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Scope Marking: Cross-Linguistic Variation In Indirect Dependency

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1. Overview

A scope marking structure is characterized by the fact that it has two clauses, each of which contains *wh*-expressions [$CP_1 \dots wh_1 \dots$] [$CP_2 \dots wh_2 (\dots wh_n) \dots$]. While wh_1 is a fixed lexical item, $wh_2 \dots wh_n$ are not. A possible answer to the question seems to specify values not for wh_1 but for $wh_2 \dots wh_n$. In recent years, such structures have come under a lot of scrutiny and various analyses have been proposed to account for their properties. In spite of differences in detail, these analyses can be classified into two groups on the basis of the status they accord to the *wh*-expressions. The direct dependency approach treats wh_1 as semantically inert and assigns matrix scope to $wh_2 \dots wh_n$. The indirect dependency approach, on the other hand, takes wh_1 to play a crucial role in determining what the question quantifies over. $Wh_2 \dots wh_n$ do not have matrix scope but play an indirect role in matrix quantification because CP_2 forms the restriction of wh_1 . Seen in this light, the direct and indirect dependency approaches are not tied to particular syntactic claims about the relation between CP_1 and CP_2 . Whether a particular analysis can be characterized as direct or indirect depends solely on the status of the *wh*-expressions at *transparent* LF, von Stechow's term for the level of syntactic representation that feeds into the interpretive module.

This paper is primarily concerned with cross-linguistic variation in scope marking structures. In particular, it investigates whether languages differ in instantiating a direct or an indirect dependency. It argues that different syntactic options exist in natural language for scope marking structures but the semantic relation remains constant. Wh_1 always fixes what the question quantifies over while the restriction on the quantification depends on $wh_2 \dots wh_n$. That is to

*My thinking on the topic of variation was much influenced by work presented at the 1995 Workshop on the Syntax and Semantics of Partial *Wh*-Movement at the University of Tübingen. I am extremely grateful to Sigrid Beck, Steve Berman, Miriam Butt, Anoop Mahajan, Gereon Müller, Marga Reis, Arnim von Stechow, and Ede Zimmermann for comments and criticisms that led to new ways of thinking about old issues.

say, scope marking structures always involve indirect dependencies. In the interest of keeping the discussion focused, the paper deals with three languages; German, Hindi, and English. These languages span a wide enough spectrum that conclusions based on them may be expected to provide a valid basis for further cross-linguistic work.

The first section of this paper briefly summarizes the core properties of the direct and indirect dependency approaches. It also considers a proposal that appears to be a third alternative and shows that, in fact, once this proposal is fleshed out it reduces to either the direct or the indirect dependency approach. The second section of the paper focuses on similarities and differences in scope marking structures across languages. Integrating a recent proposal relating scope marking structures to paratactic constructions, three different syntactic realizations for scope marking are shown to be logically possible in natural language. Evidence is presented to establish that this is the locus of cross-linguistic variation in German, Hindi, and English. As far as the semantics is concerned, scope marking in all these languages instantiates an indirect dependency. The third section addresses what may be considered open questions in the literature and discusses their status in the new conception of indirect dependency proposed in section 3. The paper ends by drawing out the implications of this proposal for future research on the topic.

2. Direct vs. Indirect Dependency

2.1. The Direct Dependency Approach

Scope marking has traditionally been analyzed in relation to the better-known extraction structure. Van Riemsdijk (1982) noted that German extraction and scope marking structures have the same possible answers. (1-a) and (1-b), for example, both allow answers naming individuals who, in the addressee's opinion, Mary has spoken to. That is, (1-c) could be used to answer either question:

- (1) a. Mit wem glaubt Karl daß Maria gesprochen hat ?
with whom thinks K. that M. spoken has
b. Was glaubt Karl mit wem Maria gesprochen hat ?
what thinks K. with whom M. spoken has
'Who does Karl think Maria has spoken to?'
c. Karl glaubt daß Maria mit Hans gesprochen hat.
K. thinks that M. with H. spoken has
'Karl thinks Maria has spoken to Hans.'

It is standard practice to analyze questions in terms of the answers they allow. It is assumed, in particular, that answers to questions specify values for all and only the *wh*-expressions that have matrix scope. The possible answers to (1-a) and (1-b) suggest, then, that they both have a representation like (2) at transparent LF:

- (2) [_{CP₁} who_i [_{IP} Karl think [_{CP₂} Maria to _{t_i} has spoken]]]

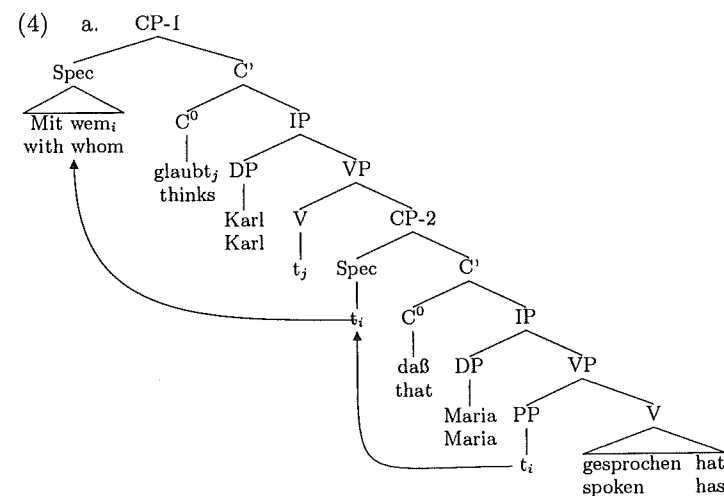
Assuming that LF is the syntactic level of representation that is the input to interpretation and adopting a semantics for questions such as Hamblin (1973), we get (3-a) as the semantic translation of (2). That is, (2) denotes a set of propositions, each one of which constitutes a possible answer to the question. In a particular case, (2) would yield sets such as (3-b):

- (3) a. $\lambda p \exists x$ [person'(x) & p = \wedge think'(k, \wedge spoken-to'(m, x))]
b. {Karl thinks Maria has spoken to Peter, Karl thinks Maria has spoken to Hans ...}

In this way of interpreting questions, *wh*-expressions are existential quantifiers whose restriction is either implicit or provided by the common noun inside the *wh*-expression. The *wh*-expression crucially determines the set of entities that can be specified by the answer. The fact that (1-a) and (1-b) allow the same answers thus follows straightforwardly under an approach that assigns (2) as the LF representation for them.

Deriving (2) as the LF for (1-a) is trivial, since the dependency between matrix Spec and embedded argument position is established at S-structure. The connection between (1-b) and (2) is harder to establish. Here the embedded *wh* has to be given matrix scope while the matrix *wh* must be treated as semantically vacuous. The challenge posed by scope marking structures, then, is to establish a dependency between the matrix Spec position and the argument position where the embedded *wh*-expression originates.

McDaniel (1989), building on van Riemsdijk's suggestions, claims that the scope marker, *was* in the case of German, is an expletive base generated in Spec of the matrix CP. Lacking semantic content, it forms a chain with the *wh*-expression which is in the Spec of the embedded CP, and is in turn linked to the original argument position via movement. The representations of (1-a)–(1-b), under her analysis, are as in (4):



- b. Was_i glaubt_j Karl t_j mit wem_i Maria t_i gesprochen hat ?
 what thinks K. with who M. spoken has

The only difference between the two structures is in the source of the *wh*-dependency. In extraction structures it results from movement, in scope marking structures from coindexing. In either case, a direct *wh*-dependency is established between the position where the theta role is assigned (the embedded argument position) and the position where scope is fixed (the matrix Spec position). In this view, then, scope markers are just a special type of *wh*-operator that some languages may employ, but the relationships they enter into are standard.

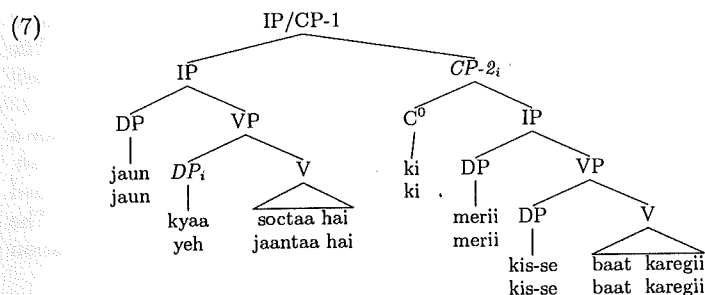
Recent analyses, taking the scope marker to be semantically vacuous, have it replaced at LF by the embedded *wh*-expressions as an instance of expletive replacement. This makes scope marking and extraction truly parallel at transparent LF. The expletive replacement approaches avoid many of the theoretical problems with McDaniel's analysis (see Dayal (1996) for a fuller discussion). My focus here, however, is not the difference between various proposals but the identification of the core properties of the direct dependency approach to scope marking. Taking semantic inertness of *wh*₁ and the fact that *wh*₂ ... *wh*_n determine quantification as the relevant criteria, Davison (1984), Bayer (1990), Mahajan (1990), Wahba (1991), Müller & Sternefeld (1996), Beck (1996), and Müller (1997) all must be classified as belonging to the direct dependency approach.¹

2.2. The Indirect Dependency Approach

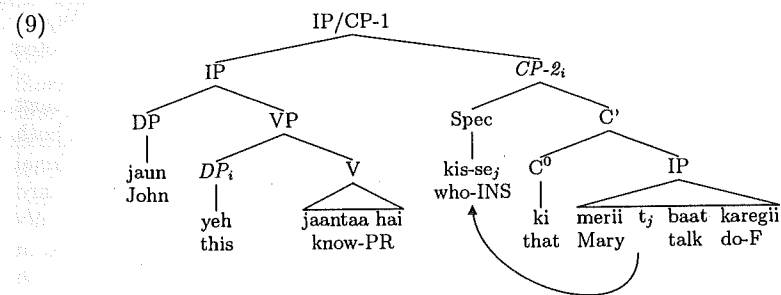
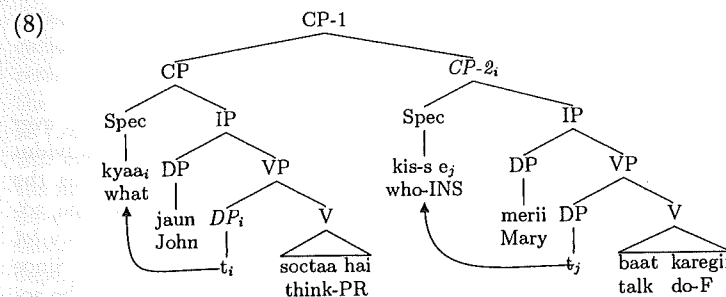
The indirect dependency approach was proposed originally in connection with Hindi scope marking. Hindi is an SOV language but finite complements occur to the right of the verb. In Srivastav (1990; 1991), I claimed that the scope marking structure in (5) and the clausal complementation structure in (6) are parallel. In particular, they both have the S-structure in (7) with the actual complement in right adjoined position and a pronominal or a *wh* in the preverbal direct object position:

- (5) Jaun kyaa soctaa hai ki merii kis-se baat karegii ?
 J. what think-PR that Mary who-INS talk do-F
 'Who does John think Mary will talk to?'
- (6) Jaun yeh jaantaa hai ki merii kis-se baat karegii
 J. this know-PR that M. who-INS talk do-F
 'John knows it who Mary will talk to.'

