von Stechow (1991) for relevant discussion.

12 Being ‘hybrid’ in nature, i.e., a combination of the structured meaning approach to F/B-structures and the propositional approach to the semantics of (*wh*)-questions, this approach inherits both the structural information encoded by the structured meaning approach to F/B-structures (or its relative, the categorial approach to (*wh*)-questions) and —given a suitable type-system as developed in Reich (2001)— the type-uniformity of the propositional approach. Presupposing a theory of propositional attitudes as developed e.g. in Cresswell & von Stechow (1982), this approach obviously allows for a theory of question embeddings in the spirit of Karttunen (1977). In the following, the variable $p$ is intended to range over structured propositions (as well as unstructured ones).
Thus, *wh*-interrogatives are still taken to denote sets of possible answers; the notion of being a possible answer, however, has now been relativized to possible F/B-structures.

### 3.2 *Wh*-Phrases as Functional Expressions

Of course, the propositions contained in the denotation of a *wh*-interrogative must be structured independently. This is precisely what I take to be the task of *wh*-phrases. Concretely, I propose to analyze *wh*-phrases not as a (type-shifted) variant of indefinites like *something*, cf. (25a), but as primarily functional expressions with an indefinite core that shape the F/B-structure of possible answers, cf. (25b).

\[(\text{what})' = \lambda Q \lambda p \exists x [\text{thing}'(x) \& Q(x)(p)]\]

Given this, the well-formedness condition imposed on Q/A-sequences can be reduced to the simplest condition one can think of, namely the $\in$-relation, cf. (26).

\[A \text{ is a direct/congruent answer to } Q \text{ iff } \llbracket A \rrbracket \in \llbracket Q \rrbracket.\]

As will be clear from the discussion in section 4, the generalization given in (1) is a direct consequence of the well-formedness condition (26) imposed on Q/A-sequences.

As far as the logical form and the interpretation of *wh*-interrogatives are concerned, the functional view on *wh*-phrases is in essence consistent with the ‘traditional analysis’ of *wh*-interrogatives within the generative framework (cf. e.g. von Stechow 1993), i.e., a *wh*-interrogative like (27a) is analyzed on the level of logical form as indicated in (27b).

\[(\text{what})' = \lambda Q \lambda p \exists x [\text{thing}'(x) \& Q(P) \& p = \langle x, P \rangle]\]

The *wh*-phrase *what* undergoes (overt) *wh*-movement (or an analogous set of operations like e.g. ‘copy and delete,’ cf. Chomsky 1995) and leaves a coindexed trace behind. Abstracting from the role of variable assignments, the interpretation of the IP *John*

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\[13\] It should be pointed out that even if the possibility of ‘contrastive topics’ is taken into account the formulation of the well-formedness condition as stated in (26) can be maintained, see Reich (2001) for relevant discussion.
drove $t_1$ results in the proposition $\text{that John drove } x_1$. This proposition, then, is shifted by an ‘interrogativator’ ‘?’ —located in C and interpreted as the function $\lambda q \lambda p[p = q]$— to the singleton set \{that John drove $x_1$\}. Up to this point, interpretation of the logical form (27b) follows completely the ‘traditional analysis;’ contrary to ‘traditional analysis,’ however, adjunction of the index 1 is not interpreted as ‘common $\lambda$-abstraction’ resulting in the function $\lambda x_1$\{that John drove $x_1$\} from individuals to sets of propositions (cf. Heim & Kratzer 1998), but as what I shall call ‘Hamblin-abstraction,’ $\lambda x_1$, resulting in the function $\lambda x_1$\{that John drove $x_1$\} from properties to truth values, i.e., in a set of properties. Informally speaking, the process of Hamblin-abstraction $\lambda x_1$ is equivalent to ‘common $\lambda$-abstraction’ within the set of propositions \{that John drove $x_1$\}, i.e., $\lambda x_1$\{that John drove $x_1$\} is basically equivalent to the set \{\lambda $x_1$\{that John drove $x_1$\}\}. The $wh$-phrase $what$, finally, singles out from this set the property ‘being driven by John,’ $\lambda x_1$\{that John drove $x_1$\}, and builds the set of structured propositions consisting of all and only those structured propositions $\langle u, \lambda x.John\text{ drove }y \rangle$, where $u$ is an individual that satisfies the restriction of the $wh$-phrase involved. Exactly this is the intended result.

