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האגודה הישראלית לבלשנות תאורטית
THE ISRAEL ASSOCIATION FOR THEORETICAL LINGUISTICS

IATL 4

The Proceedings of the

Twelfth Annual Conference

The Hebrew University of Jerusalem 1996

edited by
Edit Doron
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Multiple Questions in Russian

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1. Introduction

It has been shown in the linguistic literature that languages differ with respect to wh-movement. As Lasnik and Saito (1992) put it, "wh-movement can be obligatory, optional or non-existent depending on the language". Japanese, for example, is a language where all wh-phrases obligatorily stay in situ and can be fronted to the clause initial position only at the level of logical form (Huang, 1982). This is shown in (1):

(1) John-wa nani-o   kaimasita ka?   Japanese

    John   what-acc. bought Q   (Huang, 1982)

    What did John buy?

English, in contrast, requires wh-phrases in single questions to move to the clause initial position in order for non-echo questions to be grammatical, as in (2). However, in multiple questions in English, the second wh-phrase cannot be fronted along with the first one, as shown in (3), so instead of moving to the clause initial position, the second wh-phrase has to stay in situ, as shown in (4).This wh-phrase is fronted later on, at the LF level.

(2) a. What did he say?   English

    b.* He said what?

(3) * Who what read?

(4)   Who read what?

In addition to languages like Japanese and English, there is another group of languages, which behaves differently with respect to wh-movement. This group includes languages that require fronting of all wh-phrases to the clause initial position. Romanian, and most Slavic languages, including Russian, belong to this group of languages.

In case of genuine, non-echo multiple questions in Russian, the placement pattern is the same as with single non-echo questions: wh-phrases are obligatorily fronted to the clause initial position, (5).

(5) Kto kogo uvidel?   Russian

    who whom saw

    Who saw whom?

Multiple questions with one wh-phrase in situ, as in (6), are acceptable in a very particular context.

(6) Kto uvidel kogo?   "clarifying question" (Pesetsky, 1987)

    who saw whom

Pesetsky (1987) calls them clarifying questions. Someone could ask (6), for example, in the following case. There are several people who the listener saw and different periods of time when he saw them. All the individuals in the set of people are known to the speaker and the listener, the same is true about the dates. The speaker just wants to know the pairing between each individual of the set (known to him) and the time when he was seen (also known to him). Thus in (6) the wh-phrase "kogo", which stays in situ, quantifies over the limited set of dates *known* to the speaker, while in (5), where this wh-phrase is fronted to the clause initial position, it ranges over the set which is not limited by the speaker's knowledge. Pesetsky calls wh-phrases in questions like (6) Discourse linked (or D-linked).

D-linking of wh-phrases, according to Pesetsky, means that the range of the felicitous answers to such questions is limited to the entities already introduced in the discourse. In this sense the D-linked wh-phrases are always more restricted, more limited in terms of possible answers than the non-D-linked ones. To sum up, the generalization concerning the placement of wh-phrases in multiple questions in Russian is the following: while D-linked and echo additional wh-phrases (other than the first wh-phrase, which is obligatorily fronted) have the option of either staying in situ or being fronted, the regular, non-D-linked ones must be fronted to the clause initial position.

In my analysis I will concentrate on the nature of multiple non-D-linked question derivation in Russian. It has been claimed that multiple wh-questions in Russian are derived by the scrambling of the additional wh-phrases to the beginning of the clause via IP adjunction. I will argue, however, that multiple questions in Russian are derived by several applications of the genuine wh-movement, and all wh-phrases in Russian multiple questions are at [Spec, CP].

2. The Problem of Multiple Questions

The very existence of multiple questions like (5) poses a structural problem. Assuming the syntactic structure of the sentence proposed by Chomsky (1981) and the fact that the landing site for all wh-phrases is [Spec, CP] across all languages, multiple questions like (5) seem to demonstrate that there is more than one slot for wh-phrases in [Spec, CP]. This however contradicts the COMP Substitution Universal Hypothesis (Bresnan 1970), Baker's Q-morpheme hypothesis (Baker, 1970), and the Doubly Filled Comp Filter (Chomsky and Lasnik 1977), which, in effect, all state that there is only one position available for wh-phrase in the beginning of the clause, in [Spec, CP].

How then can the existence of questions like (5) be reconciled with the above restrictions? The possible solutions to this problem can be basically divided into two groups:
1. Those that claim that wh-phrases in languages with multiple wh-fronting are moved by rules other than the genuine wh-movement, to a position which is not [Spec, CP].
2. Those that attribute the difference between the question systems of English and languages with multiple wh-fronting to the difference in the parameter related to phrase structure rules,

I will argue that the correct analysis is a solution of Type 2, so that the appearance of more than one wh-phrase in [Spec, CP] is possible.

3. The First Approach to the Problem of Multiple Questions

We will first look at some Type 1 solutions to the problem. Wachowicz (1974) explores the possibility of moving the second wh-phrase in multiple questions by some rule different from the genuine wh-movement. She proposes that the Pronoun Rule, which moves pronouns optionally to the preverbal position in Polish and Russian, is the rule responsible for the fronting of the additional wh-phrases in multiple questions. (7)-(8) show how the Pronoun Rule operates in a regular declarative sentence

(7) Maria videla Ivana.

Mary saw John.

(8) Maria ego videla.

Maria him saw

Maria saw him.

However there are several arguments against the Pronoun Rule analysis of multiple questions in Russian. First and most importantly, the Pronoun Rule takes the pronoun only to the preverbal position.. (9)-(10) illustrate how the Pronoun Rule operates in a multiple question. (10), where both multiple wh-fronting and the Pronoun Rule apply, shows the difference between the two. Both wh-phrases must move to the beginning of the clause, whereas the Pronoun Rule takes the pronoun "ih" only to the preverbal position.

(9) Komu kogda Ivan razoslal priglashenia?

who-dat. when John sent the invitations

Who did John send the invitation when?

(10) Komu kogda Ivan ih razoslal?

who-dat. when John them sent

Who did John send them when?

Another objection to analyzing multiple questions as resulting from Pronoun Rule is the following: if Pronoun Rule of this type results in multiple wh-movement, we would expect multiple wh-phrases to move wherever we get the Pronoun Rule. However, Spanish, another language where the Pronoun Rule moving pronouns to the preverbal position operates, does not allow both wh-phrases to move to the clause initial position in multiple questions.

Kuno and Robinson (1972) propose that constraints on possible word orders in languages account for multiple wh-fronting. In other words, application of multiple wh-fronting results from wh-words being moved in accordance with general word order constraints. According to Kuno and Robinson (1972), the fact that the declarative order illustrated in (11) is possible in Russian serves as an indication that we can form questions like (12) in this language:

(11) Maria knigu kupila.

Mary book bought

Mary bought a book.

(12) Kto cto kupil?

who what bought

Who bought what?

However, this approach of generalizing from declaratives to interrogatives fails even at the descriptive level. The force of this approach is that it is supposed to be cross linguistic constraint rather than language particular principle. However, as can be seen from (13)-(14), Finnish allows SOV order in declarative sentences, but in multiple questions it is unacceptable.

(13) Herbert teddy-karhum antol.   Finnish

     herbert teddy-bear   gave

     Herbert gave the teddy bear.

(14) * Kuka mitakin antol?   Finnish

     who what gave

     Who gave what?

Finally, Zabrocki (1980), Toman (1981), and Lasnik and Saito (1984) analyze multiple questions in Russian as resulting from scrambling, which rearranges constituents in this language. This approach is an updated version of Kuno and Robinson's analysis. This most popular, so called "scrambling analysis" is adopted in Comorovski's (1989) account of multiple questions in Russian, which she contrasts with multiple questions in Romanian.

There has been a traditional assumption in linguistics that Russian is a free word order language, since any order of the main constituents is grammatical, and the grammatical functions of nouns are unambiguously marked by the morphological inflections. Because of this freedom of word order Russian used to be considered a non-configurational language. This assumption has been argued against by Pesetsky (1982), and more recently by King (1995), who claim that Russian is a language where the relative freedom of constituent order is a very superficial phenomenon resulting from scrambling at post S-structure level.

Pesetsky (1982) argues that at some level of representation Russian is configurationally well articulated, just like English. As King (1995) points out, there exists a basic underlying configurational order, which can be altered for the purposes of encoding given/new information. Thus the freedom of word order that results from scrambling of the constituents is different from the non-configurationality, and Russian shows the former but not the latter.

Let's come back to the question of multiple question derivation in Russian. Syntactically, under the scrambling analysis of Russian multiple questions, multiple fronting of

wh-phrases is viewed as multiple adjunction to IP, as can be seen in the structure (15), suggested by Lasnik and Saito (1984) for languages like Russian.

As (15) shows, the scrambling analysis assumes there is wh-movement of the first wh-phrase and scrambling of the additional wh-phrases to the front of their clause of origin. In this case, the position of the additional wh-phrases is IP-internal; that is, they adjoin to IP.

(15)
```
        CP
       /  \
   spec     C'
    |       / \
   wh    comp  IP
              / \
            wh   IP
```
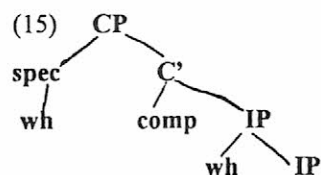
4. Scrambling and WH-movement

In this section I will examine and compare the phenomenon of scrambling with the wh-movement and I will show that scrambling is completely different in its nature and function from the formation of multiple questions in Russian, so the scrambling account of multiple questions in Russian cannot be right. I argue that what accounts for the difference between the question systems of the languages like Russian and English is the difference in terms of the ability to adjoin to CP. Russian allows multiple CP adjunction and all wh-phrases are moved to [Spec CP]in this language, while English does not allow multiple CP adjunction.

I will show that this view of multiple question formation in Russian should be preferred for two kinds of reasons. First I will present the data in Russian that does not conform to the characteristics associated with the constructions resulting from scrambling. However, assuming multiple CP adjunction in Russian accounts for this data. The second objection to the scrambling analysis has to do with the apparent lack of elegance involved in this solution to the problem of multiple wh-fronting.

So what are the differences between scrambling and wh-movement and which characteristics do multiple questions in Russian display?

I. As I pointed out earlier, scrambling encodes the discourse functions of the constituents, and is affected by pragmatic considerations, such as new/given information distinction

(16) Ya uvidela malchika.   Russian

    I   saw   a boy

    Malcik   voshol v komnatu.

    the boy (given) entered into a room (new)

(17) Ya sidela v komnate.   Russian

    I   sat   in a room.

    V komnatu   voshol malcik.

    into the room (given) entered a boy (new)

Wh-movement is a syntactic operation. Failing   to do it results in ungrammaticality. In contrast, failing to do scrambling can result in infelicitous context, but not in ungrammaticality. Both (16) and (17) taken separately, are judged as grammatical and must occur in a piece of discourse in order for us to judge whether they are used felicitously. However, as I showed earlier, the fronting of the regular, nonecho, non D-linked wh-phrases is obligatory, since the questions where they do not move are judged as ungrammatical.

    Moreover, if scramblings were responsible for the formation of multiple questions in Russian, we would expect D-linked wh-phrases to always move to the clause initial position. The reason for this is that scrambling places constituents that are already referred to in the discourse sentence-initially. However, the fact that Discourse linked wh-phrases can stay in situ instead of being fronted is exactly the opposite from what the principles governing scrambling would predict.

    II. As King (1995) points out, scrambling is clause bounded, more specifically IP-internal, (as can be seen from example (18)), while wh-movement is not   clause bounded (examples 19-20)

(18)*Annu   ia slishal $_{CP}$[cto ti videl t].

    Anna-acc. I heard   that you saw

    I heard that you saw Anna.

(19) Kogo$_i$ s   kem$_j$ $_{IP}$[ona zhaleet $_{CP}$[cto ne poznakomila   t$_i$ t$_j$]]?

    who-acc with who-prep. she is sorry   that did not introduce-3 sing.fem.

    Who does she regret that she did not introduce to whom?

(20) Kakoe bludo$_i$ $_{IP}$[ti ne pomnish $_{CP}$[kto zakazal t$_i$]] ?

    which meal   you not remember who ordered

    Which meal don't you remember who ordered?

Furthermore, if the second wh-phrase was moved by scrambling, we would expect it to be possible to rearrange it with other scrambled constituents from the clause. However this is not possible, as (21) shows

(21)*$_{CP}$[Kogo$_i$ zhaleet s kem$_j$ $_{IP}$[ona [cto ne poznakomila t$_i$ t$_j$]]?

    whom regrets with who she that did not introduce

    Who does she regret that she did not introduce to whom?

The lack of interaction between scrambling and wh-movement in terms of landing sites demonstrated in (21), which contrasts with (19), is exactly what is predicted by assuming that wh-phrases in multiple questions are fronted by the genuine wh-movement, both wh-phrases landing up in [Spec, CP]. The ungrammaticality of (21) is accounted for by the fact that both wh-phrases land at [Spec, CP], while the scrambled constituent is not IP-internal as it should be.

III. Wh-movement applies between D-structure and S-structure. Scrambling, however, is a surface level phenomenon, which applies after S-structure. As Pesetsky (1982) points out, scrambled structures result from a radical mapping from S-structure onto surface structure and cannot interfere with wh-moved constituents. Thus (23) is derived by scrambling of the unmarked (22).

(22) Kto priglasil Annyu na vecherinku?

    who invited   Annya-acc. to a party

    Who invited Annya to a party?

(23) Kto Annyu priglasil na vecherinku?

    who Annya-acc. invited to a party

However, wh-movement has occurred already in (22), before this question serves as input to scrambling. In a way, (22)-(23) show that you can undo scrambling, but not wh-fronting. It would quite ad hoc to suppose that different wh-phrases in multiple questions are fronted at different levels of grammar.

IV. Another objection to the scrambling analysis of multiple wh-fronting in Russian is the apparent lack of elegance involved in this account. It would be a coincidence that an obligatory scrambling rule applies in wh-questions, which has the same effect as wh-movement. The weakness of the scrambling analysis is that it requires intraclausal fronting rule which creates S-structure sequences similar to those of wh-questions in COMP initial languages like English and has the same effect as binding a variable to a wh-operator in [Spec, CP].

V. Finally, if scrambling was indeed involved in multiple wh-question formation, we would expect that in languages where scrambling is available, it will operate to front multiple wh-phrases. So another objection to the scrambling analysis of multiple wh-fronting in Russian comes from the fact, pointed out to me by Fred Landman, that there are languages, like German and Dutch, which allow constituent scrambling, yet in which multiple wh-fronting is not possible.

To sum up, I have compared the characteristics of scrambling and wh-movement and have demonstrated that scrambling cannot be responsible for wh-fronting in multiple questions in Russian. If scrambling is not involved in the formation of multiple questions in Russian then what can explain the fact that in Russian but not in English all wh-phrases can be moved to the clause initial position?

5. The Second Approach to the Problem of Multiple Questions

Alternative account of multiple question formation, which I shall argue is correct, has to do with the difference in phrase structure rules in different languages. Adams (1984) suggests that languages can differ as to whether they allow functional categories to iterate. The ability to front wh-phrases in multiple questions, which characterizes languages like Romanian, Bulgarian, Polish, Russian can be accounted for by the fact that these languages allow multiple CP-adjunction. In this case the structure of multiple questions would be as in (24):

(24)
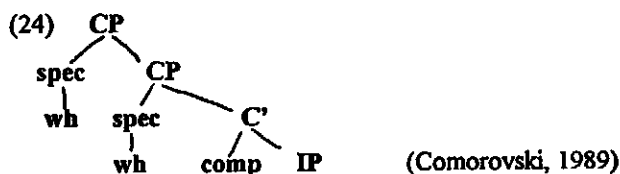
(Comorovski, 1989)

In structure (24), all wh-phrases are in spec CP; that is, they are IP external, in contrast to the scrambling analysis structure (15), where the additional wh-phrases are IP-internal. Comorovski's (1989) account of Romanian suggests that what explains multiple wh-fronting in this language is CP-adjunction. But it was argued by Comorovski, that Russian data is different and, therefore, the structure (24) is not appropriate for Russian. I will show that (24) holds for Russian as well.

If Russian multiple questions behave as if (24) is the right structure for Russian, we would expect wh-island constraint to be considerably weakened. If CP-adjunction is possible in Russian, it would create available IP-external positions for the additional wh-phrases in multiple questions. In that case a wh-phrase would not be blocked from moving through and leaving a trace in a Comp cluster that already contains another wh-phrase. As can be seen from (25)-(26) this prediction is indeed born out; the wh-island constraint loses its force in Russian.

(25) Kakoi tort$_i$ $_{IP}$[ti ne pomnish $_{CP}$[kto zakazal t$_i$]]?

which cake you not remember who ordered

Which cake don't you remember who ordered?

(26) b. Na kakich viborach$_i$ $_{IP}$[ti chochesh znat $_{CP}$[kak ia budu golosovat t$_i$]]?

on what elections   you want to know   how I will vote

On what elections do you want to know how I'll vote?

Notice that in (26) it's the adjunct wh-phrase that is moved out of the wh-complement. The ability to extract adjuncts from wh-islands in Russian contrasts with English, where the corresponding structures are not grammatical and indicates that the examples (25)-(26) are not similar to the cases of subjacency violations sometimes possible in English. In English subjacency can sometimes be violated, but this can happen only in case the extracted element is a complement and is therefore theta governed as in (27). Subjacency violations that involve adjunct extraction are always ungrammatical in English (28):

(27)??Which cake$_i$ don't you know who ordered t$_i$?

(28) * Where$_i$ do you remember who John saw t$_i$?

Clearly the grammaticality of the structures like (25)-(26) is accounted for by the COMP structures in (24), which allows several landing sites for the moved elements in the spec CP, due to multiple CP-adjunction.

Could it be that the absence of wh-island effects demonstrated earlier is due to the absence of the subjacency principle in Russian? (29) is an example of complex NP island violation. This example shows that the constraint of subjacency does hold in Russian.

(29) * CP[Kuda_i   IP[ti shlishal NP[spletniu   CP[cto pereveli   Michaila i Tanyu t_i]]].

CNPC

where to you heard the gossip that tranferred-3pl Michael and Tanya

Where did you hear the gossip that Michael and Tanya were transferred t ?

So far I have shown that the multiple CP adjunction hypothesis offers a better account of multiple questions in Russian than scrambling. Viewing multiple questions in Russian as resulting from several application of the genuine wh-movement makes better prediction with respect to Russian data than the scrambling analysis. Now I am going to examine the arguments used against the genuine wh-movement analysis of multiple questions in Russian and show that these arguments do not really hold for Russian data.

6. Classification of Languages With Multiple wh-fronting

Although there has been some research on specific multiple wh-fronting languages, not much has been said about the whole group in general. Rudin (1988) and Comorovski (1989) were the first ones who proposed to classify this group according to the derivation of multiple questions in each language. Romanian, Polish, Russian, Serbo-Croatian, Czech and Bulgarian have several characteristics in common. In each of them

a. more than one wh-phrase may undergo wh-movement in a single clause

b. there is no LF movement, like in English, since these languages, as Pesetsky puts it, "wear their LF on their sleeve".

However Rudin and Comorovski claimed that the group of these languages can be further subdivided according to several characteristics which set one subgroup of languages apart from the other.

Class 1. Romanian and Bulgarian

1. one or more wh-phrases can undergo long-distance movement

2. neither clitics nor parentheticals can intervene between the fronted wh-phrases

3. the order of the fronted wh-phrases is fixed

Class 2. Polish, Serbo-Croatian, Russian

1. multiple wh-phrases can not undergo long distance movement

2. clitics and parentheticals can intervene between the fronted phrases

3. the order of the fronted wh-phrases is completely free

Rudin (1988) and Comorovski (1989) take this difference in the characteristics of languages as the indication of the difference in the derivation of multiple questions. Thus, they claim, Class 1 languages allow genuine multiple wh-movement, while Class 2 languages allow wh-movement of only one wh-phrase but permit scrambling of the additional wh-phrases to the front of their clause of origin. Under this approach, languages of Class 2 have COMP structure as in (15), repeated below:

```
           CP
          /  \
      spec    C'
       |     /  \
       wh  comp  IP
               /  \
              wh   IP
```
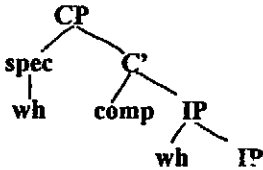
7. Russian in the Classification of Languages

We will now examine each of the characteristics that Rudin (1988) and Comorovski (1989) claim language like Russian have. According to Rudin and Comorovski, each of these properties presents a problem for the genuine wh-movement analysis of multiple questions in Russian. I will show that these generalizations either do not reflect correctly the Russian data, or even in case they do, they still can not be used as valid arguments against the genuine wh-movement analysis of multiple questions in Russian.

I .If it's not the genuine wh-movement but scrambling which is involved in the fronting of the additional wh-phrases in Russian multiple questions, we would not expect long distance wh-movement to be possible, since scrambling is

a) clause bound

b) there is no [Spec, CP] position available in syntax for such kind of extraction.

If the second wh-phrase was just scrambled to the beginning of the clause, as Rudin and Comorovski suggest, there would be no available landing site enabling the additional wh-

phrase to be fronted to the beginning of the matrix. However, as I have previously shown, multiple wh-phrase extraction is possible in Russian

(30) Kogo$_i$ gde$_j$ $_{IP}$[obviniaemii utverzdaet $_{CP}$[cto on naveshal t$_i$ t$_j$ v den ubiistva]]?

who-acc. where   the accused claims   that he visited   on the day of the

murder

Who does the accused claim that he visited where on the day of the murder?

(31) $_{SPEC\ CP}$ [Kogo$_i$ s   kem$_j$ $_{CP}$[ona zhaleet $_{CP}$[cto   ne poznakomila t$_i$ t$_j$]]]

whom to whom   she regrets   that (she) neg. introduced

Who does she regret that she did not introduce to whom?

The genuine wh-movement analysis can easily account for this data. Since multiple CP adjunction is allowed in Russian, both wh-phrases can move to [Spec, CP] of the embedded clause, and then to [Spec, CP] of the matrix.

II. Rudin and Comorovski point out that clitics and parentheticals can come between wh-phrases in Russian. From this, they conclude that wh-phrases do not form a complex constituent, and only one wh-phrase is in [Spec, CP], while the other is just adjoined to IP by scrambling. I will show that, although clitics and parentheticals can indeed come between wh-phrases in Russian, the constituency tests involving these elements are not be reliable, since, first, clitics in Russian are of a different sort than clitics discussed in other languages by Rudin (1988), and second, the position of clitics in Russian is not restricted to constituent edges.

(32)Kto zhe (imenno,vse taki, uz, bi) kuda X poshol?

who clitic   where   went

The clitics that were used in Rudin's comparative analysis were almost exclusively pronominal. Russian is the only Slavic language which does not have pronominal clitics, yet it has a whole range of non-pronominal clitics, which express the accomplished event, focus, specification or the attitude of the speaker (uz, vse taki, zhe, ni, imenno). It is also important to point out that this argument against the genuine wh-movement analysis of multiple questions does not hinge on the type of clitics or parentheticals used for the constituency diagnostic, since, according to this approach, the placement of any element- be it parenthetical or pronominal, or some other clitic, between wh-phrases constitutes an argument against multiple

wh-phrases forming a complex constituent, and thus against all wh-phrases being at [Spec, CP] at S-structure.

Clitics in Russian have a great freedom in terms of their possible positions in a sentence - they can appear practically anywhere, can even break up major constituents, as in (33)-(34), where the clitic breaks AP.

(33) Kakaya vse taki (zhe) krasivaya kartina visit na stene.

    what   clitic(s)   beautiful picture is hanging on the wall

    What a beautiful picture is hanging on the wall.

(34) Kakoi bi ustaloi ti ni bila, ti obiazana pomoch im.

    how   would tired you are you must help them

    No matter how tired you would be you must help them.

The function of these clitics is very similar to that of parentheticals. Both parentheticals and clitics in Russian add subtle nuances of meaning, more related to the pragmatic and the conversational principles than to the compositional semantics of the sentence. Thus (36), where the parenthetical is inserted between wh-phrases, is different in its meaning from (35), where a similar phrase serves as a matrix clause. In (35) the speaker is not asking about the fact who invited whom. What he is asking for is the listener's perception of reality. In contrast, in (36) the semantics of "you think" is not crucial, intrinsic part of the meaning of the whole sentence. . What the speaker is interested in is not the listener's subjective opinion or his mental perception of the events, but the reality itself. While in (35) the matrix is the integral part of the semantics of the whole sentence, in (36) the same sentence presented as a parenthetical functions as some additional information, the deletion of which does not change the meaning of the sentence. In this sense (36) is almost the exact paraphrase of (37)

(35) Kogo kuda vi dumali cto on priglasil?

    who where-to you thought he invited

    Who did you think he invited where?

(36) Kogo, ti dumaesh, kuda on priglasil?

    who you think where he invited

    Who, you think, did he invite where?

(37) Kogo kuda on priglasil?

    who where he invited

    Who did he invite where?

       I propose that both clitics and parentheticals are added to the sentence not at S-structure, but at a later, surface level, what McCawley (1987) calls "the stylistic level", since it contains the stylistic pragmatic component. Furthermore, the addition of these elements does not change the constituent structure of the sentence (McCawley calls the resulting structure "the discontinuous constituency").

       All these facts cast serious doubt on the ability to use parentheticals and clitic placement patterns as a diagnostic for the derivation of multiple questions in Russian. In other words, contrary to the claims made in previous analyses of languages like Russian, it can not be determined on the basis of clitics and parentheticals positions in multiple questions whether the additional wh-phrases are fronted by the genuine wh-movement or by some other mechanism, such as scrambling.

       III. Finally, the third characteristic that, according to Rudin's and Comorovski's classification, sets Russian apart from Class 1 languages is the absence of any restrictions on the order of the fronted multiple wh-phrases. In Rudin's analysis, the non-fixed order of wh-phrases is taken as an indication of scrambling being involved in the formation of multiple questions in Russian. Indeed if scrambling is responsible for fronting of wh-phrases in Russian, we would expect the order of multiple wh-phrases to vary with the pragmatic force of the questions asked without causing the difference in the acceptability of the resulting structures. However, the situation in Russian is quite different, as we see in the contrasts in (38)-(40):

(38) a.Kto kogo   uznal?

    who who-acc. recognized

    Who recognized whom?

  b. */? Kogo kto uznal?

    who-acc. and who made laugh

    Who did who recognize?

(39) a.Komu pro kogo rasskazali?

    who-dat about who told-3pl.

    Who did they tell about whom?

  b.*/? Pro kogo komu rasskazali?

    about whom who told-3pl.

    About who did they tell who?

(40) a. Kto kuda poshol?

    who where went

    Who went where?

  b. */?Kuda kto poshol?

    where who went

  Where did who go?

As (38)-(40) show, the order of wh-phrases in multiple questions is restricted in Russian, in the same way as it is restricted in Class 1 languages. The basic order of wh-phrases in Russian is restricted by the fine grained, case affected hierarchy (41):

(41) subject (nominative)>object-dative>object-accusative>object instrumental> object - prepositional> adverb

The only thing that can save (38b)-(40b), where hierarchy (41) is violated, is D-linking of the first wh-phrase:

(42)Kakogo artista kto uznal?

which actor-acc. who recognized

Who recognized which actor?

(43) Pro kakogo studenta komu rasskazali?

  about which student who-dat told-3pl.

  About which student did they tell who?

Why does D-linking save otherwise unacceptable questions (38b)-(40b)? Comorovski (1989) offers a semantic account for the D-linking effects in multiple wh-fronting languages, based on the requirement for the exhaustive pairing of the members over which the first wh-phrase quantifies. However what interests us here is the following question: why did Rudin and

Comorovski claim that the order of wh-phrases is free in Russian and why are (38b)-(40b) not completely ungrammatical?

I suggest that what triggered Rudin's conclusion about the non-fixed order of multiple questions in Russian is the fact that in Russian there is no lexical distinction between D-linked and non D-linked wh-words, unlike in Romanian, where there exist two sets of wh-word, D-linked ones, such as "care" and non-D-linked ones, such as "ce". D-linking in Russian is determined on the basis of the context in which multiple questions occur. This is consistent with the fact that D-linking is not necessarily an inherent semantic feature. The context of utterance can force a D-linked reading on wh-phrases not inherently D-linked. Since Russian wh-words have the option of being interpreted as either D-linked or non D-linked depending on the context, it is the context that disambiguates them, thus making the multiple question where they occur either completely grammatical, as in (44) or completely ungrammatical as in (45).

(44) Today there were parties at Anna's, Mary's and John's.

    Kuda kto poshol?

    where who went

  Where did who go?

(45) I have no idea where my friends have disappeared.

  *Kuda kto poshol?

    where who went

Where did who go?

8. Summary

To sum up, in this paper I have examined the arguments for and against both scrambling and the genuine wh-movement analysis of multiple questions in Russian. First I compared the phenomenon of scrambling with wh-movement and showed that scrambling is completely different in its nature and function from wh-movement, and cannot be responsible for the formation of multiple wh-questions in Russian. I demonstrated that wh-movement and scrambling have different characteristics, obey different constraints and the structures resulting from them behave differently.

Then I examined each of the arguments used against the genuine wh-movement analysis and showed that these arguments do not work for Russian. I looked at wh-extraction facts in Russian. I showed that the scrambling analysis can not account for multiple wh-extraction out of embedded clauses. Since scrambling is clause bounded phenomenon, it can not be responsible for such extraction. However, assuming that Russian allows multiple CP-adjunction and genuine wh-movement of all wh-phrases, we can easily explain the availability of the constructions that involve long-distance movement of several wh-phrases.

Then I examined another argument in favour of the scrambling analysis of multiple questions, namely the placement of parentheticals and clitics in Russian. The scrambling analysis takes the possibility to insert such elements as parentheticals and clitics between wh-phrases as the indication that multiple wh-phrases do not form one complex constituent. I have shown, however, that constituency tests involving parentheticals and clitics can not be relied upon, and therefore their placement between multiple wh-phrases can not be used as the definitive evidence for the scrambling of the additional wh-phrases.

Finally I examined closely wh-order patterns in Russian. The claim that the order of wh-phrases is not constrained by anything is one of the arguments used by Rudin (1988) in favor of the scrambling analysis of multiple questions. However, I demonstrated that the order of wh-phrases in Russian is constrained by the fine grained thematic hierarchy, affected by case. The fact that wh-order is not free in Russian poses a problem for the scrambling analysis of multiple questions in Russian.

I have shown that languages from Class 2 involve the same operation in multiple question formation as languages from Class 1. The position that I take here, namely, attributing the derivation of multiple questions to only one operation, that of genuine wh-movement, has desirable consequences for the theory of grammar. In this case, questions in all languages are derived by the same operation - genuine wh-movement, that applies at different levels, depending on the language. Thus, wh-movement applies at LF in Chinese, at S-structure and LF in English, and at S-structure in Russian.

language	single question	multiple question (the additional wh-phrase)
Japanese	movement at LF	movement at LF
English	movement at S-structure	movement at LF
Russian	movement at S-structure	movement at S-structure

References

Adams, Marianne. "Multiple Interrogation in Italian." The Linguistic Review 4 (1984): 1-27

Baker, Carl. "Notes on the Description of English Question: The Role of an Abstract Question Morpheme." Foundations of Language 6 (1970): 197-219

Bresnan, Joan. "On Complementizes:Towards a Syntactic Theory of Complement Types." Foundations of Language 6 (1970): 297-321

Chomsky, Noam. Lectures on Government and Binding. Dordrecht: Foris, 1981

Comorovski, Ileana. Discourse and the Syntax of Multiple Constituent Questions. Doctoral dissertation, Cornell University, 1989

Huang, C.T.J. "Move WH in a language without WH Movement." The Linguistic Review 1 (1982): 369-416

King, Tracy Holloway. Configuring Topic and Focus in Russian. Stanford: CSLI Publications, 1995

Kuno, Susumo and Robinson, Jane. "Multiple WH-questions." Linguistic Inquiry 4 (1972): 463-486

Lasnik, Howard and Saito, Mamoru. "On the Nature of Proper Government." Linguistic Inquiry 15 (1984): 235-289

Lasnik, Howard and Saito, Mamoru. Move α: Conditions on Its Application and Output. Cambridge: The MIT Press, 1992

McCawley, James. "Some Additional Evidence for Discontinuity." Syntax and Semantics: Discontinuous Constituency. Ed. Geoffrey Huch and Almerindo Ojeda. Orlando: Academic Press, 1987: 185-200

Pesetsky, David. Paths and Categories. Doctoral dissertation. MIT, 1982

Pesetsky, David. "WH in Situ: Movement and Unselective Binding." The Representation of (In)definiteness. Ed. Eric Reuland and Alice Ter Meulen. Cambridge: The MIT Press, 1987: 98-127

Rudin, Catherine. " On Multiple Questions and Multiple WH-Fronting." Natural Languages and Linguistic Theory 6 (1988): 445-501

Toman, Jindrich. "Aspects of Multiple WH-movement In Polish and Czech." Levels of Syntactic Representation. Ed. Robert May. Dordrecht: Foris, 1981: 293-302

Wachowicz, Krystyna. "Against the Universality of a Single WH-question Movement." Foundations of Language 11 (1974): 155-166

Zabrocki, Tadeusz. "On the Nature of Movement Rules in English and Polish." Contrastive Linguistics: Prospects and Problems. Ed. Jacek Fisiak. Berlin: Mouton Publishers, 1980: 431-444

Judgement structure, Focus, and the Interpretation of Indefinites

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0. Abstract

In this article I show that judgement structure is a crucial factor in the interpretation of German utterances. The judgement structure of an utterance drives the *interpretation of indefinites* (generic vs. weak existential reading) on one hand, and is made visible by the *focus structure of the sentence*, on the other hand. Whereas we have few distinctive criteria in order to test the judgement structure of a sentence abstractly, intonation patterns and the interpretation of indefinites are explicit phonological and semantic features of the utterance. The first part of the paper will be devoted to show the correlation between these two features. In the second part, I will argue that judgement structure is the driving factor behind both, focus structure and interpretation of indefinites, and will then relate the emerging picture to the syntax based theory of Diesing and Kratzer.