¹Wahba's terminology is somewhat different in that the scope marker is referred to as a Quantifier Phrase but the idea is the same. Similarly, Bayer's is a parsing account of the phenomenon but it essentially treats the scope marker as semantically vacuous.



At LF, however, the *wh*-in situs move to Spec positions, yielding (8) as the LF for (5) and (9) as the LF for (6):²



The basic claim about the scope marking structure in (8) is that the two *wh*-expressions do not enter into a direct relationship with each other. Rather, they form two local dependencies, indirectly connected by coindexation of the trace of *wh*₁ with the CP that dominates *wh*₂ ... *wh*_n.

While this view is not radical as far as the S-structure of scope marking goes, given analyses of Hindi complementation (see for example, Davison (1984) and

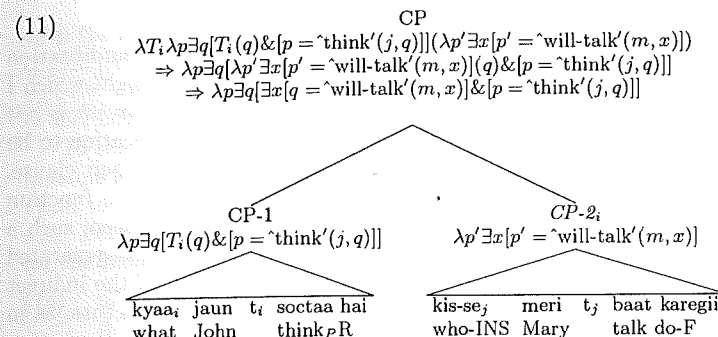
²Here I only show the complement adjoined to CP in the scope marking structure. I will revise this for Hindi in section 3.2.2 but CP adjunction will still be maintained as an option available in universal grammar.

Mahajan (1990)), other theories impose a direct dependency between embedded argument position and matrix Spec position at the level of transparent LF. The indirect dependency approach does not give matrix scope to the embedded *wh*-expression at any level of syntactic representation.

A crucial challenge for the indirect dependency approach, then, is to provide a semantics for (8) that would allow answers specifying values for the embedded *wh*. This part of the proposal was developed in Dayal (1994) and can be summarized very briefly in the following way (see also Dayal (1996) and Bittner (1998)). The *wh*-expression in the matrix clause is the ordinary *wh*-expression used to question over propositions, as shown in (10):

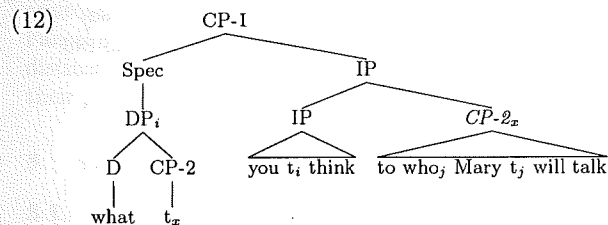
- (10) a. Jaun kyaa soctaa hai ?
 J. what think-PR
 'What does John think?'
 b. Jaun soctaa hai ki vo tez hai
 J. think-PR that he smart be-PR
 'John thinks that he is smart.'

By analogy to (10), we can take the matrix clause of (8) to be a question over propositions. The adjoined complement, of course, is a question over individuals. The crucial step in the interpretation of scope marking is in defining the semantics of coindexation between the matrix preverbal position and the adjoined complement. Descriptively speaking, the matrix question should only let in those propositions that also belong in the denotation of the complement. Since all natural language quantification is overtly or covertly restricted, this can be accomplished by treating the complement as the restrictor of the matrix *wh*. We can take *kyaa* in (8), for example, to quantify over a propositional variable restricted by T_i , a mnemonic for Topic. This yields a set of propositions as the meaning of the matrix question. The complement also denotes a set of propositions and must be filled into the slot occupied by T_i . As we can see, we have two expressions both of which denote sets of propositions at the top CP node. In order for functional application to go through, the type of one of these has to be raised. As is standard in quantificational structures, syntactic coindexation is interpreted as an instruction for lambda abstraction. T_i is abstracted over and the adjoined clause fed in as argument. This gets us the desired results straightforwardly. It may be worth noting that in cases like (10-a) when there is no embedded question providing the restriction, the variable T is still formally present but its value is contextually determined. One can think of the connection between simple questions like (10) and the matrix of scope marking structures analogously to the relation between questions with *who* or *what* and those with expressions like *which child* or *which book*:



Under the approach outlined here, the set of possible answers to the question is determined by the matrix *wh*. In this case, *kyaa* determines that the quantification will be over propositions that John stands in the *think* relation to. The restriction, however, requires that the propositions admitted also be members of the complement question. For example, the matrix question here allows sets such as {*John thinks he is smart*, *John thinks Mary will talk to Sue*, *John thinks Mary will talk to Bill*}. Once the embedded clause denotation is taken into account, the first proposition in the set will not be admitted so that possible answers will have to be from the set {*John thinks Mary will talk to Sue*, *John thinks Mary will talk to Bill*}. We get, in effect, the same set of possible answers as in the direct dependency approach where the embedded *wh* is actually given matrix scope.³

This version of the indirect dependency approach has CP_2 base generated in adjoined position, coindexed with the covert restrictor of the scope marker. Herburger (1994) has suggested a variant of this analysis in which the scope marker is the head of a DP which takes a CP complement: [DP *what* [CP *who Mary will talk to*]]. This CP appears in adjoined position because it is obligatorily extraposed. In an overt movement language like German, the S-structure of a scope marking sentence would be something like the following:



DP_i moves from object position to Spec position because it is a *wh*-operator. It contains, however, the trace of the extraposed CP_{2x} which is adjoined to the matrix. In Hindi, an in situ language, the extraposition would occur at S-structure

³The two approaches make different predictions in the case of yes/no questions, as shown in section 3.1.2. See also section 4.2 for relevant discussion.

but the *wh*-operator would move only at LF.

While Herburger does not address the issue of interpretation, her modification of the indirect dependency approach is intended to preserve the insight which I take to be crucial to the indirect dependency approach. The matrix *wh* is not an expletive but a contentful *wh*-expression, which requires quantification to be over propositions. The embedded *wh*-expressions are interpreted in their clause. This yields a question denotation for CP₂, crucially needed for it to function as a restriction over the propositional variable in CP₁. As we have seen, such a semantic relation is equally compatible with the restrictor being basegenerated discontinuously with the scope marker, as in the original version of the indirect dependency approach, or with their being syntactic sisters at D-structure, as in Herburger's modification.

2.3. A Proposed Third Approach

Mahajan (this volume), Fanselow & Mahajan (this volume), and Horvath (1997; this volume) have proposed an account of scope marking that, at first sight, appears to present an alternative to the direct and indirect approaches summarized above. It seems to me, however, that on closer examination, their proposal must be assimilated with one of the earlier approaches. Here I will demonstrate using the particulars of Mahajan and Fanselow's account of Hindi scope marking, but the argument carries over to Horvath's account as well.

Mahajan and Fanselow treat the embedded question as the complement of the scope marker, i.e., the underlying structure is [DP *what* [CP *who Mary will talk to*]]. In this respect, their position is similar to Herburger's. However, following Kayne's view that so-called SOV languages like Hindi are really SVO, they take such DP's to be generated to the right of the verb. The surface order is derived by movement of the scope marker *kyaa* to a position to the left of the matrix verb. This is shown in (13-a). At LF, *kyaa* moves to Spec and the stranded CP₂ also lands there, replacing it in the process. This is shown in (13-b):

- (13) a. [CP₁ Spec [Q [jaun kyaa_i soctaa hai [NP t_i [CP₂ merii kis-se_j
J. what think-PR M. who-INS
baat karegii]]]]]
talk do-F
- b. [CP₁ [CP₂ [kis-se_j [merii t_j baat karegii]]]_i [Q [jaun t_i
who-INS M. talk do-F J.
soctaa hai [NP t_i]]]]]
think-PR

This approach shares with the indirect dependency approach in Dayal (1994; 1996) the view that the scope marker originates in argument position and that the CP is associated with the scope marker in the same way that a common noun is associated with a determiner. However, Mahajan and Fanselow make a crucial departure from that proposal. They claim that once a structure like (13-b) is obtained, the matrix Q-operator can be coindexed with the Spec of its Spec (i.e.,

with the embedded *wh*-expression) and yield a wide scope interpretation for the embedded *wh*-expression. This brings an element of direct dependency into the picture. One might then characterize the proposal as a mixed approach. It seems to me, however, that this is more apparent than real.

To see why the proposal is not distinct from earlier approaches, consider the possible semantic interpretations of (13-b). We can take the proposed coindexation to mean that the embedded *wh* determines what the question quantifies over. Leaving aside the interpretation of the rest of the material in matrix Spec for the moment, consider what we have so far:

- (14) a. $\lambda p \exists x [\text{person}'(x) \ \& \ p = \text{think}'(j, \underline{x})]$
b. $\lambda p \exists x [\text{person}'(x) \ \& \ p = \text{think}'(j, \text{Mary will talk to } x)]$

As (14-a) shows, if the matrix quantification is over the individual variable *x*, we must have an instance of *x* inside the question nucleus. Since *think* is a verb that takes propositions, not individuals, as its second argument, *x* cannot function as its second argument. Thus, the only way to get an instance of *x* inside the propositional variable *p* is to reconstruct the rest of the material from the adjoined CP (i.e., the proposition denoted by the remnant of the embedded question) into the matrix IP. But then we are dealing with a variant of the direct dependency approach. If, on the other hand, the embedded question is to be interpreted in matrix Spec position, it can only be done if it functions as the restriction of a propositional variable. The proposed coindexing between matrix Q and embedded *wh* has to be given up at transparent LF. This, then, would place it squarely within the indirect dependency approach.

To sum up, given my characterization of the difference between the direct and the indirect dependency approaches, there are only two ways of making this proposed third approach semantically tenable. One involves reconstruction of the remnant, the other undoes the coindexing of the matrix Q with the Spec of its Spec and makes the original scope marker semantically visible. The first aligns it with the direct dependency approach, the second with the indirect dependency approach. Whatever the motivations for the distinctions argued for by Mahajan, Fanselow, and Horvath, at the interface between syntax and semantics these distinctions are necessarily neutralized. From the present perspective, therefore, their proposals do not constitute a genuine alternative.