4 Integration into an Information-Theoretical Approach

4.1 Rhetorical Relations and the Restriction RHET-REL

4.1.1 The Rhetorical Relation $answer$

Actually, my claim above to the effect that the answer (23a) denotes a structured proposition, was oversimplifying a trifle. The structured meaning approach —at least in its standard formulation— is a focus movement approach and the movement of the focus has to be triggered somehow. In the spirit of Jacobs (1984), I assume therefore that focus movement is always triggered by an operator, in the case of so-called ‘free foci’ by a rhetorical relation, and in the special case of answers by a rhetorical relation that I shall dub $answer$. The rhetorical relation $answer$ is a two-place relation that first binds the focus (the foci) in the answer (via coindexation) and thus triggers the generation of a structured proposition, cf. (28); second, it introduces a variable $\Gamma$ that ranges over sets of structured propositions and refers anaphorically to the contextually salient question, cf. (28b),

$$\text{(28) a. } \text{answer } [ F \{\text{John drove } [\text{Mary’s red conVERTible}]_f]\]$$

$$\text{b. } \text{answer}(\Gamma, \langle\text{Mary’s red convertible, } \lambda x.\text{John drove }y \rangle)$$

14 As far as I know, Hamblin (1973) was the first to make seminal use of what I call ‘Hamblin-abstraction’ within his set-based model for natural language interpretation. Rooth (1985), and others following him, referred to Hamblin-abstraction when modelling the semantics of ‘association with focus,’ albeit on a different level of interpretation. It should be mentioned that the use of Hamblin-abstraction presupposes a formal language that allows for expressions denoting functions from variable assignments to ‘common denotations,’ i.e., a language like the one developed in Montague (1970). For a similar model, as well as a precise definition of Hamblin-abstraction, the reader is referred to Reich (2001).

15 It is a well-known problem that, in general, focus movement leads to the violation of island constraints, cf. e.g. the discussion in von Stechow (1991). In Reich (2001), however, it is argued that there is an independently justified variant of the structured meaning approach that substitutes focus binding for focus movement, thus avoiding the problem of violating island constraints. But to keep things simple, I will stick to the movement approach for the remainder of the paper.

16 In fact, I am assuming that any rhetorical relation must behave focus-sensitively. It may turn out that this requirement is too strict; nevertheless it seems to constitute a reasonable methodological guideline.
and, third, checks whether the generated structured proposition is a possible answer to the question, i.e., whether it is an element of the question’s denotation, cf. (29).

\[(\text{answer}(Q,A)) = 1 \text{ iff } [A] \in [Q].\]

Now, almost everything is available that is needed to systematically coerce F-marking of the constituents corresponding to \(wh\)-phrases. What remains to be done is to introduce an additional constraint on F-marking allowing, in principle, for the presence of the necessary F-markers to fulfill the requirements of the focus-sensitive rhetorical relation \text{answer} — I call this constraint \text{Rhet-Rel} (Rhetorical-Relation), cf. (30a)— and to give it priority over the constraint \text{AvoidF} introduced by Schwarzschild (1999), cf. (30b).

(30)  
\begin{enumerate}
  \item \text{Rhet-Rel}
    \begin{enumerate}
      \item F-mark, if required to fulfill a rhetorical relation.
      \item \text{Rhet-Rel} \gg \text{AvoidF}
    \end{enumerate}
\end{enumerate}

The well-formedness condition of Q/A-sequences stated in (26) thus turns out to follow directly from the interplay of the semantics of focus, the semantics of \(wh\)-constructions, and the semantics/pragmatics of the rhetorical relation \text{answer}, as licensed by the constraint \text{Rhet-Rel} overruling \text{AvoidF}.

4.1.2 The Rhetorical Relation contrast

It should be emphasized that the assumption of an additional constraint \text{Rhet-Rel} is in fact independently motivated by examples involving so-called ‘contrastive focus,’ cf. e.g. the German data in (31).

(31)  
\begin{enumerate}
  \item Anna wird Alex zur Party einladen.
    Anna will Alex to the party invite
    ‘Anna will invite Alex to the party’
  \item Ja, sie wird \{ALEX\}_f einladen. Aber leider nicht \{PEter\}_f.
    Yes, she will \{ALEX\}_f invite. But unfortunately not \{PEter\}_f.
    ‘Yes, she will invite ALEX. But, unfortunately, she won’t invite PEter.’
\end{enumerate}

According to the above definition of \text{Given}, every constituent of \text{sie wird Alex einladen} in (31b) is \text{Given} in the context of (31a). Since they are all \text{Given}, none of them has to be F-marked (\text{Givenness}); since none of them has to be F-marked, F-marking is ruled out by \text{AvoidF}. The constituent \text{Alex}, however, does carry an accent, and therefore has to be F-marked.\footnote{The accent observed is definitely not a default accent in all-given utterances, for in German the default accent in all-given utterances is typically realized on the inflected part of the predicate, cf. Reis (1989).} This again raises the question of what it is that overrules the constraint \text{AvoidF} and licenses F-marking of the constituent \text{Alex}.