It will be essential for the overall picture to distinguish judgement focus (F1) from semantic focus (F2) in the sense of Rooth[85]. I will finally show that the accents of judgement focus are the "sentence accents" of previous accounts of the intonation patterns for (German) sentences.

1. Intonation and Indefinites

1.1. Two kinds of focus

It is wellknown that indefinite NPs can be understood in two ways: either as asserting the existence of a certain object (weak existential reading) or as making a statement about the typical indiviual of a certain kind. Thus, sentence (1) can be understood either as (1a) or (1b):

(1)   Ein Eisbär lebt am Nordpol.
(1a)   There is a polar bear living at the north pole.
(1b)   Polar bears typically live at the north pole[1].

It has also been observed that the intonation pattern in which sentence (1) is actually uttered can be used to decide whether the speaker had reading (1a) or (1b) in mind. The intonation patterns coresponding to reading (1a) and (1b) are given under (2a) and (2b) respectively, where accents are indicated by capital letters:

(2a)   Ein EISBÄR lebt am Nordpol.
(2b)   Ein Eisbär lebt am NORDPOL.

This correspondence has often been noted (see for instance Krifka[91], Diesing[92], Chierchia[92]) and seems to indicate that the interpretation of indefinite NPs is driven by the focus structure of a sentence, which in turn is expressed by certain (wellstudied) accent patterns. To be precise, we might formulate the following general rule:

(A)   The interpretation of indefinites is driven by focus structure.
        An indefinite NP is interpreted existentally iff it is in focus.

This generalization is in line with examples (2a) and (2b). However, it turns out to be wrong.

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[1]There is a third reading, namely the partitive one: "One of the polar bears is living at the north pole", where a certain set of polar bears has to be prementioned in the discourse. This reading is evoked by a stress on the determiner "ein". I count "ein" under this reading as a "strong quantifier" which patterns with "jeder" (each), "die meisten" (most) etc. I will not consider these quantifiers in the following; but see section 2.

It is easily possible to construct counterexamples on the basis that other factors force certain parts of the sentence to be in focus. In each of the following examples, we either find an indefinite NP which is existential outside focus, or which is generic inside focus. The foci in (3) are evoked by the focus sensitive element "sogar" (even). Those in (4) are motivated by the preceding questions, and those in (5) mark a contrast with a preceding utterance.

(3a)   Sogar [ARNIM]F hat einen Mercedes.
        Even   Arnim   owns a Mercedes
(3b)   Sogar [EISBÄREN]F leben am Nordpol.
        Even (the species of) polar bears live at the north pole.
(4a)   Wer hat eine Zwiebel mitgebracht? - [OTTO]F hat eine Zwiebel mitgebracht.
        Who brought an onion? - Otto brought an onion.
(4b)   Wer frißt Eukalyptusblätter? - [EIN KOALABÄR]F frißt Eukalyptusblätter.
        Who (=which kind of animal) eats eucalyptus? - A koala bear eats eucalyptus.
(5a)   Jon hat eine Zwiebel gebracht. - Nein, falsch: [OTTO]F hat eine Zwiebel gebracht.
        Jon brought an onion. - No, wrong: Otto brought an onion.
(5b)   Ein Braubär frißt Eukalyptus. - Nein, falsch: [Ein KOALABÄR]F frißt
        Eukalyptus.
        A brown bear eats eucalyptus. - No, wrong: A koala bear eats eucalyptus.

(3a), for instance, does not make a claim about the typical Mercedes, stating that it is owned by Arnim, but asserts that Arnim owns one single Mercedes. Therefore generalization (A) can't be maintained as it stands.

However, the foci in examples (3) - (5) are of a different kind than those in (2). While examples like (3) and (4) have fruitfully been treated within recent theories of semantic focus in interaction with focus sensitive elements (see Rooth[85], [92], Krifka[92]) and foci like in (5) are usually labelled as "contrastive foci", the phenomenon in (2) is not simply captured by alluding to the traditional semantic notion of focus.

First note that we observe no effect of narrow foci with respect to the availability of existential or generic readings. This is shown in example (6):

(6)   Ein [ERWACHSENES]F Schwein wird geschlachtet
       An [adult]F pig gets/is getting slaughtered.

The narrow focus on the adjective can only be understood as contrastive, or question-answer focus and allows either reading: "There is an accidental slaughtering of an adult pig going on". Or: "What happens to typical adult pigs is, that they get slaughtered". Thus, narrow foci do not determine the interpretation of indefinites. If we assume that ordinary semantic focus drives the interpretation of indefinites in the way indicated in (A) we can not account for this observation.

Second, we could claim that the effects under (2) arise because the focus associates with a tacid adverbial GEN quantifier, as suggested by Krifka[91]. However, the following example shows that an explicit focus can associate with an adverbial quantifier in addition to the determination of the reading of an indefinite NP. Imagine the following situation: You have moved next to a kindergarden and there are always children making a noise. They are arguing, they are laughing, they are screaming - but on the phone you tell your friend:

(7)   Meistens HEULT ein Kind.
       = "Most of the time there is a child CRYING."
(7a)   MOST t (a child makes some kind of noise at t ; a child cries at t)

An analysis of quantification associating with focus will predict that

- the unfocussed part of the sentence is interpreted as the domain of quantification
- the focussed part as the scope
- indefinites are unselectively bound by the adverbial quantifier

This will lead to a representation which says that most children cry most of the time, or possibly that all children cry most of the time. However, (7) can be true where only one or two of a large group of children cry all the time. This shows that the indefinite NP "ein Kind" is interpreted existentially although it is not in focus. The explicit (semantic) focus only associates with "most", yielding the correct domain of quantification. This proves that the interpretation of indefinite NPs is not a simple matter of focus associating with adverbial quantifiers.

Thirdly, the intonation patterns in (2) match with accents which do not involve any quantification:

(8a)   Stefan war in HEIDELBERG.
        = Stefan was in Heidelberg
(8b)   STEFAN war in Heidelberg.
        = Stefan was in Heidelberg

The different intonation patterns in (8a) and (8b) involve meaning differences beyond the level of fine grainedness defined by truth value semantics. In special, they have nothing to do with the presence of any genericity operator. No quantification is involved in (8). One aim of the paper is, to demonstrate that viewing example (2) as similar to (8) instead of claiming it to be a simple case of "focus in association with adverbial quantification" leads to a coherent and fruitful picture.

Looking at (8), one might suggest that the respective foci have to do with "discourse topic". Discourse topic is loosely considered to be that parameter which determines what is under debate at the moment. It is assumed that discourse topic can be spelled out by a question (see von Fintel[9.²], Büring[94]). Thus, the accents in (2) would be ordinary semantic focus accents which are licensed by the question explicating the topic. Let me exemplify this assumption for sentences (2a) and (2b).

(9a)   [Ein EISBÄR lebt am Nordpol]$_F$
        = wide focus; answering to the topic question: "what is the matter?", "what's happening?"
(9b)   Ein Eisbär [lebt am NORDPOL]$_F$
        = narrow focus; answering to the topic question: "which ones of a variety of properties does a typical polar bear have?".

However, we have seen above that questions can licence any focus, independent of the interpretation of indefinités in the sentence. For instance, the focus in (9b) could all the same be licenced by the question: "At what place does a/some polar bear live?". In that case, the topic question would lead to an existential interpretation of "ein Eisbaer". However, our observation was that the intonation patterns in (2) *determine* the interpretation of the subject. If we claim that the foci in (2) simply answer the discourse topic, we will have to explain why the "contextually least marked questions" that come to mind, or the "most normal discourse topics" for (2a) and (2b) are those given in (9a) and (9b), and not the topic questions which allow the opposite interpretations of the indefinite subjects.

The four observations above show that the intonation patterns in (2) and (8) can't straightforwardly be analyzed as some kind of association with focus. I suggest to draw a principal distinction between two kinds of foci: F1 focus on one hand, driving the interpretation of indefinite NPs, and F2 focus on the other hand, which I take to cover both semantic and contrastive foci. The following four assumptions characterize the interaction between F1 and F2:

(H1)   There are two different abstract focus features, F1 and F2. Both can be realized by an accent; but they need not always be.

(H2)   Where both F1 and F2 are present in a sentence, the accent of F2 "wins over" the accent of F1: The audible accent is an F2 accent. F1 is not realized by accent. **(Hierarchy hypothesis)**

(H3)   Both F1 and F2 follow the same "focus projection rules". (This means that the relation between accents and F1 domains can be tested empirically by looking at F2 domains) **(Uniformity Hypothesis)**

(H4)   An indefinite NP is interpreted existentially if and only if it is in F1 focus. **(Existential focus hypothesis)**

(H4) is the most crucial assumption in view of example (1). Hypotheses (H1) to (H3) set the overall perspective. The next sections will be devoted to exemplify, refine and test (H1) to (H4) by looking at simpler and more complex examples - examples in German, where word order and accent pattern conspire in order to establish certain readings of indefinite NPs.

1.2. Examples

Before looking at the examples, let me repeat some facts about focus projection in German. German is an SOV language where this word order shows up in subordinate clauses. The SVO order of the main sentence is assumed to be derived by fronting verb and subject. This movement of the subject is neutral with respect to focus projection[2].

Generally, however, movement does have influence on focus projection, as has been demonstrated by Höhle[82]. German has free word order. Not all word orders are equal with respect to focus projection, though. Höhle shows that there is a "normal word order" for each sentence, which is characterized by the fact that this order allows accents in the proper positions to signal sentence wide foci. Höhle's test for focus consists in using question-answer pairs, such that in fact, he tests F2 foci in the terminology of section 1.1. Due to the Uniformity Hypothesis we can transfer his results to our examples. All non-normal word orders have the effect that single accents will reflect narrower focus domains.

It will turn out that <u>F1 always has to dominate the verb</u>. This empirical finding will get a conceptual interpretation in section 2. Apart from that, we can live on the rough rule that, as long as no scrambled NPs intervene the accent lands on the rightmost NP in focus next to the verbal complex; if no nominal argument is in focus, focus gets realized on the verbal complex. The verbal complex comprises finite and infinite verbs and possibly modifiers. I will say nothing about accent realization in the verbal complex.

This is more or less a variant of the nuclear stress rule (Chomsky&Halle[68]). It will turn out, though, that broad foci are also possible in scrambled sentences, an observation which is rarely discussed or explained in the literature. In section 1.3. we will discuss examples where scrambling interfers with focus projection, however on a purely empirical basis.

In Eckardt[96] I attempt to give a more explicit set of focus projection rules which confirm with the data under discussion, both in the scrambled and nonscrambled case. These rules are mainly inspired by the literature, for example Gussenhoven [83], Cinque[93], Uhmann[91] or Rosengren[93].

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[2]To be precise, I will use a top-down picture of focus projection: Focus is seen as an abstract feature in the syntactic structure which gets realized by "sending down" one or several accents, down to the lexical level to the appropriate positions. For the sake of brevity, I will use the term "focus projection" to refer to the rules that guide the relation between focus feature and accent(s), although this term is normally part of a "bottom up" theory. Both perspectives should be intertranslatable in the end.

We will proceed as follows in the discussion of examples: First, we will give the sentence without any accents. Next, we will list those intonation patterns which can be understood non-contrastively and not having to be licensed by an explicit question. These are the F1 patterns, while contrastive and question-answer foci are F2 patterns which reveal the original F1 structure.

We will give intonation patterns with the respective focus structures that are predicted for these accents by the literature. (In cases of doubt, we will do a short cross check with F2 focus, tested by questions.) Thirdly, we will check whether the sentences, in the focus structures indicated, have the readings predicted by (H4). Finally, we check whether the sentences have any unpredicted additional readings (not involving contrasitve focus).

The simplest kind of example are sentences with intransitive verbs. Sentence (10) can be uttered as in (11) and (12).

(10)   (weil) eine Katze miaut. (= (because) a cat meow/is meowing)
(11)   (weil) [eine KATZE miaut]F1
(12)   (weil) eine Katze [MIAUT]F1.

An accent pattern like in (12) is known to correspond to a narrow focus on the verb alone. The subject is outside F1. Therefore, it should be interpreted generically, according to (H4). And indeed, (12) has the meaning "the typical cat meows", and this is the only noncontrastive meaning.

The accent in (11) corresponds to sentencewide F1 focus. Therefore, (11) should have the reading "there is some cat meowing" - which it has indeed. If we force ourselves to understand the subject NP "eine Katze" generically in (11), then we will automatically understand the accent as contrastive accent.

According to the literature on focus projection, the accent in (11) could of course also reflect narrow focus on the subject NP alone. However, we will see later that F1 focus always has to cover the verb - which a very narrow focus in (11) would not do. Therefore the F1 structure of (11) is unambiguous.

Sentences with transitive verbs are not as unambiguous as sentence (10). Look at example (13), which allows the noncontrastive intonation patterns in (14) and (15):

(13)   (weil) eine Katze Mäuse frißt. (= a cat eats/is eating mice)
(14a)   (weil) [eine Katze MÄUSE frißt]F1
(14b)   (weil) eine Katze [MÄUSE frißt]F1
(15)   (weil) eine Katze Mäuse [FRISST]F1.

The intonation pattern in (14) is in known to reflect either one of two focus structures in (14a) and (14b). Thus, we expect two readings. This is the case: (14) can mean "there is a cat eating mice", corresponding to (14a). (14) moreover has a reading with generic subject NP: "A typical cat eats mice". This corresponds to (14b).

The pattern in (15) is unambiguously due to narrow focus on the verb. This means that both, subject and object NP are outside F1. The data match this prediction: (15) has a (somewhat odd) double generic reading: "What typical cats do about typical mice is: eat them".

Any other reading of (14) and (15) will automatically force us to understand the accents as contrastive accents, which proves that we have exhausted the range of readings that are possible with these F1 accents.

We can discuss what happens if the word order in (13) is disturbed, as in (16):

(16)   (weil) eine Maus(acc) eine Katze(nom) frißt.
        (= "(because) a mouse(obj) a cat(subj) eats/ is eating")

(17)   (weil) eine Maus [eine KATZE frißt]F1.
(18)   (weil) eine Maus eine Katze [FRISST]F1

The word order in (16) is non-normal. Therefore the accent pattern in (17) can only reflect narrow F1 focus on "eine Katze frißt". This corresponds to the observation that (17) means that the typical mouse dies by getting eaten by a cat.
Sentence (18) is a somewhat odd variant of sentence (15): It exhibits narrow F1 focus, and means that the typical action for a cat to take about a mouse is: to eat it. The reasons why (18) is odd might be of the following kind: German uses scrambling mainly in order to get the proper elements outside a focus (like in example (17)), or to make sure that an accent is unambiguously understood as narrow focus (which is often the reason to front something different from the subject NP in main clauses). However, no such effects arise in (18): If we want to get narrow focus on the verb alone, the more normal sentence (15) will be perfect. Only if we get full understanding of the factors that drive scrambling in German, we might be able to construct situations where (18) is the best way to say things.

Sentences with ditransitive verbs confirm the picture drawn so far. They give rise to accent patterns which are even more ambiguous than (14), and the corresponding readings where not only one, but even two or three arguments of the verb must be understood generic. They also allow for more scrambling, which will be discussed below.
Let us finally look at examples which involve manner adverbs. An overview over the data involved suggests that the normal word order for transitive sentences which contain an adverb of manner is this:

Subject   Adverb of Manner   (Object 1)   (Object 2)   Verbal complex

Only in this order we find that one accent (on the rightmost object) can reflect sentencewide focus. If we look at other positions of the adverb of manner, we find that the sentence either gets ungrammatical (Adv Sj Obj Verb), or that single accents can only reflect narrow foci (Sj Obj Adv Verb). An example is given in (19).

(19)   (weil) ein Hund aufgeregt einen KNOCHEN vergräbt.
          (because) a dog excitedly a bone buries
(19a)   (weil) [ein Hund aufgeregt einen KNOCHEN vergräbt]F1.
          A dog is excitedly burying a bone.
(19b)   (weil) ein Hund [aufgeregt einen KNOCHEN vergräbt]F1.
          A dog (generic) excitedly buries a bone.

(19a) and (19b) give the two possible readings of (19).

Already example (6) in the introduction has shown that F1 has to dominate the verb. Let me demonstrate the same point with a further example: Sentence (20) can only be understood to involve a narrow *contrastive* focus on the object NP: If this narrow focus was a possible *F1* focus, we would expect to get a non-contrastive reading which is equivalent to (19b). However, (20) needs a contrast and then allows *any* reading - depending on the sentence it contrasts with.

(20)   (weil) ein Hund [einen KNOCHEN]F? aufgeregt vergäbt.
          (bec.) a dog   a bone   excitedly   buries

The examples we have seen so far all confirmed the central hypothesis (H4). The most distinguished sentences were those with intransitive verbs. Transitive verbs give rise to more ambiguous accent patterns, apart from accents on the verb alone, where the corresponding readings were somewhat odd, maybe.

In order to conform the observation that intonation and the interpretation of indefinites are closely connected I want to discuss a further type of example in the next section, namely sentences with scrambled word order but wide F1 focus.

1.3. More examples

Theories of "sentence accent" or "focus projection" usually look only at sentences in normal word order (if there is anything to chose). The underlying assumption seems to be that sentences in derived word order simply are never used in contexts where they should have broader foci than what can be done with a single accent. This, however, is not true. (A more innocent view on the data can be found in Gussenhoven[83]).
Sentences in non-normal word order can carry broad foci. These foci simply need more than one accent to get expressed. Look at the examples in (21) and (22):

(21) (weil) [ein Hund einen KNOCHEN AUFGEREGT VERBUDDELT]F1
    (bec.) a dog   a bone   excitedly   buries
(22) (weil) [ein Politiker eine ROSE(acc) einer MARKTFRAU(dat) geschenkt hat]F1
    (bec.) a politician a rose to-a market woman given has
    = A politician gave a rose to a market woman

Each of the examples is in non-normal word order. In (21), the adverb is too far right, and in (22) the order of objects is "the wrong way round". Nevertheless both sentences can be understood with broad F1 focus as indicated: Both sentences have a reading where all indefinites are understood existentially, *but* they *only* have this reading *in the intonation pattern indicated*. The first thing to be said about these examples is, that they show that intonation helps to determine the readings of indefinite NPs. However, are these accent patterns still focus accents?

This question can be answered positively if we find cases of "real" semantic focus which exhibit the same patterns - that is, constellations where broad semantic foci should arise in the above sentences. I will test this with question-answer pairs: Can the above examples be successfully used in answer to the question "what happened?" or "what is the matter?". It seems that they can. The following two mini-discourses are coherent:

(23) What is the matter? Why do you look out of the window?
    - Weil [ein Hund einen KNOCHEN AUFMERKSAM VERBUDDELT.]F2
(24) Why is everybody so excited?
    - Weil [ein Politiker einer MARKTFRAU eine ROSE geschenkt hat.]F2

This shows that the indicated accent patterns reflect sentencewide focus. While the F2 focus domains in (23) and (24) are tested with the preceding questions, the broad F1 focus domains in (21) and (22) are diagnosed by looking at the interpretation of the indefinites.
    Note that the same accent patterns can indicate a narrower focus, covering everything except the subject NP. The corresponding F1 focus licences a generic reading of the subject, the corresponding F2 focus for instance the question "what did a politician do?". I will not discuss the exact rules of focus projection in scrambled cases which predict the above patterns. A more thorough investigation of examples can be found in Eckardt [96], [t.a.].

2. Indefinites and judgement structure

The preceding section has shown that there is a fruitful corellation between the domain where indefinites are interpreted existentially, and a certain focus structure which I called F1 focus. It would be odd, though, to have a notion of focus which only operates in sentences which contain indefinite NPs. The question arises whether there is some broader cognitive

content underlying F1. I suggest that the picture is complete only if supplemented by two insights drawn from the literature.

On one hand, Ladusaw[94] claims that the interpretation of indefinites has to be captured in terms of judgement structure of sentences. He suggests that the domain of the sentence where indefinite NPs are interpreted existentally corresponds to the predication part of the sentence. Subject-indefinites, in contrast, have to be understood generically. (For the definition of the term Subject, see below).

On the other hand, Sasse[87] shows that German uses the intonation pattern of an utterance in order to express the underlying judgement structure. He discusses mainly sentences with intransitive verbs, though, and it will soon become clear why.

These two assumptions can fruitfully be merged into the following overall picture: German[3] uses F1 structure in order to express the judgement structure of an utterance. Judgement structure is decisive for the interpretation of indefinite NPs. Thus, indefinites, intonation and judgement structure are one coherent phenomenon.
Let me explicate in more detail the terms and theories I want to refer to.

The theory of judgement structure goes back to Marty (Marty[40]) and Brentano (Brentano[1874]). Brentano assumes that if a speaker utters a sentence, s/he thereby expresses a judgement which s/he arrives at in a preceding underlying mental process. Brentano distinguishes two kinds of judgements: thetic judgements and categoric judgements. In a categoric judgement, the speaker has a certain person or object already in mind, the Subject[4] of the judgement, and moreover a certain property. The judgement consists in ascribing or denying the Subject the property. The following sentences (normally) express categorical judgements:

(25)   Sue has blond hair.
(26)   Sue doesn't have blond hair.

Thetic judgements, on the other hand, are not structured into a Subject and a predication. They assert the existence of an object or describe an overall scene without any prominent part. The following sentences (normally) express thetic judgements:

(27)   It's raining.
(28)   It doesn't snow.
(29)   There is beer in the fridge.   .
(30)   There is no beer in Hawaii.

Let me comment somewhat more on this terminology.
The term "Subject" seems to overlap in part with what has been called "Topic" elsewhere, especially in Reinhart[81]. Both her article and Kuroda[72] point out that the "Subject" (i.e. Reinhart's "topic") is only in part determined by the previous discourse - certain items can *not* be the Subject, but in the end it is the speaker's decision which item s/he wants to be the Subject. These observations are not compatible with other uses of the term "Topic" in the literature, like in von Fintel[94] or Buring[94]. Thus, the reader is warned to equal Subjects with any kind of "topics" discussed elsewhere. I especially will *not* assume that any question which would coherently precede an utterance automatically brings out the Subject-predicate structure of that utterance. This assumption translates the observations in examples (4a) and (4b).

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[3]I will restrict my claims to German where I have a good understanding of the intonation patterns involved. Although the situation in English looks similar in many cases, I got the impression that certain crucial differences exist. For instance, as German has free word order, it allows to rearrange the word order of the sentence such that almost any division of material into F1/non-F1 can be expressed. English, having fixed word order, might use other grammatical devices in order to express the relevant structures.
[4]We will use Subject with capital "S" for the logical subject, in contrast to grammatical subject NPs.

As for thetic judgements, it seems that many of these can best be understood as being in fact about a Subject, too, namely the location which is described, or where the existence of a certain kind of objects is asserted. These ideas are discussed in more detail by Jäger[96]. Thus, sentence (30) will be about the Subject "Hawaii", and sentence (27) about the Subject "the place for which I now tell you the weather". These Subjects are not always explicated in the sentence (which might be why the inventors of the theory did not come to this generalization). It is an open question whether there are completely Subjectless sentences - candidates are sentences at the beginning of a story, and the like.

The consequences of viewing an utterance as having a certain judgement structure have largely been assumed to be purely pragmatic in nature in languages like English or German. However, Ladusaw[94] proposes that we find effects of the judgement structure of an utterance which are diagnosable in terms of truth value semantics, even in languages like English. Ladusaw's main interest lies in developing a certain perspective on negation; yet, in order to support his view, he integrates the interpretation of indefinites into a theory of the modes of judgement. He argues that indefinites - in their existential reading - are characterized by their function in discourse, namely, to introduce novel, previously unmentioned individuals and objects into the domain of discourse. This function *agrees* with the thetic mode of judgement and generally with predication. It is *incompatible* with the function "to denote a Subject of a judgement". Subjects are what the speaker was already thinking about. It would be misleading, so to speak, to introduce something as new into the discourse and at the same time ask the reader to understand that the speaker had been thinking about this item before. (This constellation is expressed differently. The speaker uses a definite NP where the hearer would have expected an indefinite, like in the following first sentence of a discourse: "This student of mine is really cute.") Therefore, Ladusaw claims, the only way to interpret an indefinite as something acquainted is to interpret it generically. "A polar bear" only counts as known if it refers to the typical "polar bear-an-sich"[5].

Ladusaw thus provides an account of the interpretation of indefinite NPs which is based on conceptual notions, while the most prominent alternative theory, the theory of Diesing and Kratzer (Diesing[92], Kratzer[89]) is based on syntactic grounds. The latter will be discussed in more detail in section 4.

We have seen two possibly distinct factors - focus structure and judgement structure - which both have been claimed to drive the interpretation of indefinite NPs. Can we merge them into a uniform picture? Sasse, in the paper Sasse[87], investigates the notion of "judgement structure" under a typological perspective, demonstrating a variety of means to express Subjecthood and predication in a number of different languages. He draws attention to the fact that one has an odd alternation between two intonation patterns in German sentences with intransitive verbs: Certain sentences seem only possible with an accent on the predicate, others almost only with an accent on the (grammatical) subject, and some sentences allow both patterns:

(31)   Die SONNE scheint
        The sun is shining
(32)   Joe ist INTELLIGENT
        Joe is intelligent
(33a)   Das BABY weint.
(33b)   Das Baby WEINT.
        The baby is crying

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[5] The partitive existential reading of the German "ein Eisbär", namely "one of an already known crowd of polar bears, counts as a quantified NP. It makes sense to assume that quantified NPs *can* refer to Subjects and express multiple predications. I will not be concerned with quantificational cases here.

Sasse argues that the subject-accented sentences express thetic judgements while an accent on the verbal predicate expresses a categoric judgement. A comparison of examples (27) to (30) with (31) and (32) may illustrate his claim.

If we analyze examples like (31) to (33b) in terms of the regularities of focus projection, like the ones alluded to in section 1, we note that (31) and (33a) would have broad F1 focus, while (32) and (33b) show narrow F1 focus. Thus, it makes sense to see Sasse's intonation patterns not just in terms of "accent to the left" and "accent to the right", but to assume that the more theory-bound notion of "focus" is in play. I take the above examples as the starting point for the following claim:

> F1 focus is used to express the judgement structure of German utterances.
> The part of the sentence inside F1 expresses the predication.
> The part outside F1 denotes the Subject.

This assumption allows to generalize Sasse's observations to the transitive and ditransitive case, both in basic word order and scrambled word order. It also becomes apparent, though, why the most illustrative examples arise in the intransitive case: As there is only one nominal argument present in the sentence, intonational effects arise as soon as this only argument is meant to denote the Subject of the judgement. Sentences with transitve verbs are more robust with respect to intonation. Our knowledge of the focus projection regularities will tell us that the same accent patterns arise for all-F1 focussed sentences and sentences with the grammatical subject being the Subject. Only the rarer judgement structures where both subject and object NP are what the speaker makes a claim about will show a different accent pattern (compare example (15)). Another case are utterances which are "less normal" with respect to word order: The object NP can be fronted in order to express that it denotes the Subject, as in (17) or (34).

(34)   (weil) das Geißlein(i,akk) [der WOLF(nom) ti gefressen hat.]F1
        (because) the little-goat the wolfe eaten has
        "The little goat, it was eaten by the wolfe"

More examples will be discussed in the next section.

Let me finally repeat the overall picture.

> (A) Utterances express certain underlying judgements. These judgements are structured in (possibly) a Subject and a predication.
> (B) Judgement structure is expressed by F1 focus in German. F1 contains the predication, the Subject corresponds to what is outside F1
> (C) Judgement structure drives the interpretation of indefinites. An indefinite NP inside the predication part is interpreted existentially, a Subject indefinite must be interpreted generically.

The integrated theory of judgement structure, focus, and the interpretation of indefinites provides a richer picture than both, Ladusaw's and Sasse's theory in isolation. Different from Ladusaw, we have means to identify judgement structures in more than just those sentences which happen to contain an indefinite NP. In contrast to Sasse, we have a more theory-bound concept of "accent pattern" and its correlation to judgement structure. Moreover, we have an independent criterion to test the judgement structure which seems to be indicated by a certain intonation pattern, namely the interpretation of indefinite NPs (if there happen to be some). The diagnosis of judgement structures has always been, apart from the core cases, a task relying mainly on the linguist's inner voice, and the results were not always easily communicable to others.

3. Lexical conditions on judgement structure

We have correlated focus structures, judgement structures, and the interpretation of indefinite NPs. It is well known, however, that certain predicates restrict the possibility to interpret their subject (or other) arguments existentially: So-called *individual level predicates* (in short ILPs) with indefinite subjects only allow generic readings for these subjects, while *stage level predicates* (in short SLPs) do not restrict the interpretation of subject or object NPs. This distinction has first been closely investigated by Carlson (Carlson[77]) and more recently by Kratzer and Diesing (Kratzer[89], Diesing [90], [92]).

For the moment, I want to adopt Ladusaw's view on the SLP/ILP distinction. I take it to be part of the speaker's knowledge about the meaning and possible uses of a predicate, whether it can be used in thetic judgements or not. ILPs verbalize properties which can only "be ascribed to someone" but where it does not make sense to describe an overall scene with them. I take it to be too early to derive this distinction from any absolute semantic factor like "the presence or absence of an event parameter" or the like (see next section). It has also been noted that even ILPs may give up their ILP properties in certain contexts, like comparative constructions with "so" ("be so intelligent", "be so blue eyed", ...) or certain focus constructions. It would be surprising if comparatives or semantic foci could change the semantic characteristics of predicates.

What we can do, however, is to test whether ILPs and other examples of predicates which restrict the judgement structures where they can appear confirm the claim that a certain focus domain indicates the part of a sentence where existential readings for indefinite NPs arise. This will indeed be the case, and moreover we will face an interesting little zoo of predicates which show preferences for one or the other type of judgement structure.

3.1. Predicates with a normal use

There is a wide variety of predicates which, although allowing for all kinds of judgement structures, express something which is preferably uttered in a context where the speaker makes a certain type of judgement. These most normal uses have led to the claim that such sentences have a most normal accent pattern, which is especially interesting for intransitive verbs where accents are floating between subject and verb. This type of normality, however, has nothing to do with grammar, but with world knowledge. Let me discuss an example.

(35)   KARL kommt. ("Karl is coming")
(36)   Eine FRAU kommt. ("A woman is coming")
(37)   Karl GEHT. ("Karl is leaving")
(38)   eine frau geht (≈ "a, some, one of the women is leaving"; intonation pattern unclear)

The verb "kommen" (= to come) unproblematically allows for thetic judgements. This is proved both by the - even preferred - intonation patterns in (35) and (36), and the unproblematic use of indefinite subject NP in (36). And indeed, "to come" or "to arrive" is one of the first things someone can do in order to introduce herself into some real world scene. Thus, the linguistic observation that (35) and (36) are good thetic judgements corresponds to the world knowledge that the contexts in question are such that the speaker easily might not have had Karl in mind before, and thus does not talk about the Subject Karl.