3. Variation in Scope Marking

3.1. The Cross-Linguistic Picture

3.1.1. Scope Marking Across Languages

The question I want to explore in this section is whether a single approach to scope marking can apply across languages. The discussion so far has referred to German and Hindi but since van Riemsdijk's (1982) original observation, scope marking structures have been attested in a number of languages. For example, they have been noted for Bangla (Bayer (1990)), Romani (McDaniel (1989)), Iraqi

Arabic (Wahba (1991) and Basilico (1998)), and Hungarian (Horvath (1997)). Below I give examples from Bangla, Romani, and Iraqi Arabic in that order.⁴ These languages all display the hallmark of scope marking structures in that CP₁ contains a *wh*-expression, analogous to *what*, and CP₂ contains the *wh*-expression which possible answers specify values for:

- (15) a. Tumi ki bhebe-cho ke baaRi kore-che ?
you what think who house built
'Who do you think built the house?'
b. So o Demiri mislinol kas i Arifa dikhla ?
what the D. thinks whom the A. saw
'Who does Demir think Arifa saw?'
c. Sh-tsawwarit Mona Ali raah weyn ?
what thought M. A. went where
'Where did Mona think Ali went?'

There are other similarities in scope marking structures across languages that I have discussed elsewhere. I will list some of them here without actually elaborating on how they are treated in the direct and the indirect dependency approaches (see Dayal (1994; 1996)). I focus only on German and Hindi but the facts are representative of all the other languages mentioned here except for Hungarian, which I discuss briefly at the end of the paper.

In Hindi as well as German, the scope marker is the lexical item used to question over propositions but the embedded question can have any type or any number of *wh*-expressions. Some examples that illustrate these facts are given below:

- (16) a. Tum kyaa socte ho merii kahaan gayii ?
you what think-PR M. where go-P
'Where do you think Mary went?'
b. Was glaubst du wo Maria getanzt hatte ?
what think you where M. danced had
'Where do you think Maria had danced?'
- (17) a. Tum kyaa socte ho kaun kahaan gayaa ?
you what think-PR who where go-P
'For which person x and place y, you think x went to y?'
b. Was glaubst du wann Hans an welcher Universität studiert hat ?
what think you when H. at which university studied has
'For which university x and time y, do you think Hans studied at x at y?'

In each language, scope marking structures can be used to express unbounded dependencies, as shown in (18). Possible answers give values for the most deeply

⁴In Dayal (1994), I had made some errors in glossing the Romani data which are corrected here. Thanks to Dana McDaniel for pointing this out.

embedded *wh*-expression:⁵

- (18) a. Tum kyaa socte ho merii kyaa kahegii ravi kahaan gayaa ?
you what think-PR M. what say-F R. where go-P
'Where do you think Mary will say Ravi went?'
b. Was glaubst du was Peter meint mit wem Maria gesprochen hat ?
what think you what P. believes with who M. spoken
has
'With whom do you think Peter believes Maria has spoken?'

The distribution of scope marking in each language fits in with the generalization that the verb in CP₁ must be able to take [-wh] complements but CP₂ must be a question. This is at least a necessary condition.⁶

- (19) a. *Jaun kyaa jaantaa hai merii ravi-se baat karegii ?
J. what know-PR M. R.-INS talk do-F
b. Jaun kyaa jaantaa hai merii kis-se baat karegii ?
J. what know-PR M. who-INS talk do-F
c. *Jaun kyaa puuchtaa hai merii kis-se baat karegii ?
J. what ask-PR M. who-INS talk do-F
- (20) a. *Was glaubst du daß Maria mit Hans gesprochen hat ?
what think you that M. with H. spoken has
b. Was glaubst du mit wem Maria gesprochen hat ?
what think you with whom M. spoken has
c. *Was fragst du mit wem Maria gesprochen hat ?
what ask you with whom M. spoken has

Finally, as noted by Rizzi (1992), scope marking is not acceptable with negation in the matrix clause:

- (21) a. *Jaun kyaa nahiiN soctaa hai merii kis-se baat karegii ?
J. what not think-PR M. who-INS talk do-F
'Who doesn't John think Mary will talk to?'
b. *Was glaubst du nicht mit wem Maria gesprochen hat ?
what think you not with whom M. spoken has
'Who don't you think Maria has spoken to?'

⁵Van Riemsdijk (1982), McDaniel (1989), and Herburger (1994) report that in such cases each intermediate clause needs to have a scope marker:

- (i) *Was glaubst du daß Peter meint mit wem Maria gesprochen hat ?
what think you that P. believes with whom M. spoken has
'With whom do you think that Peter believes Maria has spoken?'

This fact, however, seems to be subject to dialectal variation in German (Höhle (1991; this volume)). In dialects where (i) is acceptable, presumably *was* is able to move long-distance. I do not discuss this phenomenon further in this paper.

⁶In section 4.3 I discuss an exception to this generalization.

Explanations for these facts have been attempted within the direct as well as the indirect dependency approaches, which I will not repeat here. I want to reiterate, though, that given the number of facts on which Hindi and German scope marking agree, it is a priori desirable to treat scope marking in both languages along the same lines rather than to posit radically different explanations. In the next subsection, however, I will mention some phenomena that have been pointed out in the literature as being problematic for such an enterprise.

3.1.2. Problems with a Uniform Account of the Phenomenon

In discussing the possibility of a common account for Hindi and German scope marking, I will first point out the problems with extending the direct dependency approach developed for German to Hindi. I will then point out the problems encountered in extending the indirect dependency approach developed for Hindi to German.

There is a conceptual and an empirical reason why the direct dependency approach cannot be applied to Hindi. Consider the fact that the Hindi scope marker typically appears in preverbal position, as schematically represented in (22-a) below:⁷

- (22) a. [CP₁ [IP Subj *kyaa* Verb] [CP₂ ... *wh₂* ...]]
 b. [CP₁ [IP Subj [CP₂ ... *wh₂* ...] Verb]]
 c. [CP₁ [CP₂ ... *wh₂* ...] [IP Subj *t*CP₂ Verb]] ⇒
 [CP₁ *wh₂* [IP Subj [CP₂ ... *t**wh₂* ...] Verb]]

Given that the preverbal position is the one where direct objects occur, it is implausible to suggest that *kyaa* is an expletive base-generated in operator position.⁸ If it is an expletive, it can only be an expletive in argument position. Since the verb takes propositional arguments, *kyaa* must be considered a clausal expletive and be replaced by a CP. If *kyaa* were to be replaced by CP₂ in its surface position, as shown in (22-b), *wh*-expressions inside CP₂ would have to move into the matrix Spec position in order to yield the right interpretation. However, the pronominal counterpart of this construction (cf. (6) in section 2.2) arguably has this structure at transparent LF but it does not allow direct question readings, suggesting that Hindi finite clauses remain scope islands for *wh*-in situ even if they move to the preverbal position at LF. The derivation in (22-b), therefore, would simply be ruled out as a violation of the selectional restrictions of the matrix verb. If, on the other hand, the scope marker moved to operator position first

⁷Hindi allows scrambling so that *kyaa* may occur elsewhere, but the intuitions about basic word order suggest that it is generated in preverbal position.

⁸Rothstein (1995) identifies a number of syntactic and semantic/pragmatic differences between true expletives and argumental pronominals linked to an adjunct. In Dayal (1996), I have shown that the preverbal pronominal in Hindi examples like (6) has argumental status, in terms of the distinctions argued for by Rothstein. If the Hindi scope marker is really a *wh*-counterpart of an argumental pronominal, it seems problematic to me to think of it as an expletive element that undergoes replacement at LF.

and was then replaced by CP₂, as in (22-c), some maneuvering would be needed to give scope to the embedded *wh* and the remnant CP would have to be reconstructed in object position. As we saw in section 2.3, such proposals have indeed been made (Mahajan (this volume) and Fanselow & Mahajan (this volume), for example). The point to note though is that these maneuvers are construction specific and unattested elsewhere in the grammar. This, it seems to me, poses a non-trivial conceptual problem for this approach.

In addition to these theoretical considerations, there is also an empirical argument against adopting the direct dependency approach for Hindi. In the case of scope marking structures with yes/no questions it leads to incorrect predictions. Consider the following:

- (23) a. Ravi-ne *kyaa* *kahaa* *ki* *anu* *aayegii* *yaa* *nahiiN* ?
 R.-E what say-P that A. come-F or not
 'What did Ravi say, will Anu come or not?'
 b. Ravi-ne *kahaa* *ki* *anu* (*nahiiN*) *aayegii*
 R.-E say-P that A. (not) come-F
 'Ravi said that Anu will (not) come.'
 c. #Ravi-ne (*nahiiN*) *kahaa* *ki* *anu* *aayegii* *ya* *nahiiN*
 R.-E (not) say-P that A. come-F or not
 'Ravi said/didn't say whether Anu will come.'

Such examples have not been discussed by proponents of the direct dependency approach but it is easy to see what the theory predicts. A yes/no question about CP₁ would be a question about Ravi's saying or not saying something. That is, it would denote the set of propositions in (24-b) and would yield unacceptable answers like (23-c). In point of fact, the question poses alternatives about CP₂. The indirect dependency approach predicts acceptable answers like (23-b) since it assigns (24-a) as the denotation of the question.⁹

- (24) a. $\lambda p \exists q [q = \text{'will-come'}(\text{anu})] \vee [q = \text{'will-come'}(\text{anu})] \ \& \ p = \text{'say'}(\text{ravi}, q)$
 b. $\lambda p [p = \text{'say'}(\text{ravi}, \text{'will-come'}(\text{anu})) \vee p = \text{'say'}(\text{ravi}, \text{'will-come'}(\text{anu}))]$

We must accept, then, that the direct dependency approach cannot be correct for Hindi. Let us now see why extending the indirect dependency approach to German does not proceed smoothly either. In Dayal (1994; 1996), I argued that scope marking in German is also amenable to the indirect dependency approach. The basic thesis there was that German, like Hindi, has the scope marker originate in argument position, and is coindexed with a CP in adjoined position. It differs from Hindi in having the scope marker move to Spec position at S-structure instead of at LF. In other words, I claimed there that German displays at S-structure what Hindi achieves only at LF. Problems with this view of German scope marking have been pointed out. One argument against it comes from the unacceptability of yes/no questions:

⁹In the case of verbs like *think*, an answer might have negation in the matrix but only a neg-raised reading will be possible, as predicted.

- (25) *Was glaubt sie ob man sich auf seine Hilfe verlassen kann ?
 what thinks she whether one self on his help rely can
 'According to her thinking, can one rely on his help?'

Beck & Berman (this volume), for example, argue that the unacceptability of (25) can be explained within the direct dependency approach. Under the assumption that yes/no questions do not have a Q-operator or features that can move, the expletive *was* cannot be replaced at LF resulting in a violation of Full Interpretation. In the indirect dependency approach, the data appear to be an accidental gap in the paradigm.