The answer I wish to argue for is that the possibility of F-marking the constituent \text{Alex} is due to the presence of a rhetorical relation \text{contrast} binding ‘contrastive foci.’ This in turn raises the question of how to define such a rhetorical relation. To see this, consider the following examples typically being discussed under the notion ‘contrastive focus’ (cf. e.g. Rochemont 1986, Rooth 1992a):
Structurally, the examples cited in (32) all have one property in common: each of them contains at least two (maximal) constituents of the same category (DP, VP, or S) differing in focus, but identical in background. In (32a), for example, the DP *American farmer* is contrasted with the DP *Canadian farmer* and vice versa, the focus simply serving the purpose of ensuring comparability on the one hand, and distinctiveness in denotation on the other. I conclude from this data that the rhetorical relation *contrast* may adjoin at LF at any constituent (quite similar to Rooth’s 1992a operator –Γ), but needs to bind at least one focus in its scope. (32a), for example, is represented at the level of LF as (33a), and interpreted as (33b).

\[
(33) \begin{align*}
\text{a. } & \text{contrast [ F [ an [American] farmer]] met [ contrast [ F [ a [Canadian] farmer]]]} \\
\text{b. } & \text{met’(contrast((American, λX.an X farmer)), contrast((Canadian, λX.an X farmer)))}
\end{align*}
\]

As far as truth-conditions are concerned, *contrast* is simply vacuous, cf. (34b); *contrast* presupposes, however, the presence of a contextually salient LF-constituent differing in focus, but matching the background of the structured meaning in its scope, cf. (34b).¹⁸

\[
(34) \begin{align*}
\text{a. } & \text{contrast}((\alpha, \beta)) = \beta(\alpha); \\
\text{b. } & \text{contrast}((\alpha, \beta)) \text{ is defined iff there exists a contextually salient LF-constituent } \gamma[[\gamma]] = \langle \alpha’, \beta’ \rangle, \text{ such that } \alpha \neq \alpha’, \text{ but } \beta = \beta’.
\end{align*}
\]

Definition (34) together with the constraint RHET-REL on F-marking therefore does not only account for the specifics of the F/B-structures in examples like (31) and (32), but also for the specific interpretational effect —contrastiveness— triggered by their use.

Having defined the rhetorical relation *contrast*, we are now in a position to give a fully explicit account of Schwarzschild’s convertible example (9), repeated here as (35) for convenience.

\[
(35) \begin{align*}
\text{a. } & \text{What did he drive (before that)?} \\
\text{b. } & \text{(Before that,) He drove [her [BLUE] convertible].} \\
\text{c. } & \text{(Before that,) He drove [her [BLUE] convertible].}
\end{align*}
\]

In section 3 it has been argued that the *wh*-interrogative (35a) denotes the set \{⟨u, λx. that John drove x⟩; u is a driveable object\} of structured propositions. Consequently,

---

¹⁸ It should be noted that the definition of *contrast* in (34) does not directly capture the existence of asymmetric contrastive foci. As far as I can see, however, there is in principle no problem with generalizing (34) in such a way that asymmetric contrastive foci can be accounted for too.
any declarative that is meant to answer the question (35a) necessarily needs to be F-marked on the constituent corresponding to the *wh*-phrase *what* in (35a). Although this constituent is *Given* in the relevant sense, and so F-marking should be suppressed by AVOIDF, the F-marker is licensed by the constraint RHET-REL when it is bound by the rhetorical relation *answer*; the focus on the constituent *blue* constitutes a symmetric (or asymmetric) contrastive focus that is bound by the rhetorical relation *contrast*. All in all, both the sentential answer in (35b) and the term answer in (35c) are represented as (36a) on the level of logical form, and they are interpreted as indicated in (36b).

\[(36)\]
\[
\begin{align*}
\text{a.} & \quad \text{answer} [ F [\text{He drove } [\text{contrast} [ F [\text{her } [\text{blue}] \text{, convertible}]]]]] \\
\text{b.} & \quad \text{answer} (\Gamma, (\text{contrast}((\text{blue}, \lambda X. \text{her } X \text{ convertible})), \lambda x. \text{he drove } x))
\end{align*}
\]

Thus, based on the definitions of the rhetorical relations *answer* and *contrast* and the availability of the constraint RHET-REL, (35b) and (35c) are correctly predicted to be well-formed answers in the context of (35a).\(^{19}\)

4.2 Functional expressions and the restriction *FUNC*E

In the last part of this paper, I shall outline an important consequence of the functional view on *wh*-phrases for the F/B-structure of *wh*-interrogatives.