The verb "gehen" (= to leave) behaves differently. If "gehen" is combined with a definite NP or proper name, the respective sentences expresses a judgement about the person in question (f.e. Karl in (37)) in the most normal case. Accordingly, it is difficult to express a straightforward thetic judgement with (38). The use of "to leave" implies that the speaker's location is the same as the location of the person denoted by the subject, before s/he leaves. Moreover, it seems implausible that - given this situation - the speaker's attention should

focus on the "leaving" scene without having been aware of the subject for some time before; or at least perceiving the subject as one of a known group of people. This can be concluded from what we find to be possible uses of (38): Sentence (38) is preferably uttered as

(38a.)   Eine FRAU GEHT.

(We are not interested in the partitive pattern "EINE Frau GEHT.") The accent on "Frau" (=woman) contrasts this woman with other persons. Sentence (38a.) can't be uttered in a situation where this woman is the only woman in the room, say. It implies[6] that more people than just this one woman must be present. Thus, we know that (38a.) is not simply a non-normal case of wide F1 focus in an exotic intonation pattern.

If we specify the scenario, however, we can support a thetic use of sentences (37) and (38). Imagine that you are a janitor watching the entrance of your house. You have only recently arrived at your office and do not know how many people are in the house, if any. At 12.15 you see Karl/ a woman pass your office and leave the house. In such a context you can use "leave" without having been in the same room with that person before. Now you can use (37') or (38'):

(37')   KARL geht. / Um 12.15 ging KARL.
        Karl is leaving/ At 12.15, Karl left.
(38')   Eine FRAU geht. / Um 12.15 ging eine FRAU.
        A woman is leaving / At 12.15, a woman left.

These examples show that more factors are in play in the thetic/categoric distinction than simple "presence or absence of an event" or "situation" (see section 4.). The contrast between (35) and (37) is all the more telling, as the verbs "kommen" and "gehen" almost have the same content and only differ in perspective.

Another class of verbs with a most normal use are discussed be Allerton/Cruttenden (Allerton/Cruttenden[79]). They list "sentences that report a mishap" among those where intransitive verbs can be used in sentences with an accent on the subject NP - that is thetic judgements, in our terms. Although their examples are given in English, they carry over to German. (39) to (41) are of the relevant kind:

(39)   Deine HOSE brennt. ("Your TROUSERS are on fire")
(40)   Das BOOT ist undicht. ("The BOAT leaks")
(41)   Der FÜLLER kleckst. ("The PEN blots")

It should be puzzling to find that a syntactic notion like "sentence accent" was sensitive to content. Thinking in terms of judgement structure, however, the accents in (39) to (41) make much sense. They reflect thetic judgements. Thetic judgements are characterized as "describing some overall scene without any special attention to a certain object". It is typical for mishaps that the objects in question have not been in the speaker's attention before - this is why mishaps are so surprising. Of course, nothing in the above sentences themselves disallows them to express categoric judgements. If you bargain the prize of a boat you want to buy, you can say:

(40')   Das Boot ist UNDICHT.

thus pointing out a certain undesirable property of the boat. Note that, looking at (40') alone, one would expect that German treats "undicht sein" as an adjectival, permanent property, in the same way as it does with "nervös sein" (be nervous). No event in the

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[6] in whatever pragmatic sense of "implication"

Davidsonian sense seems to be involved. Nevertheless, not only thetic sentences like (40) are good, but also existential thetic sentences like (42).

(42)   Eine LUKE ist undicht. ("A hatch leaks, is leaking")

These examples show that the close connection between "ILP-hood" and the presence of an event parameter which has been postulated by certain theories is not tenable. We will come back to these issues in section 4.

3.2. The ILP property - classical cases

I will use the term "ILP property" to characterize those predicates which have at least one argument which, if instantiated with an indefinite NP, can't give rise to existential readings. Thus classical ILPs certainly have the ILP property, and moreover the relevant argument of the predicate is the grammatical subject. As I have said before, I take it to be part of the speaker's knowedge about the meaning of predicates like "be intelligent" or "be blond" that they express properties of individuals. We *have* to check, however, if the intonational facts match the predication that narrow F1 foci are in play. It turns out that intonational structure and judgement structure do match. The following intonation patterns are the only possible F1 patterns for the respective sentences.

(43)   Ein Dobermann ist INTELLIGENT.
         A doberman is intelligent.
(44)   Ein Schwede ist BLOND.
         Swedes are blond.
(45)   Ein Ritter im Mittelalter war REICH.
         A knight in the middle ages was rich.
(46)   Ein Eichhörnchen ernährt sich von HASELNÜSSEN.
         A squirrel lives on hazelnuts.

In contrast, even SLPs which are adjectival constructions with "sein" (= to be) can carry an accent on the subject NP, proving their ability to be used with wide F1, that is, in thetic judgements.

(47)   Ein FEUERLÖSCHER ist verfügbar.
         A fire extinguisher is available.

Note that "undicht sein" of the preceding section patterns with example (47) and thus does not have the ILP property, in spite of its temporal constitution.

3.3. The ILP property - nonclassical cases

Apart from the standard examples of ILPs, there are predicates which have the ILP property for the object argument, or even for both arguments, subject *and* object. These examples are a challenge for a syntax based theory for the ILP/SLP distinction, as the one to be discussed in section 4, as well as further test material for the judgement+focus hypothesis. Let me give some examples.

(48)   (daß) einem Professor ein COMPUTER zur Verfügung steht.
         (that) a professor (dat) a computer (nom) available stands
(49)   (daß) Lärm eine Oma ÄRGERT. / Lärm ARGERT eine Oma.
         (that) noise a Grandma annoys / Noise annoys a Grandma

(50)   (daß) Folkloretänze einem Touristen GEFALLEN.
        (that) folklore dances please a tourist

Example (48) is unusual in various respects. On one hand, the dative object NP "ein Professor" can only be understood generically. On the other hand, the most unmarked word order seems to be this:

(51)   indirect object   subject   verb

The intonation pattern, then, is the one given in (52).

(52)   indirect object   SUBJECT   verb

These observations can be fitted into the overall picture in at least two ways. We can either claim that the word order in (51) is base generated, and that narrow F1 focus, indicated by the accent in (52), is part of the lexical description of the verb. We can alternatively assume that the indirect object undergoes obligatory scrambling, leaving the F1 domain [subject - verb]. F1 focus is indicated by an accent on the rightmost nominal argument of the verb in focus – the grammatical subject. I will not argue in favour of either of these exaplanations. Both come along with the assumption that the verb has to know about the Subject status of its future indirect object argument. The main result thus is that the F1 structure of (48) must be like this:

(53)   (daß) einem Professor [ein COMPUTER zur Verfügung steht]F1

Thus, "be available" expresses a categorical judgement about the beneficient, if this participant is expressed.

The examples given in (49) and (50) show that there is such a thing as "doubly categorical judgements", that is, judgements where a property is ascribed to two participants. Both subject and object NP can *only* be interpreted generically. Both subject and object NP are outside F1 focus, which makes itself audible by the accent on the verb. It turns out that we even face a homogeneous semantic class of predicates which have this property: most verbs of emotional affection in their non-agentive variant pattern with (49) and (50). Interestingly, if we use the agentive variant of these the ILP property will vanish. Thus, (54) can express a good thetic judgement with sentencewide F1 focus, existential subject and object:

(54)   Ein kleines Mädchen ärgert eine KATZE.
        A little girl is annoying a cat.

(54) means that the little girl does something on purpose in order to annoy the cat. This is crucial in order for the thetic judgement to be possible. The noise in example (49), on the other hand, can only annoy Grandma by its mere existence or occurrence, and thus this reading is blocked.

These non-classical versions of ILPs have often been attacked in discussions. The respective counterexamples, however, were always of a kind which turned even classical ILPs into predicates without the ILP property. I want to go though one example in order to demonstrate how these mechanisms work. One might, with respect to the predicate "gefallen" in example (50), point out that the following sentence is thetic:

(55)   Ein Mantel hat einer Frau so gefallen, daß sie ihn sofort kaufte.
        A coat (ex.) pleased a woman (ex.) so much that she bought it immediately.

Does this mean that "gefallen" doesn't have the ILP property? No, it doesn't mean that. This type of construction even allows an existential subject with the classical ILP "be intelligent":

(56)   Ein Bäcker in Bamberg war so intelligent, daß nur Professoren bei ihm einkauften.
         A baker in Bamberg was so intelligent that only professors would buy from him.

Therefore it is not surprising that (55) also has the existential readings it has.

The nonclassical ILP examples confirm the hypothesis that focus structure, judgement structure and indefinites are one coherent phenomenon. This means that intonational data can be taken more serious in future research. Moreover the division of theories into the hard ones which talk about focus structure, quantification and genericity on one hand, and the weak ones which talk about predication, topics and Subjects on the other hand has to be given up if we want to understand the nature of judgement structure to its full extend.

The next section will be devoted to contrast the present picture to a syntax driven theory of interpretation of indefinites.

4. The theory of Kratzer and Diesing.

I made various side remarks, in the preceding sections, to the end that certain data constituted counterexamples to a syntax driven theory of interpretation of indefinites. Here, I want to repeat shortly this kind of theory and sum up the arguments that stand against such an approach.
Kratzer argues in Kratzer[89] that the crucial difference between ILPs and SLPs consists in the latter, but not the former, have a Davidsonian event argument. The following contrast is taken to be prototypical:

(57)   A man ate an apple
         = reporting an event; temporally restricted; no ILP property
(58)   Men are hypochondric
         = not reporting an event; no own temporal constitution; ILP property for subject.

She discusses various tests which confirm this distinction.
        Diesing[90], [92] turns this observation into a theory of NP interpretation. It is assumed that each sentence has one VP external ("subject") position which obligatorily has to be occupied by the highest argument. In the case of SLPs, the event parameter can occupy this position. If, however, no event parameter is present, then another argument of the verb, normally the nominative case argument, will occupy this position.
        Next, these structures are interpreted semantically. Diesing assumes a DRT stype framework. Indefinite NPs do not introduce a quantifier on their own account, but get bound by unselective existential binding. Existential binding applies at the VP boundary, or in the nuclear scope of further quantifiers. This means that an indefinite NP outside VP is not captured by existential closure. Diesing assumes that these indefinites get bound by an adverbial quantifier GEN which turns (58) into a semantic representation like (59):

(xx)   GEN x (MAN(x) ; HYPOCH(x))   = "typical men are hypochondric"

This theory accounts for the prototypical ILP/SLP distinction as exemplified in (57)/(58).

4.1. Taking care of the event argument

Kratzer's observation concerning the rough corellation between absence/presence of an event and ILP properties is certainly true. How, then, does this event parameter of SLPs get bound? Semanticists agree that verbs introduce the event indefinitely. Thus, sentence (60) has the meaning (60a.), and not (60b.) or (60c.). The F2 focus construction in example (61) shows that events can be bound unselectively, another test for indefiniteness.

(60)   A man ate an apple.
(60a.) There was an event e, a man x, and an apple y, and x ate y in e.
(60b.) The salient/unique event e consists in there being a man x and an apple y, and x eats y in e.
(60c.) All typical events e are such that a man eats an apple in e
(61)   Most women solved the problem [ELEGANTLY]$_{F2}$

Diesing, however, assumes that the event parameter occupies the VP external position, that is, one which is not covered by existential closure. Assuming that the same rescue mechanisms apply for unbound event parameters as for unbound indefinites, she will predict that sentence (60) has either meaning (60b.) or (60c.) - which is wrong.

In order to safe the overall picture, one might claim that the ILP/SLP distinction is not due to the presence or absence of Davidson's events, but due to some more abstract "situation" parameter. In fact, both Kratzer and Diesing tend to use the more vague term "eventuality", losening the narrow Davidsonian concept. Nevertheless they will have to conclude that ILPs like "eat" have *both* an event and an "eventuality" parameter, while ILPs like "be hypochondric" have neither. It is much more difficult, though, to argue that ILPs do not even refer to a situation in the lose sense than to show that htey do not refer to events. All the tests in Kratzer[89], for instance, might in fact test the presence or absence of events, and say nothing about the situation parameter, at all. Therefore the conceptual motivation of the Kratzer/ Diesing theory turns out to be purely stipulative.

4.2. Nonclassical ILPs

In section 3.3 we saw predicates which had the ILP property either for the object NP, or for both subject and object NP. Diesing can account for the former examples by assuming that - for some reason or other - it was the object NP and not the subject which was the highest argument in these cases. The doubly-generic examples are harder to capture, however. One would have to provide two VP external positions in that case in order to predict that both arguments are obligatorily interpreted outside VP. While one VP external position can be motivated on independent syntactic grounds, it will be difficult (at best!) to argue that there are isolated verbs which can only live in syntactic structures with two "subject" positions.

4.3. Prototypical uses.

We discussed the verb pair "kommen"/"gehen" (come/leave) in section 3. These verbs are very similar with respect to event structure - in fact it makes little sense to claim that one of them refers to an event or situation while the other doesn't. However, their preferences for certain types of judgement structures differ. This can be derived from the observation that "gehen" can rarely be used with plain and simple existential indefinite subject NPs, while "kommen" is unproblematic in that respect.

Diesing can "explain" the generic or contrastive readings of "gehen" subjects by observing that speakers just happen to prefer uttering "gehen" sentences with a VP external subject NP. (This is technically possible in her framework.) However, she can't do more than that. A theory of judgement driven interpretation of indefinites can do more: It can at

least use these examples as a starting point to investigate the factors which licence or motivate the mode of judgement. While "ascribing someone an atemporal, a-situated property" seems to be *one* reason for making a categorical judgement, it might not be the only one. "using a verb which carries the perspective: be near an object while describing its actions" seems to be another reason to prefer categorical judgements.

The dual case arouse in the following type of sentence, where a catastrophy was reported using a thetic judgement, yet refering to an uneventive property of an object:

(40)   Eine LUKE ist undicht. ("A hatch leaks/is leaking")

The predicate "undicht sein" certainly does not have an event parameter in Davidson's sense. It is unclear whether the property "undicht sein" is situated, or temporally bound, seen from the perspective of the hatch. (Many things in our life are leaking in a more inherent way than we would like them to.)
What certainly is the case is that "A hatch is leaking" describes some larger situation, namely the "ship situation" in which the hatch is built in. This "ship situation" is licenced by the noun "hatch", maybe, but not by its further property of leaking. (The ship would be around the hatch whether it leaks or not.) Thus the overall sentence is about a situation, in spite of the atemporality of the "leaking" with respect to the hatch. This may look like a point in favour of Diesing's theory. However, these observations make it clear that testing the eventiveness of a predicate doesn't tell anything about the situatedness of the overall sentence. The question to be answered is this: Why can a property like "be leak" be situated for a hatch, while a property like "be hypochondric" can not be situated for a man?

4.4. "Being available"

The predicate "verfügbar sein" (= be available) is often used as the prototypical stage level predicate.The predicate "jemandem zur Verfügung stehen" (= "stand at someones disposal" = be available for someone) was discussed in section 3. as one case where obligatorily predication about the dative object takes place. Diesing would explain this by claiming that "zur Verfügung stehen" does not have a situation/event parameter, that the dative argument is the highest argument of the verb, and that it thus has to occupy the VP external position. However, "verfügbar sein" and "zur Verfügung stehen" denote very similar concepts - as is revealed by the English translation. One can *claim* but not give much conceptual reason that one of these predicates speaks about situations/events, but not the other one.

4.5. Summary

The theory of Kratzer/Diesing might be considered as one where a conceptual criterion (presence/absence of an event) is turned into a syntactic feature (arity of the predicate) which in turn has influence on semantic interpretation. I have argued that the conceptual basis of this picture has to be rethought seriously, and I have moreover tried to show that a notion like "judgement structure" is the driving factor in the overall picture. The arguments against the theory Diesing[92] can be complemented by the objections discussed in Jäger[96] and Ladusaw[94]. I will not repeat them here for reasons of space.
    Note that a judgement driven interpretation of indefinites does not necessarily have to ignore syntax. Diesing argues in favour of her qualification of NPs as "inside" or "outside" VP mainly on syntactic grounds. We can still do justice to her syntactic observations by aiming at the following integrated picture:

    VP   = default F1 focussed domain

= predication part
= domain of existential closure

One major technical refinement will have to be made in Diesing's syntactic assumptions, in order to make this picture work. Section 1 included examples where scrambeld NPs could still be in F1 focus. This means, they are still in the predication part of the sentence, that is, still in the domain of existential closure, that is, still in VP. Therefore we have to allow for adjunction *inside* VP as well as *outside* VP. Diesing.originally assumed that any adjunction gave the NP the status of "being outside VP". We have seen that intonation data are telling with respect to predication structure of the sentence, and that an analysis of intonation data also refers to the notion of "scrambling". This is why the examples in 1.3. were analysed as involving moved NPs, while the interpretation of the respective indefinite NPs classified them as inside F1, that is, inside VP. For more details see Eckardt[96].

The main difference between the focus-judgement-driven interpretation of indefinites and the syntax driven theory consists in the localization of the factors that are held responsible for the respective division of sentence material. Moreover, taking focus into account we have access to many more examples where the division is not testable through indefinite NPs, but through intonation alone.

5. A note on sentence accents.

Many of the accents in the examples throughout this paper are of the kind that were formerly called "sentence accents". The following may be taken as a side result of the theory of judgement and focus structure:

There is no such thing as a "meaningless sentence accent" in German.

(This is probably also true for English.) Every utterance contains at least an F1 focus which is audible as long as not other (semantic F2) foci intervene. Therefore the hierarchy hypothesis in section 1 translates the old insight in the investigation of sentence accents that all predictions of a theory of sentence accent can be overruled once a "semantic focus" is in play (that is, an F2 focus in our terms). In contrast to traditional views on sentence accents, however, our theory in no way implies that there should be, for each sentence, the one and only place where the F1 focus accent turns up. Any sentence can have any one of the admissable F1 structures. F1. There are sentences which are *preferably* uttered in situations where the speaker wants to make a thetic judgement and others which are *preferably* uttered in situations where the speaker wants to make a categoric judgement. This explains why the respective accent patterns sound more "normal" - however they are by no means "better" or "more correct". Accordingly, we also had accent patterns which were F1 patterns but would never have qualified as "sentence accent" in traditional terms.
Focus projection rules are such that transitive verbs give rise to sentences which are ambiguous with respect to focus structures: An accent on the object NP can reflect both a thetic judgement and a categoric judgement about the (grammatical) subject. Therefore these sentences are comparatively stable with respect to accent patterns. Only the obligatorily double-generic "double ILPs" of section 3.3 are an exception.
Sentences with intransitive verbs show more variations with respect to accent patterns. This can be explained by observing that the focus projection regularities force the F1 accent from the subject NP to the verb as soon as the sentence expresses a thetic judgement and not a categorical one. This is why intransitive sentences have first raised the suspicion that something semantic might be driving the position of sentence accents at least in intransitive sentences (see Schmerling[76]) although normally semantic accents were the kind of accents which overwrite any kind of sentence accenting. (Which is a notoriously schizophrenious point in theories of sentence accent.)

6. References

Allerton, D. J. / Cruttenden, A. (1979): "Three reasons for accenting a definite subject", *Journal of Linguistics* 15, 49-53.

Brentano, F. (1973): *Psychology from an empirical point of view*. Translated by Rancurello, A. C., Terrell, D. B. and McAlister, L. from: Psychologie vom empirischen Standpunkt. (1874, 1924).

Büring, D. (1994): "Topic." In: P. Bosch and R. van der Sandt (Eds.), *Focus &Natural Language Processing*, Vol.II, Working Papers of the ILL, Heidelberg .

Carlson, G. (1977): *Reference to Kinds in English*. Ph.D. dissertation, University of Massachusetts, Amherst.

Chierchia, G. (1992): "Anaphora and Dynamic Binding". In: *Linguistics and Philosophy* 15,111-183.

Chomsky, N./ Halle, M. (1968): *The sound pattern of English*. New York, Harper&Row.

Cinque, G. (1993): "A Null Theory of Phrase and Compound Stress." *Linguistic Inquiry* 24, p. 239 - 297

Diesing, M. (1990) *The Syntactic Roots of Semantic Partition*. Ph.D. dissertation, University of Massachusetts, Amherst.

Diesing, M. (1992) *Indefinites*. Cambridge, Massachusetts: MIT Press.

Eckardt, R. [96]: *Intonation and Predication*. Arbeitspapier 77 des Sonderforschungsbereichs 340, University of Tubingen and Stuttgart.

Eckardt, R. (t.a.) : *Events, Adverbs, and Other Things*. Ph.D. Dissertation, Universität Stuttgart. To appear at: Niemeyer Verlag, Tübingen.

von Fintel, K. (1994) *Restrictions on Quantifier Domains*. Ph.D. dissertation, MIT.

Gussenhoven, C. (1983): "Focus, Mode, and the Nucleus". *Journal of Linguistics* 19, 377-417.

Höhle,T. N. (1982) "Explikationen für "normale Betonung" und "normale Wortstellung"." In: Altmann, H. (ed.): *Intonationsforschungen*. Niemeyer (Linguistische Arbeiten 200), Tübingen 1988.

Jäger, G. (1996): "The stage/individual level contrast revisited". *Proceedings of WCCFL 15*, CSLI Stanford.

Kratzer, A. (1989): "Stage-Level and Individual-Level Predicates", in: Krifka, M.: *Genericity in Natural Language* - Proceedings of the 1988 Tübingen Conference. SNS-Bericht Nr.42, Tübingen University.

Krifka, M. (1991): "A compositional Semantics for Multiple Focus Constructions." In *Proceedings of the 1991 SALT Conference*, 127 - 158. Dept. of Modern Languages and Literatures, Cornell University.

Krifka, M. (1996): "On second occurrence focus" in: Kamp, H., Partee, B. (eds.): *Proceedings of the Prague/Stuttgart workshop on Context*, Working paper of the IMS, University of Stuttgart.

Kurorda, S.-Y. (1972): "The categorical and the thetic judgement." *Foundations of Language* 9: 153 - 185.

Ladusaw, B. (1994): "Thetic and categorical, Stage and Individual, Weak and strong". In *Proceedings of the 1994 SALT IV Conference*. Dept. of Modern Languages and Literatures, Cornell University.

Marty, A. (1940) *Psyche und Sprachstruktur*. Ed.: Funke, O.. Bern, Verlag Francke.

Reinhart, T. (1981) "Pragmatics and Linguistics. An Analysis of Sentence Topics". In: *Philosophica* 27, p.53 - 94.

Rooth, M. E. (1985) *"Association with Focus."* Ph.D. disstertation, UMass, Amherst.

Rooth, M. E. (1992) "A Theory of Focus Interpretation." *Natural Language Semantics* 1, 75 - 116

Rooth, M. E. (1995): "Ellipsis Redundancy and Reduction Redundancy", in: Kamp, H., Partee, B. (eds.): *Proceedings of the Prague/Stuttgart workshop on Context*, Working paper of the IMS, University of Stuttgart.

Rosengren, I. (1993): "Wahlfreiheit mit Konsequenzen - Scrambling, Topikalisierung und FHG im Dienste der Informationsstrukturierung". In: Reis, M. (ed.): *Wortstellung und Informationsstruktur*, 251 - 312. Tübingen, Niemeyer.

Sasse, H.-J. (1987): "The thetic/categoric distinction revisited. *Linguistics* 25: 511 - 580.

Schmerling, S. F. (1976): *Aspects of English sentence stress*. University Texas Press, Austin.

Uhmann, S. (1991): *Fokusphonologie*. Tübingen, Niemeyer, Linguistische Arbeiten 252.

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THE LICENSING OF SUBJECTS IN NOUN PHRASES

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1. Introduction

Subjects in nominals, or more generally, possessive elements, have been argued to be licensed by a functional head, either D or an intermediate functional head, on a par with subjects of clauses, which are dependent on a functional head (T) for reasons of feature checking. Empirical basis for the motivation for this analysis has been provided by various languages. Abney (1987) argued for the position of possessive phrases in English in the specifier of DP, Szabolcsi (1987, 1994) argued for movement of the possessor phrase to a functional projection in Hungarian noun phrases, and Valois (1991) - for the position of possessors in the specifier of PossP in French noun phrases. The idea common to all these analyses is that subjects in noun phrases are either base generated as speicfiers of a functional heads or raise to this position out of the lexical projection (NP) in the course of the derivation. In these analyses, then, the possessive phrase depends crucially on the existence of a functional projection in a noun phrase. This analysis of subjects of noun phrases as occupants of functional projections apart from being empirically motivated, has the advantage of observing the principle of cross categorial parallelism, stating in fact that subjects are uniformly licensed by functional heads.

Subjects of noun phrases in Modern Hebrew, however, have received a different treatment. Modern Hebrew has two possibilities for the realization of genitive case: (i) by means of combining the head and the genitive phrase directly (1), and (ii) by means of the genitive preposition *Sel* (2). The form in (1) has been traditionally referred to as construct. The head of a construct undergoes a change in its form as a result of the loss of stress, and is said to be in a construct state. In (1a) the construct is formed with the possessor (or the agent). In (1b) the construct is formed with the complement:

(1) a. taxazit   ha-   parSan
       forecast *DEF*-commentator
       'the commentator's forecast'

    b. taxazit   ha-   tocaot
       forecast *DEF*-results
       'the forecast of the results'

The other possibility for the formation of genitive is by means of the genitive preposition *Sel*:

(2) a. ha-   taxazit Sel ha-   parSan
       DEF-forecast of *DEF*-commentator
       'the commentator's forecast'

    b. ha-   taxazit Sel ha- tocaot
       DEF-forecast of *DEF*-results
       'the forecast of the results'

In this form the head does not undergo any phonological changes, and I will refer to this combination as a 'separate form' and to genitive phrases in separate form as '*Sel*-phrases'. *Sel*-phrases, as well as genitive phrases in construct, can surface as possessors (2a) or as complements (2b). The Case of genitive phrases in construct nominals, such as *ha-parSan* ('the commentator') in (1a) and *ha-tocaot* ('the results') in (1b) has been argued to depend on the functional head in a noun phrase (Hazout 1990, Ritter 1991, Siloni 1994), and the genitive phrase has been assumed to raise to the functional projection (Ritter 1991, Siloni 1994). For separate forms such as (2), the genitive phrase has been assumed to remain *in situ* and acquire case from the genitive preposition *Sel* (Borer 1994, Hazout 1990, Ritter 1991, Siloni 1994,). Subjects in Hebrew noun phrases thus have been assumed to be licensed by two different mechanisms: the genitive case in construct has been assumed to be licensed by a functional head, and the genitive phrases have been suggested to leave the lexical projection and raise to a functional projection, while genitive phrases in the separate form have been argued to be case marked *in situ* and hence to remain inside the lexical projection. These analyses encounter several problems. First, they allow for two different mechanisms for the licensing of subjects in noun phrases in Modern Hebrew (movement and base generation). Second, they do not accord with the principle of cross categorial parallelism and depart from analyses proposed for other languages. Third, they fail to explain certain facts concerning the distribution of subjects and complements in noun phrases, as will be shown below.

My proposal is that subjects in Hebrew nominals are uniformly licensed by D. Specifically I will argue that subject *Sel* phrases are also dependent on the functional head (D) and raise to the functional projection for feature checking at some point of the derivation. Evidence in support of this hypothesis is provided by the phenomenon of clitic doubling, illustrated in (3):

(3) a. taxazit- o   Sel ha-   parSan
      forecast-*3MS* of *DEF*-commentator
      'the commentator's forecast'

   b. trumotei- hem   Sel ha-   xaverim
      donations-*3MP* of *DEF*-members
      'the members' donations'

I will show that only subjects in noun phrases can be doubled. Complements are excluded from doubling configurations, as indicates the ungrammaticality of (4):

(4) a. * taxazit- an   Sel ha-   tocaot
      forecast-*3FP* of *DEF*-results
      'the forecast of the results'

   b. * trumotei- hen   Sel yacirot ha-   omanut (le muzeon)
      donations-*3FP* of   works   *DEF*-art   (to museum)
      'the donations of the works of art (to the museum)'

Starting with the analysis proposed in Borer (1984), suffixes attached to nouns as in (3) have been analyzed as clitics. I will argue that these suffixes are an overt realization of agreement features on D°, and the noun phrase with which agreement is marked must therefore appear in an appropriate configuration for agreement to be realized. Within current approaches,

specifically within the Minimalist framework (Chomsky 1995), such configuration is identified as a canonical SPEC-head configuration. It follows, then, that if the suffixes in (3) are agreement features on D, the noun phrase with which agreement is marked (in our case *Sel ha- parSan* ('the commentator) in (3a) and *Sel ha-xaverim* ('the members') in (3b) must raise to D in the course of the derivation. The ungrammaticality of (4) must be attributed to the failure of the functional head to mark agreement with the complement due to the inability of the complement to raise out of the lexical projection (NP) to the functional projection (DP). The analyses that treat subject and complement *Sel*-phrases uniformly, distinguishing between the form of the genitive phrase: separate vs. construct, ignore the structural distinction between the specifier of N and the complement of N. An account along these lines, which relies exclusively on the form of the genitive phrase, fails to explain the contrast between (3) and (4).

The paper focuses on two main claims:

1. Clitics in noun phrases are agreement features on D°, and therefore they can mark agreement only with noun phrases that raise to D. That is, the relation between the clitic and the doubled noun phrase is a checking relation.

2. Subjects in noun phrases, whether in separate or in construct, raise to D for feature checking, whereas complements, whether in separate or in construct, do not leave the lexical projection. It follows that the distinction that must be drawn is not between the form of the genitive construction, but rather between the original position of the genitive phrase as a specifier or as a complement of N.

The paper is structured as follows. In section 2 I argue for the analysis clitics in noun phrases as an overt realization of agreement features. In section 3 I show that the doubled DP can surface as an agent, a possessor, or an internal argument, all of which will be shown to be subjects, that is, specifiers of a lexical projection before merger with D, and therefore capable of raising to D. The evidence presented in this section leads to the conclusion that only subjects can enter into agreement relation with the head. In section 4 I discuss the position of subjects in noun phrases and propose a movement analysis of subject *Sel*-phrases. Section 5 focuses on the licensing conditions for subjects and complements in noun phrases, aiming at providing a principled account for their distinct behaviour with respect to the agreement phenomenon, that is for the failure of complements to raise. Drawing on Higginbotham's theory of theta-discharging, I suggest that the licensing conditions for subjects and complements are determined by different mechanisms of saturating open positions in a theta-grid of a noun.

2. Clitics in Nominals as a Realization of Agreement Features

In this section I present evidence in support of the analysis of clitics in nominals as an overt realization of agreement features on D°. The evidence presented concerns (a) the affinity between clausal agreement in Hebrew and the behaviour of clitics attached to nominal heads and (b) the relation between agreement and definiteness, which indicates that these clitics must be associated with D.

2.1 Clausal Agreement

Hebrew, as a null-subject language, does not require overt DPs in all subject positions of tensed clauses. Overt DPs are not required with past and future tense inflection for 1-st and 2-nd persons:

(5) a. rait- I   et   ha- seret
　　　saw-*1S ACC DEF*-movie
　　　'I saw the movie'

　　b. halax-tem la-   hafgana
　　　went- *2MP* to-(+*DEF*)-demonstration
　　　'You went to the demostration'

In this respect clausal agreement, marked on verbs, parallells the agreement in noun phrases: neither requires an overt subject. For noun phrases this is illustrated in (6):

(6) a. taxazit- o
　　　forecast-*3MS*
　　　'his forecast'

　　b. trumotei- hem
　　　donations-*3MP*
　　　'their donations'

Overt subjects, though, can appear optionally in clauses (7) similarly to doubled DPs in noun phrases (3):

(7) a. ani rai- ti et   ha- seret
　　　I   saw-*1S ACC DEF*-movie
　　　'I saw the movie'

　　b. atem halax-tem   la-   hafgana
　　　you went-*2MP* to-(+*DEF*)-demonstration
　　　'You went to the demonstration'

Clitics in noun phrases, then, pattern like agreement suffixes in clauses in that they do not necessitate an overt subject, and in such cases are said tlo be coindexed with *pro*, but they can optionally host an overt subject, thus creating an effect of doubling, similarly to the optional occurrence of subjects in clauses with past and future tense inflection.