Another problem with applying the indirect dependency approach to German, originally pointed out to me by Josef Bayer and also noted by Müller & Sternefeld (1996) and Müller (1997), has to do with the behavior of the scope marker in superiority contexts. Consider the following paradigm:

- (26) a. Wer glaubt was ?
 who believes what
 'Who believes what?'
 b. *Wer hat was gedacht wen wir anrufen sollten ?
 who has what thought whom we call-up should
 'Who thought what, who should we call up?'
 c. Was hat wer gedacht wen wir anrufen sollten ?
 what has who thought whom we call-up should
 'Who thought what, who should we call up?'

Ordinary multiple *wh*-questions in German leave the object in situ, as shown by (26-a). A straightforward application of the indirect dependency approach would suggest, then, that in scope marking structures *was* would remain in preverbal object position. But (26-b), with the scope marker in argument position, is unacceptable while (26-c), with the scope marker in initial position, is noticeably better, if not completely acceptable (see Reis (this volume) for discussion). The fact that the scope marker behaves differently from ordinary propositional arguments suggests a status distinct from ordinary *wh*-expressions. Direct dependency approaches predict superiority effects by treating the scope marker as an expletive generated in operator position. The indirect dependency approach, in emphasizing the tie between the scope marker and the regular propositional *wh*, leads us to expect opposite effects.

Such problems have given rise to the view that there are two distinct scope marking strategies, an indirect dependency strategy in languages like Hindi and a direct dependency strategy in languages like German (Beck & Berman (this volume) and von Stechow (this volume), for example). Though this may be a descriptively adequate resolution of the cross-linguistic question, it seems to me somewhat unsatisfactory in that it leaves unexplained the large degree of overlap that has been observed between German and Hindi scope marking. Clearly, an account that delivers the differences while maintaining a connection would be optimal. In the next subsection, I will propose a way of thinking about variation that seeks such a balance. From a diachronic perspective, I will suggest,

the development of a spectrum of possibilities extending from indirect to direct dependency over time is plausible. I will show, however, that empirical considerations indicate that the full spectrum is not utilized. All of the attested variants fall within the indirect dependency end of the scale.

3.2. Cross-Linguistic Variation in Indirect Dependency

3.2.1. Sequential Scope Marking

In Dayal (1996), I proposed that contrary to popular belief scope marking is a universal phenomenon. This observation is a good starting point for the account of cross-linguistic variation I want to develop. Take English, for example, which does not allow the kind of scope marking structure we have been looking at. It does, however, have scope marking of a different kind. (27-a) instantiates a subordination structure and is unacceptable but (27-b) instantiates a sequence of questions which has properties characteristic of scope marking:

- (27) a. *What do you think who Mary will see ?
 b. What do you think? Who will Mary see ?
 c. I think Mary will see Tom

Note that possible answers to (27-b), such as (27-c), give values for the *wh* in CP₂, not for the *wh* in CP₁.¹⁰ Furthermore, in doing so, they embed the proposition corresponding to CP₂ as the complement of the verb in CP₁. Clearly, English sequential questions must be viewed as scope marking constructions since they have a *wh*-expression that seems to be semantically inert and a *wh* that can be construed as taking scope outside its syntactic domain.¹¹

That such sequential questions instantiate the scope marking phenomenon is also shown by the fact that they are subject to similar constraints. The examples in (28) illustrate this with respect to the properties discussed in section 3.1:

- (28) a. What do you think? Who will go where?
 b. What do you think? What will he say? Who should go?
 c. *What did she ask? Who is coming?
 d. *What do you think? Mary is here.
 e. *What don't you think? Who is coming?

(28-a) shows that it is possible to have more than one *wh*-expression in CP₂ resulting in a pair-list answer. (28-b) shows that it is possible to do multiple

¹⁰Since the terms *matrix* and *embedded* are inappropriate in the context of sequential questions, we will rely more heavily on the linear-oriented terminology from this point on, referring to the clause that contains the propositional *wh* expression as CP₁ and the clause that follows it as CP₂. This is intended to maintain neutrality with respect to the syntactic relation between the two clauses, while emphasizing the connection between sequential and subordinated scope marking structures.

¹¹The contrast is with a sequence of questions encoding separate requests for information. The following is illustrative:

- (i) a. Who called? What did she/he want?
 b. Mary called. She wanted to know if you are free.

sequencing. (28-c) and (28-d) show that the verb in CP₁ must be able to take [-wh] complements, that is, allow for quantification over propositions, and that CP₂ must denote a question, that is, a set of propositions. Finally, (28-e) shows that negation is disallowed in CP₁. To complete the picture, consider what happens when CP₂ is a yes/no question. A possible answer chooses between alternatives of CP₂ and embeds the selected proposition as the complement of the verb in CP₁:

- (29) a. What did she say? Will Mary come?
 b. Yes, she said that Mary will come.
 c. No, she said that Mary won't come.

Now, sequential questions obviously cannot be handled in a direct dependency approach since *wh*-movement cannot take place across distinct clauses. There is, however, a straightforward explanation within the indirect dependency approach. We might take the first question to involve quantification over propositions and the second question to involve an ordinary question, along the lines sketched in section 2.2. The issue is to connect up T_i, the topic variable restricting the propositions under consideration in the first question, by the second question. This could be thought of as a cataphoric relation of the kind that occurs in right dislocation or other cases of backward anaphora. English sequential questions, then, may be syntactically distinct from Hindi scope marking structures but can, and indeed must, be handled within the indirect dependency approach.

A similar observation is made by Reis (this volume) who draws attention to similarities between *was*-parentheticals and *was ... w*-constructions in German.¹² (30-a), for example, is a parenthetical involving two independent clauses since it displays V2 in CP₂. (30-b) is a *was ... w*-construction and involves subordination as shown by the absence of V2 in CP₂. The former is what I have called sequential scope marking in the case of English, the latter is the subordinated scope marking structure we have been looking at in this paper:

- (30) a. Was glaubst du, wohin ist er gegangen?
 what think you where has he gone
 b. Was glaubst du, wohin er gegangen ist?
 what think you where he gone has
 'Where do you think he has gone?'

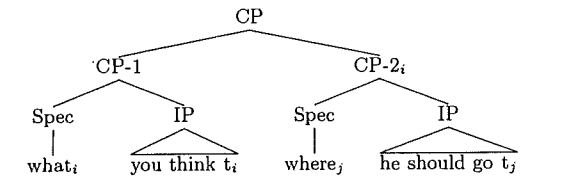
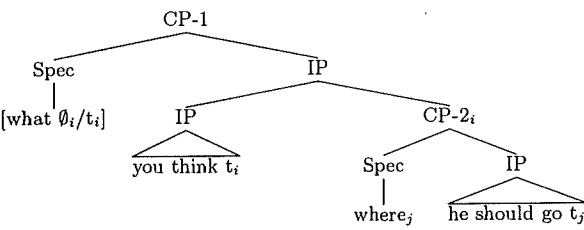
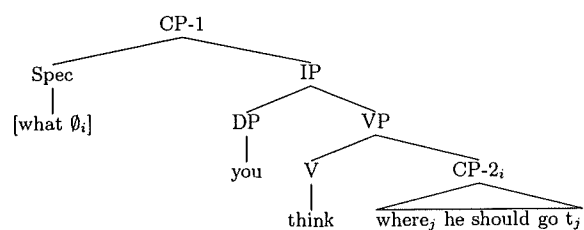
Reis proposes that subordinated scope marking historically is a grammaticalization of the parenthetical construction, involving a shift from two independent clauses in juxtaposition to genuine subordination. She suggests that Hindi scope marking may still involve a parenthetical structure, amenable to the indirect dependency approach, while German scope marking may involve genuine subordination and extraction. If so, the direct dependency approach would be expected

¹²One difference between English sequential scope marking and German *was*-parentheticals is that the latter do not allow multiple sequencing as in (28-b) (cf. Reis (this volume)). My German informants, however, did not have a problem with multiple sequencing.

to apply to it. Reis's proposal thus gives up the idea of a common analysis for scope marking in the two languages, but suggests an explanation why they may have different analyses. I find this general approach extremely appealing but I want to claim that, in fact, the notion of grammaticalization can be exploited without necessarily giving up the possibility of a common account.

3.2.2. Syntactic Variation in Scope Marking

The proposal I would like to make is that languages differ with respect to the syntactic realization of scope marking, not its semantics. Some syntactic options available in natural language are schematized in (31-a)–(31-c). (31-a) has simple juxtaposition, (31-b) indirect syntactic subordination, and (31-c) full-blown subordination. In the spirit of Reis's proposal, we might think of these possibilities as marking different points in the process of grammaticalization:

- (31) a. 
- b. 
- c. 

Let us familiarize ourselves with the core features of these syntactic possibilities. Juxtaposition of CP₁ and CP₂ in (31-a) involves adjunction at the CP level. The two clauses are syntactically independent, neither being subordinate to the other. At the same time, there is semantic integration of the two, signalled here by the coindexation of the *wh*-expression in CP₁ with CP₂. The mechanism for effecting this integration is as presented in section 2.2 where the meaning of CP₂, a set of propositions, fills in for the covert restriction on the scope marker, a propositional

variable, via lambda conversion.¹³

(31-b) and (31-c) differ from (31-a) in according subordinate status to CP₂ by generating it below the LF position of its semantic host, the scope marker. CP₂ undergoes indirect syntactic subordination when it occurs adjoined to IP and is linked to the restriction on the scope marker, which is the complement of the matrix verb.¹⁴ The scope marker and CP₂ may be generated as discontinuous constituents, in which case we posit a null element inside the *wh*-expression with which CP₂ can be coindexed. Alternatively, CP₂ itself could be generated inside the *wh*-expression and be extraposed at S-structure, leaving behind a coindexed trace. The choice between the two is not significant, for present purposes. What is crucial is that CP₂ should be able to move into the position of the restrictor as an instance of replacement or reconstruction, yielding a structure like [CP₁ [*what* [CP₂ *where he should go*]]; [IP *you think t_i*]] at transparent LF. The interpretation then proceeds as in the original version of the indirect dependency approach, except that the meaning of CP₂ does not have to be inserted into the meaning of the scope marker by lambda conversion. It is already in target position at transparent LF.¹⁵

There is a third option, schematized in (31-c), that we might consider for scope marking. Here the scope marker is generated in Spec of CP₁ while CP₂ is in argument position. If we treat the scope marker as an existential quantifier (over propositional variables) with a syntactically visible but phonologically null restrictor coindexed with CP₂, CP₂ can move into this position at LF. The interpretive procedure for this structure would then fall straightforwardly within the indirect dependency approach, analogously to the case of indirect subordination. Note that the structure in (31-c) essentially incorporates van Riemsdijk's proposal about the positions in which the scope marker and CP₂ are generated. These syntactic assumptions have generally been thought to go hand in hand with a direct dependency between scope marker and embedded *wh*-expressions but they are equally compatible with an indirect dependency approach to scope marking.