It is well known that *wh*-phrases in German (at least in simple *wh*-interrogatives) are typically unaccented, cf. (37a) vs. (37b), although they do not constitute *Given* information in a strict sense.

\[(37)\] (out of the blue)
\[
\begin{align*}
\text{a.} & \quad \text{Wer hat (eigentlich) SANdra eingeladen?} \\
& \quad \text{Who has (anyway) SANdra invited?} \\
& \quad \text{‘Who invited SANdra, anyway?’} \\
\text{b.} & \quad \ast \text{WER hat (eigentlich) SANdra eingeladen?} \\
& \quad \text{WHO has (anyway) SANdra invited?} \\
& \quad \text{‘WHO invited SANdra anyway?’}
\end{align*}
\]

This does not mean, however, that they *never* carry any accent. But when they do, this has—in general—an additional pragmatic effect: either the question becomes more emphatic, cf. (38a) and (38b), or accenting triggers a ‘disputational’ implicature (the

\(^{19}\) As the reader may have noticed, there are now two possible explanations for the F-marking on the adjective *blue* in (36a): on the one hand, F-marking is required to fulfill the rhetorical relation *contrast*; on the other, a lack of F-marking would violate the constraint Givenness. Note, however, that the observed redundancy effect is not a general one and cannot be avoided in the proposed extension of Schwarzschild’s approach, for, in general, neither Givenness (plus AVOIDF) is able to account for the F-markers required by RHET-REL (cf. subsections 4.1.1 and 4.1.2), nor is RHET-REL able to account for the F-markers required by Givenness (cf. e.g. the F-marker on the adjective *blue* in a discourse sequence like the following: Which convertible did John like best? [The [BLUE] convertible].). Nevertheless, as proposed by both anonymous reviewers, the observed redundancy effect may be taken to suggest establishing RHET-REL as a totally independent constraint, as opposed to the Givenness constraint. Actually, this would amount to positing the existence of two different kinds of foci, one resulting from deaccentuation and the other from focusation (by virtue of RHET-REL). In the end, this may turn out to be the correct approach. However, given that such an approach certainly does not eliminate the observed redundancy, but in addition requires a theory relating both kinds of focal operations, I will stick to the formulation given above as long as there is no empirical evidence to the contrary.
existential implicature is called into question), cf. (38a) and (38c), or it correlates with an echo-reading, cf. (39).

(38) a. Heute koche ich mal wieder.
   Today cook I Particle again
   ‘I’ll do the cooking again today.’

b. Schön. Und WAS kochst du?
   Good. And WHAT cook you
   ‘Good. And WHAT are you going to cook?’

c. Und WAS willst du kochen?
   And WHAT want you cook
   ‘And WHAT do you want to cook?’

(39) a. Peter hat gestern Sushi gegessen.
   Peter has yesterday Sushi ate
   ‘Yesterday, Peter ate Sushi.’

b. WAS hat Peter gestern gegessen?
   WHAT has Peter yesterday ate
   ‘WHAT did Peter eat yesterday?’

As Reis (1989) points out the most straightforward way to account for this data is to assume that, in general, wh-phrases in German are simply not F-marked. This fully accords with the observation made in Rosengren (1991) that, in German, the F/B-structures of wh-interrogatives seem to be subject to exactly the same regularities as the F/B-structures in declaratives.

However, if we have a look at the comparative evidence this is —prima facie—a rather surprising assumption to make; in Hungarian, for example, wh-phrases have to move into a special focus position, cf. (40). 20

(40) Nem tudtuk hogy Mari mit tett az asztalra
   not know-1.Pl. that Mary what-Acc laid Art table-on
   ‘We don’t know, what Mary laid on the table.’

Moreover, Ladd (1996:171) reports that in Turkish, a wh-in-situ language, wh-phrases even need to carry an accent, cf. (41).

(41) Halil’e NE verdimiz
   Halil WHAT you-gave
   ‘What did you give to Halil?’