2.2 Clitics and Definiteness

In Hebrew the presence of clitics in noun phrases triggers obligatory definiteness of the head. Hebrew exhibits agreement in definiteness between nouns and adjectives, and, therefore, adjectives serve as a diagnostics for the definiteness specification of the head noun. Thus [-definite] noun requires a [-definite] adjective and vice versa, as shown in (8) and (9) respectively:

(8) a. taxazit   aguma
       forecast gloomy
       'a gloomy forecast'

   b. * taxazit   ha-   aguma
       forecast *DEF*-gloomy

(9) a. ha-   taxazit   ha-   aguma
       DEF-forecast *DEF*-gloomy
       'the sad forecast'

   b. * ha-   taxazit   aguma[1]
       DEF-forecast gloomy

Cliticized nominals can be modified by [+definite] adjectives only:

(10) a. taxazit- o   ha-   aguma Sel ha-   parSan
        forecast-*3MS DEF*-gloolmy of *DEF*-commentator
        'the gloomy forecast of the commentator'

   b. * taxazit- o   aguma Sel ha-   parSan
        forecast-*3MS* gloomy of *DEF*-commentator

The ill-formadness of (10b) indicates that *taxazit* ('forecast') can only have a [+definite] reading. On the assumption that definiteness, is a feature of D, the [+definite] reading of the head triggered by the occurrence of the clitic indicates that these clitics are closely related to D. Clitics, therefore, must be associated with D. The association of clitics with D follows straightforwardly if these clitics are analyzed as agreement features, since agreement is primarily a property of functional heads.

2.3 Clitics and Case

The analysis of the affixes in (3) as clitics is due primarily to the assumption that these affixes absorb Case (Borer 1984 and all the subsequent treatments). The major reason for the treatment of clitics in nominals as case absorbing elements is the obligatory presence of the genitive preposition *Sel* in clitic doubling constructions, that is, the failure of the doubled noun phrase to surface without the mediation of *Sel,* as shows the contrast between (11a) and (11b):

(11) a. taxazit- o   Sel ha-   parSan
        forecast-*3MS* of *DEF*-commentator
        'the commentator's forecast'

   b. * taxazit- o   ha-   parSan
        forecast-*3MS DEF*-commentator

The ungrammaticality of (11b) has been attributed to the lack of Case on the doubled DP due to the absence of a Case assigning head. The clitic in (11) thus is assumed to absorb the Case

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[1] (10b) is grammatical if interpreted as a caluse: 'The forecast is gloomy'.

assigned by the noun (the Case that is normally assigned to the genitive phrase in construct), whereas the doubled DP is said to be assigned case by *Sel*. If, on the other hand, clitics in nominals are a realization of agreement features, their need for case becomes puzzling, on the assumption that agreement features do not require case. My claim is that clitics in noun phrases, being agreement features, do not require and hence do not absorb case. The ill-formadness of (11b), then, must be attributed to other reasons. My claim is that the ill-formadness of (11b) does not follow from the absence of a case assigning head, but rather from the presence of overt agreement features, which assign definiteness specification to the head, thereby blocking the possibility for the formation of construct and leaving the separate form as the only available option for the genitive DP.

One of the most salient property of heads in construct is the inheritance of the definiteness value of the genitive phrase with which they form a construct. In other words, the noun in the construct state has been observed to acquire the definiteness specification of the genitive phrase. Thus whenever the genitive phrase in construct bears the definiteness marker *ha-* the head must also be interpreted as [+definite].[2] In (12a) *taxazit* ('forecast') can only have the reading of (12b), not of (12c):

(12) a. taxazit   ha-   parSan
       forecast *DEF*-commentator
       'the commentator's forecast'

   b. ha-   taxazit   Sel ha-   parSan
       DEF-forecast of *DEF*-commentator
       'the commentator's forecast'

   c. taxazit   Sel ha-   parSan
       forecast of *DEF*-commentator

Furthermore, the definiteness marker *ha-* appears on the head of the separate form when it is [+definite] (13a). By contrast, the head of the construct form cannot coccur with *ha-* even when interpreted as [+definite] (13b):

(13) a. ha-   taxazit   Sel ha-   parSan
       DEF-forecast of *DEF*-commentator
       'the commentator's forecast'

   b. * ha-   taxazit   ha-   parSan
       DEF-forecast *DEF*-commentator

This inheritance property coupled with the failure of the head in construct to cooccur with the definitenes marker *ha-* leads to the conclusion that the head in construct has no definiteness value of its own, as, in fact, assumed by Borer (1994). Under this analysis, if the head is overtly marked for agreement, it is no longer unspecified for definiteness, since an overt realization of agreement features provides the head with a definiteness value, as illustrated in

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[2] This holds only for non-argument-taking nominals. The definiteness value of argument-taking nominals need not be determined by the genitive phrase with which they form a construct.

(10). Hence the possibility for the formation of construct in such cases in blocked. In other words, the formation of construct is impossible with the spell out of agreement features on the head, since they provide the head with a definiteness specification. If the lack of the definiteness specification of the head is a precondition for the formation of construct, then the latter is blocked in the presence of overt agreement features. The only other possibility for the genitive phrase to surface is, therefore, via the separate form.

This analysis of the affixes in (3) as agreement features also avoids the problems that arise under the hypothesis that these affixes are case absorbing clitics. First, on the assumption that case is assigned to maximal projections, these affixes must be XPs, as, in fact, has been proposed for Romance clitics (Jaeggli 1986, Kayne 1989, 1991), and not X^0 projections, as standardly assumed for Semitic clitics. Second, if these affixes are case absorbing clitics, it follows that the same head licenses case twice: to the clitic and to the doubled DP, and this is not attested elsewhere in noun phrases in Hebrew[3].

I have argued in this section for the analysis of clitics in nominals as agreement features on D^0 based on (i) the affinity between clausal agreement and the behaviour of clitics in nominals and (ii) the definiteness effect created by the clitic. I have also argued that the association of clitics with case is not self evident, suggesting that *Sel* is forced in doubling constructions as a result of the definiteness specification provided to the head by the attached affix.

3. Doubled DPs as Subjects

I will show now that only subject *Sel*-phrases can enter into agreement relation with the head, that is, only *Sel*-phrases that bear an appropriate structural relation to the head.

3.1 Doubling in Non-Process Nominals
It was illustrated in (4), repeated here as (14), that complements of nouns do not exhibit agreement with the head.

> (14) a. * taxazit- an   Sel ha- tocaot
>   forecast-*3FP* of *DEF*-results
>   'the forecast of the results'
>
>   b. * trumotei- hen   Sel yacirot ha-   omanut (le muzeon)
>   donations-*3FP* of works *DEF*-art   (to museum)
>   'the donations of the works of art (to the museum)'

The ungrammaticality of (14) cannot be attributed to the sensitivity of doubling to the animacy feature, since [-animate] noun phrases <u>can</u> agree with the head if they are interpreted as possessors and not as complements:

> (15) a. muvan- o   Sel ha- Sem
>   meaning-*3MS* of *DEF*-name
>   'the meaning of the name'

---

[3] Even on the assumption that *Sel* <u>is</u> a Case assignor, it must be licensed by a nominal head.

b. sof- a   Sel ha- milxama
   end-*3FS* of *DEF*-war
   'the end of the war'

On the other hand [+animate] noun phrases cannot be doubled if they are interpreted as complements. Thus, in (16a) the genitive phrase *ha-yeldaim* ('the children') has three possible readings: (a) as a possessor (the pictures belong to the children), (b) as an agent (the children drew the pictures), (c) as a complement (the children are depicted).

(16) a. ha- ciyurim Sel ha- yeladim
        DEF-drawings of *DEF*-children
        'the drawings of the children'

     b. ciyurei- hem Sel ha- yeladim
        drawings-*3MP* of *DEF*-children
        'the children's drawings'

In (16b), however, the genitive phrase can have only the first two readings (the children own the pictures and the children drew the pictures). The third reading, with the genitive phrase being interpreted as a complement (the children are depicted), is excluded.

3.2 Doubling in Process Nominals

An aditional piece of evidence in support of the analysis of clitics as agreement features is provided by doubling in process nominals. Process nominals have been observed to obligatorily occur with their internal arguments and optionally with their external arguments (Grimshaw 1990). Process nominals differ from non-process (or result)[4] nominals in the distributional pattern of the doubled DPs. In Hebrew noun phrases, in the presence of a genitive external argument, the internal argument is assigned accusative case:

(17) ha- rexiSa Sel ha- soxen et   ha- menayot
     DEF-purchase of *DEF*- broker *ACC DEF*-shares
     'the broker's purchase of the shares'

In the absence of a genitive external argument, the internal argument surfaces in genitive:

(18) ha- rexiSa Sel ha- menayot
     DEF-purchase of *DEF*-shares
     'the purchase of the shares'

Process nominals apparently differ from result nominals in that the former exhibit agreement with the genitive argument, whether external (19a) or internal (19b):
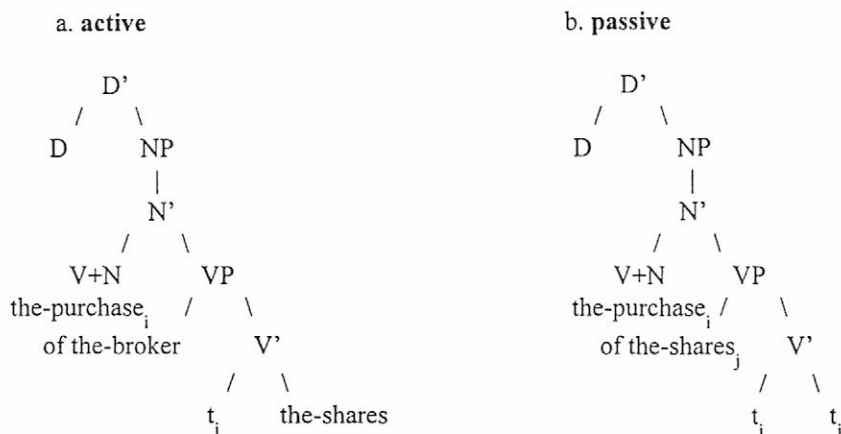
(19) a. rexiSat- o   Sel ha- soxen et   ha- menayot
        purchase-*3MS* of *DEF*-broker *ACC DEF*-shares
        'the broker's purchase of the shares'

---

[4] The term refers to non-process nominals in the sense of Grimshaw 1990

b. rexiSat- an Sel ha- menayot
   purchase-*3FP* of *DEF*-shares
   'the purchase of the shares'

The question that arises concerns the availability of doubling of internal arguments in process nominals. That is, why clitic doubling is impossible with complements of result nominals but is perfectly acceptable with internal arguments of process nominals. My claim is that clitic doubling in these nominals is possible due to the structural differences between the two types of nominals. Hazout (1990) suggests that process nominals with accusative internal arguments (17) contain a fully projected VP incorporated into a nominalizing head. Borer (1994, in progress) extends the VP analysis to all instances of process nominals arguing that nominals with genitive internal arguments (18) are instances of passive. In her analysis, then, the genitive argument in these nominals is invariably the subject. She proposes the structure in (20) for Hebrew process nominals:

(20) Borer (1994)

a. **active**

```
        D'
       /  \
      D    NP
           |
           N'
          /  \
       V+N    VP
  the-purchase_i  /  \
    of the-broker   V'
                   /  \
                  t_i   the-shares
```

b. **passive**

```
        D'
       /  \
      D    NP
           |
           N'
          /  \
       V+N    VP
  the-purchase_i  /  \
   of the-shares_j   V'
                    /  \
                   t_i   t_j
```

Under this analysis, the genitive phrases in (20a) (*Sel ha-soxen* - 'of the broker') and in (20b) (*Sel ha-menayot* - 'of the shares') are said to occupy the same position, i.e. the specifier of VP. The incorporated head is said to raise to D° to check definiteness. This in turn avails a further movement of the genitive argument to D. The head thus agrees with the argument located in the specifier of the lexical projection embedded under D. The difference in doubling of internal arguments in result and process nominals, then, follows from the status of these arguments as specifiers in the latter type.

The difference between process and result nominals with respect to doubling indicates that the ungrammaticality of (14) can neither be attributed to thematic restictions on the doubled genitive phrases nor to the anymacy feature but rather to the structural position of these phrases. This position must be identified as the specifier of the lexical projection embedded under D.
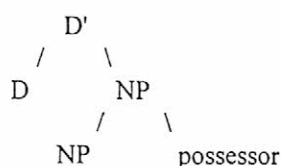
To summarize this section, I have shown that doubling is possible only with subject *Sel*-phrases, that is, *Sel*-phrases that are located in the specifier of the lexical projection prior to the merger with D. The sensitivity of the clitic to the position of the agreeing genitive phrase provides an additional piece of evidence in support of the analysis of these clitics as an

overt realization of agreement, since agreement is a structural relation and hence is predicted to be sensitive to the position of the element marked for agreement.
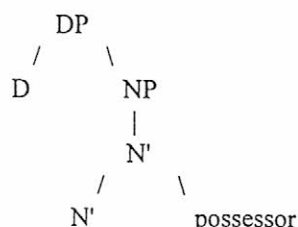
4. The Position of Subjects

Turning now to the position of subjects, several possibilities have been proposed for the site of agent and possessor *Sel*-phrases in non-argument-taking nominals: (21a) right adjoined to NP (Borer 1994), (21b) right adjoined to N' (Hazout 1990), (21c) right adjoined to DP (Ritter 1991), (21d) specifier of NP (Siloni 1994):
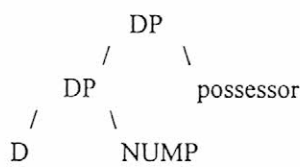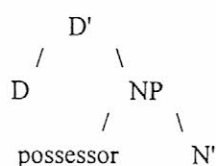
(21) a. (Borer 1994)   b. (Hazout 1990)

```
          D'                                    DP
         /  \                                  /  \
        D    NP                               D    NP
            /  \                                   |
          NP    possessor                         N'
                                                  /  \
                                                 N'    possessor
```

     c. (Ritter 1991)   d. (Siloni 1994)

```
          DP                                    D'
         /  \                                  /  \
        DP    possessor                       D    NP
       /  \                                       /  \
      D    NUMP                           possessor   N'
```
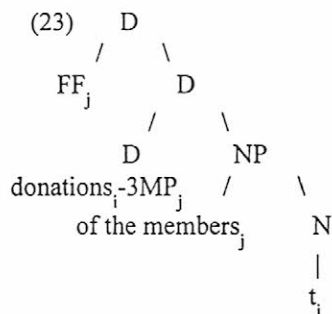
The idea underlying all the above analyses is that *Sel* is a case assignor, and hence the genitive phrase introduced by *Sel* acquires case *in situ*. The agreement facts discussed in section 3, however, cannot be explained on the assumption that subject *Sel*-phrases remain in their base generated position throughout the derivation. In (21a-b) the *Sel*-phrases cannot enter into a checking relation, since they are not in an appropriate (Spec-head) configuration. In (21c) the possessor is an adjunct. Adjunct genitive phrases in Hebrew do not exhibit agreement with the head. Thus in (22a) the genitive phrase can be interpreted as a possessor (the clothes belong to the children) or as an adjunct (a type of clothes). In (22b), however, the agreeing genitive phrase can only be interpreted as a possessor.

(22) a. bgadim Sel yeladim
       clothes of children
       'children clothes'

     b. bigdei-hem   Sel yeladim
        clothes-3MP of children
        'children's clothes'

This difference must be attributed to the distinct structural positions of the relevant genitive phrases. Adjunct genitive phrases are indeed base generated as adjuncts to D. By contrast, possessor and agent genitive phrases are base generated as specifiers (either of N or of D). The failure of genitive adjuncts in noun phrases to agree with the head is predicted under the hypothesis that checking features subsumes a specifier head relation (Chomsky 1995). I follow Siloni in assuming that agent and possessor *Sel*-phrases are base-generated as specifiers of N, and N raises overtly to D°. However, counter to Siloni I propose that the head movement of N to D is followed by the LF movement of the subject to D, as shows the diagram in (23):

```
(23)        D
          /   \
       FF_j      D
              /   \
           D      NP
  donations_i-3MP_j  /   \
      of the members_j    N
                          |
                          t_i
```

In (23) the subject *Sel ha-xaverim* ('the members) raises to D covertly for feature checking. At LF the agreement features of D are checked off against the subject adjoined to D. The complement, by contrast, does not raise and hence can never be in the checking domain of D. It follows then that the complement cannot enter into an agreement relation with D.

This analysis has a number of advantages both, on theoretical and empirical grounds. First, it reconciles the analysis of subjects in Hebrew noun phrases with the analyses proposed for other languages in so far as subjects are assumed to be licensed by a functional head. Second, it presents a unified treatment of subjects in noun phrases in Modern Hebrew, suggesting that all subjects in noun phrases are uniformly licensed by D, irrespective of the nature of a given nominal, whether result or process, and irrespective of the form of the genitive construction, whether separate or construct. Finally, the proposed analysis accounts for the distribution of doubled DPs, which is otherwise left unexplained.

## 5. The Licensing of Subjects and Complements in Noun Phrases

The question that arises at this point concerns the failure of the complement to raise out of the lexical projection. That is, what enables the subject in (3) but precludes the complement in (4) from raising to D? My proposal is that the failure of the complement to raise is directly linked to the mechanism of thematic licensing of subjects and complements in noun phrases. Complements of nouns are base generated as sisters of N° and must be assumed to be theta-marked by the head. Various arguments have been raised against considering nouns as theta-role assignors. In particular Grimshaw (1990) argues that even process nominals, which have argument structure, are defective theta-role assignors and require the presence of prepositions to transmit the theta-role. It is of little consequence for my analysis what the exact mechanics of the theta-role assignment in nominals is. That is, whether the noun directly theta-marks its

complement or employs for that purpose a preposition which transmits the theta-role to the relevant argument, as long as the positions which are part of the lexical entry of a given noun are thematically linked to the head N. My claim is that arguments which are part of the lexical entry of a noun and therefore assigned a theta-role internally, cannot raise to the functional projection, whereas possessor phrases, which are not part of the lexical entry of a noun and hence not theta-marked by a noun, are licensed by the functional head (D). In what follows I will outline my hypothesis, which draws on Higginbotham's theory of theta-grids and thematic saturation.

5.1 Thematic Saturation

Higginbotham (1985) proposes that a lexical item has a theta grid, which specifies the number of open positions for this lexical item. All open positions must be or discharged for the structure to be well-formed. The relevant mechanisms of closing open positions for the purposes of the present analysis are: theta-marking and theta-binding. Theta-marking, is the relation between the head and its arguments in the sense of the canonical theta-role assignment. For nouns, then, it must be the relation which holds between the head N and its complement (e.g. *taxazit* ('forecast') and *ha-tocaot* ('results') in (1b) and (2b). Theta-binding is the relation between the determiner or the quantifier and the noun bound by it. A noun is said to contain an open position in its theta-grid and therefore is interpreted as denoting a property. In the diagram in (24) the determiner *the* in the specifier of NP is said to bind the open position, establishing the reference of the noun phrase and thus converting N' into a referential expression. In other words, every noun has a variable which is bound by the material in the specifier of NP:

$$(24) \quad (NP, <1^{\bullet}>)$$
$$\diagup \qquad \diagdown$$
$$Spec \qquad (N', <1>)$$
$$| \qquad \qquad |$$
$$the \qquad (N, <1>)$$
$$|$$
$$dog$$
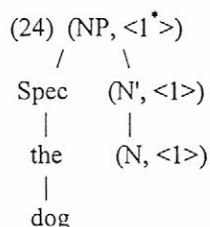
Incorporating this idea into the DP hypothesis, Speas (1990) proposes that D has one open position, which is linked to the predicate variable, so that the denotation of the noun is understood as the property restricted by the material in D, which theta-binds the variable. Speas extends Higginbotham's analysis of determiners as theta-binders to the genitive marker *'s*, whose position she identifies in D°.

5.2 Genitive Phrases and Thematic Saturation

Turning now to subjects and complements in noun phrases, the former can occur with every noun and hence are not be part of the lexical entries of nouns, as suggested in Stowell (1991). The complement, by contrast, is part of the lexical entry of a given noun, and therefore the saturation of this open position is via theta-assignment and not theta-binding. So in (25), the DP *the results* is theta-marked by the head *forecast*. Saturation of the internal (complement) position, however, does not discharge the position in D, and therefore a determiner (*the*) or a possessor (*John's*) are added to saturate the remaining open position in (25):

(25) the/John's forecast of the results

The complement, which is theta-marked, then, cannot act as a theta-binder. The possessor, by contrast, is not theta-marked by a noun. My proposal is that theta-marked constituents cannot serve as theta-binders. In other words, if a noun phrase is theta-marked, it cannot act as a theta-binder. The failure of complements to raise to D is explained: since complements are theta-marked, they must remain inside the lexical projection, the functional projection in noun phrases being reserved for theta-binders. Hence, complements are predicted not to enter into an agreement relation with the functional head. This amounts to the claim that the option of passive is not available in nouns. In that, nouns fundamentally differ from verbs. Verbs have both, external and internal arguments as part of their argument structure, and, therefore, verbs theta-mark both, the external and the internal arguments, and none of these arguments acts as a theta-binder. If an external argument is not part of the theta-grid of a verb, there is no possibility to add one. The internal argument hence can raise to the position which would otherwise be occupied by the external argument. Nouns, by contrast, can have only internal arguments in their theta-grids, and, therefore, can always have a DP added externally in the form of a possessor phrase, thereby blocking the possibility for the complement to raise.

In process nominals the arguments are theta-marked by the incorporated verb, not the noun, and therefore the internal arguments of process nominals exhibit the same pattern of behaviour in noun phrases as in clauses. That is, they can be passivized, thus raising to the specifier of the functional projection and entering into the agreement relation with the functional head.

Abney (1987) argues that in process nominals the maximal lexical projection (NP) is predicated of the subject in the specifier of DP, whereas no such relation holds in result nominals. Formulating this claim in terms of Borer's VP incorporation hypothesis, this amounts to saying that predication in noun phrase holds in the presence of the VP projection. Agreement in noun phrases, then, is triggered either by predication or by theta-binding. In either case it is mediated by a functional head, and therefore the DP participating in either of these relations must raise to the functional projection. The difference between the two is in that the subject of predication is theta-marked, and hence external or internal arguments can be predicated of, while theta-binding excludes theta-marking, and therefore complements of result nominals cannot act as theta-binders.

6. Conclusion

I have argued in the paper that subjects in Hebrew noun phrases are uniformly licensed by D, that is, subjects raise to the functional projection irrespective of whether they are genitive phrases in separate or construct forms. The relevant distinction that must be drawn is not between the different forms of the genitive construction, but rather between specifiers and complements. Only noun phrases base-generated as specifiers of lexical projections embedded under D raise to D and participate in agreement relations. The movement analysis of subjects coupled with the analysis of clitics as agreement affixes provides an explanation for the distribution of subjects and complements in Hebrew noun phrases. In a more general sense, I have attempted at providing a principled account for the subject/complement asymmetry in noun phrases with respect to agreement. I have proposed that theta-marking and theta-binding are mutually exclusive. It follows from this that subjects of noun phrases cannot be theta-marked, unless a noun phrase contains a verbal projection.

Acknowledgements

References

Abney, S. P. (1987) *The Noun Phrase in its Sentential Aspect*, Ph.D. dissertation, MIT, Cambridge Mass.

Borer, H. (1984) *Parametric Syntax*, Foris, Dordrecht.

Borer, H. (1994) "Deconstructing the Construct" ms., UMass Amherst.

Borer, H. (in progress) *Parallel Morphology*.

Chomsky, N. (1981) *Lectures on Government and Binding*, Foris, Dordrecht.

Chomsky, N. (1986) *Knowledge of Language: Its Nature, Origin, and Use,* Praeger, New York.

Chomsky, N. (1995) *The Minimalist Program*, MIT Press, Cambridge, MA

Fukui, N. and M. Speas (1986) "Specifiers and Projections", *MIT Working Papers in Linguistics* 8, 128-172.

Grimshaw, J. (1990) *Argument Structure*, MIT Press, Cambridge, MA.

Hazout, I. (1990) *Verbal Nouns: Theta-theoretic Studies in Hebrew and Arabic*, Ph.D dissertation, University of Massachusetts, Amherst.

Higginbotham, J. (1985) "On Semantics", *Linguistic Inquiry* 16, 547-594.

Jaeggli, O. (1986) "Three Issues in the Theory of Clitics: Case, Doubled NPs, and Extraction", in H. Borer (ed.) *Syntax and Semantics* 19, 15-42.

Kayne, R. (1989) "Null Subjects and Clitic Climbing", in O.Jaeggli and K.Safir (eds.) *The Null Subject Parameter*, Kluwer, Dordrecht.

Kayne, R. (1991) "Romance Clitics, Verb Movement, and PRO", *Linguistic Inquiry* 22, 647-686.

Ritter, B. (1988) "A Head-Movement Approach to Construct-State Noun Phrases", *Linguistics* 26, 909-929.

Ritter, B. (1991) "Two Functional Categories in Noun Phrases: Evidence from Modern Hebrew" in S. Rothstein (ed.) *Syntax and Semantics* 25, 37-62.

Siloni, T. (1994) *Noun Phrases and Nominalizations*, Ph.D dissertation, University of Geneva.

Speas, M. (1990) *Phrase Structure in Natural Language*, Kluwer, Dordrecht.

Stowell, M. (1991) "Determiners in NP and DP", in D. Bouchard and K. Leffer (eds.) *Views on Phrase Structure*, Kluwer, Dordrecht.

Szabolcsi, A. (1987) "Functional Categories in the Noun Phrase" in I. Kenesey (ed.) *Approaches to Hungarian* Vol.2: *Theories and Analyses*, Jate, Szeged.

Szabolcsi, A. in F. Kiefer and E. Kiss (eds.) *Syntax and Semantics* 27.

Valois, D. (1991) *The Internal Syntax of DP*, Ph.D dissertation, UCLA.

Coordination and the Interpretation of Situation Type[1]

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1. Introduction

Josman (1986) observes that (1a) below is understood as two sequential situations (her term: actions), while the situations reported in (1b) are understood as simultaneous:

1. a. I sat on the chair and fell off.
   b. I sat on the chair and read a book.

Josman attributes the difference to "shared real-world knowledge" (p.2). I do not completely disagree with Josman, in that "shared knowledge" is an important pragmatic factor for interpreting the difference between (1a) and (1b). However, "shared knowledge" alone cannot account for this difference. This paper shows that other pragmatic factors along with semantic conditions are responsible for the difference in interpretation between (1a) and (1b). Hinrichs (1986[1982]) and Dowty (1986) account for the understanding of sequentiality in successive clauses, by showing that aspectual classes, i.e., aktionsarten, are responsible for the interpretation of the temporal relations holding between reported situations. They show that we usually understand situations reported in successive clauses as sequential if they report events, but as simultaneous, or overlapping each other, if they report states or activities. In Hatav (1989) I show that Aktionsarten are relevant to the interpretation of temporal relations only indirectly; and that the relevant factor is boundedness. Events are always bounded and therefore can always be candidates for sequence, while states and

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activities are usually unbounded , and therefore do not usually appear in sequence. However, states and activities can be bounded linguistically by phrases such as "for three hours" in "Mary slept for three hours", and then be able to constitute sequences. I will use the cover term "s(ituation)-type" for the distinction of bounded vs. unbounded situations although in recent literature (e.g., Smith 1991) the term is used as equivalent to aktionsarten, which I reserve for referring to the aspectual classes with respect to another property, namely the property of distributivity. Section 3.1 discusses the property of distributivity distinguishing between aktionsarten, and the property of boundedness which distinguishes between "s(ituation)-types. Section 3.4 provides a brief overview of the analyses dealing with the temporal relations between coordinated clauses, and shows that the sequential understanding in (1a) is due to the fact that we interpret the situations in both predicates as bounded events, and that we understand the temporal relations holding between the situations in (1b) as simultaneous because we interpret both predicates as reporting unbounded situations. In other words, the predicate "(I) sat on the chair" is ambiguous between an (inchoative) event 'sat down' as manifested in (1a) and a state 'was in the position of sitting' as manifested in (1b). The situation type of the predicate coordinated to this predicate disambiguates it. If the coordinated predicate reports a bounded situation, only the eventive meaning of '(I) sat on the chair' is retained, e.g. (1a), but if it reports an unbounded state or activity, only the stative meaning is retained, e.g. (1b). This behavior of ambiguous predicates in coordinated sentences is due to a more general phenomenon first discussed by Chomsky (1957) who pointed out that conjoined constituents must be of the same type. Section 2 overviews this constraint and shows it to be not only syntactic (as originally claimed by Chomsky), but also semantic and pragmatic (Schachter 1977, Grosu 1985, 1987, Lang 1984 , Bayer 1996, and others). Section 3.2 demonstrates that boundedness, i.e., s-types, is one of the semantic properties relevant for coordination. Section 3.3 shows how this explains why predicates such as "sat on the chair" must be interpreted as events when coordinated with another bounded situation, but as states when coordinated with an unbounded situation. Section 4 discusses problems and possible solutions, and section 5 summarizes the ideas presented in this paper.

2. The Coordinate Constituent Constraint

To account for the parallel nature of the coordination structure, and for grammatical phenomena hinging on it, various syntactic analyses were developed to refine Chomksy's (1957:35-7) idea that coordinated constituents must be of the same syntactic type (Williams 1978, Gazdar 1981, Goodall

1987, Moltmann 1992, Muadz 1991, Pickering & Barry 1993, Zoerner 1995, among others). Recent studies show that semantic and pragmatic features are also relevant, i.e., they also should be of the same type to permit coordination of constituents. Keenan & Faltz (1978, 1985), Gazdar (1980) and Lasersohn (1995) argue that coordination is an operation of intersection which takes arguments from the denotation domains of any conjoinable type to return a value of the same type. Developing this idea, Partee & Rooth (1983) define the set of conjoinable constituents and then suggest rules of lambda abstraction to apply to them recursively, binding all the free variables. As shown explicitly by Munn (1993:128-9), if the conjuncts are not of the same type, at some stage of the derivation lambda abstraction will not be possible. Thus Partee & Rooth require the constituents to be of the same type, returning the same type when coordinated. In case of apparent different types, an operator is assumed to shift one of the conjunct's type into the type of the other. In particular they analyze coordination of intensional and extensional verbs, where the intensional verbs in "want and need" and the extensional verbs in "catch and eat" get coordinated straightforwardly. To explain how intensional verbs are able to coordinate with extensional ones, they assume that for every extensional verb such as "buy" there is an intensional homonym, and the coordination "want and buy" is possible only when the verb "buy" is lifted to its parallel intensional type. A similar analysis is given in Partee (1987) for NPs such as "John and every man" where "John" (an NP of type $<e>$, according to Partee) is lifted to have the same type of "every man" (an NP of type $<<e,t>,t>$), to allow the coordination. Schachter (1977) suggests rather a cognitive explanation for the question of why coordination is possible only with categories of the same type. Applying Grosu (1972)'s notion of cognitive 'conflict principles', Schachter argues that a coordination of unlike categories will result in a cognitive conflict. Thus Schachter formulates the following constraint (where "semantic function" includes pragmatic features, as shown in his illustrations):

2. The constituents of a coordinate construction must belong to the same syntactic category and have the same semantic function. (Schachter 1977, rule #12)

However, as Gazdar et al (1985) and Sag et al (1985) rightly claim, not every syntactic category is relevant for coordination; e.g., NPs do not have to bear the same case, person, number or gender to be coordinated. Similarly, Schachter claims that not everything that might be classified as a semantic (or a pragmatic) feature is in fact relevant to the permissibility of coordinate conjunction (p. 90). Let us illustrate this by his examples (5), (19), (9) and (24) reproduced here as (3a), (3b), (3c) and (3d) respectively:

3. a. John and his girl friend quarreled.

b. John said that he and Mary were just good friends.

c. *What are you doing and shut the door.

d. *Mary makes very little money and all her clothes.