We see, then, that a range of options exist for the syntactic realization of indirect dependencies in scope marking. It is time now to ground these possibilities

¹³There is no particular reason for ruling out a complex syntactic structure in which the scope marker takes a phonologically null but syntactically visible complement [_{DP} *what* \emptyset]. Crucial for the account is the semantic type of this element. Since the scope marker involves a propositional variable of type $\langle s, t \rangle$, its restriction, whether implicit or syntactically visible, must be a set of propositions of type $\langle \langle s, t \rangle, t \rangle$.

¹⁴The order of relevant elements in Hindi, on which the schema here is based, is *verb, inflectional elements, CP₂*, suggesting IP adjunction. However, VP adjunction would also count as indirect subordination. The question of the level at which adjunction occurs is orthogonal to the distinction I would like to make here.

¹⁵Making the restriction a syntactically visible target for movement is motivated by considerations of compositionality. If CP₂ is left adjoined to IP (or VP) at transparent LF, its meaning will have to be held in store until Spec of CP₁, where the scope marker is interpreted. Without a suitably articulated mechanism for storage, this is problematic (see Dayal (1994; 1996) for discussion). There is also strong empirical motivation for (31-b), as will be discussed shortly.

empirically. Beginning with the CP adjoined structure in (31-a), recall that it is the one I had proposed in earlier work for scope marking in all languages (Dayal 1994; 1996). While I had drawn parallels between English sequential scope marking and Hindi subordinated scope marking in Dayal (1996), there are differences between them that I had not noted there. A consideration of these differences has led me to depart from my earlier position to say that CP adjunction holds only for sequential scope marking, which I assume is universally available and which we have illustrated above with respect to English (27)–(29) and German (30-a). The syntactic independence of CP₂, under this account, correctly predicts inversion in English and V2 effects in German. The interpretive procedure is ideally suited for sequential scope marking, obviating as it does the need for syntactic movement to Spec of CP₁. The structures in (31-b) and (31-c), on the other hand, in assigning subordinate status to CP₂ ensure that it will display behavior typical of such clauses. In Hindi, the adjoined CP₂ optionally has the complementizer *ki* and in German CP₂ does not show V2 effects.

Further evidence in favor of this core structural distinction between syntactic juxtaposition and subordination is also available. Consider (32)–(33) with a universal quantifier in CP₁ and a pronoun in CP₂. A bound variable reading for the pronoun is impossible in (32) but readily available in (33):¹⁶

- (32) a. Was glaubt jeder_i, wohin wird er_{*i} gehen ?
 what thinks everyone where will he go
 'Where does everyone think he will go?'
 b. What does everyone think? Where should he go?
- (33) a. Was glaubt jeder_i wohin er_i gehen wird ?
 what thinks everyone where he go will
 'Where does everyone think he'll go?'
 b. Har aadmii; kyaa soctaa hai ki us-ko; kahaan jaanaa hai ?
 every man what think-PR that he-A where go has
 'What does every man think, where does he have to go?'
 c. Har baccaa; kyaa soctaa hai ki vo; jaayegaa yaa nahiiN ?
 every child what think-PR that he go-F or not
 'What does every child think, will he go or not?'

Under the present proposal these facts have a simple explanation. In the case of (32), there is no c-command relation between CP₁ and CP₂, so the pronoun inside CP₂ cannot be considered syntactically bound. Consequently, it denotes a free variable. Without getting into details of the interpretation for questions with quantifiers at this point (see section 4.1), it can still be shown why the bound

¹⁶In Dayal (1994), I had mistakenly thought the bound variable readings to be unavailable for structures like (33-a). In fact, they are unacceptable only for the corresponding sequential case in (32-a). I am grateful to Sigrid Beck, Miriam Butt, and Steve Berman for pointing out my error. See also Beck & Berman (this volume) for this. Thanks to Anoop Mahajan and Miriam Butt for confirming the judgements for Hindi. And to Susanne Preuss for judgements of the key German data in this paper.

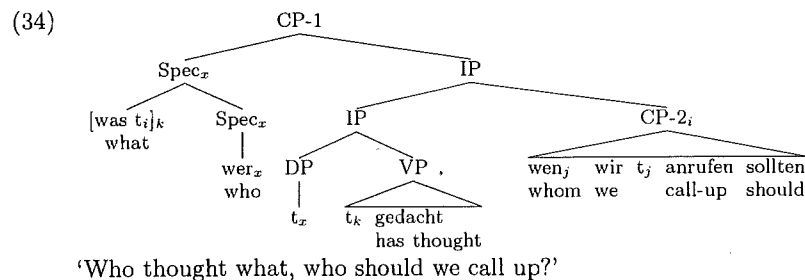
variable reading is ruled out. Since CP₁ and CP₂ only merge in the semantics in such structures, the binding of the variable denoted by the pronoun would have to be done at the point where the meaning of CP₂ is lowered into CP₁. However, lambda conversion is proscribed in those instances where a variable that is free becomes bound in the process of such conversion. The bound variable reading for the pronoun is thus predicted to be impossible. (33), on the other hand, represents a very different situation. CP₂ is either syntactically linked to a position that is c-commanded by the subject or directly c-commanded by the subject at D-structure so that pronouns inside it meet the structural requirement for binding. Furthermore, since CP₂ syntactically replaces the topic variable before interpretation, the need for lambda conversion is obviated and the issue of illegal lambda conversion becomes moot. We simply have an instance of a syntactically bound pronoun with the appropriate semantics.¹⁷

Let us turn now to the distinction between indirect subordination of CP₂, as in (31-b), and full-blown subordination, as in (31-c). The canonical case of indirect subordination is Hindi where the scope marker appears in complement position and CP₂ is clearly adjoined. Now, in earlier versions of the theory I had proposed that German is similar to Hindi in these respects but, as we saw, this view has been challenged. Recall that a strong empirical argument against it and in favor of the direct dependency approach for German came from the position of the scope marker in superiority cases such as (26-b)–(26-c). In this respect (31-c), although it encodes an indirect dependency, achieves the same results as direct dependency accounts of the phenomenon.

One disadvantage of adopting this line for German, however, is that it weakens the link between simple questions and scope marking constructions, an appealing aspect of the original version of the indirect dependency approach. In the first case, the *wh* is generated in argument position while in the second, a *wh* with the same meaning is generated in operator position. If an alternative account for superiority contexts were available, one could then retain a unified account for the two structures in terms of indirect subordination. With this in mind, let us rethink the problem.

Following suggestions of Gereon Müller, I will present one way of getting the attested superiority facts while assuming a structure essentially similar to (31-b) for German. Consider (34), the representation of the unacceptable (26-b) after LF movement of the scope marker. For expository reasons I have indexed CP₂ and its trace *i* and the scope marker and its trace *k*. Given that a quantifier and its restriction do not carry distinct indices, however, we should keep in mind that *i* is identical to *k*. The corresponding simple question in (26-a) is repeated below:

¹⁷The configuration [[CP₁ ... pro_i ...] [CP₂ ... R-expression_k ...]] is ruled out in sequential as well as subordinated scope marking. In subordinated structures this could be explained as a Principle C violation but that cannot be invoked for sequential scope marking. I assume therefore that this fact does not have an explanation in structural terms but must be dealt with by whatever principles rule out such possibilities in regular discourses like *She_i came in. Mary_i sat down.*



- (26) a. Wer glaubt was?
 who believes what
 ‘Who believes what?’

In (34), the subject is in Spec at S-structure, so the scope marker must adjoin to it at LF. Such adjunction is not problematic in the simple case, but in scope marking there is a trace inside the *wh*-phrase coindexed with the adjoined CP₂. This adjoined CP₂ has to move into this position before interpretation can take place but such movement could be ruled out since the host is not in a higher position, it is merely adjoined to a higher position. Thus, there is a possible account for the contrast between the two cases with respect to the position of *was* that does not involve generating the scope marker in operator position.

To the extent that there are no other attested instances of *wh*-expressions generated in operator position, expletive or otherwise, the elimination of (31-c) as a possibility would be a welcome result. I will leave this open, however, noting simply that if the guiding intuition for German is that CP₂ is the actual argument and the scope marker begins its life as an operator, (31-c) provides a way of reconciling that intuition with the view that the scope marker, though it may contain an expletive element, is itself semantically contentful.

3.2.3. Against Semantic Variation in Scope Marking

I have argued above that variation in scope marking may range from simple juxtaposition of two standard questions to a non-canonical structure in which the scope marker is base-generated in operator position while its restriction occurs in complement position. The locus of variation, in other words, is the syntax not the semantics of scope marking. Stechow (1996), commenting on this proposal, notes that a further stage of development could be hypothesized for scope marking where a *wh*-expression generated in operator position loses its link with CP₂ and becomes a *wh*-expletive which must be replaced by regular *wh*-expressions. That is to say, structures like (31-c) could evolve in such a way that the semantics catches up with the syntax, resulting in a *wh*-expression generated in operator position which has no theta role and no semantic content. German scope marking may well represent this later stage of development. In this subsection, I would like to show that this possibility is not, in fact, realized in German. I will present below

four arguments that show this quite clearly. German is crucial in determining whether variation in the semantics of scope marking is attested because sequential scope marking can only be treated in terms of indirect dependency and yes/no complements establish unequivocally that Hindi scope marking reflects an indirect dependency.

The first argument showing that the German scope marker is not an expletive which is replaced by *wh*-expressions is based on an example from Höhle (this volume). In (35-a), CP₂ is a conjunction of questions and the answer specifies values for the *wh* in each conjunct. Not much attention has been paid to such examples but extraction of embedded *wh*-expressions would clearly lead to a violation of the co-ordinate structure constraint. Under an indirect dependency approach such cases pose no special problem. Since a conjoined question has the same semantic type as a simple question, CP₂ can readily function as the restriction of the scope marker.¹⁸

- (35) a. Was meint er wann sie kommt und wen sie mitbringt?
 what thinks he when she comes and who she brings
 'What does he think when is she coming and who is she bringing?'
 b. Er meint daß sie um zwei kommt und daß sie Karl mitbringt
 he thinks that she at two comes and that she K. brings
 'He thinks she is coming at two and bringing Karl.'

Parasitic gaps provide another testing ground for the semantic status of German scope marking. Consider (36) from Sabel (this volume).¹⁹

- (36) Was_i hat [ohne e_i offen auszusprechen] Hans gemeint (t_i) [CP_{2i}
 what has without openly to pronounce H. thought
 wen_j Maria t_j liebt] ?
 whom M. loves
 'What has Hans thought without openly pronouncing (it), whom does Maria love?'