Obviously, this data suggests rather that wh-phrases are focused than that they are not (cf. e.g. Rochemont 1986). But provided that the functional view on wh-phrases is basically correct, this data may be accounted for in a fairly natural way without assuming that wh-phrases are focused (i.e., F-marked) in German (and English): whereas the property of structuring propositions is part of the lexical semantics of wh-phrases in German (and English) —so that wh-phrases in German (and English) must be conceived of as functional elements— wh-phrases in Turkish seem to lack this very property and therefore

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20 This has been argued for extensively by Horvath (1986).
must be considered as non-functional in this respect; since, however, for reasons of Q/A-congruence, the propositions in the question’s denotation require structuring, this task falls to a genuine syntactic mechanism, namely focusing. As a welcome consequence, we can stick to the assumption that any F(oc)-marked phrase contains an accent, cf. (18) above.

Actually, in German and English wh-phrases are not the only expressions to behave in such a way. Similar observations can be made i.a. with respect to focus particles, negation, and sentential adverbials, cf. (42).

(42) a. John only introduced BILL to Mary.
b. John did not introduce BILL to Mary.
c. Unfortunately, John introduced BILL to Mary.

This parallel behavior suggests that the prima facie peculiar behavior of wh-phrases simply mirrors their membership in the class of functional expressions: functional expressions are always considered to be given, as their primary function is not to add new information to a context but to systematically operate on ‘old information.’ Within Schwarzschild’s approach to F-marking, this behavior can be captured by introducing a further constraint, FUNC (Functional Expressions), that rules out any F-marking of functional expressions, cf. (43a). Obviously, FUNC must be able to overrule GIVEN-ness, cf. (43b).

(43) a. **FUNC**
    Do not F-mark functional expressions.
b. **FUNC >> GIVEN**
c. **RHET-REL >> FUNC**

Furthermore, by giving the constraint RHET-REL priority over the constraint FUNC, cf. (43c), we allow the pragmatic effects triggered by focusing functional expressions to be derived from the presence of covert rhetorical relations, e.g. the rhetorical relation contrast.

5 Summary

On the basis of the assumption that term answers are derived from sentential ones by eliding their background, I have argued that wh-phrases should be considered as

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21 In Bresnan (1971) it was observed that wh-phrases are patterned like indefinites with respect to accent; whereas pronominal expressions like what or something are typically unaccented, the restriction of a more complex expressions like which car or some car requires accenting. Concerning indefinites, this behavior is a direct consequence of their semantics: unlike the complex indefinite some car—carrying a non-trivial restriction—the pronominal indefinite something is always GIVEN, since its existential closure (‘there is some property P that is true of some individual x’) is entailed by any discourse. Now, if it were assumed that wh-phrases and indefinites are semantically equivalent, exactly the same reasoning would account for the behavior of wh-phrases in English and German. Disregarding the main argument in this paper for a moment, why should we then assume that wh-phrases in English and German are functional expressions rather than indefinites? The reason is that if we treated wh-phrases as semantically equivalent to indefinites, it would be totally unexpected that pronominal wh-phrases in Turkish need to carry an accent. If, however, wh-phrases in German and English are considered as functional expressions, a straightforward explanation is available (see the discussion above): contrary to wh-phrases in German and English, wh-phrases in Turkish are non-functional and so need to be focused for reasons of Q/A-congruence; given a suitable binder —possibly a focus-sensitive variant of the interrogativator ’?’—, focusing is, once more, licensed by the constraint RHET-REL overruling AVOIDF.
functional expressions shaping the F/B-structure of possible answers. I therefore proposed that wh-interrogatives should be treated as denoting sets of structured propositions and that the well-formedness condition on Q/A-sequences should be derived from the interaction of the semantics of wh-questions, the semantics of F/B-structures, and the semantics/pragmatics of rhetorical relations. In order to coerce F-marking of the constituents corresponding to a wh-phrase, I proposed extending Schwarzschild’s approach to F-marking by adding a further constraint called RHET-REL overruling AVOIDF. Finally, I showed that the assumption that wh-phrases are functional expressions allows their peculiar behavior with respect to accenting to be considered as an instance of a more general phenomenon, one that can be captured by an independently required constraint FUNCE. The proposed extension of Schwarzschild’s approach can be summarized as follows:

(44) a. RHET-REL
   F-mark, if required to fulfill a rhetorical relation.

   b. FUNCE
   Do not F-mark functional expressions.

   c. Extending ‘>>>’:
   (i) RHET-REL >> AVOIDF
   (ii) FuncE >> GIVENNESS
   (iii) RHET-REL >> FUNCE.

Finally, it should be pointed out that the mechanics introduced so far need to be generalized with respect to complex wh-phrases like whose mother or how many apples; this, however, is yet another —and undoubtedly complex— story. 22

References
tionsforschungen. Tübingen.

22 See Reich (2001) for a detailed proposal.