In (3a) the first conjunct is a proper noun and the second is not, yet the sentence is well-formed. (3b) is also good, although the first constituent in its coordination has the semantic function of coreferentiality ("he" corefers with "John") and the second does not. Contrary to these sentences, (3c) and (3d) are bad. In (3c) the first clause in the coordination is a question, while the second clause is a command. In (3d) the verb "makes" in the first conjunct means "earns" and in the second "manufactures". Thus, we may conclude that the property of coreferentiality and the property of proper vs. common noun are not relevant for coordination, while speech acts and lexical meanings are.

In the following section I show that one of the semantic features relevant for coordination is boundedness, i.e., coordinated constituents must share the same s-type defined by this property. When the conjuncts seem to have different s-types, I argue that in order to generate a well-formed sentence a semantic or pragmatic operator applies to shift one type to the other. Now since the s-type is determined by the predicate, i.e., by the verb and its arguments and modifiers, its proper domain is the predicate, and therefore the coordinated constituents I deal with in the present paper are predicates, as in "Mary sang and danced".[2] [3]

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[2] Many linguists, e.g., Schmerling (1975) assume for this sentence some reduction, derived from the sentence "Mary sang and Mary danced". However, it has been shown (e.g., by Keenan & Faltz 1978) that this analysis will result in a wrong interpretation for sentences such as (ia) which cannot be paraphrased as (ib):

(i) a. Some student walks and talks.

b. Some student walks and some student talks.

An excellent overview for the theory conjunction reduction see van-Oirsouw (1987).

I would like to take this opportunity to refer the reader to van Oirsouw also for an overview for the different syntactic analyses of coordination, and to Lasersohn (1995) for an overview from a semantic point of view.

3. Boundedness, Coordination and Ambiguous Predicates

This section begins with an overview of the notions of aktionsarten vs. s(ituation)-types and the properties of distributivity vs. boundedness distinguishing between them (section 3.1). Then it shows how the property of boundedness is relevant for coordination (section 3.2), and accounts for ambiguous clauses such as "John sat on the chair" with respect to coordination (section 3.3). Finally, it shows how the behavior of such clauses in coordination accounts for the interpretation of sequentiality (section 3.4).

3.1 Aktionsarten and Situation Types

The taxonomy of aktionsarten dates as far back as Aristotle. Different taxonomies have been suggested, but the most influential one is Vendler (1967)[4]. Vendler observes four aktionsarten: states, activities, accomplishments and achievements, all illustrated below.

4) a) Mary lived in London (for ten years).   (state)

   b) Lucie ran (for an hour).   (activity)

   c) Carol ate the apple.   (accomplishment)

   d) Julia found her bird.   (achievement)

Vendler stipulates that states and activities are homogeneous, while accomplishments and achievements are not (i.e., they are heterogeneous). In recent semantic studies resting on the notion of interval semantics this property has been called 'the distributive property' and analyzed in a more formal way (Bennett & Partee (1979 [1972], Dowty 1979, 1986, Taylor 1977, Bach 1981, Hinrichs 1985, among others). Interval semantics is the idea of evaluating the truth of a sentence with respect --

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[3] As shown in the literature of verbal aspects, the subject should also be taken into account. Verkuyl (1993) demonstrates this by the difference between (ia) and (ib) below (his: p. 18 ex. 60 and 61):

   (i)a. Nobody gave a badge to a congress-goer.   (unbounded)

     b. Den Uyl gave a badge to a congress goer.   (bounded)

However, this would not affect my claims, since the NP subject of a coordinated sentence has a wide scope over both predicates.

[4] For good overviews see Hinrichs (1985) and Binnick (1991).

to time intervals (rather than to moments or points of time as has been done in tense logic). The distributive property defined within this framework is concerned with the relationship of the situation interval with its subparts, distinguishing between states and activities on the one hand and accomplishments and achievements on the other hand. It has been stipulated that states are true in every subinterval and activities are true in most of their subintervals. For example, if it is true that Mary lived in London from 1980 to 1990, then it is true that Mary lived in London in 1986; and if it is true that Lucie ran from 9:00 to 10:00, then it is true for most of the time in that hour that she ran. States and activities, therefore, are distributive situations. Accomplishments and achievements, on the other hand, are false in their subintervals. For example, if Carol started to eat her apple at 12:00 and finished eating it at 12:20, then it is not true at 12:15 that Carol ate the apple (but rather she was engaged in eating the apple, she was eating the apple). While Vendler makes the distinction between achievements and accomplishments, stipulating that achievements are punctual where accomplishments have duration, and Dowty (1979) even proposes tests to distinguish them, Dowty (1986) deliberately does not make this distinction. As he points out there, many events usually classed as achievements do in fact have some duration. A physician may view dying not as a punctual event happening all at once (as analyzed by Vendler), but as a process with multiple stages happening in sequence. Hence accomplishments and achievements are grouped together as non-distributive situations. They have been referred to in the literature, e.g. Partee (1984), as "events", a term which I adopt here. This distinction, however, seems to be replaced in the literature by a more intuitive one where events are understood to have "endpoints" (e.g., Dry 1981), or bounds (e.g., Moens 1987, Verkuyl 1993) while states and activities do not. Dowty (1986) explains this intuitive notion as a logical entailment of distributivity. Since events are not distributive they may not continue beyond the indicated time, e.g., if Mary ate the apple yesterday, it cannot be the case that she ate the same apple today; she may have eaten another apple today, but then we say that there were two different events of eating an apple. On the other hand, since states and activities are distributive they may continue beyond the indicated time, cumulating more intervals of the same kind. E.g., the sentence "Mary was sick yesterday " does not entail that today she is not (still) sick. This analysis seems to suggest that one may characterize the predicates by one property or the other, a suggestion which I argue to be inadequate. Although there is a high correlation between the properties of distributivity and boundedness, they are not the same. Since events may be true in one interval only for being nondistributive, they are by definition bounded. On the other hand, since states and activities are distributive and their interval number is not limited, they are usually

unbounded. In Hatav (1989) I emphasized that the property of boundedness is strictly semantic, and not a property of the real world. E.g., the state expressed by "John lived in London" must have two endpoints in the real world (as assuming that John cannot live in London forever), but the endpoints are not linguistically defined. Since their lack of bounds does not depend on the real world, states and activities may be bounded linguistically by expressions, the most discussed one being a "for"-phrase (as in 5a below). (Cf. Depraetere's (1995) distinction of "inherent" vs. "intended" endpoints.) In Hatav (1989) I analyze another modifier for bounding situations: 'cardinal count number' expressions such as "three times" in (5b) below:

5. a. Mary worked for six months.

   b. John was sick three times this winter.

The activity "worked" in (5a) and the state "was sick" in (5b) are bounded by the phrases "for six months" and "three times" respectively. Mittwoch (1988) claims that "for" expressions turn activities into accomplishments (i.e., events), an analysis which seems to be inadequate. Although (5a) implicates strongly that Mary did not work more than six months, it does not entail it logically (which would be the case if it were an event). Suppose that in order to get promoted Mary had to work for (at least) six months, and she worked for ten. In order to get her the promotion one could say "Mary worked for six months; actually she worked for ten." Moreover, "for" phrases are used as a test for determining the aktionsart of the predicate; only when the predicate reports a state or an activity can it be modified by a "for" phrase, as demonstrated by the examples in (6) below. As a mirror test, "in" phrases may modify only events, as shown in (7) below. (These and other tests are summarized in Dowty 1979 and Hinrichs 1985.) That "for" phrases do not change states or activities into events is shown by the ungrammaticality of (7d). Thus, we may conclude, "for" and cardinal count number phrases shift the s-type of states and activities from unbounded into bounded situations, rather than shifting the aktionsart (they remain distributive).

6. a. *John finished his article for a month.

   b. John lived in Boston for a month.

   c. John worked for the American army for a month.

7. a. John finished his article in a month.

   b. *John lived in Boston in a month.

c.*John worked for the American army in a month.

d. *John slept/worked for twenty hours in a day.

Note, that events may also "lose" their bounds, e.g., when modified by phrases such as "repeatedly" in "(John) fainted repeatedly" (see ex. 30 below). However, in such cases not only do the predicates shift their s-type, but their aktionsart as well (since an unbounded event is a contradiction). To summarize the terminology used in this paper: The term 'aktionsart(en)' refers to the property of distributivity, i.e., to events on the one hand and states and activities on the other hand. The term s-type refers to the property of boundedness, and thus is used to refer to unbounded situations (states and activities) on the one hand, and bounded situations (events and linguistically bounded states or activities) on the other hand.

3.2 Boundedness and Coordination

Arguing that boundedness is a relevant property for coordination, I suggest the following rule:

8. Two (or more) predicates may be coordinated iff they share the same s-type, such that:

    a. unbounded situations yield a new unbounded state-of-affairs;

    b. bounded situations yield a bounded sequence or list of situations;

    c. an operator applies to shift one s-type, usually of the second conjunct, to match the
       s-type of the other conjunct.

Rule (8) merits some comment. Lasersohn (1995: 189) argues that "any two eventualities combine to form a third more complex eventuality, their 'sum' or 'combination'..." The "more complex" eventuality (=situation) suggested by clause (a) in rule (8) may be illustrated by the coordination "Mary wore her dress and felt happy". Each predicate in this coordination reports a state; when they are coordinated, they yield a new state-of-affairs, a combination of both situations: Mary being happy while wearing her dress. Clause (b) requires that the "more complex" situation yielded by coordinating bounded situations be a sequence or a list. It is well acknowledged that events (and other bounded situations) usually result in sequences when coordinated (see discussion in section 3.4). However, this is not always the case, as demonstrated by the following examples:

9. a. The policeman kicked the door and pulled the trigger (at the same time)

    b. Speaker A: What did you do yesterday?

       Speaker B: A lot. I worked for a few hours in the library, I wrote some letters, read and
          and even saw a movies on TV. (Not necessarily in that order.)

The context in (9a) suggests that the events occurred simultaneously. However, although they are two different events they are related, expressing some "complex" situation (the policeman catching the criminal?). For a lack of a better term I call a situation of this kind a LIST. In (9b) there is a preliminary context, namely Speaker A's question, which establishes that the following is a list, and furthermore determines its topic (the list of the things Speaker B had done). Since lists do not require temporal (or other) order, Speaker B may enumerate all the things s/he had done without the addition of the phrase "not necessarily in that order", which only strengthens the suggestion that the order of the situations is not relevant.

Clause (c) in rule (8) also needs some discussion. There are in the literature different frameworks to account for s-type shifting. Hinrichs (1985:37-39) uses the notions of "universal grinder" and "universal packager" attributed to Pelletier (1975) explaining how a given expression shifts from one s-type to another in certain contexts (he actually talks about aktionsart shifting). As an example, he considers the predicate "eat a cake" which is an event, and therefore may not occur with "for" phrases. If it does, as in (10), claims Hinrichs, it has to be put through the universal grinder in order to be interpreted as an activity:

    10. Mary ate the cake for an hour.

Similarly, a predicate such as "look for a book" is an activity, but if it occurs in a context ordinarily ruled out for activities, it must be interpreted as an event. As an example he cites Dowty (1979:61):

    11. The librarian finished looking for the book.

As pointed out by Dowty (1979) and elsewhere, activities do not occur as the complement of the aspectual verb "finish". However, as he points out, if we interpret the activity "look for a book" as an event, say, in the sense carrying out all the steps in the library's search procedure, then (11) becomes acceptable.

Moens (1987 & Steedamn 1988) develops a transit network showing graphically that situations may "move" around the network, from having bounds to losing them or vice versa, when they are coerced to do so. These intuitive analyses may be given a more formal account. I argue that for every bounded situation there is a related unbounded homonym, and vice versa, where the unbounded situation is the logical conclusion of the parallel bounded one. Consider the following examples:

    12. a. Mary made a chair. -----> Mary was making a chair.

       b. Mary slept for three hours. -----> Mary slept.

       c. Mary ate three apples ---- Mary ate apples.

       d. Mary ate the apples ------> Mary ate apples.

e. John ate apples -----> John ate an apple.

f. John kept falling off./John fell off repeatedly ----> John fell off.

g. John gets up at 5 every morning. ----> John got up at 5 (this morning).

In (12a) the event entails the unbounded situation , and in (12b) the bounded state entails the unbounded state.   In (12c) and (12d) the situations reported by the premises have a count NP as a modifier for their predicates, and thus they entail the sentences with the bare plural NPs. (Bare plurals turn predicates into unbounded situations -see discussion on ex. 27 below.) However, the entailments in (12 e-g) seem to form a set of counterexamples to my thesis, since their bounded situations entail the unbounded ones, rather than being entailed by them. These examples, however, seem to manifest the same problem, as their premises all have a phrase expressing "more than one": the bare plural "apples" (12e), the iterative phrases "kept" and "repeatedly" (12f), and the frequency phrase "every morning" (12g). Thus a solution to one of the examples may solve the others. Note, furthermore, that although they form counterexamples to the thesis that unbounded situations are the logical conclusions of their bounded counterparts, they do not refute the essential claim that there is a relation of entailment between the bounded and the unbounded situations.   Another set of examples that may seem to form a problem of this kind are inchoatives such as "John fell in love" and inceptive events, such as "Mary started to read". (See more discussion on inchoatives and inceptives in section 3.3.) It may seem that these events and their unbounded counterparts "John was (is) in love" and "Mary was (is) reading" respectively, entail each other. This, I claim, is not an adequate observation.   While the events do indeed entail the unbounded situations, as predicted by my thesis, it is not the case that the unbounded situations also entail the bounded events.   The sentences "Mary was reading" and "John is in love" strongly implicate the sentences "Mary started to read" (as she could not be born reading), and "John fell in love", but they do not entail them. That the unbounded situations do not entail their inchoative or inceptive homonyms may be shown more clearly by other examples. Inchoative sentences such as "John's face reddened" and "Mary recovered" entail that John's face was (or is) red, and that Mary is (or was) healthy, but not vice versa. John may have been born with a red face, and Mary may have been always healthy. Ignoring the problem of iterative phrases (as in ex. 12e-g), we may conclude, then, that bounded situations entail their unbounded homonyms. Following Keenan and Faltz (1985) I define the relation of logical entailment in terms of informativeness, where the logical conclusion is less informative than its premise. Thus bounded situations are more informative than their unbounded homonyms, and

the shift from one type to the other may be done by adding or removing information[5]. This may be done by linguistic (ex. 5a above and 30b below), or contextual (ex. 23 below) devices. Now since the hearer processes sentences linearly, in the case of coordination it is usually the case that the s-type of the second conjunct is shifted to match the s-type of the first (ex. 47b below). (Cf. FN. 11 in Partee & Rooth 1983.) Only when there is an explicit linguistic marker as in (30) and (49) below, or a preliminary context as in (23 and 29), does the hearer shift the s-type of the first conjunct, reprocessing it. In what follows I will demonstrate the validity of rule (8).

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[5] It is tempting to consider shifts of s-types within the framework of Montague grammar. We may think of bounded situations as parallel to two-place predicates, with some argument referring to their bounds, while unbounded situations will be similar to one-place predicates. Thus shift will be from a type of a one-place to a two-place predicate or vice versa. This line of thinking may find support in the analysis of Verkuyl (1993). Verkuyl argues that the s-types may be determined compositionaly, where the bounded situations have phrases bearing the feature [+SQA], meaning phrases with an argument A which has "specified quantity". Thus "walk home" is bounded because it has the NP "home" whose quantity is specified, but "walk" is unbounded for lacking such a phrase. (A similar analysis is given in Krifka 1992.) Stimulating as it is, this does not always work, since Verkuyl adds many semantic properties which cannot be determined compositionaly. E.g., although states such as "John loves Mary" have a phrase bearing the property [+SQA], they are not bounded due to another parameter Verkuyl develops, namely [ADD TO] which distinguishes between predicates progressing in time and those which are not. The feature [+SQA] is not relevant for stative predicates, according to Verkuyl, because they are assigned the feature [-ADD TO]. Another example is the well known problem of "push the cart", which is understood as an unbounded situation, although it has the phrase "a cart". Verkuyl explains this predicate as a paraphrase of "give pushes to the cart" which now has the NP "pushes" bearing the property [-SQA]. However, this paraphrase cannot be predicted from the VP itself.

If boundedness is a relevant property for coordination, then we should be able to coordinate bounded situations with each other (if they do not violate other relevant properties), and unbounded situations with each other, but not a bounded with an unbounded situation. First observe a few examples of permissible coordination. (13-15) demonstrate that unbounded situations may, indeed, be coordinated. The examples in (16-17) demonstrate that bounded situations may also be coordinated.

13. state + state

    a. John is tall and has blue eyes.

    b. John is smart and handsome.

14. activity + activity

    a. Mary danced and sang.

    b. John walked and pushed a cart .

    c. The boy rolled down the hill and laughed.

15. state + activity or activity + state

    a. John slept in his bed and dreamt funny dreams.

    b. John is lying on the bed and smoking.

    c. John played basketball and was only 5 feet tall.

16. event + event

    a. John opened the door and started to laugh.

    b. Mary drew a circle and wrote a poem.

    c. Snow-white ate the poisoned apple and fainted.

17. event + bounded state/activity

    a. John went home and slept for ten hours.

    b. Mary put on her shoes and ran for twenty minutes.

    c. Mary ran for twenty minutes and took a break.

    d. Mary danced three dances/times and took a rest.

The examples in (17) demonstrate that boundedness rather than distributivity, i.e., that the s-type rather than the aktionsart, is the relevant factor for coordination. Strengthening this claim, the examples in (15) show that the difference between activities and states is not relevant for the constraint formulated under (2) above. (And example 16c shows that the difference between

achievements and accomplishments is not relevant either.) However, this does not mean that it is not relevant in other respects. The distinction of state-activity is subject to the constraint of asymmetric conjunction. Linguists and philosophers have long noted that there are two kinds of coordinated sentences: symmetric and asymmetric (Lakoff 1971, Schmerling 1975, among others). Consider the differences between (18) on the one hand and (19) and (20) on the other hand, (Schmerling ex.1, 2 and 4):

18. a. Paris is the capital of France, and Rome is the capital of Italy.

    b. Rome is the capital of Italy, and Paris is the capital of France.

19. a. Harry stood up and objected to the proposal.

    b. Harry objected to the proposal and stood up.

20. a. Smile and the world smiles with you.

    b.*The world smiles with you and smile.

Schmerling gives (18a) as an example of symmetric conjunction (coordination), and therefore the order of its clauses could be reversed as in (18b), without changing its meaning. On the other hand, (19a) and (20a) illustrate asymmetric conjunctions. When the order of the clauses of (19a) are reversed to generate (19b), the temporal relations between the situations reported in them change; while in (19a) we understand that Harry first stood up and then objected to the proposal, in (19b) we understand the order in time to be the other way around (Harry first objected to the proposal and then stood up). Reversing the order of the clauses in (20a), moreover, turns the grammatical sentence into an ungrammatical one. It might be the case that if both clauses in a coordination report states or both report activities, the coordination may be symmetric as in (13b) and (14a) respectively, or asymmetric as in (13a) and (14b-c) respectively. But if one of the clauses expresses a state, and the other one reports an activity as in (15a-b) it is (usually?) asymmetric. However, this rule of thumb should be investigated further, to determine the conditions of defining when they are symmetric and when they are not[6].

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[6] Michael Boutin (pc) points out that even clauses both reporting states are not always symmetric, e.g.,

    (i) He is short and fat.

To illustrate the claim that we may not coordinate a bounded with an unbounded situation, it is interesting to observe the difference in grammaticality between the sentences in (21) and in (22) below:

21. a. Mary put on her dress and went to school.

    b. Mary wore her dress and felt happy/looked nice.

    c. *Mary wore her dress and went to school.

22. a. The leaf turned brown and died.

    b. *The leaf turned brown and moved with the wind.

In (21a) and (21b) the two coordinated predicates report bounded and unbounded situations respectively, and hence the sentences are well-formed. In (21c), however, the first predicate expresses an unbounded state, but the second reports a bounded event, and therefore the sentence is ill-formed. Similarly, (22a) is grammatical since the coordinated predicates both report events, but (22b) is bad since the first predicate reports an event, and the second an (unbounded) activity. However, the starred sentences may be given an interpretation in a context where the s-type of one of the predicates is shifted. Ann Wehyemer (pc) suggests the following context in which (21c) is implemented, turning it into a well-formed sentence:

23. Mary's mother told her the dress was awful, but Mary wore the/her dress and went to school.

The context established in the first clause of (23), I argue, shifts the unbounded state "wore the dress" into a bounded situation. Chafe (1970) suggests two tests for identifying states. He shows that non-states answer the questions "What happened?" and "What did she do?", but states do not. Applying these tests to (21c) result in a bad discourse, as shown in (24) below, while applying them to (23), results in a well-formed one, as shown in (25):

24. Speaker A: How was the party last night?

    Speaker B: It was lovely, and Mary was there too.

(ii) He is fat and short.

The (ii) example is non-idiomatic.

Speaker A: What happened?/ What did she do?

Speaker B: *She wore her/the dress.

25. Speaker A: Mary bought a new dress, but her mother told her it was awful.

Speaker B: What happened (then)? What did she do?

Speaker A: Mary wore the/her dress (anyway).

Another test which can be applied here is found in Dowty (1979), namely that states may not be modified by "deliberately". If we modify "She wore the dress" in (24) and in (25) by the adverb "deliberately" we will have a bad sentence for the former and a good one for the latter. The reason the context in (23) shifts the s-type of "wore...", I believe, is that it implicitly states that Mary disobeyed her mother (or refused to accept her advice), which is a bounded situation. The question that might arise here is why would the speaker not use the parallel eventive lexical "put on" in this case. The answer, it seems to me, is that "put on" reports only the inchoative event ("started to wear"), which was not what was objected to by Mary's mother; it could be even the case that she told Mary to put on the dress, look in the mirror, see how awful she looks, and take the dress off.

Dowty (1979, 1986) and Verkyul (1972, 1993) (summarized in Hinrichs 1985) state that the aktionsart a situation belongs to cannot be determined by the lexical meaning of the verb alone (as claimed by Vendler, although his examples suggest otherwise), but is a function of the verb along with its arguments and modifiers. For example, an NP or a PP expressing extent can convert an activity into an event (the examples and the analysis are from Dowty 1986):

26. a. John walked.   (activity)

b. John walked a mile. (event)

c. John walked to the station. (event)

In (26a) the predicate consists of the verb 'walk' alone, and therefore the aktionsart is that of the lexical verb. However, in (26b) and in (26c) the verb 'walk' has the NP 'a mile' and the PP 'to the station' respectively as arguments, changing the aktionsart of the lexical verb 'walk' from an activity to an event.   (Verkyul 1993 and Krifka 1992 suggest formal accounts for the phenomenon.) On the other hand, a mass NP, a bare plural NP or a PP with the preposition "toward" turns the sentence into an activity, or retains its original meaning as an activity, as demonstrated in

(27) below (27a-c are taken from Dowty 1986, ex. 11, and 27d is a variation from Hinrichs ex. 1 on page 204):

27. a. John noticed the rare seashell on the beach. (event)

    b. John noticed rare seashells on the beach.   (activity)

    c. Tourists noticed the rare seashell/seashells on the beach. (activity)

    d. John went toward the beach.   (activity)

Since the events are bounded and the activities are not, we should predict that the events in (26) and (27) will yield good sentences when coordinated with bounded situations, but bad sentences when coordinated with unbounded ones; the reverse should be predicted for the activities. First let us conjoin the sentences in (26) with an eventive clause, as in (28):

28. a. *John walked and fainted.

    b. John walked/ran a mile and fainted.

    c. John walked/ran to the station and fainted.

As predicted, since (26b) and (26c) are events, they may be coordinated with an event such as 'fainted', but (26a) is an activity and results in an ungrammatical sentence when coordinated with an event such as 'fainted'. Here too, however, an operator may be applied to shift the s-type of one of the conjuncts in (28a), yielding an interpretable sentence. Ann Wehymeyer (pc) suggests the following context:

29. The doctor told John not to walk, but John walked and fainted.

As in the case of ex. (23) above, the preliminary context and the conjunction "but" implicate that by walking John disobeyed his doctor's advice. Thus "walked" no longer expresses the unbounded activity of walking, but the bounded event "refused to take the advice (and walked anyway)". The s-type of the predicate in the second conjunct may also be shifted, however usually with specific linguitic means. For instane, the phrase "repeatedly" shifts the s-type of "fainted" in (28a), yielding a coordination of two unbounded situations:

30. John walked and fainted repeatedly.

To conclude, when coordinating the sentences in (26) with bounded situations, they yield good sentences with (b-c), but bad sentences with (a) (unless an operator applies to shift (a)'s s-type, or its conjunct's s-type). The results should be converse if we coordinate an unbounded predicate to the predicates of the sentences in (26):

31) a. John walked and sang.

    b. John walked a mile and sang songs.

    c. *John walked to the station and sang[7].

Indeed, adding the activity clause "sang" to (26a) results in a well-formed sentence (31a), but adding it to (26c) results in a bad sentence (31c). However, the second conjunct in (31b) has a bare plural , yet the sentence is not ruled out. It might be the case that the duration of the activity of the second conjunct is bounded by the situation of the first conjunct. More precise, it seems to me, is to conclude that the phrase "for a mile" bounds both situations. That it is possible to bound the singing by the phrase "for a mile" is manifested by the sentence "John sang for a mile". (However, it is not clear to me how an adverbial in the first conjuct is able to bound the predicate in the second.) With some effort it is also possible to interpret the first clause in (31c) as reporting an inceptive event 'started to walk'. In this case the sentence is grammatical (see discussion in section 3.3 below). To appreciate this last point consider the difference in grammaticality between the sentences in the following pair:

    32. a. John went to the beach and started to swim.

        b. *John went toward the beach and started to swim.

The first clause in (32a) has the PP 'to the beach' expressing extent, and therefore the clause reports an event, and is permitted to be coordinated with another event "started to swim". However, in (32b) the PP "toward the beach" does not turn the situation into a bounded one and the inceptive reading 'started to swim' is not possible for conversational rules - one starts swimming only when one gets to the beach, not when s/he has started to walk toward it. Hence the first clause in (32b) is understood only as an unbounded activity, and being coordinated to the event 'started to swim' results in a bad sentence. To support this analysis compare (32b) with (33a-b):

    33. a. John went toward the beach and started to sing.

        b. John pushed the cart and started to sing.

As in (32b), the first predicate in (33a) is not bounded. However, unlike (32b) it may be interpreted as an inceptive situation "started to go" since it is possible to sing before reaching the beach. Similarly, "push the cart" in (33b) may be interpreted as inceptive. All the speakers I have consulted

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[7] Michael Boutin (pc) believes that if we reverse the order of the clauses in (31c), the sentence

will be good. If this is the case, my coordination argument fails. However, other native speakers

do not share this judgment (and neither do I accept the equivalent sentence in Hebrew).

agree that in (33a-b) the singing started right after starting walking or pushing the cart respectively. In other words, the sentences in (33) report inceptive, and thus bounded, situations in both conjuncts. Note, however, that modifying the derived inceptives in the second conjuncts with "in"-phrases will yield ill-formed sentences. Consider the following examples.

(34) a. Mary put on her shoes and ran.

    b. *Mary put on her shoes and ran in a second.

(35) a. John went home and slept.

    b. *John went home and slept in a second.

Due to the fact that the first conjunct in (34a) reports an event, we interpret the second conjunct as reporting the inceptive event "started to run". Similarly, in (35a) the s-type of the predicate in the second conjunct gets shifted to interpret the beginning of the state, which may be paraphrased as "went to bed" (note that it is not interpreted as the incohative "fell asleep"). However, although the s-types of "ran" in (34a) and "sleep" in (35a) are shifted to express bounded situations, they yield ill formed sentences (34b) and (35b) respectively when modified by "in a second". Recall in this respect the distinction between aktionsarten and s-types. The aktionsarten of the predicates "ran" and "sleep" in these sentences, I claim, were not shifted; their s-types were. Now recall that the "in"-phrase test was developed to identify aktionsarten, not s-types. I.e., "in"-phrases may modify only events, not any bounded situation, as shown in (17d) where the bounded situation "sleep for twenty hours" turned ungrammatical when modified by an "in"-phrase. This claim might find some support in the difference in grammaticality between (36a) and (36b):

(36) a. *Mary put on her shoes and started to run in a second.

    b. Mary put on her shoes and in a second started to run.

It seems that in (36a) the phrase "in a second" is understood to modify "to run" whose aktionsart is that of an activity, and hence the ill-formed sentence. In (36b), on the other hand, the phrase is positioned at the beginning of the predicate "started to run", making clear that the predicate itself is modified rather than the activity verb "to run"; hence the grammaticality of (36b).

Let us now consider mass and bare plural noun phrases in connection with coordination.

37. a. Mary ate popcorn and sang.

    b. *Mary ate popcorn and finished her article .

38. a. John ate apples and sang.

    b. *Snow white ate apples and fainted.

c. Snow white ate the apples/apple and fainted.

d. John mixed eggs and stopped talking to Mary.

The situation in the first clause in (37a) is an activity since the clause has a mass noun "popcorn" as an argument of the verb "ate." Hence when coordinated with the activity "sang", it results in a well-formed sentence. However, when this clause is coordinated with the event "finished her article", it results in an ill-formed sentence, as shown in (37b). The sentences in (38) demonstrate the behavior of bare plurals in coordinated clauses. The first clause in (38a) and (38b) contains a bare plural NP 'apples' as an argument of the verb, retaining its lexical activity meaning. Hence the difference in grammaticality between the sentences in (38). Coordinating this clause with another activity clause 'sang' in (38a) results in a good sentence, while coordinating it with an event 'fainted' in (38b) results in an ungrammatical sentence. Compare (38b) with (38c), in which the NP turns the clause into an event, and hence it results in a grammatical sentence when coordinated with the eventive clause 'fainted'. (38d) seems to be a counterexample. I suggest that in this case the context makes it clear that the number of eggs is specified, since people do not mix eggs unless they have a recipe for a cake or a dish, with specific measures of the ingredients. Therefore, in (38d) the hearer applies a pragmatic operator shifting the predicate with the bare plural phrase into a phrase such as "mixed the eggs", which turns the predicate into a bounded situation.

The last remark in the previous paragraph points to the major problem for this paper, namely identifying aktionsarten and s-types. Unfortunately, the mechanism for determining the aktionsart and hence the s-type of the predicate compositionally by the lexical verb and its arguments and modifiers does not always work (contrary to what Verkuyl 1993 claims - see FN 5). A famous example is the predicate 'push a cart' which is an activity although the verb has the NP 'a cart' as its argument (again, cf. FN 5). Fillmore (1971) observes that the sentence "John read a book" is ambiguous between an event 'John read the whole book' and an activity 'John read from the book', and therefore it may be modified by an 'in' phrase or a 'for' phrase, disambiguating it:

39. a. John read a book in two hours. (event)

b. John read a book for two hours. (activity)

In other words, adding a noun phrase expressing extent such as "a book" does not render an unbounded activity clause into a bounded event in this case. (See a formal analysis for a similar example "write the letter" in Krifka 1992.) Moreover, we have seen that any s-type may be shifted to its parallel homonym in the right context. In other words, in addition to syntactic means of

determining aktionsarten and s-types, we may need to rely on real world knowledge, or conversational devices (Dowty 1986). However, although the claims in this paper rely on the identification of the s-types in question, the validity of these claims is not affected by the possible difficulty of determining the s-types.

3.3 Coordination and the interpretation of the situation type in ambiguous clauses

Now we are ready to account for ambiguous sentences such as "Mary sat on the chair". Comrie (1985:342) observes that it is rare for English to use morphophonemically unrelated verbs such as "wear" and "put on" to refer to the state and the inchoative event 'entry into the state'. Rather, often English uses the same verb in both senses. In other words, verbs such as "sit", "feel", "see", "stand" and the like are ambiguous between a stative and an eventive meaning. For example, the salient meaning of the verb "sit" is that of a state, but its secondary meaning is that of an inchoative event, as explicated in (40a) and (40b) respectively:

40. Mary sat on the chair.
    a. state = was sitting on the chair, was in the position of sitting on the chair.
    b. event = sat down on the chair. (Cf. the order "sit!" to a dog).

Dowty (1986) indicates that activities too are ambiguous between activities, as their salient meaning, and inceptive events, as illustrated below:

41. Mary read newspapers/watched the birds.
    a. activity = Mary was engaged in the activity of reading newspapers or watching the birds.
    b. event = Mary started to read the newspapers/to watch the birds.