The empty category inside the adverbial phrase being propositional, Fanselow & Mahajan argue that such gaps are licensed by the *wh*-chain [CP₁ was_i ... t_i CP_{2i}], where they take *was* to be generated in argument position. There are two objections that have been raised in this connection. First, von Stechow notes that the gap could well be licensed by extraposition of CP₂. If so, there is no evidence from parasitic gaps of a *wh*-chain linking *was* and the object position. That is, the gap in (36) would also be compatible with the *wh*-chain formed by direct dependency between *was* and the embedded *wh* [was_j...t_i [CP_{2i}, wh_j...t_j]]. Sabel, on the other hand, makes the point that German has pseudo parasitic gaps, not

¹⁸German also has a construction in which a copy of the embedded *wh* appears in each of the higher clauses, generally referred to as *w ... w*-construction, as opposed to *was ... w*-construction, the name used for scope marking. The *w ... w*-construction appears to encode the same constraints as extraction and does not allow conjoined questions in embedded position.

¹⁹Thanks to Gereon Müller for pointing out the relevance of this example. See also Horvath (1997) for discussion of parasitic gaps in Hungarian scope marking.

real ones, and argues that evidence from parasitic gaps cannot be used to test for *wh*-dependencies.

In spite of these objections, I think there is substance to the claim that such gaps reflect indirect dependency. To see this, we might compare the behavior of gaps in scope marking and extraction structures:

- (37) a. Wen hat Hans [ohne e_i wirklich zu treffen] gemeint [t_i daß
 who has H. without really to meet thought that
 Maria t_i mögen würde] ?
 M. like would
 'Who is such that Hans, without really meeting (him), thought that Maria will like him?'
 b. *Wen_i hat [ohne e_i wirklich zu glauben] Hans gesagt [t_i daß
 who has without really to believe H. said that
 Maria t_i liebt] ?
 M. loves
 'Who is such that Hans, without believing (that she loves him), said that Mary loves him?'
 c. *Was_i hat Hans [ohne e_j wirklich zu treffen] gemeint [CP_{2i}, wen_j
 what has H. without really to meet thought who
 Maria t_j mögen würde] ?
 M. like would
 'Who is such that Hans, without really meeting (him), thought that Maria will like him?'

The extraction structures in (37-a)-(37-b) have a *wh*-expression (over individuals) in Spec of CP₁ which is linked to an embedded argument position. While (37-a) has a gap of the same type, the gap in (37-b) has a propositional meaning and this results in a sharp contrast in acceptability. Assuming that CP₂ appears in an A' position due to extraposition in both cases, we can see that licensing of the parasitic gap, real or pseudo, does take into account the *wh* in Spec of CP₁. Setting aside the murky issues surrounding parasitic gaps in German, one generalization that we can safely make is the following: if there is a *wh*-expression in Spec of the CP that hosts a gap, the identity of the gap must match that of the *wh*-expression, regardless of whether there is an extraposed finite clause in A' position. The example in (37-c), with a scope marker in Spec of CP₁ and an individual denoting gap, completes the paradigm. If the scope marker were coindexed with the individual-denoting *wh*-expression in CP₂, as in the direct dependency approach, the sentence would be predicted to be good. That it is not, shows that the *wh*-chain formed by *was* is propositional.

There is other evidence that favors the indirect dependency approach for German. Herburger (1994) points out that there is a difference between scope marking and extraction with respect to *de re* and *de dicto* readings.²⁰ As she puts

²⁰Reis (this volume) discusses other *de re/de dicto* differences. Though cases discussed by

it, a question that involves extraction leaves it open whether the speaker accepts the presupposition behind the embedded question while a scope marking structure implies that the speaker is committed to it. This is expected if extraction and scope marking structures encode direct and indirect dependencies respectively. Herburger's observation is based on German examples like (1-a) and (1-b). Here I will attempt to make it accessible by embedding English extraction structures and sequential questions in contexts that bring out the distinction she notes:

- (38) a. I know no one will volunteer to help. But who does Mary think will volunteer?
 b. #I know no one will volunteer to help. But what does Mary think? Who will volunteer?
- (39) a. Speaker A: No one ever helps clean up. I know that and you know that but Mary apparently doesn't.
 Speaker B: So who does Mary think will help clean up?
 b. #Speaker A: No one ever helps clean up. I know that and you know that but Mary apparently doesn't.
 Speaker B: What does Mary think? Who will help clean up?

The effects are subtle, but the contexts in (38) and (39) bring out Herburger's intuitions about the difference in presuppositions between extraction and scope marking questions. It is a well-known property of natural language that domains of quantification are presupposed to be non-empty. The whole CP₂ forms the restriction in the indirect dependency approach, while in the direct dependency approach only the common noun restricts the quantification. Now, the context makes it clear that the speaker does not believe the existential presupposition behind CP₂ and the use of a scope marking structure is odd. On the other hand, the context presupposes a non-empty set of individuals who, in Mary's opinion, might be expected to help. The extraction structure is therefore acceptable. The difference in presuppositions shows up here because the verb in CP₁ is non-factive. CP₂ in scope marking structures, but not in the extraction structures, is interpreted outside the scope of the matrix verb. Its presuppositions are therefore inherited by the whole structure.

In addition to these empirical arguments, there is also a conceptual argument to be made against direct dependency for German. As is well known, a scope marker cannot be associated with a *wh*-expression in its own clause, a phenomenon dubbed anti-locality in the literature (see von Stechow (this volume) and Fanselow & Mahajan (this volume)):

- (40) a. *Was ist wer gekommen ?
 what is who come
 'Who came?'

her are more accessible than Herburger's and point straightforwardly to an indirect dependency approach, von Stechow (this volume) proposes a way of accommodating them within the direct dependency approach. Since my goal is to present only those arguments which unequivocally show indirect dependency, I do not discuss them here.

- b. *Was glaubt wer daß Maria Karl liebt ?
 what believes who that M. K. likes
 'Who believes that Maria likes Karl?'

Now, there clearly is no principle of synchronic grammar that can be invoked to enforce anti-locality and the only way to derive it in the direct dependency approach is by stipulation. Given the perspective of historical change from indirect to direct dependency that we are considering, however, one might ask the question whether anti-locality is simply a residue of an earlier stage in the derivation of scope marking. Consider though what would have to happen to create this situation. The scope marker would have to change from a propositional *wh*-expression linked to CP₂ to become an expletive. Its link to CP₂ would not simply be erased, but rather replaced by a link to *wh*-expressions, with the proviso that such expressions may not be in the same clause. My understanding of historical change is certainly not deep enough to make strong claims, but it seems to me that such a proposal would not have much explanatory power. Under the indirect dependency approach, of course, anti-locality is a straightforward consequence of the core semantics of scope marking.

To sum up this section, earlier claims that languages differ in encoding indirect vs. direct dependencies left unexplained the great degree of overlap between various types of scope marking within and across languages. In a view that sees direct dependency as evolving from indirect dependency, the claim can be made without loss of explanatory adequacy. However, it is a matter for empirical investigation whether the change from syntactic juxtaposition to embedding is accompanied by a semantic shift from a contentful *wh*-expression restricted by a question to a *wh*-expression whose only role is to indicate scope. The unavailability of yes/no complements in German, the only language in the sample for which direct dependency is even a possibility, makes it impossible to determine the issue on the basis of possible answers – as we know, in every other case direct and indirect dependencies predict identical answers. I hope to have shown here, however, that there is enough evidence to place German scope marking squarely within the indirect dependency approach. The spectrum of cross-linguistic possibilities, then, does not extend from indirect to direct dependency but from indirect dependency without syntactic subordination to indirect dependency with increasing subordination, as schematized in (31-a)–(31-c).

4. Some Further Issues

4.1. Intervening Effects and Traces

I would now like to evaluate what may be thought of as open issues in the literature from the perspective of variation in scope marking sketched above. I will first consider intervention effects, explanations for which have been proposed within the direct dependency approach. I will show that these explanations transfer over to the modified indirect dependency approach without any additional stipulations. Thus intervention effects cannot be used as arguments for one approach

over the other. I will then consider restrictions on embedding verbs that I believe remain equally elusive, at the present stage of our understanding, under both approaches. Finally, I will comment briefly on the status of two properties that have been discussed in relation to Hungarian scope marking in the languages we are focusing on here.

As mentioned earlier, scope marking structures are sensitive to negative islands (Rizzi (1992), Herburger (1994), Dayal (1994; 1996), and Beck (1996)). The relevant example is repeated in (41-a) with the corresponding extraction structure in (41-b). Another kind of intervention effect, noted by Pafel (this volume), has to do with the potential ambiguity of questions with quantifiers. Pafel notes that the scope marking structure in (42-a) only allows pair-list answers like *Karl thinks the best wines grow in France and Maria thinks the best wines grow in Italy*. The corresponding extraction structure in (42-b) is equally compatible with pair list answers or with individual answers like *Everyone thinks the best wines grow in France*:

- (41) a. *Was glaubst du nicht mit wem Maria gesprochen hat ?
 what think you not with whom M. spoken has
 b. Mit wem glaubst du nicht daß Maria gesprochen hat ?
 with whom think you not that Maria spoken has
 'What don't you think, who has M. spoken to?'
- (42) a. Was meint jeder wo die besten Weine wachsen ?
 what believes everyone where the best wines grow
 b. Wo meint jeder daß die besten Weine wachsen ?
 where believes everyone that the best wines grow
 'Where does everyone think the best wines grow?'
- (43) a. * α_i ... negation/quantifier ... t_i^{LF}
 b. [CP wh_i ... [IP \forall /negation ... [CP ... t_i ...]]]
 c. [CP \forall_j wh_i ... [IP t_j ... [CP ... t_i ...]]]

Beck (1996) accounts for these differences by proposing that traces created at LF, unlike those created at S-structure, may not cross over negation or quantifiers, as shown in (43-a). She explains the data in (41)–(42) by positing LF movement of the embedded *wh* in scope marking structures as opposed to S-structure movement in extraction structures. This straightforwardly predicts the contrast with respect to negation, depending on whether the configuration (43-b) is created at LF or not. The explanation for the data in (42) builds on the view that individual answers to questions derive from an LF like (43-b) in which the universal is inside the scope of the *wh*, while list answers derive from an LF like (43-c) in which the universal has scope over the *wh* (see also May (1985), Groenendijk & Stokhof (1984), Chierchia (1993), and Dayal (1996)). In order to derive the individual answer, the embedded *wh* must cross over the universal. The configuration in (43-b) is problematic only for scope marking because it creates traces at LF. The pair list answer involves the additional movement of the universal. As the configuration in (43-c) shows, the universal does not intervene between the *wh*

and its trace so the level at which the configuration is created is not important. Scope marking and extraction therefore both allow list answers.