Dry (1981), Dowty (1986) and Josman (1986) show that stative predicates are interpreted as inchoative events if an adverbial like underline suddenly is added to them. Here is an example from Dowty (his:9):

42. John sat in his chair going over the day's perplexing events again in his mind. Suddenly, he was asleep.

In this section I suggest that coordination is another device for eliciting the eventive meaning of a stative predicate; moreover, it is a device for disambiguating the state, blocking the eventive meaning. This is predicted from the rule that the conjoined predicates must be of the same s-type.

Since eventive predicates may be coordinated with bounded predicates only, if we coordinate predicates containing verbs like 'sit' with an eventive predicate, they will necessarily be interpreted

as reporting inchoative events. However, if we coordinate such predicates with unbounded ones, they cannot have an inchoative meaning, i.e., they are interpreted as statives only. Reconsider the sentences in (1), reproduced here under (43) with a variation:

43. a. John sat on the chair and fell off.
    b. John sat on the chair and watched the birds.
    c. John sat on the chair and read a book.

In (43a) the second conjunct is unambiguously an event, and therefore "sat on the chair" is necessarily understood as an inchoative event 'sat down'. On the other hand, in (43b) the predicate "watched the birds" is an activity, i.e., an unbounded situation, and therefore "sat on the chair" is understood as a state. (43c), however, is more complicated. As discussed above (ex. 39), this clause is ambiguous between an event 'read the whole book' and an activity 'read from the book'. In our context it seems that the activity reading lends itself more easily, probably because we do not expect a person to read a book from beginning to end by one sitting only. (That is how Josman interprets 43c). In this unmarked case the first clause "sat on the chair" is necessarily interpreted as a state, but if we prefer the other reading of "read a book" (say, in a context where one wants to appraise Mary for being a fast reader), the first clause will be interpreted as an event 'sat down'. Note, however, that there is also the inceptive reading for "read a book"[8], namely 'started to read'. In this case, too, the clause "sat on the chair" is interpreted as an inchoative event.

The claim that coordination coerces ambiguous predicates to retain only one of their meanings finds support in languages such as Russian and French which mark aspectual classes morphologically.

In Russian each verb has derivational forms P(erfective) and IMP(erfective) (Forsyth 1970), with a derivational relationship. A clause with a perfective verb denotes an event, while a clause with an imperfective verb denotes an unbounded situation. Thus, as claimed by Comrie (1985), in the case of statives the imperfective forms denote being in a certain state, and the perfective forms denote inchoative situations. Comrie illustrates this by the imperfective verb sidet' 'be in a sitting position', vs. the perfective set' 'to adopt a sitting position'. The thesis predicts that a clause with set' can only be coordinated with clauses with perfective verbs, in which case both clauses express events. Furthermore, it predicts that a clause with sidet' can only be coordinated with clauses with

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[8] I owe this observation to Ruth Berman (pc).

imperfective verbs, in which case both clauses express unbounded situations. This prediction is indeed valid, as shown below.[9] First consider the coordination of the forms with eventive clauses.

44. a. Vladimir se'   na stul   i   upal na pol

     Vladimir sit(P) on chair and   fall-off (P)

   b. *Vladimir sidet   na stul   i   upal na pol

     *Vladimir sit(IMP) on chair and   fall-off (P)

In (44a) the clause with the perfective se' expressing the event 'sat down' is coordinated with a clause with a perfective verb, expressing another event 'fell off'. Hence the grammaticality of the coordinated sentence. In (44b), however, the first clause, which has the verb 'sit' in the imperfective expressing a state, is coordinated with the eventive clause 'fall off', which is in the perfective, resulting in an ill-formed sentence.

Note, however, that it is possible to have BOTH verbs in IMP, but then we have a different meaning of "fall-off" - 'kept falling off' or 'fell off again and again'. CF. the English sentence "John was sitting on the chair and (kept) falling off".

Now let us consider the behavior of 'sit' with activities such as "read". When coordinated with "read" the verb 'sit' may take only the imperfective form:

45. a. *Vladimir sei   na stul   i   čital

     *Vladimir sit(P) on chair and read(IMP)

   b. Vladimir sidet   na stule i   čital

     Vladimir sit(IMP) on chair and   read(IMP)

If both coordinated predicates are in the perfective, 'sit' is interpreted as 'sit down' and 'read' as 'started to read' (or 'read the whole book', which is more difficult to get).

French is a similar case. Verbs in eventive clauses should have passé composé (or passé simple, in narrative discourse), while verbs in stative clauses have imparfait. Therefore, the verbs in (46a) in both clauses are in passé composé, and the verbs in (46b) are in imparfait (Michel Achard, pc).

46. a. Michel s'est assis sur la chaise et   est tombé.

     Michel sat (PC)   on the chair and fell-off (PC)

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[9] I thank Bill Sullivan and Wayne King for providing me with this data.

b. Michel était assis sur la chaise et regardait   les oiseux.

Michel sat (IMP) on the chair and watched (IMP) the birds.

Since 'read a book' is ambiguous between an activity and an eventive reading, its verb can be in PC or in IMP, eliciting different meanings, as demonstrated by the sentences in (47) below. (Note that in the first case the verb in the second clause is also in PC, and in the second case the verb of the second clause is in IMP, to have two bounded clauses and two unbounded ones respectively.)

47. a. Michel s'est assis sur la chaise et a lu   un livre.

Michel sat (PC) on the chair and read (PC) a book.

b. Michel était assis sur la chaise et lisait   un livre.

Michel sat (IMP) on the chair and read (IMP) a book.

The fact that we usually need semantic or pragmatic markers to elicit the eventive meaning of statives may suggest that they are unambiguously unbounded situations. Adding adverbials like "suddenly" to them, coordinating them with bounded situations, or planting them in certain context may shift their s-type, turning them into bounded situations. In this light, the hearer processes the first clause in (43a) as a state. When they hear the second conjunct "and fell off", they go back to the first conjunct, reprocessing it as an inchoative event, to allow coordination. This process will not be needed when the <u>second</u> clause has to shift its s-type, as in (48).

48. John put on his new suit and felt ridiculous.

In the case of (48) the hearer processes the first conjunct as a bounded situation, expecting another bounded one in the second conjunct. Since the second has a stative predicate "felt", the hearer applies an operator to shift it into a bounded inchoative event "started to feel", to match the s-type of the first predicate. Thus, we may assume that usually the s-type of the second clause gets shifted, unless there is a linguistic phrase or a preliminary context coercing the type shift of the first conjunct. An example of a preliminary context was discussed in respect with examples (22c) and (28a). Example (48) may be an illustration of linguistic considerations. A more explicit example for linguistic means I provide in (49):

49. John put on his new suit and felt ridiculous doing so.

As in (48) the hearer interprets the first conjunct in (49) as a bounded situation, expecting another bounded one. However, in the second predicate of (49) there is an anaphoric phrase "doing so" referring to the predicate "put on his new suit". It is well acknowledge that progressives are always interpreted as unbounded situations (see discussion on ex. 67 below). Thus, "doing so" shifts its antecedent "put on..." from a bounded to an unbounded situation (the "picture" we see in our mind is that of John sticking one hand into one sleeve, and then another hand into the other sleeve, and so on.). Since the hearer processes the sentences linearly, as mentioned above, the hearer first processes the first predicate as a bounded situation, expecting another bounded situation, and when s/he hears the last phrase "doing so" s/he goes back to the first conjunct, reprocessing it to have an interpretation of an unbounded situation.

3.4 Sequentiality and Situation Types

Kamp (1979, 1981 & Reyle 1993) proposes interpreting clauses within a narrative discourse in two steps. First, discourse rules map a succession of clauses comprising a discourse into a discourse representation structure (DRS), and then truth conditional rules give an interpretation to the discourse representation. Kamp proposes that for French , at least, these relationships in discourse structure are a function of the tenses in the clause. If the clause is in passé simple, its situation follows the situation of the previous clause. But if the clause is in imparfait, its situation overlaps temporally with that of the previous clause.

Hinrichs (1986 [1982]), followed by Partee (1984) and others, applies Kamp's theory to the analysis of English discourse, using s-types. Hinrichs claims that successive clauses with eventive predicates are necessarily understood as sequential, while clauses with states, activities or progressive (i.e., unbounded situations) must be interpreted as simultaneous. Let us see one of his examples (his:17):

> 50. He went to the window and pulled aside the soft drapes. It was a casement window and both panels were cranked out to let in the night air.

The situations reported in the first two clauses are events, and therefore interpreted as following each other. The coordinated clauses in the second sentence report states, and hence, they are understood as occurring at the same time.[10] Dowty (1986) does not agree with Hinrichs, and develops a theory

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[10] Hinrichs's analysis accounts also for the temporal relationships holding between the states described in the second sentence and the events reported in the first. (He shows that in the most natural reading the states occur at the same time as the events). However, since this paper is

which suggests that only events are necessarily understood to be in succession, but in the case of states it is only a (strong) implicature.[11] Furthermore, Partee (1984:256), who adopts Hinrichs's analysis shows that events may be understood as simultaneous or overlapping when clauses have different subjects . However, they all agree that for eventive successive clauses the most natural interpretation is that of sequentiality, and for successive unbounded clauses it is simultaneity. In this light we can now explain the difference in temporal relations between the situations in (1a) and the situations reported in (1b), reproduced here as (51a) and (51b) respectively:

51. a. I sat on the chair and fell off.

    b. I sat on the chair and read a book.

The situation of the first clause in (51a) is necessarily understood as an event 'I sat down on the chair' because of its eventive coordinate "and fell off". It is also understood as preceding in time the second event. On the other hand, since "sat on the chair" is interpreted as a state in (51b) (in its salient unmarked reading), the sentence is understood to report a state simultaneous with the activity of reading a book. Note that in its secondary reading, where "sat on the chair" is understood as an inchoative event, and "read a book" is understood as an event (or an inceptive event), this sentence, too, is understood as reporting two sequential events.

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concerned with coordinated sentences only, and since one cannot coordinate eventive sentences with stative ones, I ignore this part of his theory.

[11] I did not explicate each of the theories, since they both rely on a different account of the notion of reference-time, which is the core of their analyses. Discussing this notion and each of the theories involving it will distract us from the subject of this paper, and will provide us with too many details which are not relevant for it. Furthermore, this notion is irrelevant to this paper.

4. Problems and Possible Solutions

I have traced two different problems with respect to the main thesis of this paper, namely that predicates can be coordinated only if they share the same boundedness property. In what follows, I account for each of the problems.

The first problem was brought to my attention by Barbara Partee (pc). Consider the following sentences:

52. a. John got a phone call and stayed at home.

    b. John went to the library and stayed there.

In both sentences the first coordinate expresses an event, while the second is usually interpreted as a state.

I argue that the second clause in (52a) and (52b) does not report a state but a negative event, and hence may be paraphrased as in (53) below:

53. a. John got a phone call and did not leave home.

    b. John went to the library and did not leave.

Usually negative clauses are analyzed as states (e.g. Dowty 1986). Indeed, they usually have the distributive property, e.g. if it is true that "John did not sleep" say from 9 AM till 7 PM, then it is true that John did not sleep between noon and 1 AM. These sentences also meet the stative test "for-phrase" (in most cases), as demonstrated in (54a) and (55a), and fail the event test "in-phrase", as demonstrated by (54b) and (55b).

54. a. John did not sleep for ten hours.

    b. *John did not sleep in a day.

55. a. Mary did not eat chocolate for a month.

    b. *Mary did not eat chocolate in a month.

However, note that the predicates within the scope of the negation are distributive ('sleep' is a state, and 'eat chocolate' is an activity since the argument of the verb is a mass noun). Eventive predicates in the scope of negation behave differently. Consider:

56. a. *John did not drink a bottle of vodka for an hour.

    b. John did not drink a bottle of vodka in an hour.

The data in (56) suggests that the event 'drink a bottle of vodka' remains an event when negated.[12]

Other evidence that negative clauses are not always interpreted as distributives is their behavior in narrative discourse. While it is usually the case that negative clauses cannot be a link in a sequence, there are cases when they can be, as in the following examples:

57. a. Max greeted John, and (but) John did not reply.

b. Max asked Mary out, and (but) she did not accept the invitation.

c. Lucie took the medicine, and (but) did not get better.

It seems to me that (56b) and (57) have something in common. In both of them there is an implied expectation of events to take place. In (56b) John was expected to drink a bottle of vodka in one hour, in (57a) John was expected to reply to Max's greeting, in (57b) the possible expected event is that Mary accepts the invitation, and in (57c) Lucie expected to get better as a result of her taking the medicine. Hence, (57a-c) may be paraphrased as (58a-c) respectively:

(58) a) Max greeted John, but he refused to reply.

b) Max asked Mary out, but she turned him down.

c) Lucie took the medicine, but she remained sick.

That is, we may sometimes replace a negative sentence with an affirmative one, without affecting its truth conditions. This seems to be possible when the affirmative equivalent has a verb whose lexical meaning involves negation. In (58a) the verb 'refused' means 'did not agree', in (58b) the expression "turned down" means "did not accept" and in (58c) the verb 'remained' means 'did not change'. Similarly, the verb 'stayed' in (52) may be interpreted as 'did not leave', and therefore the sentences in (52) may be paraphrased as (53). That is, (52a) suggests that John was going to leave home, but the phone call changed his mind, and (52b) implicates that John was supposed to go to the library and leave, say after finishing his work. I suggest thinking of the implications in these sentences as dealing with possible worlds, where at least one of them has (59) as true propositions:

59. a. John got a phone call and left home.

b. John went to the library and left (after a while).

In other words, 'stayed' is ambiguous between a state 'hung around' and an inchoative event 'remained' or 'did not leave'. The sentences in (52) elicit the eventive meaning.

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[12] However, it may be the case that the "in-phrase" in (56b) is in the scope of the predicate 'drink a bottle of vodka' . I.e., it is not the negated clause which is modified by the phrase.

This analysis of the 'stayed' clause in (52) finds support in Mandarin Chinese. Liu and Chu (ms.) discuss adverbs in Mandarin Chinese which perform what they call connective functions if moved to a clause-initial position. For example, buguo means 'only' if it is positioned inside the clause, but it means 'but' if positioned at the beginning of the clause, as demonstrated by (60) below (their: 3a-b).

60. a. Wo buguo shi yige laobaixing.

     I only BE a ordinary-citizen

     'I am just an ordinary-citizen'

  b. Buguo wo shi yige laobaixing.

     but I be a ordinary-citizen

     'But I am an ordinary citizen'.

The word jiu may have a few adverbial meanings 'soon', 'just' (and others) if it is not in a clause-initial position, as illustrated in (61a-b) (their:17a-b). In clause-initial position it has one meaning only: 'inferred cause effect sequence' (p. 10, attributed to Fang 1991), as illustrated in (61c-e) (their: 18a-c):

61. a. Liangsui de shihou, wo jiu   chengle   gu'er.

     age-two DE time   I SOON become-LE orphan

     'As early as two years of age, I became an orphan'

  b. Wo jiu   xihuan youyong.

     I JUST like swimming.

     'I just like swimming.'

  c. Zhangfu ji youle   kekaode shouru, yijia   ren   jiu neng heheqiqide guo rizi.

     husband if have-LE reliable income, family person JIU can peacefully pass day

     'Now that the husband has a steady income, the family can live a peaceful life.'

  d. Jiran ta yao kao, na   jiu rang ta   kao ba.

     if   he want test, then JIU let   him test BA.

     'If he wants to take the test, let him take it.'

  e. Yaoshi ni   lai, wo jiu gen   ni gu.

     if   you come I JIU with you go

     'If you come, I'll go with you.'

Chu (pc) points out that in (52) the conjunction jiu is needed to coordinate the two clauses and to express that the situation 'stayed at home' follows in time the phone call, and results from it:

62. jon jiedao yige dianhua   jiu dengo zai jiali.

John receive one telephone JIU wait   at   home-in

'John got a phone call and stayed at home.'

Compare (52) to (63) below:

63. John stayed at home and worked.

The situation reported by the 'stayed' clause in (63) is not the cause of the situation reported in the second clause. Therefore the conjunction jiu is not permitted to coordinate the clauses in (63), as illustrated in (64) below:

64. jon liuzai jiali   gongzno.

John stay-at home-in work

In fact, such clauses are not coordinated with a conjunctive word, as in the sentences which report simultaneous situations such as 'John sat on the chair and watched the birds' , 'John sat on the chair and read a book' and 'John sang and danced' , or sequential situation which do not have a cause-effect relationship such as 'John sat on the chair and fell off'.

Other evidence is found in French as seen in the following sentences (I thank Michel Achard):

65. a. Michel a reçu   un coup de téléphone et   il est resté á la maison.

Michel recieved(PC) a   call   of telephone and he stayed (PC) at the home

'Michel got a phone call and stayed at home.'

b. ... et   n'a pas quitté la maison.

... and not-left(PC)   the home

'... and did not leave home'

66. a. Elle restait   á la maison et   travaillait.

she stayed(IMP) at the home   and worked(IMP)

'She stayed at home and worked.'

b. Elle ne quittait pas la   maison et   lisait   toute la   journée.

she not left(IMP) the home   and read(IMP) all   the morning

'She did not leave home and read all day long.'

In (65a) both clauses are in passé composé, and result in a sequence. This also holds for (65b), although the second clause is negative. The parallel clauses 'stayed' and 'did not leave' in (66a) and (66b) respectively appear as the first clause in their respective coordinate sentences. Therefore they cannot be understood as inchoative events resulting from another event, but as states overlapping with the activities reported in the second clause. Hence the verbs in these clauses are in

imparfait. However, further research on negation in general and negation in coordination in particular is needed for tackling this problem.

Let us discuss the second problem. Consider the following sentence:[13]

    67. John was sitting on the chair and fell off.

The first clause is in the progressive. Vlach (1981), followed by Bach (1981), Dowty (1986) and others, claims that the progressive turns a clause into a state. In Hatav (1989) I show this analysis is inadequate. However, I agree that, like states, progressive clauses report distributive, and hence unbounded, situations. Furthermore, progressives, unlike states and other distributive situations, may not be bounded by "for" or cardinal count number phrases, which suggest that they may never be bounded. In other words, the clauses in (67) are of different s-types - the first is an unbounded situation and the second is a bounded event, yet (67) is a well-formed sentence.

In the following, I demonstrate that the _and_ in (67) is not a coordinating conjunction, and the conjoined clauses are not identified as being semantically coordinated[14].

Ross (1967) was first to notice that _and_ may be used not only for coordination. Schmerling (1975) and Schachter (1977) show that we are not dealing here with a unified phenomenon, and the conjunct _and_ may express different kinds of relations between clauses. This is illustrated in (68a-c):

    68. a. She's gone and ruined her dress now.   (Ross, ex. 4.107a)

        b. Aunt Hittie wants you to be nice and kiss your granny.   (Ross, ex. 4.107c)

        c. I'll try and find her.

As analyzed in Schachter (1977), the second conjoined constituent 'and ruined (her dress)' in (68a) appears to function semantically as an adverbial in relation to the first 'She's gone', and therefore as Schmerling (1975) points out (68a) cannot be understood as reporting two situations. Schmerling claims rightly that the adjective in the first conjunct in (68b) is predicated not of the subject of the sentence but of the act expressed in the second conjunct, and a reply such as (69) for (68b) 'would probably earn the speaker a spanking' (p.224):

    69. I'll be nice, but I won't kiss my granny.

Similarly, (68c) does not express two different events, but the second conjunct is understood to modify the first. Sentence (67), I claim, is another example where _and_ is not used to coordinate

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[13] I owe this observation to my colleagues and students at the University of Florida.

[14] I thank Michel Achard for pointing this out to me.

clauses. In this case, it seems to me, the second clause is a time adverbial, and hence may be paraphrased by a "when" clause, as shown in (70) below:

70. John was sitting on the chair when he fell off.[15]

However, as pointed out to me by Tom Suales, there is a difference between (67) and (70). While (67) is ambiguous between 'John was in the process of sitting down' and 'John was already seated', (70) retains only the second meaning (cf. FN. 15).

Paraphrasing a 'real' coordination with a 'when' clause results in a bad sentence. Compare (70) with (71b) which is a paraphrase of (71a=1a):

(71) a) John sat on the chair and fell off.

b) *John sat on the chair when he fell off.[16]

(71b) may be grammatical if the pronoun he in the second clause is not coreferential with John in the first clause. That is, this sentence will not be a paraphrase of (71a) but a different sentence.

On the other hand, we may substitute the and in (1a) but not in (67) by other conjunctions, e.g., "or" and "but". Imagine a sitcom situation where a guest is coming for dinner, the parents want his company, but the children do not. So before he arrives, the children try to hide his chair, and the parents keep putting it back to the table. When the guest arrives the audience does not know who won - the parents or the children, and one of them may utter sentence (72a):

72. a. John (either) sat on the chair or fell off.

b. *John was (either) sitting on the chair or fell off.

c. John sat on the chair but fell off.

d. *John was sitting on the chair but fell off.

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[15] This does not mean to say that there are no differences between the two paraphrases. For example, they do not share some presuppositions, and the "when" sentence needs a pronoun as its explicit subject.

[16] Tom Suales (pc) suggests a context where this sentence is possible. John was drunk and dancing on the tables. At some point he sat on the chair when he fell off. However, the sentence in this context is remotely different from (1a): John tried to sit on the chair, but he fell off (and then he succeeded sitting on the chair).

As in the case of "when" (see FN. 15), the other conjunctions have specific meanings which and does not have.

Schmerling suggests a few tests for determining if the sentence is a logical conjunction, or an example of the non-coordinating function of and, one of which, namely Demorgan's Law, is applicable here. Demorgan's Law determines the equivalence in (73) below:

73. $\sim p.\sim q \equiv \sim(p \vee q)$

The law should apply only to coordinated clauses. Let us compare the negation of the clauses of (1a) to the clauses of (67). First examine (1a):

74. a. John didn't sit on the chair or fall off.

   b. John didn't sit on the chair and didn't fall off.

(74a) is equivalent in its interpretation to (74b). Now consider (67) with respect to Demorgan's Law:

75. a. *John was not sitting on the chair or fell off.

   b. John was not sitting on the chair and didn't fall off.

As we can see, Demorgan's law cannot apply here.

5. Summary and Conclusions

The main idea of this paper has been to account for coordination in connection with ambiguous predicates such as 'sit (on the chair)'. It has been shown that most of the stative verbs in English are ambiguous between statives and inchoative events. Likewise, many activities are ambiguous between an activity as their salient meaning and an inceptive event. It has been shown that such predicates are usually disambiguated when they appear in coordination. If the other conjunct reports a bounded situation, their eventive meaning occurs; but, if the other conjunct reports an unbounded situation only their stative or their activity meaning occurs. The key thesis in this explanation has been that you can coordinate predicates only if they both report bounded or both unbounded situations. In case of coordination of predicates with different s-types, a semantic or a pragmatic operator was assumed to shift one type to the other. When a shifted interpretation is not possible, the coordinated sentence is ruled out as ungrammatical (or semantically deviant). This is a special case of the rule that only constituents of the same type can be coordinated. The main problem for tackling this issue is identifying the aktionsarten and hence the s-types of the predicates. More extensive treatment of aspectual classes is needed to demonstrate further the validity of the claims made in the present paper.

A side effect of the analysis presented in this paper is the account of sequential vs. simultaneous or overlapping interpretation of ambiguous clauses. The discussion relies on Hinrich's and Dowty's analyses, which predict that we (usually) understand bounded clauses in succession as reporting bounded situations temporally ordered; and we (usually) understand unbounded clauses in succession as depicting situations overlapping in time.

REFERENCES

Bach, Emmon (1981). 'On Time, Tense and Aspect: An Essay in English Metaphysics'. In Radical Pragmatics P. Cole (ed.). New York: Academic Press.

Bayer, Samuel (1996). 'The coordination of unlike categories'. Language 72:3, 579-616.

Bennett, Michael; and Partee, Barbara A. (1979 [1972]). 'Towards the Logic of Tense and Aspect in English'. Bloomington: Indiana University Linguistics Club.

Binnick, R.I. (1991), Time and the Verb; A Guide to Tense and Aspect, Oxford University Press, New York.

Chafe, W.L. (1970), Meaning and the Structure of Language, ch. 9, The University of Chicago Press, Chicago.

Chomsky, Noam (1957). Syntactic Structures. The Hague:Mouton.

Comrie, Bernard (1985). 'Causative Verb Formation and other Verb-Deriving Morphology'. In Shopen, Timothy (ed.), Language Typology and Syntactic Description, Vo. III: Grammatical Categories and the Lexicon, Cambridge: Cambridge University Press.

Depraetere, I. (1995). "On the Necessity of distinguishing (un)boundedness and (a)telicity", Linguistics & Philosophy 18, 1-19.

Dowty, David (1977). "Semantic analysis of verb aspect in English imperfective progressive", Linguistics & Philosophy 1, 45-77.

----- (1979). Word Meaning and Montague Grammar. Dordrecht:Reidel.

---- (1986). 'The Effects of Aspectual Class on the Temporal Structure of Discourse: Semantics or Pragmatics?' Linguistics and Philosophy 9(1), 37-61.

Dry, Helen (1981). 'Sentence Aspect and the Movement of Narrative Time'. Text 1(3), 233-240.

Fang, Yuqing (1991). Practical Chinese Grammar. Beijing: Beijing Language Institute.

Fillmore, C.J. (1971). 'Lectures on Deixis', Indiana University Linguistics Club, Bloomongton.

Forsyth, J. (1970). A Grammar of Aspect: Usage and Meaning in the Russian Verb. Cambridge: Cambridge University Press.

Gazdar, G. (1980), "A Cross Categorial Semantics for coordination", Linguistic & Philosophy 3, 407-409

----- (1981). 'Unbounded Dependencies and Coordinate Structure'. Linguistic Inquiry *12(2), 155-184.*

Gazdar, G., E, Klein, G. Pullum and I Sag (1985), Generalized Phrase Structure Grammar, Harvard University Press, Cambridge MA.

Goodall, G. (1987), Parallel Structures in Syntax, CUP, Cambridge.

Grosu, Alexander (1972), "The Strategic Content of Island constraint. (Working papers in linguistics, 13.) Columbus:Department of Linguistics, The Ohio State University.

----- (1985). 'Subcategorization and Parallelism'. Theoretical Linguistics 12 (2/3) 231-239.

---- (1987). 'On Acceptable Violations of Parallelism Constraints'. In Driven, R. & Fried V. (eds.). Functionalism in Linguistics . Vol. 20 of the series Linguistic and Literary Studies in Eastern Europe. Amsterdam/Philadelphia: John Benjamins Publishing Co.

Hatav, Galia (1989). 'Aspect, Aktionsarten, and the Time Line'. Linguistics 27, 487-516.

----- (1993). "The aspect system in English: an attempt at a unified analysis", Linguistics 31, 209-237

Hinrichs, E. (1985). A Compositional Semantics for Aktionsarten and NP Reference in English. Unpublished Ph.D. dissertation. Ohio State University.

---- (1986[1982]). 'Temporal Anaphora in Discourse of English'. Linguistics and Philosophy 9 (1).

Josman, Barbara (1986). The Linguistic Encoding of Temporality in the Hebrew Narrative. Unpublished MA thesis, Tel Aviv University.

Kamp, Hans (1979). 'Events, Instants and Temporal Reference'. In Semantics from Different Points of View, Bauerle, E., Egli, U. and von Stechew, A. (eds.), 376-417. Berlin: Springer.

----- (1981). 'Evénéments, Représentation discoursive et référence temporelle'. Langages 64, 39-64.

---- & U. Reyle (1993), From Discourse to logic; Introduction to Modeltheoretic Semantics of Natural Language; Formal Logic and Discourse Representation Theory . Kluwer Academic Publisher, The Netherlands.

Keenan, E.L. & L. M. Faltz (1978), Logical Types for Natural Language, UCLA Occasional Papers in Linguistics, #3.

----- (1985), Boolean Semantics for Natural Language, Reidel, Dordrecht.

Krifka, M. (1992), 'Thematic relations as links between nominal reference and temporal constitution.' In: Ivan A. Sag & Anna Szabolcsi (eds.), Lexical Matters, CSLI, Lectures notes No. 24. United States: Center for the study of language and information, Leland Stanford Junior University, 29-53.

Lakoff, Robin (1971). 'If's, And's and But's about conjunction'. In Fillmore, C.J. and Langendoen D.t. (eds.) Studies in Linguistic Semantics. New York: Holt, Rinehart & Winston.

Lang, Ewald (1984). The Semantics of Coordination, vol 9 of the series Studies in Language Companion Series, Amsterdam: John Benjamins B.V.

Lasersohn, P. (1995), Plurality, Conjunction, and Events, Studies in Linguistics and Philosophy vol. 55, Kluwer Academic Publishers, Dordrecht.

Liu, Lening & Chu, Chauncey (ms.). 'Movable Adverbs, Conjunctions and Grammaticalization of Conjunctive Functions', presented in 1993 CLTA Annual Meetings.

Mittwoch, Anita (1988). 'Aspects of English Aspect: on the Interaction of Perfect, Progressive and Durational Phrases'. Linguistics and Philosophy 11(2), 203-254.

Moens, Marc (1987). Tense, Aspect and Temporal Reference. Edinburgh: Center for Cognitive Science; University of Edinburgh.

--- & Steedman, M. (1988), "Temporal Ontology and Temporal Reference", Computational Linguistics, 14:2, 15-28.

Moltmann, F. (1992), Coordination and Comparatives, diss. MIT.

Muadz, H. (1991), Coordinate Structure: A Plannar Representation, diss. University of Arizona.

Munn, A. (1993), Topics in the Syntax and Semantics of Coordinate Structures, diss. University of Maryland, College Park.

Oirsouw, van R. (1987), The Syntax of Coordination, Croom Helm, London

Partee, Barbara (1984). 'Nominal and Temporal Anaphora'. Linguistics and Philosophy 7, 243-286.

--- (1987), "Noun Phrase Interpretation and Type-Shifting Principles" in: J. Groenendijk, D. de Jongh & M. Stokhof (eds.), Studies in Discourse Representation Theory of Generalized Quantifiers, Dorrdrecht: Foris Publications, pp. 115-143.

----- & Rooth (1983), "Generalized Conjunction and type ambiguity", in R. Baurele, C. Schwarze and A. von Stechow (eds.), Meaning, Use and Interpretation of Language, Walter de Gruyter, Berlin, 361-383.

Pelletier, Jeffrey (1975). 'Non-Singular Reference: Some Preliminaries'. Philosophia. Vol. 5. Reprinted in Pelletier (1979), 1-14.

----- (1979) ed. Mass Terms: Some Philosophical Problems. Dordrecht: Reidel.

Pickering M. and Barry G. (1993). 'Dependency Categorical Grammar and Coordination'. Linguistics 31 (5), 855-902

Ross, J.R. (1967). Constraints and Variables in Syntax. Unpublished Ph.D. dissertation, MIT, Cambridge, Mass.

Sag, I.A., Gazdar, G., Wasow T. & Weisler, S. (1985). 'Coordination and How to Distinguish Categories', Natural Language and Linguistic Theory, 3, 117-171.

Schachter, P. (1977). 'Constraints on Coordination'. Language 53(1).

Schmerling, Susan F. (1975). 'Asymmetric Conjunction and Rules of Conversation'. In Cole. P. & Morgan, J.L. (eds.) Syntax and Semantics vol. 3: Speech Acts. New York, San Francisco, & London Academic Press.

Smith, Carlotta (1991). The Parameter of Aspect. Studies in Linguistics and Philosophy 43. Dordrechtrecht:Kluwer.

Taylor, Barry (1977). 'Tense and Continuity'. Linguistics and Philosophy 1, 199-220.

Vendler, Zeno (1967). Linguistics in Philosophy. Ithaca, N.Y.: Cornell University Press.

Verkyul, Henk (1972). On the Compositional Nature of the Aspects. Reidel, Dordrecht.

----- (1993), A Theory of Aspectuality, CUP, Cambridge.

Vlach, Frank (1981). 'The Semantics of the Progressive'. In Syntax and Semantics 14: Tense and Aspect. P.J. Tedeschi and A. Zaenan (eds.). New York: Academic Press.

Williams, E. (1978), "Across-the-Board Rule Application", Linguistic Inquiry, 9:1, 31-43.

Zoerner, Edward Cyril (1995), Coordination: the syntax of &P. Doctoral diss. University of California, Irvine.