As would be obvious, Beck's account of the facts in terms of LF traces applies equally well to German subordinated scope marking, under the present version of the indirect dependency approach. As such, it does not constitute an argument in favor of one approach or the other. For instance, whether the scope marker is generated in argument or operator position, CP₂ at least will have to cross over negation in the case of (41), leaving behind an LF trace. Similarly, in the case of (42), we can count on CP₂ to create a trace at LF. The constraint in (43-a) cannot discriminate between the configurations in (43-b)–(43-c) and (44-a)–(44-b):²¹

- (44) a. [CP [wh ([CP₂ ...]_i)] [IP ... negation/ \forall ... t_i]]
 b. [CP \forall_j [wh ([CP₂ ...]_i)] [IP t_j ... t_i]]

Another point worth noting is that sequential scope marking also does not allow negation in CP₁. The relevant example is repeated below in (45-a). Since sequential scope marking does not create traces, (43-a) cannot be used to explain the unacceptability of negation. An alternative explanation such as the one in Dayal (1994; 1996) would still be needed. Summarizing briefly, the basic idea there is that negative questions in general are only possible with D-linked domains of quantification, as an examination of (45-b)–(45-c) shows:

- (45) a. *What don't you think? Where should we go?
 b. Who came to the party?
 c. Who didn't come to the party?.

While one can easily ask (45-b) without knowing the set of individuals from whom possible values for *who* may be picked, this knowledge is presupposed in (45-c). The reason for the impossibility of negation in sequential scope marking is due to the fact that if T_i is D-linked, as negative questions require it to be, the value of this variable will be a contextually given set of propositions. There will be no free variable available for functional application to take place and the meaning of CP₂ will remain unintegrated.

We see, then, that an account of the negative island effect for scope marking is available without appealing to traces. The question then arises whether the same would not apply to structures in which traces are at issue, given that the facts are parallel. While it is certainly possible that one explanation is correct

²¹For the sake of completeness, let me make explicit how (42-a) would be interpreted under the present account. List answers draw on two sets, namely the ones denoted by the restricting terms of the quantifier and the *wh*, with the former taking scope over the latter. In the present case, the relation would be between the set of people, say {*Karl, Maria*}, and the set of propositions in CP₂, say {*the best wines grow in France, the best wines grow in Italy*}. Nothing beyond specifying that the set contributed by the *wh* is propositional and the standard mechanisms for deriving list answers is needed. The particular account of list answers that I adopt is based on Chierchia (1993) but for present purposes any account of pair list readings would yield the desired pairing between individuals and propositions. Specific discussion of the various approaches is given in Dayal (1996) and a modification of Chierchia's proposal is presented there that does not have problems with quantifiers like *most* raised by Pafel (this volume).

for subordinated scope marking and another for sequential scope marking, the need for two separate accounts takes away from the generality of Beck's account. One might also wonder about the deeper reasons behind Beck's generalization but, for present purposes, it is enough to note that the explanation is consistent with the view established in section 3.2.3 that German subordinated scope marking encodes indirect dependencies involving LF movement of CP₂ rather than extraction of *wh*-expressions inside it.

4.2. Lexical Restrictions in Scope Marking

In this section I would like to take a closer look at properties that separate Hindi and German subordinated scope marking to see whether they shed light on the structures under consideration. The standard generalization about scope marking is that the verb in CP₁ should select [-wh] complements and CP₂ must be a question. While this generalization essentially holds for English sequential scope marking and for Hindi subordinated scope marking, additional restrictions in German subordinated scope marking are known to exist.

Beginning with CP₂, recall that yes/no questions are acceptable in English and Hindi scope marking but unacceptable in German subordinated scope marking. This has been taken as evidence against indirect dependency and in favor of direct dependency for German under the view that the yes/no operator cannot undergo movement at LF (Beck & Berman (this volume) and von Stechow (this volume)).²² There is, however, an alternative explanation, due to Reis (this volume), which is neutral with respect to the nature of the dependency. Note that in Hindi a matrix question, *wh* or yes/no, and the corresponding embedded question have the same syntactic structure. The only effect of subordination is in the optional addition of the complementizer *ki*. In German, both types of questions manifest a shift from V2 to V-final word order. Additionally, yes/no questions require the insertion of the complementizer *ob*. If subordinated scope marking is a grammaticalization of two independent clauses in juxtaposition, the insertion of a yes/no complementizer involves an extra operation that may not be tolerated.

²²Beck & Berman consider CP₂ with *wh*-phrases like *wieso* ('why') unacceptable and propose that they are lexically banned from participating in *wh*-chains. This lexical property would be independently attested if *wieso* could not be extracted, that is, if (iii) were not an acceptable answer to (ii):

- (i) *Was glaubst du wieso Maria getanzt hat ?
 what believe you why M. danced has
 (ii) Wieso glaubst du daß Maria getanzt hat ?
 why believe you that M. danced has
 (iii) Weil sie es entspannend fand
 because she it relaxing found
 'Because she found it relaxing.'

There seems to be some difference in judgements with respect to these examples. Both my informants accepted (i) while only one of them accepted the question/answer pair in (ii)/(iii). I am not sure what to make of the data at this point but it is clear that even if there is a restriction on *wieso* in CP₂, this restriction is not of the same order as the restriction on *ob*-clauses. I am, therefore, setting aside this example.

Under this view, the possibility of yes/no questions as CP₂ has little to do with whether the language has direct or indirect dependency. It is solely determined by the structural relationship of matrix and embedded yes/no questions. Though it remains to be seen how this generalization bears up under further cross-linguistic investigation, it provides an explanation that is compatible with the conclusion of section 3.2.3 that German scope marking does not instantiate direct dependency.

Assuming that the restriction against *ob* clauses can be so explained, let us turn our attention to restrictions on embedding predicates. It is well known that German subordinated scope marking does not occur with strong factive predicates like *bedauern* ('regret') (cf. (46-a)), *berücksichtigen* ('take into account'), or *sich entsetzen* ('be appalled'). This is potentially an argument for direct dependency in German since extraction across factive islands is also impossible (cf. 46-b). This argument, made by Müller & Sternefeld (1996) for example, is invalidated, however, by the fact noted by Reis (this volume) that such predicates are not attested in German sequential scope marking either (cf. 46-c). Comparing subordinated scope marking in German with sequential scope marking, then, changes the nature of the argument:

- (46) a. *Was bedauerte sie wohin Hans ging ?
 what regretted she where H. went
 b. *Wohin bedauerte sie daß Hans ging ?
 where regretted she that H. went
 c. *Was bedauerte sie wohin ging Hans ?
 what regretted she where went H.

The data in (47) show that the set of (subordinated) scope marking predicates is not co-extensive with the set of extraction predicates (see von Stechow (this volume)). In each case, though, the former patterns with sequential scope marking:

- (47) a. Was hast du entschieden/*dich erinnert wer kommen soll ?
 what have you decided/REFL remembered who come should
 b. Wer hast du *entschieden/dich erinnert daß kommen soll ?
 who have you decided/REFL remembered that come should
 c. Was hast du entschieden/*dich erinnert wer soll kommen ?
 what have you decided/REFL remembered who should come

This, of course, is consistent with the view that subordinated and sequential scope marking are historically connected. In spite of this, it would be hasty to conclude from these facts that there is clear evidence of indirect dependency in German subordinated scope marking. The following examples from Reis (this volume) strike a cautionary note since subordinated scope marking and extraction line up against sequential scope marking with respect to predicates like *behaupten* ('claim'), *vorschlagen* ('suggest'), *erzählen* ('tell'), and *argwöhnen* ('suspect'):

- (48) a. Was behauptest du wieviel das kostet ?
 what claim you how much this costs

- b. Wieviel behauptest du daß das kostet ?
 how much claim you that this costs
- c. *Was behauptest du wieviel kostet das ?
 what claim you how much costs this

Reis takes these predicates to be analogical extensions of the verb classes admissible in sequential scope marking. She concludes that only predicates belonging to the class that is attested in sequential scope marking occur in subordinated scope marking. Note though that strong factives, which may be considered to rightly belong to the relevant class, are still not attested in subordinated scope marking.

Our earlier understanding of the facts was that the set of predicates allowed in German subordinated structures was more restricted than in corresponding Hindi structures. Consequently, the search was for a principled explanation in terms of those structures. From Reis's description of the facts, however, it seems that the real cross-linguistic difference lies at the source of these structures. Sequential scope marking in German appears to be more restricted than sequential scope marking in Hindi. Though the reasons for this difference remain mysterious, they are clearly orthogonal to determining whether German subordinated structures encode direct or indirect dependency. What we need to scrutinize further is sequential scope marking in different languages to see what the locus of variation is. At this point, neither the direct nor the indirect dependency approaches can provide a clean explanation for the facts and I therefore leave the issue as an open problem for both approaches.

4.3. Considerations from Hungarian

In a recent article, Horvath (1997) has argued that the Hungarian scope marker in Spec position bears accusative case and is thus associated with CP₂, which occurs in argument position. At LF, however, the scope marker is replaced by CP₂ and once this configuration is obtained, *wh*-expressions inside CP₂ are free to take matrix scope. In other words, hers is a 'mixed' approach of the kind discussed in section 2.3. Semantic considerations would clearly dictate reconstruction of the remnant CP₂, though Horvath herself does not address this issue. If so, her account of Hungarian would fall within the direct dependency approach at transparent LF. While I am not in a position to discuss Horvath's claims for Hungarian, I would like to briefly review two of her arguments as they introduce new considerations into the discussion of scope marking. The goal here is a modest one, namely to lay out the facts in the languages we are concerned with in this paper and discuss how they impact on the proposals I have made for those languages.

The most striking piece of novel data discussed by Horvath has to do with the standard assumption that embedding predicates must select propositions rather than questions. The same seems to hold in Hungarian, except that the restriction is relaxed when CP₂ is a multiple *wh*-question. This fact is illustrated most dramatically when CP₂ combines a *wh*-expression and a yes/no particle since normally yes/no questions are not acceptable in Hungarian scope marking:

- (49) a. *Mit kérdeztek hogy kivel találkoztam ?
 what_{acc} asked-3pl that who-with met-1sg
 'With whom did they ask that I had met?'
- b. *Mit gondolt János hogy átment-e Mari a vizsgán ?
 what_{acc} thought J._{nom} that over-went-Q prt M._{nom} the exam-on
 'What did John think whether Mary passed the exam?'
- c. Mit kérdeztek hogy kivel találkoztam-e ?
 what_{acc} asked-3pl that who-with met-1sg-Q prt
 'With whom did they ask whether I had met?'

In Horvath's account, scope marking structures require an embedded *wh* in the preposed CP₂ to take matrix scope. (49-a) is ungrammatical because there is only one embedded *wh* which can either satisfy the matrix scope requirement or the selectional restrictions of the predicate. (49-b) is ungrammatical because the yes/no operator cannot be extracted, or equivalently, does not have features that can move long-distance. (49-c) is good because there is a regular *wh*-expression that takes matrix scope while the yes/no operator satisfies the requirements of the embedding predicate.

Note, first of all, that the Hungarian yes/no suffix *-e* is specially designated for embedded contexts. Thus, the unacceptability of (49-b) fits in with the proposal advanced in section 4.2 that grammaticalization of sequential scope marking prohibits the introduction of such extra elements. Turning now to the quirky behavior of question embedding predicates, consider German questions like the following:

- (50) a. *Was fragt sie wen ob Maria liebt ?
 what asks she whom whether M. loves
- b. *Was fragt er wann Hans an welcher Universität studiert hat ?
 what asks he when H. at which university studied has

According to my information (50-a) does not have the readings Horvath claims for Hungarian. It cannot be answered with something like *She asked whether Maria likes Karl*, nor can (50-b) be answered with something like *He asked when Hans studied at the University of Tübingen* or *He asked which university Hans studied at in 1996*.

The same intuitions hold for Hindi and English. However, it seems to me that the relevant reading does emerge, just in case one of the *wh*'s in CP₂ is stressed:²³

²³Horvath notes that the Hungarian examples are not to be interpreted as echo questions. It should be noted, of course, that the questions in (51) are not themselves echo questions and are therefore not expected to have the intonation associated with echo questions. It is only CP₂ inside those questions that have this property. This point is also relevant in connection with Müller & Sternefeld's (1996) observation that (i) with *was* echoed is unacceptable. In order for (i-a) to be acceptable, the previous discourse would have to contain an utterance like (i-b) where the expression corresponding to *was* remains inaudible. The echo question would then be a query about possible substitutions in this position. Note, however, that there are no alternatives to *was* in this context. Thus the situation in which (i-a) could be uttered would never arise:

- (i) a. *Fritz hat WAS gesagt mit wem sie gesprochen hat ?
 F. has WHAT said with whom she talked has
- b. Fritz hat [...] gesagt mit wem sie gesprochen hat

- (51) a. Us-ne kyaa puuchhaa KAUN kahaaN gayaa ?
 she-E what ask-P who where go-P
 'What did she ask, who went where?'
 b. What did she ask? Where did WHO GO?
- (52) a. {Where did John go? Where did Sue go? Where did Bill go?}
 b. She asked where John went.

The most natural context in which we might get such exchanges would be one in which somebody asks *Where did x go?* in a way that the speaker cannot make out who *x* is. He might then ask the questions in (51-a)–(51-b) and be given an answer like (52-b). Note now that this is as expected under the indirect dependency approach. Since *ask* quantifies over questions, its restriction must denote a set of questions. Multiple *wh*-questions with one stressed or echoed element are interpreted precisely as second order questions. This is discussed in detail in Dayal (1996). Without going into the technical details here, it is easy to show that if CP₂ denotes sets such as (52-a), it will be able to function as the restriction of a variable over questions. Answers such as (52-b) are predicted once the meanings of CP₁ and CP₂ are composed. That this phenomenon holds in English sequential questions shows that an account is needed within the indirect dependency approach, regardless of whether it also occurs in languages where direct dependency may be at issue.

Turning now to another observation from Hungarian, Horvath notes a difference between two types of predicates with respect to negative island effects. Those predicates whose complements have open-ended interpretations (*gondol* ('think'), *mond* ('say'), *hall* ('hear'), etc.) display this effect while those whose complements have D-linked domains (*beismer* ('admit'), *tagad* ('deny'), *elárul* ('reveal'), etc.) do not. Since in her account it is CP₂ that moves to Spec position, negation will intervene just in case the CP is not D-linked. With D-linked CPs antecedent government of the trace is not at issue so negation does not have its usual effect:

- (53) Mit nem *gondolsz/ismertél be hogy kivel beszélt
 what_{acc} not think-2sg-indef.DO /admit-2sg that who-with spoke-3sg
 Mari ?
 M._{nom}
 'Who don't you *think/admit Mary spoke to?'

Again, it seems that the facts are different in Hindi and English. Take English (54-b), for example. This question cannot be answered by (55-b) where the interlocuter names the individual or individuals about whom he did not confess/reveal the relevant proposition, implying thereby that he did confess/reveal facts about the others. Thus (54-b) must not denote sets such as (55-a), where the italicized propositions are understood to be accepted as given by speaker and hearer:

- (54) a. *Tum-ne kyaa nahiiN maanaa ki tum-ne kis-ko maaraa ?
 you_{erg} what not admit-P that you_{erg} who_{acc} hit
 'Who is such that you did you not admit that you hit him?'
 b. *What didn't you confess/reveal? Who did you cheat?

- (55) a. {I didn't confess/reveal that *I cheated Bill*, I didn't confess/reveal that
I cheated Sue, I didn't confess/reveal that *I cheated John*, ...}
 b. I didn't confess/reveal that I cheated Bill (but I did confess/reveal
 that I cheated Sue and John).

Horvath suggests that this distinction can be used to test whether a particular scope marking construction has movement of CP to Spec position. She expects this test to be generally applicable but notes that it may be unusable in German which does not allow factives. Of course, Horvath is not taking into account sequential scope marking of the kind we see in English where syntactic movement of CP₂ is untenable.²⁴ In fact, it might be said that the facts in English are orthogonal to the discussion since no predictions are made about such cases. However, I have brought in English for two reasons. One, it highlights the fact noted in section 4.1 that the negative island effect cannot be reduced to explanations in terms of syntactic movement. A semantic account, such as the one presented in Dayal (1994; 1996), is needed at least for these cases. The other is for expository purposes. As would be obvious, the two accounts make radically different predictions about scope marking and D-linking. While the semantic account of the negative island effect holds that a D-linked propositional argument of CP₁ blocks semantic composition since it does not leave free the topic variable, Horvath's account suggests that D-linking is quite compatible with scope marking. In fact, the difference in predictions can also be tested without bringing negation into the picture. If the verb in CP₁ of a scope marking construction like (56-a) were lexically primed to take a D-linked propositional argument and CP₂ were in a syntactic configuration to move to Spec of CP₁, Horvath's account would predict it to admit possible answers like (56-c). In the indirect dependency approach, on the other hand, the question-answer pair would be ruled out. This is, of course, predicted for English and Hindi and, as Horvath notes, the phenomenon cannot be tested in German:

- (56) a. *What did you confess? Who did you cheat?
 b. {I confessed that *I cheated Bill*, I confessed that *I cheated Sue*, I confessed that *I cheated John*}
 c. I confessed that I cheated Bill (but not that I cheated Sue and John).

We see, then, that the new negative island facts from Hungarian do not have direct relevance for the languages under study. I have discussed them at some length in order to clarify their status and under the belief that explicating the issues may be useful in applying the diagnostic to other languages in the future.

The key properties on which Horvath bases her proposal, we see, are not replicated in the languages under consideration, so that no modification of our previous conclusions is warranted. The question remains, of course, where Hun-

²⁴Syntactic reanalysis of the two clauses into one, if available, would make it possible for syntactic movement to take place subsequent to reanalysis. Such a move is precluded by the absence of bound variable readings for pronouns in CP₂ since reanalysis would also open the way for anaphoric binding.

garian fits into the cross-linguistic picture I have proposed connecting German, Hindi, and English, given its somewhat distinct properties. Horvath's conclusion is that there are different types of scope marking in natural language and the search for a unified account may be futile. This is a conclusion that I am reluctant to accept. A hypothesis one might entertain about Hungarian is that it represents the kind of development from indirect to direct dependency that we discussed in connection with German in section 3.2.3. That is, we could keep Horvath's account for the synchronic grammar of Hungarian while relating it to the more familiar types of scope marking. However, a closer study of the facts is needed before such claims can be definitely established.²⁵ I must therefore be satisfied for now with showing a relation between German, Hindi, and English scope marking and leave for another occasion the challenge of placing Hungarian within the cross-linguistic picture.

5. Conclusion

The starting point of this paper was a desire to synthesize two views about German and Hindi scope marking. One, evident in much recent literature, is that their diverse properties make a uniform explanation unlikely. The other, given the large degree of overlap between them, is that two unrelated explanations indicate a missed generalization. This led to a fundamental distinction in the syntax of scope marking, based crucially on comparisons with sequential scope marking, explicated here primarily with data from English. The key idea that was proposed is that languages universally have sequential scope marking but may differ with respect to the presence or absence of subordination, and possibly, in the levels of subordination. Though the historical perspective presented here is arguably compatible with the existence of direct dependency in scope marking, empirical evidence was presented showing that in the languages under consideration the dependency remained indirect even after subordination. The conclusion, thus, is that the locus of variation in scope marking is the syntax not the semantics.

In coming to this conclusion, the paper explicated issues regarding the syntax and semantics of scope marking. Taking transparent LF as the level at which the dependency can be characterized as direct or indirect, it showed that either dependency can be derived by a number of different syntactic options. What lies at the heart of the distinction is whether it is the scope marker as a whole that must be replaced by other semantically contentful *wh*-expressions before interpretation or whether its restriction is dependent on the second question for semantic content. The paper also sought to separate out phenomena that distinguish between the two approaches. These include different predictions about possible answers in the case of yes/no questions, possible complements in the case of conjoined

²⁵Of the issues discussed in section 3.2.3, Horvath has explored parasitic gaps in Hungarian. I have no information about *de dicto-de re* distinctions, but conjoined questions appear to be possible (Frank Borbas (p.c.)). This is suggestive of indirect dependency in the language, contrary to Horvath's conclusion.

questions, and presupposition projection properties in the context of intensional verbs. In addition, there remains the well-known fact that the direct dependency approach leaves open which lexical item will be used as a scope marker since there is no principle determining what the default in a particular language will be. In the indirect dependency approach, on the other hand, the scope marker will always be the *wh*-expression used to question over propositions.²⁶

This study also extended the domain of inquiry by bringing into focus the phenomenon of sequential scope marking. This led to a refinement of our present diagnostics since comparisons between sequential and subordinated structures provide a way of separating out those phenomena, such as bound variable readings, for which a structure sensitive explanation must be given from those, such as negative island effects, for which a purely semantic account cannot be ignored. There is a further consequence of recognizing the status of sequential scope marking in the grammar that goes beyond the issue of cross-linguistic variation. It alters the paradigm for so-called long-distance *wh*-phenomena by showing that such effects are also available without extraction. The fact that sequences of the relevant kind, in addition to extraction structures, constitute bona fide members of the reference set has clear implications for minimalist or optimality based studies of scope marking (for example, Müller (1997)), as well as for psycholinguistic studies of *wh*-dependencies (for example, Thornton & Crain (1994), Abdulkarim, Roeper, & de Villiers (1997), Kluender & Münte (1998)).

Of course, many questions remain unanswered. What forces determine whether a language will shift from sequential scope marking to subordination, for example, is a question that has largely been ignored in the literature. Hopefully, though, probing the relation between scope marking structures that are attested will help future investigations into this deeper question.

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²⁶See Dayal (1994; 1996) for evidence in support of the indirect dependency approach from Navajo, a language with different lexical items for questioning over ordinary objects vs. propositions.

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