WH-QUESTIONS: UNIFICATION IN A TYPED FEATURE STRUCTURE GRAMMAR VS FEATURE CHECKING IN THE MINIMALIST PROGRAM

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Movement in the Minimalist Program (MP)

Chomsky (1995)

(i) Movement is forced by the need to eliminate uninterpretable features through feature checking (Last Resort).

(ii) Overt movement is forced by the presence of a strong (non-intrinsic categorial) feature on a functional head, which attracts a term (phrase or lexical head) with this feature.

(iii) Covert movement (Move FF(A)) carries less computational cost than overt movement, and so it the preferred option when possible (Procrastinate).

Wh-Questions in Iraqi Arabic

Wahba (1991), Ouhalla (1994), and Simpson (1995)

Wh-phrases can occur *in situ* in matrix wh-questions and in non-finite embedded clauses, but they are excluded from embedded tensed clauses.

1a. Mona shaafat meno?
   Mona saw whom
 b. Mona raadat tijbir Su'ad tisa'ad meno?
   Mona wanted to force Su'ad to help who
 c.*Mona tsawwarat Ali istara sheno?
   Mona thought Ali bought what

A puzzling fact is that although *in situ* wh-phrases are excluded from embedded tensed clauses, they can be extracted from these positions. This pattern also holds for multiple wh-phrase cases with a preposed phase binding an argument position in the matrix clause and an *in situ* wh-phrase in an embedded complement.

2a. sheno₁ tsawwarit Mona Ali ishtara t₁
     what thought Mona Ali bought
     What did Mona think Ali bought?

b. sheno₁ ishtara Ali t₁ minshaan yenti li-meno
     what bought Ali in order to give to whom
     What did Ali buy to give to whom?

c.*meno tsawwar Ali xaraj weyya meno
     who thought Ali left with whom

Wh-Questions in Hindi

Mahajan (1990)

3a. Raam-ne [Mohan-ko kise dekhne ke liye] kahaa
     Ram-erg Mohan-erg whom to   see for told
     Who did Ram tell Mohan to see?

b.*Raam-ne kahaa [ki kOn aayaa hE]
     Ram-erg said that who has come
     Who did Ram say has come?

c. kOn Raam-ne kahaa [ki aayaa hE]
     who Ram-erg said that has come
     Who did Ram say has come?

4a.*kOn Raam-ne kahaa [ki kis-ko maaregaa]
     who Ram-erg say that who will hit
     Who did Ram say will hit who?

b. kOn kis-ko Raam-ne kahaa [ki maaregaa]
     who whom Ram-erg say that will hit
     Who did Ram say will hit who?

Simpson (1995)

These facts seriously undermine the MP theory of feature checking and movement. The wh-feature on a wh-phrase is interpretable and so need not be checked. Overt wh-movement is forced by the presence of a wh-phrase (QP) feature in Comp. *In situ* phrases should be possible when (i) a single wh-phrase has raised overtly to C to allow its QP feature to be checked, or (ii) the QP feature is not present in C. The fact that 1c, 2c, 3b, and 4a are excluded runs counter to this prediction.

Even if one posits a non-categorial (ie. weak) wh-feature on either Comp or a wh-phrase itself, and stipulates that this feature requires checking by LF, these sentences are still a severe problem for the MP. If a wh-phrase can raise overtly to check such a feature, then it should be able to raise covertly. In fact, covert movement should be the only option, given Procrastinate.

A less restrictive notion of licensing replaces feature checking. All wh-phrases must be licensed by a Q element in Comp by spell out (SO). For languages like Iraqi Arabic and Hindi, Q elements license the presence of wh-phrases within their immediate tense domain. Raising to SPEC of C or adjoined C position is not, in general, necessary. Overt

wh-movement is required in 2a, 3c, and 4b so that the wh-phrase in the tensed embedded clause can appear within the licensing domain of the Q element in the matrix C at SO.

Optional Wh-Movement in Iraqi Arabic and Hindi

5a. meno$_1$ shaafat Mona t$_1$
who saw Mona
Who did Mona see?

b. meno$_1$ raadat Mona tijbir Su'ad tisa'ad t$_1$
who wanted Mona to force Su'ad to help
Who did Mona want to force Su'ad to help?

6a. Raam-ne kyaa ciiz khaaii?
Ram-erg what thing ate
What did Ram eat?

b. Kyaa ciiz$_1$ Raam-ne t$_1$ khaaii
what thing Ram-erg ate
What did Ram eat?

If raising occurs only when required for licensing, then 5a,b and 6b should not be possible. This problem cannot be avoided by positing an optional (strong) QP feature in C, by analogy with Chomsky's account of optional (overt) OBJ movement. If all wh-phrases must be licensed by a Q element in Comp by SO and raising applies as a last resort strategy to escape a licensing island, the optional strong feature account of non-obligatory overt movement is not available.

Simpson suggests that in fact wh-raising in Iraqi Arabic and Hindi is not forced by wh-licensing. It is triggered by the need to check topic-like features on the raised wh-phrase, and to identify the clause-initial complementizer head as licensing the optional topic-like features on the wh-phrase. Licensing of the wh-features of the raised phrase is a side effect of this independently required topic feature checking process.

There are at least two problems with this suggestion.

(i) It is not obvious in what sense the notion of topichood which Simpson seems to invoke corresponds to a syntactic or even a straightforward semantic property. Therefore, why should it correspond to a feature which requires checking?

(ii) Why can't the topic feature be licensed outside of the SPEC or adjunction domain of the topic-licensing head, as in the case where Q licenses *in situ* wh-phrases? Simpson appears to stipulate that wh-phrase topic-licensing (and the identification of the comp as licensing a wh-phrase topic) requires raising. But then this account of wh-movement reduces to the otherwise unmotivated stipulation that wh-topic identification can only be achieved by movement.

The Treatment of Unbounded Dependencies in HPSG

Pollard and Sag (1994)

Unbounded dependency relations are expressed through feature inheritance. In addition to LOCAL features, like tense, agreement, and Case features, phrases have the attribute NONLOCAL. This attribute takes two sorts of feature value, INHERITED and TO-BIND. P&S posit three types of INHERITED features, (i) SLASH, (ii) QUE, and (iii) REL corresponding to a displaced constituent, a wh-question feature, and a wh-relative clause feature, respectively. INHERITED feature values are lexically introduced and passed up from daughters to mothers until the point at which a TO-BIND feature appears, and, in the case of SLASH, a filler phrase P whose local features match those of the INHERITED feature F is present. The TO-BIND feature is introduced by an immediate dominance schema, which licenses its presence in certain configurational structures. This feature forces the unification of the value of F and the LOCAL value of P, and so effectively discharges F. The NONLOCAL Feature Principle (NFLP) controls the propagation of INHERITED features in a feature structure.

The NFLP

7. For each NONLOCAL feature F, the INHERITED value of F on a mother M is the union of the INHERITED values of F on the daughters of M minus the value of TO-BIND on the head daughter.

8. $[_{S[INHER \mid SLASH \{ \}]}[_{NP[LOCAL\ 1]}$ Lucy$][_{S[INHER \mid SLASH \{1\},TO-BIND \mid SLASH \{1\}]}[_{NP}$ we $[_{VP[INHER \mid SLASH \{1\}]}$
$[_{V}$ know$][_{S[INHER \mid SLASH \{1\}]}[_{NP}$ John$][_{VP[INHER \mid SLASH \{1\}]}[_{V[INHER \mid SLASH \{1\}]}$ likes$]]]]]]$

INHER | SLASH {1} is introduced in the object position of the SUBCAT feature of *likes*. It is passed up the immediate dominance hierarchy until TO-BIND {1} on the matrix S discharges it by unifying its value with the LOCAL value of the topicalized NP *Lucy*.

An HPSG-Based Account of Wh-Questions

Johnson and Lappin (forthcoming)

We assume that in wh-questions a wh-complementizer Q appears in C, and that this lexical item may be (and frequently is) phonologically null. Q's SUBCAT and TO-BIND features can be specified in (at least) one of the three ways indicated in 9-11.

9a. SUBCAT <S[fin,INHER | QUE : X]> (X ≠ ∅)
  b. NONLOCAL | TO-BIND | QUE : X

10a. SUBCAT <[LOC 2,INHER | QUE: X], S[fin,INHER | SLASH {2},
                                            (INHER | QUE: Y)]>
  b. NONLOCAL | TO-BIND | QUE: Z
  c. Condition: If Y does not exist, X = Z; else X ⊆ Z ⊆ (X ∪ Y).
     (It follows that if Y exists and Y = ∅, then X = Z.)

11a. SUBCAT <[LOC 2,INHER | QUE {1}], CP[Q,INHER | SLASH {2}]>
  b. NONLOCAL | TO-BIND | QUE {1}

In languages in which all wh-phrases appear *in situ*, like Chinese and Japanese, Q receives the values given in 9. Q is defined as in 10 for English-type languages, where one preposed wh-phrase is required in a question, and 0 or more in situ phrases are possible. 11 yields cases like Czech and Bulgarian, which permit all wh-phrases in a question to be extracted.

In Iraqi Arabic both 9 and 10 are possible lexical specifications of Q.

A Parameterized Defeasible Version of The NLFP

Let an F-Island be a constituent that blocks the propagation of the NONLOCAL feature F. The set of F-islands for a given feature F may vary across languages.

12. For each NONLOCAL feature F, the INHERITED value of F on a mother M is the union of the INHERITED values of F on the **non-F-island** daughters of M minus the value of TO-BIND on the head daughter.

In English wh-clauses are SLASH islands but not QUE islands.

13a.*What do you remember where we bought?
  b. Who remembers where we bought what?

In Iraqi Arabic (and Hindi) S[fin] is a QUE island but not a SLASH island.

14. $[_{CP[INHER \mid QUE \{\}]}[_{C[TO\text{-}BIND \mid QUE \{1\}]}$ Q$][_{S[fin,INHER \mid QUE \{1\}]}$ Mona shaafat $[_{NP[INHER \mid QUE \{1\}]}$ meno$]]]$
  (= 1a)

15. $[_{CP[INHER \mid QUE \{\}]}[_{C[TO\text{-}BIND \mid QUE \{1\}]}$ Q$][_{S[fin,INHER \mid QUE \{1\}]}$ Mona raadat
    $[_{VP(S)[\text{-}fin,INHER \mid QUE \{1\}]}$ tijbir Su'ad tisa'ad $[_{NP[INHER \mid QUE \{1\}]}$ meno$]]]]$
  (= 1b)

16.*$[_{CP[INHER \mid QUE \{\}]}[_{C[TO\text{-}BIND \mid QUE \{\}]}$ Q$][_{S[fin,INHER \mid QUE \{\}]}$ Mona tsawwarat
    $[_{S[fin,INHER \mid QUE \{1\}]}$ Ali istara $[_{NP[INHER \mid QUE \{1\}]}$ sheno$]]]]$
  (= 1c)

17. $[_{CP[INHER \mid QUE \{\}]}[_{C[TO\text{-}BIND \mid QUE \{1\}]}$ Q$][_{NP[LOC 2,INHER \mid QUE \{1\}]}$ sheno$]$
    $[_{S[fin,INHER \mid SLASH \{2\},TO\text{-}BIND \mid SLASH \{2\}]}$ tsawwarit Mona $[_{S[fin,INHER \mid SLASH \{2\}]}$ Ali
    $[_{V[fin,INHER \mid SLASH \{2\}]}$ ishtara$]]]]$
  (= 2a)

14 satisfies the parameterized defeasible NLFP, with S[fin] taken as a QUE island, given that INHER | QUE {1} is not inherited past the single S[fin] in which it is lexically introduced by the *in situ* wh-phrase *meno*.

15 satisfies the NFLP by virtue of the fact that the matrix VP inherits INHER | QUE {1} from a VP (or S) with the feature [-fin].

16 is ruled out by the NFLP because the VP in the matrix S cannot inherit the INHER | QUE {1} feature from the embedded S[fin].

17 is well formed, as the NLFP does not prevent inheritance of the SLASH {2} feature from the embedded S[fin].

Wh-QP Structures in Iraqi Arabic

Wahba (1991)

The presence of a matrix clause initial wh-QP *sh* (apparently a reduced form of *sheno*) permits a wh-phrase to appear in an embedded tensed clause.

18. sh-tsawwarit Mona [Ali gabal meno]
    wh-QP-thought Mona Ali met who
    Who did Mona think Ali met?

The wh-QP defines wide scope for wh-phrases in embedded clauses.

19. sh-'urfut Mona [Ali gabal meno]
    wh-QP-knew Mona Ali met who
    Who did Mona know that Ali met?
    *Mona knew who Ali met.

A wh-phrase cannot be separated from the wh-QP by more than one S[fin].

20a. sh-tsawwarit Mona [$_{S[fin]}$ meno$_1$ rada [$_{S[-fin]}$ Ali ysa'ad meno$_2$]]
     wh-QP-thought Mona who wanted Ali to help who
     for which $<x_1,x_2>$ Mona thought x_1 wanted Ali to help x_2
   b.*sh-i'tiqdit Mona [$_{S[fin]}$ meno$_1$ tsawwar [$_{S[fin]}$ Ali sa'ad meno$_2$]]
     wh-Q-believed Mona who thought Ali helped who
     for which $<x_1,x_2>$ Mona believed x_1 thought Ali helped x_2

Wh-QP-Structures as Cases of Partial Movement (PM)

We introduce a new NON-LOCAL wh-feature LQUE.

(i) PM structures contain a phonetically null complementizer C, which has the feature LQUE: X ($X \neq \emptyset$). C takes an S[QUE: X] complement, and its LQUE value is unified with the QUE value of its S complement.

(ii) Wh-QP is a Q complementizer with the feature TO-BIND | LQUE: X. It takes an S[LQUE: X] complement.

(iii) S[fin] is (universally) an LQUE island for the NLFP.

(iv) Discharging the value of LQUE: X by TO-BIND | LQUE: X counts as discharging the value of QUE: X. Therefore the scope of a wh-phrase with the feature value QUE: X is determined by the wh-QP Q comp which binds LQUE: X.

21a. $[_{CP[INHER | LQUE \{\}]}[_{C[TO\text{-}BIND | LQUE \{1\}]}$ sh-] $[_{S[fin,INHER | LQUE \{1\}]}$ tsawwarit Mona
$[_{CP[INHER | LQUE \{1\}]}[_{C[INHER | LQUE \{1\}]}$ C]$[_{S[fin,INHER | QUE \{1\}]}$ Ali gabal $[_{NP[INHER | QUE \{1\}]}$ meno]]]]]
(= 18)

  b. $[_{CP[INHER | LQUE \{ \}]}[_{C[TO\text{-}BIND | LQUE \{1,2\}]}$ sh-] $[_{S[fin,INHER | LQUE \{1,2\}]}$ tsawwarit Mona
$[_{CP[INHER | LQUE \{1,2\}]}[_{C[INHER | LQUE \{1,2\}]}$ C]$[_{S[fin,INHER | QUE \{1,2\}]}[_{NP[INHER | QUE \{1\}]}$ meno] rada
$[_{S[\text{-}fin,INHER | QUE \{2\}]}$ Ali ysa'ad $[_{NP[INHER | QUE \{2\}]}$ meno]]]]]]
(= 20a)

  c.*$[_{CP[INHER | LQUE \{\}]}[_{C[TO\text{-}BIND | LQUE \{1\}]}$ sh-] $[_{S[fin,INHER | LQUE \{1\}]}$ i'tiqdit Mona
$[_{CP[INHER | LQUE \{1\}]}[_{C[INHER | LQUE \{1\}]}$ C]$[_{S[fin,INHER | QUE \{1\},LQUE \{2\}]}[_{NP[INHER | QUE \{1\}]}$ meno] tsawwar
$[_{CP[INHER | LQUE \{2\}]}[_{C[INHER | LQUE \{2\}]}$ C]$[_{S[fin,INHER | QUE \{2\}]}$ Ali sa'ad
$[_{NP[INHER | QUE \{2\}]}$ meno]]]]]]]
(= 20b)

  d.*$[_{CP[INHER | LQUE \{\}]}[_{C[TO\text{-}BIND | LQUE \{1\}]}$ sh-] $[_{S[fin,INHER | LQUE \{1\}]}$ i'tiqdit Mona
$[_{CP[INHER | LQUE \{1\}]}[_{C[INHER | LQUE \{1\}]}$ C]$[_{S[fin,INHER | QUE \{1\}]}[_{NP[INHER | QUE \{1\}]}$ meno] tsawwar
$[_{S[fin,INHER | QUE \{2\}]}$ Ali sa'ad $[_{NP[INHER | QUE \{2\}]}$ meno]]]]]]
(= 20b)

As wh-QP binds an LQUE feature inherited from its S complement, there must be a C complement embedded within this S. C allows the QUE value of its S complement to be passed up as an LQUE value beyond the S[fin] QUE island in which the QUE feature appears, as in 21a,b.

The fact that C has the feature LQUE and takes an S[QUE] complement insures that there is at least one wh-phrase contained in this S complement, and C cannot be separated from S[QUE] by an S[fin].

There are two possibilities for 20b represented by 21c and 21d, respectively. (i)The most deeply embedded clause is a CP headed by a C comp. The QUE {2} feature value of the most deeply embedded *meno* is passed up as an LQUE {2} feature value to the intermediate S[fin]. However, the intermediate C cannot pass LQUE {2} to the CP which it heads, as its LQUE value is unified only with the QUE value of its S complement. (ii) Alternatively, the most deeply embedded clause is an S[fin], and QUE {2} value cannot be passed up as an LQUE value past this S[fin]. In either case, the QUE value of the most deeply embedded *meno* is not discharged.

Wh-QP discharges the LQUE value of its S complement, and so forces wide scope for the QUE values which the LQUE feature inherits. This accounts for the fact that only a wide scope reading is available for the wh-phrases in 19.

PM in German

The SUBCAT and TO-BIND features of the Q complementizer in German are specified as in 10, and so Q takes a preposed wh-phrase complement.

22. mit wem₁ glaubst du dass Johann t₁ gesprochen hat
    with whom believe you that Johann spoken has
    With whom do you believe that Johann has spoken.

McDaniel (1989)

The wh-QP in German PM structures is realized as *was*. An unbounded number of wh-QP's can appear between the matrix clause initial wh-QP and the preposed wh-phrase. No two immediately successive elements in such a wh-QP-wh-phrase sequence can be separated by more than one S[fin].

23a. [$_{CP}$ was [$_{S[fin]}$ glaubst du mit wem Johann gesprochen hat]]
       wh-QP   believe you with whom Johann spoken has
       With whom do you believe that Johann has spoken.
  b. [$_{CP}$ was [$_{S[fin]}$ glaubst du [$_{CP}$ was [$_{S[fin]}$ Hans meint [$_{CP}$ mit wem Johann gesprochen hat]]]]]
        wh-QP believe you   wh-QP   Hans says with whom Johann spoken has
        Who do you believe Hans says Johann has spoken with?
  c.*[$_{CP}$ was [$_{S[fin]}$ glaubst du [$_{CP}$ dass [$_{S[fin]}$ Hans meint [$_{CP}$ mit wem Johann gesprochen hat]]]]]
        wh-QP believe you   that   Hans says with whom Johann spoken has

(i) In German C's SUBCAT feature is specified as in 10a, and so it takes both a wh-phrase with a QUE feature and an S[QUE] as complements.

(ii) Wh-QP has either a TO-BIND or an LQUE feature. With the latter, the value of its LQUE feature unifies with the LQUE value of its S[LQUE] complement.

(iii) A filler-gap CP is (universally) a QUE island for the NLFP.

24a. [$_{CP}$ [$_{C[TO\text{-}BIND \mid LQUE \, \{1\}]}was_1$][$_{S[fin,LQUE \, \{1\}]}$ glaubst du [$_{CP[LQUE \, \{1\}]}$ was$_2$ [$_{S[fin,LQUE \, \{1\}]}$] Hans meint
      [$_{CP[LQUE \, \{1\}]}$ C [$_{PP[LOC \, 2, QUE \, \{1\}]}$ mit wem] [$_{S[fin,SLASH \, \{2\},TO\text{-}BIND \mid SLASH \, \{2\}]}$ Johann gesprochen
      hat]]]]]   (= 23b)
  b.*[$_{CP}$ [$_{C[TO\text{-}BIND \mid LQUE \, \{1\}]}$ was] [$_{S[fin,LQUE \, \{1\}]}$ glaubst du [$_{CP}$ dass [$_{S[fin,LQUE \, \{1\}]}$] Hans meint
      [$_{CP[LQUE \, \{1\}]}$ C [$_{PP[LOC \, 2, QUE \, \{1\}]}$ mit wem] [$_{S[fin,SLASH \, \{2\},TO\text{-}BIND \mid SLASH \, \{2\}]}$ Johann gesprochen
      hat]]]]]   (= 23c)

In 24a the embedded wh-QP complementizer *was$_2$* passes up the LQUE value of its S[fin] complement, inherited from the embedded C comp, to the matrix VP. It is then passed to the matrix S[fin] and discharged by the matrix wh-QP *was$_1$*. In this structure, the intermediate wh-QP comp *was$_2$* performs a comparable role as that of the C comp in passing up an LQUE encoding of the original QUE feature value beyond an S[fin] LQUE island.

The LQUE value of the C comp in 24b cannot be passed up beyond the first S[fin] LQUE island in which C is contained, as this S[fin] is not the complement of a wh-QP comp. Therefore the QUE value of the wh-PP is not discharged.

Feature Structures vs. Movement

We derive the full range of wh-question and PM facts for Iraqi Arabic and German from the interaction of two factors. One is the presence of alternative SUBCAT and NONLOCAL feature structures in the lexical specification of the Q, C, and wh-QP complementizers. The second is a parameterized defeasible version of the NLFP which imposes language-specific constraints on the inheritance of the QUE feature. It is entirely natural to assume cross linguistic variation in feature values for particular types of complementizer. In fact, this

assumption is consistent with the MP claim that differences in the possibilities for overt movement and word order across languages are reducible to choices in lexical features for functional heads.

The second factor highlights the main advantage which the HPSG account offers over the MP theory of feature checking. The MP treats a phrase or lexical item A as an unstructured set of features. Feature checking requires the presence of at least the elements in FF(A) within the local domain of a checking head, and movement is a global operation affecting all features in FF(A) in the same way. On the other hand, licensing of *in situ* wh-phrases must be handled by a distinct "interpretive" mechanism (Chomsky (1995), pp. 290-291), given that the wh-feature is interpretable and does not require checking by a functional head. In order to capture the fact that, in languages like Iraqi Arabic, *in situ* wh-phrases are subject to many of the same locality conditions as overt wh-movement, it will be necessary to duplicate these conditions for movement and the interpretative mechanism.

By contrast, HPSG represents expressions as complex articulated feature structures within which the propagation of distinct feature types can be independently specified. Different kinds of unbounded dependency relations receive a uniform formal treatment which relies on (i) typed feature structures, (ii) inheritance of features through unification of feature values in a feature structure path, and (iii) parameterized principles governing feature inheritance which permit language variation for a restricted set of feature types (like the specification of inheritance islands for certain NONLOCAL features).

Crucially, the four types of NONLOCAL | INHER features, SLASH, QUE, LQUE, and REL are introduced by distinct lexical sources, and their inheritance can be controlled by specifying different values for the relevant F-island parameter of the NLFP within a given language. Unlike the MP, the proposed HPSG account offers a formally unified account of unbounded dependencies under which the fact that different UD relations are subject to distinct constraints in a particular language is expected.

REFERENCES

Chomsky, N. (1995), *The Minimalist Program*, MIT Press, Cambridge, MA.

Johnson, D. and S. Lappin (forthcoming), "A Critique of the Minimalist Program", *Linguistics and Philosophy*.

McDaniel, D. (1989), "Partial Movement and Multiple Wh-Movement", *Natural Language and Linguistics Theory* 7, pp. 565-604.

Mahajan, A. (1990), *The A/A-bar Distinction and Movement Theory*, unpublished Ph.D dissertation, MIT, Cambridge, MA.

Ouhalla, J. (1994), *Remarks on the Binding Properties of Wh-in Situ*, unpublished ms., Queen Mary and Westfield College, University of London.

Pollard, C. and I. Sag (1994), *Head-Driven Phrase Structure Grammar*, University of Chicago Press, Chicago, IL.

Simpson, A. (1995), *Wh-Movement, Licensing, and the Locality of Feature-Checking*, unpublished Ph.D dissertation, School of Oriental and African Studies, University of London.

Wahba, W. A-F. B. (1991), "LF Movement in Iraqi Arabic" in C.-T.J. Huang and R. May (eds.), *Logical Structure and Linguistic Structure*, Kluwer, Dordrecht, pp. 253-276.

Sentence Fragments in Dialogue: why Generative Semantics got it (half) right

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Abstract

I consider the resolution process in the elliptical "short-answers" that occur in dialogue. I offer a variety of syntactic, semantic and processing reasons which suggest that this resolution process is problematic for existing models of ellipsis resolution, either syntactic, semantic or ones which alternate between the two based on discourse structure. An interesting issue that emerges is that short-answers do maintain a limited amount of parallelism with their source: even an unbounded number of dialogue turns away the short-answer must bear the category assigned to the corresponding wh-phrase in the source. I offer an account of the resolution process which also attempts to provide a raison d'être for the emergence of such unbounded syntactic dependencies. I show how an interrogative meaning can encode a specification for focus which includes constraints on structural realization. This involves developing the notion of a λ-abstract whose argument-roles carry syntactic appropriateness restrictions. I suggest that such a notion is already in essence presupposed in sign-based grammars such as HPSG, and that, with certain independently motivated modifications, such abstracts have similar semantic expressiveness to abstracts that lack such appropriateness restrictions. The account can be generalized to account for other types of ellipsis and anapora, where the existence of syntactic parallelism has been taken as an indication of a syntactically-based resolution process, including sluicing and gapping.

Keywords: Dialogue, Ellipsis, Situation Semantics, Information Structure

1 Introduction

A central issue since the late 1960's has been the issue of whether ellipsis resolution processes are syntactic or semantic in nature.[1] Recently, works that take a more generalized discourse view (Prüst et al 1993, Asher 1993, Kehler 1994) have suggested the need for an approach which eschews a purely syntactic or semantic approach, but rather is conditioned by discourse structure. Kehler, for instance, has modified the approach of Hankamer and Sag 1976, 1984 so that whether the resolution arises from syntactic copying or is semantic i.e. derives from material already integrated in the discourse model, is determined by whether the coherence relation between clauses is parallel or not. Thus, on

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the Sag/Hankamer/Kehler view, syntactic parallelism is not expected indeed not possible in resolution where the source has been integrated in the discourse model. In this paper, I show that "short answers" as they occur in extended dialogue involve a resolution process that is perplexing for current models of ellipsis, both purely syntactic or semantic, and mixed ones such as Kehler's. In particular, I demonstrate that elliptical options are possible

- at essentially unbounded distance from the original source,

- long after integration of material must have taken place in the discourse model, and yet,

- (partial) syntactic parallelism obtains.

However, I defend the semantic nature of the resolution procedure itself. Nonetheless, I suggest that the syntax/semantics interface as far as interrogative meaning, and, quantification in general, needs to be modified, arguing that the data motivates reconstructing the idea of *syntactically-based* presuppositions first broached in Lakoff 1971. I will argue that, at least as far as this type of ellipsis goes, syntax does have a material role to play, not in *constructing* interpretations but in *constraining* interpretations. More specifically: in ensuring that the contents of phrasal utterances get associated with the right *semantic argument-roles*. This will provide a natural account for why (a very limited amount of) syntax needs to be preserved across utterances and in what cases it does not, for instance the short-answers used to respond to y/n questions.

My own account is based on combining the dialogue dynamics developed in Ginzburg 1994,195a,c, in progress with information structure. The latter will serve as motivation for introducing the notion of a syntactic presupposition on a semantic argument-role. I will show how such presuppositions can be captured within a slightly modified version of a sign-based grammar like HPSG, using a number of tools from situation semantics, including the reification of utterances and parameters bearing restrictions. The idea of using restrictions to capture such syntactic presuppositions follows up on ideas first put forward in Cooper 1993.

2 Dialogue Dynamics

I review here the basics of the semantic framework I presuppose, based on Ginzburg 1994, 1995a,b,c.

2.1 Individuals in dialogue

How to talk about a dialogue participant (DP)? Ginzburg 1994 proposes the following schematic partition. On the one hand, we need a way of talking about some *quasi*-shared object, each DP's version of the common ground, relative to which the conventionalized interaction of the dialogue, both locutionary (uttering) and illocutionary (asserting, querying) takes place. I will call this component the *DP's gameboard (DGB)* (cf. Hamblin 1970's notion of 'individual commitment slate'). Separate from this will be the *non-publicized* aspects of each participant's individual mental state. I will call this the DP's *unpublicized mental situation* (UNPUB-MS(DP)), where typically, such things as goals and general inferential capabilities are represented. In the current paper attention will be focussed

exclusively on the dialogue gameboard: a gameboard is a situation which represents a DP's view of certain attributes of the dialogue situation. These attributes need to include at least the following:

- FACTS: set of commonly agreed upon facts;

- QUD ('questions under discussion') : partially ordered set that specifies the currently discussable questions. If q is topmost in QUD, it is permissible to provide any information specific to q.

- LATEST-MOVE: content of *latest move* made: it is permissible to make whatever moves are available as reactions to the latest move.

With this view of context, *discussion* can be modelled as the consequence of a particular question q being maximal in QUD. This structures the context to accept either any information σ that is *about* q or questions q_1 on which q *depends*. Here *about* and *depend* are semantic notions, relations respectively between informational items and questions, and between two questions described and formalized in Ginzburg 1995b. Whereas the standard view of assertion *that p* due to Stalnaker only accommodates acceptance or rejection of p as followups, the current view allows us to explicate why an assertion commonly gives rise to a discussion of *whether p*. An assertion is modelled as a sequence of actions that starts out with the question *whether p* as maximal in QUD. The context is then structured either to accept *that p* as information that resolves the question or to lead to a discussion sequence of *whether p*.

2.2 Semantic ontology

The semantic framework utilized here is situation theory (e.g. Barwise and Perry 1983, Barwise and Etchemendy 1990, Barwise and Cooper 1991). The view of questions utilized here is the framework described in Ginzburg 1995b,c.

A proposition is notated $p = (s!\tau)$, where s is a situation and τ is a SOA. This is the kind of entity that can be believed or disbelieved and is the descriptive content of an assertion.

(1) $p = (s!\tau)$ is TRUE iff τ is a *fact* of s: denoted as: $s \models \tau$

Thus, the proposition $(s!\langle WALK, j; +\rangle)$ is TRUE iff $s \models \langle WALK, j; +\rangle$. That is, intuitively, if j's walking is a fact of s.

A question will be an entity $(s?\mu)$, constructed from a situation s and an n-ary abstract $\mu = \lambda X_1, \ldots, X_n \sigma(X_1, \ldots, X_n)(n \geq 0)$. For instance:

(2)   a. a use of 'Did Bill leave' has as its content: $(s?\langle LEFT, b; +\rangle)$,

       b. a use of 'who left' has as its content $(s?\lambda x \langle LEFT, x\rangle)$

Questions are related to SOA's via two principal relations, 'ABOUT' ("partial answer-hood") and 'RESOLVES' ("contextually relativised exhaustiveness"). Both relations are formally characterized in Ginzburg 1995b using the notion of informational subsumption within a SOA-algebra (Barwise and Etchemendy 1990).

3 Short Answers

I turn now to one prominent semantic application of the semantic framework for dialogue briefly sketched above. One of the most obvious ways in which a query use of an interrogative i_0 changes the context is to enable elliptical followups, *short answers*, phrasal

utterances used to respond to queries: I formulate a basic rule for interpreting such ut-
terances, à rule that makes what is, I believe, non-eliminable reference to QUD. This is
motivated primarily by the fact illustrated in section 5.1[2] that elliptical contributions are
possible, in principle, arbitrarily far away from the turn in which the question was posed as
long as the question remains under discussion. An interesting semantic fact that emerges
is that, for a certain class of cases, short–answers *unambiguously* manifest a reading that
involves branching quantification, which is often rather difficult to get for non-elliptical
constructions.

3.1 Basics

Let us start by considering short answers to unary wh-questions. An initial formulation
of a rule for interpreting such utterances is (3):[3]

(3)   S → XP

      Content(S)[DGB$_0$] = (SIT(DGB$_0$ | Max-QUD) ! λ-Abstr(DGB$_0$ | Max-QUD)[Content(XP)])

The rule says that in a DGB configuration DGB$_0$, any XP can be expanded as an S
whose content is calculated as follows: it is a proposition of the form $(s!\sigma)$. Here s is
the situation component of the question maximal in QUD; σ arises by predicating of the
XP the abstract component of the question maximal in QUD.[4] This is exemplified in the
following example, where many significant details such as tense have been simplified away:

(4) a. [In a train depot, the driver needs to be decided]
     A: Who will drive the train?
     B: Bill.
  b. The question expressed: $(s_{train-journey}?\lambda x(WILL - DRIVE - THE - TRAIN, x))$
  c. Content of answer phrase: (reference to the individual) b.
  d. Content of the short answer: $(s_{train-journey}!(WILL - DRIVE - THE - TRAIN, b))$

The rule in (3) is, putting aside framework-related differences, similar to rules for
interpreting short-answers prevalent in the so-called categorial approach to interrogatives,
approaches that interpret interrogatives as denoting n-ary relations (see e.g. Keenan and
Hull 1973, Hull 1975, Hausser 1983, Hausser and Zaefferer 1979). The main innovation
here pertains to the reference to QUD, which connects up to context in an explicit way, in
particular enabling an account of short-answers used an arbitrary distance away from the
question to which they pertain. Thus, in (5(4)), 'Jelle' can be interpreted as 'We should
invite Jelle for tomorrow' because at that point in the dialogue, as can be observed,
the question expressed by a use of 'who should we invite tomorrow' is QUD–maximal:

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(5)

A(1): Who should we invite for tomorrow?
B(2): Who will agree to come?
A(3): Helen and Jelle and Fran and maybe Sunil.
B(4) : I see. So, Jelle.

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[2]For data from corpora see the extended version.

[3]For expository simplicity, I use here a phrase structure, rule-to-rule description; as will become clear
in chapter 5, my approach crucially presupposes a sign-based approach, where syntax and semantics can
interact and influence each other in significant ways.

[4]Thanks to Rob Koeling for discussion on this point.

> (1): A | QUD: q_1
> (2): B | QUD: q_1; asks q_2 such that q_2 influences q_1;
> B | QUD: $q_1 \prec q_2$
> (3): A | QUD:= $q_1 \prec q_2$; asserts p_1 about q_2:
> A | QUD: $q_1 \prec q_2 \prec p_1$?
> (4): B | QUD:= $q_1 \prec q_2 \prec p_1$?
> B | FACTS : soa(p_1);
> downdates p_1?, q_2 from QUD: B | QUD: q_1;
> asserts p_3 about q_1:
> B | QUD:= $q_1 \prec p_3$?

(6) a. q_1: $(s_{dinner}?\lambda x \langle INVITE - ABLE, x \rangle)$

  b. Content of answer phrase: (reference to the individual) **j**.

  c. Content of the short answer: $(s_{dinner}! \langle INVITE - ABLE, j \rangle)$

The rule assumes that such fragments are (declaratively) sentential by nature and, hence, potentially embeddable as complements.[5] This potential is fulfilled, as originally pointed out by Morgan 1973:

(7) a. A: What is the default font-size?

  B: I'd been assuming that 12 point.

  b. I'd been assuming that the default font-size is 12 point.

(8) a. A: What does Nixon want for breakfast?

  B: Kissinger says eggs

  b. Kissinger says that what Nixon wants for breakfast is eggs. (Morgan 1973)

(9) a. A: Why is she leaving town?

  B: It seems that because Max is no longer here.

3.2 Generalizing the short-answer rule

In the previous section we formulated a rule which can be used to interpret one class of short-answers to unary wh-questions. As it stands, however, it does not account for the following pervasively occuring two classes of responses:

(10) a. A: Who attended the meeting?

  B: No students.

  B: A friend of Jill's.

(11) a. A: Did Bill attend the meeting?

  B: Yes.

  B: Maybe.

In (10) we see examples of quantified NP's used as short-answers, whereas in (11) examples of sentential adverbials used to respond to y/n-questions.[6] In the former case we cannot directly input a quantifier content as an argument to a λ-abstract. In the latter

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[5]Contrary to Steedman 1990. Steedman's claim, however, is supported by a single putatively infelicitous example:

(i) A: Who ate the biscuits?

(ii)* I think that Harry. (Steedman's (115c). The star is Steedman's; I find the example fully acceptable).

Steedman seems unaware of Morgan's data in this regard. Morgan for his part noted the existence of an idiolect that does not accept such embeddings.

[6]See the extended version for discussion of other types of responses to y/n-questions.

case, assuming the abstract associated with a y/n-question is a 0-ary abstract, it cannot predicate of the operator that constitutes the content of the adverbial.

There is an obvious response to these two problems, one advocated in somewhat distinct forms by Groenendijk and Stokhof 1984, and by Ginzburg 1995c.[7] This is to view the *short-answer phrase* as the operator, rather than the abstract associated with the question:

(12) $S \rightarrow XP$

Content(S)[DGB₀] = (SIT(DGB₀ | Max-QUD) ! Content(XP)[λ-Abstr(DGB₀ | Max-QUD)])

By taking a Montogovian view of NP meaning, one that views both referential and quantified NP's as denoting properties of properties, (12) enables a unified account of short-answers to unary wh-questions. One also obtains an account of adverbial phrase answers to y/n-questions.

There are, however, a number of reasons due to which I will not assume (12) as the basic short-answer interpretational scheme. For a start, from a purely metatheoretic point of view, one might prefer not to adopt an interpretational approach that necessarily *requires* all NP's to be treated as quantifiers. A more serious problem is that the schema doesn't generalize well to $n > 1$. Indeed, short answers are possible in such cases too:

(13) a. A: Who was interacting with whom at the party?

      B: Bill with Mary.

      B: Some of my friends with each of her friends.

      B: One thing's for sure: None of my friends with none of my sister's friends

   b. A: Who arrived when?

      B: Bill at 5, Mustafa a couple of hours later.

      B: Several of us in the morning, everyone else at noon.

   c. A: Who is similar to whom?

      B: Jack to Jill and Tweedledum to Tweedledee.

      B: Exactly one Norwegian to exactly one Swede.

And indeed such examples just like the unary ones can also be embedded, which, if these cases are treated as instances of gapping, goes against a rather established assumption (see e.g. Steedman 1990):

(14) a. A: Who arrived when?

      B: I think that Bill at 5, and Mustafa a couple of hours later.

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[7]Groenendijk and Stokhof also postulate that the short answer interpretation process involves an exhaustification operator. This would enforce that (ii), (iv) and (vi) used as responses to (i) be construed *semantically* as (iii), (v), and (vii) respectively:

(i) A: Who left?

(ii) B: Bill

(iii) Bill is the only person that left.

(iv) B: Every journalist.

(v) The people who left were all the journalists.

(vi) B: At most two journalists.

(vii) Either no one left or the people who left consisted of at most two journalists.

Apart from the fact that (v) and (vii) in particular (the latter noted by Groenendijk and Stokhof themselves) seem rather problematic construals, exhaustification would predict that followups to (ii)/(iv)/(vi) such as (viii) and (xi) should sound incoherent:

(viii) A: Who else left?

(xi) B: Merle also left.

This prediction seems incorrect, as noted also by Yabushita 1993. Consequently, I assume that exhaustification is best treated as a conversational implicature.

b. A: Who was arguing with whom?

    B: I've been told that some of my friends with each of her friends.

How to interpret such answers? The most pressing question perhaps is the relative scope of the answer phrases: which one composes first with the abstract provided by the question? One could imagine a number of possible strategies that might emerge, perhaps based on word order or grammatical hierarchy. However, what the data seems to suggest is perhaps most consonant with a non-elliptical syntax presupposed here, namely *neither answer takes scope over the other*: this means that what emerges can be analyzed either as a *branching* reading (see Hintikka 1974, Barwise 1979, Westerståhl 1985, May 1989, Sher 1991) or in terms of cumulative quantification over groups(see e.g. Landman 1995).

Thus, whereas a dependent reading in which the subject NP takes scope over the object PP for (15) would be equivalent to a $\forall\exists$ reading, the actual reading exhibited is one whose truth conditions entail that the set of my friends kept apart from the set of my sister's friends:

(15)   A: Who was interacting with whom at the party?

        B: One thing's for sure: None of my friends with none of my sister's friends.

Similarly, in (16), a dependent reading means that *a lot* of inter-sexual arguing was taking place, whereas the branching reading, the one that seems to occur, involves relatively little such discord:

(16)   A: Who was arguing with whom?

        B: Some liberals with most conservatives but few men with few women.

These data constitute, to the best of my knowledge, one of the few cases where branching quantification contents arise as the *sole* interpretational possibility, arguably as a consequence of a particular constructional meaning.

A third problem with (12) pertains to data discussed in section 5: the apparent generalization (12) captures between unary wh–questions and y/n–questions breaks down with respect to the syntax/semantics interface. The XP's used to respond to wh–questions do manifest (categorial) parallelism with respect to the original interrogative utterances, whereas the adverbial answer phrase provided as a response to y/n–questions does not.

These considerations point us to resuscitate and attempt to generalize our original schema (3):

(17) $S \rightarrow (Adv),(XP_1),\ldots,(XP_n)$

      Content(S)(context) = (SIT(MAX-QUD) ! Content(Adv)
      (Branch-closure(Quant-Content(XP_1),...,Quant-Content(XP_n),
      $\langle Rel:\mu, r_1$: Content(XP_1),...,r_n: Content(XP_n) $\rangle$))))

      Context: $\mu = \lambda$-Abstr(Max-QUD)

The 0-ary case corresponds to y/n questions, where the phrasal utterance is a sentential modifier ('yes', 'probably','no','maybe next week','not at present' etc.), which takes as its argument the 0-ary λ-abstract associated with the question currently under discussion, i.e. maximal in QUD, which is simply a SOA. When $n \geq 1$, the content arises by predicating the λ-abstract associated with the question maximal in QUD, of the contents associated with the phrasal utterances; in case these latter are quantified, the content that arises is the branching-quantificational closure of these quantifiers, with nuclear scope the λ-abstract. When we restrict attention to the most common case, $n = 1$, branching closure reduces to ordinary quantificational closure.

Two issues remain with respect to (17): first—how to construe branching quantification? For current purposes I do not need to take a stand on this. The crucial point is to have a means of combining quantifiers without forcing dependence between the various

quantifier phrases. For concreteness, I will adopt the following schema due to Barwise 1979, restricted for simplicity to two quantifier phrases:[8]

(18) a. Branch-closure$(Q_1 x_1 A, Q_2 x_2 B, \mu(x_1, x_2)) \leftrightarrow \exists X \subset A, \exists Y \subset B[Q_1 AX \wedge Q_2 BY$
$\wedge (X \times Y \subset Extension(\mu) \cap A \times B)]$ $(Q_1, Q_2$ monotone increasing quantifiers)

b. Branch-closure$(Q_1 x_1 A, Q_2 x_2 B, \mu(x_1, x_2)) \leftrightarrow \exists X \subset A, \exists Y \subset B[Q_1 AX \wedge Q_2 BY$
$\wedge (Extension(\mu) \cap A \times B \subset X \times Y)]$ $(Q_1, Q_2$ monotone decreasing quantifiers)

Thus, given these schemas B's response in (16) repeated here as (19) will involve the following truth–conditions:

(19)   A: Who was arguing with whom?

B: Some liberals with most conservatives but few men with few women.

a. There exist sets X, Y; X consists of liberals, Y is such that most conservatives are in Y and for each x ∈ X and y ∈ Y, x argued with y.

b. There exist sets X, Y; X is either empty or consists of few men, Y is either empty or consists of few women and those men/women pairs who engaged in arguing are included in $X \times Y$.

A second issue that remains concerning (17) is a crucial one as far as the syntax/semantics interface goes: how to ensure the correct association between semantic roles and phrasal utterances? Thus, consider (20):

(20)   A: Who depends on whom?

a. B: John on Mary.

b. B: Most students on most teachers.

Both short answers here are quite unambiguous: in (20a) 'John' is the depender and 'Mary' dependent, in (20b) 'most students' is the depender and 'most teachers' dependent. In any account which involves reconstruction/deletion at some level of analysis, this is not difficult to enforce. But what about the present account, which eschews such mechanisms? As it stands (17) does not offer a way out. A solution to this problem will emerge in section 7, without in any way altering (17); the alteration will be in the nature of the abstract associated with the question, which will encode certain syntactically-based presuppositions on its argument-roles.

4 Surface Semantics v. Reconstruction

In the previous section I provided one syntactic and semantic proposal for interpreting short answers. I dub the position that interpretation proceeds according to this schema the *surface semantics* position, for obvious reasons. My concern in this section is to argue against the desirability of a reconstruction/deletion-based approach to short-answer resolution. Specifically, I will offer some arguments towards refuting the following claim:

Well-formedness of short answers involves checking whether their reconstruction correlates are well-formed. (Morgan 1973)

My claim will be that in general the short answer diverges from plausible surface correlates of the reconstructed form both syntactically and semantically.

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[8]See Westerståhl 1987 and Sher 1990 for background and a more general and uniform condition.

4.1 Syntactic Divergences

I start by considering syntactic divergences between the short answer and those surface forms that are plausible correlates of a reconstruction analysis.

4.1.1 Propositional operators

The ungrammaticality of (21b) and (22b) are surprising for a syntactic account in light of the undoubted felicity of the elliptical response:[9]

(21) a. A: Who stole the phonemic level? B: Not Bill.

     b. * Not Bill stole the phonemic level. (Morgan 1973)

(22) a. A: Who did Martha talk to? B: Not Kissinger.

     b. *Martha talked to not Kissinger. (Morgan 1973)

According to Surface Semantics there is no reconstruction. Rather, following Generalized Quantifier theory, 'not Bill' is analyzed as $\lambda P.\neg P(b)$, as motivated by examples like (23a,b):

(23) a. I want Jill but not Bill for the job.

     b. The person chosen for the job was not Bill.

Given this content for 'not Bill' the correct content for (21a) and (22a) follows immediately. Similar remarks *mutatis mutandis* hold for other fragments composed of a propositional operator and NP, e.g. 'probably Bill', 'maybe Jill' etc.

4.1.2 Verbal Questions

Verbal questions, i.e. questions where what is questioned is the sentential predicate, provide a telling illustration of the undesirability of reconstruction. The reconstructed sentence is ungrammatical. However, given the fact that *any* sufficiently general action verb can be used suggests that any attempt to treat the construction as involving a light verb, which is unrepresented at some syntactic level is unattractive:

(24) a. A:What did Bill do yesterday? B: wash dishes.

     b. # Bill did wash dishes.

(25) a. A: What unfavourable actions did he perform? B: coughing in a public place, spitting in the soup.

     b. # He performed coughing in a public place.

     c. A: What has Bill achieved during his stay here? B: Not much apart from breaking the Duke's china set.

     d. # Bill achieved during his stay here not much apart from breaking the Duke's china set.

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[9]Morgan noted such data as a puzzle for a reconstruction/deletion-based approach.

4.1.3 y/n Questions

The issue of sentential modifier responses to y/n-queries is not often broached. Let me note two problems for a reconstruction/deletion approach. The first problem is that getting a schema to cover all cases is not straightforward. Adjoining the modifier to auxiliary position will require some "re-spellout" of certain modifiers, as (26b) shows; whereas, adjoining from the left is also not generally possible:

(26) a. A: Did Bill leave? B: Yes/No/Probably/Maybe not/Uh huh/Not this week.

   b. *Bill yes left/*Bill no left/Bill probably left/*Bill uh huh left/*Bill did not this week leave.

   c. Yes, Bill left/No, Bill left/Probably, Bill left/*Maybe not, Bill left/*Not this week, Bill left.

A second problem is how to license negative polarity items. These are licensed in y/n-interrogatives but not in the corresponding declaratives:

(27) a. Did Bill call anyone? Yes.

   b. *Bill called anyone.

A class of cases Morgan discusses, following Pope 1971, are fragment responses to y/n questions. The claim is that well-formedness of such fragments involves checking whether they obey subjacency:

(28) a. Did John and Bill$_i$ leave this morning? # No, Harry$_i$ (= No, John and Harry left this morning.)

   b. Did the man who shot Lincoln go to Russia? # No, Kennedy. (= The man who shot Kennedy went to Russia.)

However, the approach to fragment interpretation proposed here does *not* lead to the expectation that a y/n-question expressed by a sentence where no constituent is focussed should *ceteris paribus* license constituent fragments, given that in such a case QUD contains no requisite property:

(29) A: Can you help me with my homework? B: # No, Jill (= #No, Jill can help you.)/# No, but maybe your carpentry (= No, but maybe I can help you with your carpentry.)/# No, distract you. (= No, I can distract you.)

Things are quite different when a constituent is focussed:

(30) a. A: Can you help me with my *homework* ? B: Your homework, no. Your carpentry, yes.

   b. A: Can *Bill* help me with my homework ? B: Bill, no; on the other hand, Sue, yes.

Such cases are naturally analyzed as involving the presence in QUD respectively of the questions 'what can you help me with' and 'who can help me with my homework' (see below section 6), from which an account of the felicity of the responses should follow.[10] If indeed constituent replies to y/n-questions require the constituent to be focussed, then, if focussing possibilities are not determined by subjacency, as argued in detail by Rooth 1985 (though countered e.g. by Kratzer 1991), then there is no argument for (subjacency imposed by) reconstruction in such cases. Another case where ceteri are not paribi concerns the possibility of "acknowledgement/clarification fragments" that arise particularly during the grounding of an utterance, as illustrated in (31). These are discussed in chapter 8 of Ginzburg (to appear):

(31) A: Bill resigned yesterday. B: Bill?/resigned?/yesterday?

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[10]There are some subtleties involved. For instance: why is (i) much less felicitous than (30a)?

(i) Can you help me with my *homework* ? B: ? No. Your carpentry, yes.

Perhaps this has something to do with the fact that in (30a) there is explicit attention in the initial response to the issue 'what can you help me with', whereas in (i) the switch to discuss this requires some accommodation.

4.1.4 Binding Theory

One of the biggest challenges for the surface semantics approach is Morgan's claim that well-formedness of fragments involves checking whether reconstructed forms satisfy binding theory (BT). If this were indeed the case, the implication would be that syntactic information of the *entire* source is relevant. However, I will argue that Morgan's BT data is actually preferably explained otherwise. Morgan's idea is that, for instance, condition B of BT would be invoked to explain why examples such as (32) are infelicitous:

(32) a. A: Who does $Bill_i$ like? B: $himself_i$/# him_i (felicitous if stressed)

    b. Bill likes $himself_i$ /# him_i.

However, as the following examples illustrate, the ill-formedness of the reconstructed form is not, as a general rule, a good predictor of short-answer felicity[11] :

(33) a. A: Who will punish $Bill_i$ if he fails? B: he himself/himself/#he/#him (both felicitous if stressed)

    b. # He $himself_i$/* $himself_i$ will punish $Bill_i$ if he fails.

(34) a. A: What caused the computer to break down? B: Power surge? A: perhaps, but the most intriguing answer is: [the computer itself]$_i$ /$itself_i$ /#it

    b. #The computer $itself_i$/*$Itself_i$ caused the $computer_i$ to break down.

(35) a. A: Who were the cause of John and Mary's worst problems? B: Each other.

    b. *Each other were the cause of John and Mary's worst problems.

(36) a. A: Whose complaints annoyed Bill and Jill most intensely? B: Each other's.

    b. # Each $other_i$'s complaints annoyed [Bill and Jill]$_i$ most intensely.

Thus, BT + reconstruction undergenerates: many fragments are felicitous despite the fact that their reconstructed surface correlate violates BT. A better explanation of such cases is provided by the two independently motivated assumptions that a short answer is focal and hence must be accented (see e.g. Selkirk 1995 and below), and that accented pronouns in English must be contrastive. This has the consequence of ruling out coreference in examples such as (37):[12] , [13]

(37)   A: Who does $Bill_i$ like? / B: HIM_i

Support for the focus-based explanation comes from (38). Here what reconstruction + BT predicts should be licit (the unstressed pronominal) is infelicitous, whereas a resolution that is *outlawed* by reconstruction is acceptable:

(38) a. A: Who does Jill think Bill desires? B: Herself/#Her.

    b. # Jill thinks Bill desires herself.

    c. Jill thinks Bill desires her.

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[11]In the discussion here I assume that the surface correlate ("spellout") of reconstruction is simply the form obtained by, roughly speaking, inserting the short answer in the *in situ* position of the interrogated wh-phrase, as commonly assumed (see e.g. Morgan 1973, Von Stechow 1991, Rooth 1992). In the extended version of the paper, I offer both syntactic and semantic arguments that an alternative assumption according to which the deletion source/reconstruction output is either a pseudo-cleft or a cleft does not strengthen the reconstructionist's case.

[12]I wish to thank Joe Taglicht for helpful discussion of this point that helped sharpen my previous proposal.

[13]Cremers 1983 proposes a related explanation for 'the absence of clitics or relative pronouns from being a proper part of a well-formed ellipse.' (Cremers 1983, p. 148.) Cremers is concerned with gapping and sluicing, which he argues to be instances of a general ellipsis schema. He proposes an essentially phrase-structure account and advocates separating away issues of well-formedness from issues of interpretability of ellipsis.

4.2 Semantic Divergences

Let us consider now semantic divergences between short answers and their reconstructed correlates. The first set of data I discuss is based on some interesting observations by Corblin 1995; his data is based on French, I will discuss similar examples from Hebrew (if anything the Hebrew data makes the point somewhat more strongly.) The observations are these:

- the short answer (39a) has only a $\forall\exists$ reading [for (39a) this amounts to a reading where everyone met at least one visitor.]

- the reconstructed version only has the reading in which no meet: /no inspections took place (in French this is the *preferred* reading; $\forall\exists$ also available)

(39) a. A: mi lo pagash af exad mihamevakrim? B2: af exad.

   A: who not met no one of the visitors? B2: no one.

   "Who met none of the visitors?" "No one"

   b. af exad lo pagash af exad mihamevakrim.

   "No one met any of the visitors"

The surface semantic approach explains the short-answer part of Corblin's observation. The reading provided for (39a) is the following:

(40) a. $\lambda P\neg\exists x[\text{person}(x) \wedge P(x)](\lambda z\neg\exists y(\text{visitor}(y) \wedge \text{met}(z,y))) =$

   $= \neg\exists x[\text{person}(x) \wedge\neg\exists y(\text{visitor}(y) \wedge \text{met}(x,y))]$

   $= \forall x[\text{person}(x) \rightarrow \exists y(\text{visitor}(y) \wedge \text{met}(x,y))]$

An analogous argument can be constructed with responses to multiple wh-questions. As we saw in section 3 short-answers need to be analyzed as involving scope-less quantification, either branching quantification or cumulative quantification, *not* scope-ful quantification. However, it is the latter that is, at the very least, the preferred interpretation of the reconstruction correlates. One such example is provided in (41): for (41a) the reading exhibited is one whose truth conditions entail that the set of men keeps apart from the set of women, whereas (41b) is preferably understood as indicating the lecherous nature of men; this reading is accentuated if 'few' in the object NP 'few women' receives a pitch accent. Similar phonology does *not* have a similar effect in (41a):

(41) a. A: who interacts with whom here these days?

   B: As far as I can tell few men with few women. (Unambiguously branching/cumulative reading, regardless of stress.)

   b. Few men interact with few women. (Preference for scoped reading, especially with stress on second 'few')

5 Category concord in (long-distance) dialogue ellipsis

5.1 Data

The data considered in the previous two sections underlines the fact that short answers diverge markedly from their reconstructed correlates both on the syntactic and the semantic front. In particular, this suggests the following conclusion: *the syntax of short answers does not require reference to the syntactic properties of the* entire *source*. It does *not* follow from this, however, that: *no* syntactic properties of *any* constituent of the source are relevant. In fact, I will now attempt to establish the following two claims [14]:

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[14]Data from Korean supporting the first claim are provided in Morgan 1989, the sequel to his 1973 paper.

- Reference must be made to the syntactic properties of the argument-role associated with the interrogated wh-phrase.[15]

- This constraint holds across (in principle) unbounded stretches of dialogue.

I consider here solely nominal complements, though analogous data exists with verbal complements. A language like English, where case is irregularly marked, is not an ideal stalking ground; the phenomenon is more straightforward to demonstrate in languages where case is more pervasive. I offer an example from Hebrew whose analogues in a variety of inflected languages (e.g. German, Greek, Russian) demonstrate a similar point: the Hebrew verb siyea ('help') takes PP's headed by lo ('to'), whereas the verb tamax ('support'/'vote') takes PP's headed by be ('in'). The short-answers must be headed by the requisite preposition:

(42)

```
(a) A: be/#le mi tamaxta babxirot?      A: #be/le mi siya'ta babxirot?
(b) B: ba/#la xazit haislamit           B: #ba/la xazit haislamit
(c) A: haxevre shel Darawsha            A: haxevre shel Darawsha
(d) B: shel Dahamshe                    B: shel Dahamshe
(e) A: ah ken.                          A: ah ken.
(f) B: vekamuvan gam be/#leAhmad        B: vekamuvan gam #be/leAhmad
(g) A: yafe                             A: yafe.
(h) B: veleca'ari gam ba/#la tembel hahu.B: veleca'ari gam #ba/latembel hahu
(Gloss: A: Who did you help/support in the elections? B: (to)/(in)
the Islamic front; A: (to)/(in) Darawshe's guys?; B: Dahamshe's!
A: Right; B: And (to/in) Ahmad;A:Nice; B: And also unfortunately
(to/in) that idiot.)
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Does this data reflect idiosyncratic subcategorisation requirements or is it to be explained in terms of (something like) distinctness in thematic roles? While one can never fully rule out an explanation of the latter type, this seems rather unlikely: the fineness of grain needed to distinguish the thematic roles of, say, siyea ('help') and tamax ('support'), cuts across any default thematic-role–to–syntax mappings that might plausibly be proposed: PP[+le] is associated with *goal* argument-roles, whereas PP[+be] is associated with *location* argument-roles. By most tests, the PP-object of either verb is in fact a *goal*, so by default we should expect both PP's to be realized as PP[+le].

5.2   The Moral

In considering how to capture syntactic dependencies such as those exemplified in this section, it is important to bear in mind the fact that the dependence is maintained across unbounded stretches of dialogue. This means that capturing the dependence using *reconstruction* of the source is problematic, not only for the syntactic and semantic reasons mentioned above, but also for two processing-related reasons: first, there is a variety of data that shows syntactic information as a whole decays rapidly (see e.g. the psycholinguistic literature following up on Sachs 1967), which is why one would not wish to posit a syntactic structure over unbounded stretches of dialogue. Second, for a short answer such as (42f) or (42h) above, occuring as it does while the question is in the midst of being discussed, it seems quite clear that the question expressed in (42a) *has been incorporated in the discourse model* as a semantic entity (it has been understood and is under discussion.). Hence, given that the relevant semantic object (the abstract representing the

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[15]For the y/n case (with no focussing), the claim amounts to: *no* syntactic dependence, see the extended version for exemplification.

queried property) is available anyway, it would be an otiose processing strategy to keep on performing syntactic reconstruction each time an XP appropriate to serve as an answer is encountered. The unbounded nature of the syntactic dependency and the concomitant likelihood that the question must get integrated sooner or later in the discourse model also weakens the applicability of the Sag-Hankamer-Kehler approach to discourse ellipsis—one where syntactic dependencies arise solely when resolution makes recourse to material *not yet integrated in the discourse model.*

6   QUD and Focus

I shall follow a strategy according to which context can influence the *form* of an utterance, at least that part of the utterance often dubbed the *focus*. In order to spell out this hypothesis, we need to fix concretely the notions of *focus/ground* (henceforth: *f/g*). I will keep things rather simple here, basing them on the following assumptions:

- [partition] Every utterance-type can be partitioned into two components (not necessarily syntactic constituents.) one of which constitutes the ground, the other the focus. Every utterance-type contains a focus, though some utterances might contain only a focus (cf. Engdahl and Vallduví 1996.).

- [QUD and focus] An utterance with a given f/g partition requires for its felicity the maximality in QUD of a certain question, one whose defining property is identical with the scope generated by the focus constituent(s) (cf. the "question test" for diagnosing the focus of an utterance, and the theories of focus semantics of Von Stechow (Von Stechow 1991) and Rooth (Rooth 1992).).

My formulation of "QUD and focus" follows Rooth in viewing the effect of focus as being presuppositional in nature—requiring the maximality in QUD of a particular question:

(43) a. [JILL]$_{FOCUS}$ [likes Bill]$_{GROUND}$ presupposes QUD-maximality of the question (denoted by) *who likes Bill* i.e. (s ? λx⟨LIKE, liker:x,likee:b ⟩)

     b. [Jill likes]$_{GROUND}$ [BILL]$_{FOCUS}$ presupposes QUD-maximality of the question (denoted by) *who does Jill like* i.e. (s ? λx⟨LIKE, liker:j,likee:x ⟩)

7   Specifying the structure of foci: the emergence of syntactic presuppositions

7.1   The Intuition

In the previous section I proposed that the fact that a given question **q** is maximal in QUD has the consequence of making utterances with a particular f/g structure felicitous in that context—those utterances whose focus has as its scope the individuating property of **q**. I now want to concentrate on one subcase: the one that pertains to utterances which contain nothing but focus. The basic idea is simply that an interrogative utterance creates a context where it is permissible to provide an utterance in which *only* the focus is realized, on condition that the form *and* content of such an utterance matches the specification provided by QUD. Hitherto, I assumed that QUD consisted merely of questions, which in turn are partially specified in terms of n-ary λ-abstracts. Henceforth, we enrich the notion of *question*: these will now also implicitly carry a specification for the structure of possible

foci. This specification originates from the utterance of a *focus-establishing-constituent* (f-e-c), which in the current paper will exclusively be a wh-phrase.

The proposal I put forward is based on the idea that the abstract created by scoping wh-phrases in a question possesses argument-roles that carry appropriateness restrictions on the category of utterance which can associate with them. The current proposal is indebted to and builds on a number of ideas first put forward in Cooper 1993.[16] This view of the syntax/semantics interface suffices to overcome the problems pointed out above for other accounts of ellipsis. I will suggest that this proposal is ontologically conservative in the sense that the notion of abstract appealed to, viz. an abstract that has argument-roles that carry syntactic appropriateness restrictions, is already in essence presupposed in sign-based grammars like HPSG. Before this and before considering how to implement the idea, let me sketch the underlying intuition: Assume that with the interrogative sign 'who relies on whom' we now associate the following abstract:

(44) $\lambda X, Y (\text{RELY}, \text{reli-er}:X, \text{reli-ee}:Y; +)$
       RESTRICTIONS: utterance associated with X is of syntactic category NP[+nom], utterance associated with Y is of syntactic category PP[+on].

If the question expressed by 'who relies on whom' is introduced into QUD, then in particular the abstract used in resolution of a short-answer is the one in (44).

Now consider what happens when we encounter an utterance such as:

(45)   John on Mary

Interpretation can proceed directly using the schema provided in section 3 repeated here:

(46) $S \rightarrow (\text{Adv}), (XP_1), \ldots, (XP_n)$
       $\text{Content}(S)(\text{context}) = (\text{SIT}(\text{MAX-QUD}) \,!\, \text{Content}(\text{Adv})$
       $(\text{Branch-closure}(\text{Quant-Content}(XP_1), \ldots, \text{Quant-Content}(XP_n),$
       $(\text{Rel}: \mu, r_1: \text{Content}(XP_1), \ldots, r_n: \text{Content}(XP_n))))))$
       Context: $\mu = \lambda\text{-Abstr}(\text{Max-QUD})$

The referent of the utterance 'John' can *only* be fed to the role covered by the X parameter, given the restriction it carries ("utterance associated with X is of syntactic category NP[+nom]"), whereas the referent of the utterance of 'on Mary' can *only* be fed to the role covered by the Y parameter, given the restriction it carries ("utterance associated with Y is of syntactic category PP[+on]"). So, for a start, there is no potential for ambiguity as to which phrase associates with which argument-role, as a purely semantic approach would necessarily involve. Second, the syntactic dependency has been captured simply by having it stated *once*, as part of the compositional creation of the content of the interrogative. The sign description of the short-answer itself requires absolutely no stipulation of *syntactic* presuppositions. Third, we do not appeal to any essentially hybrid entities, as for instance a pair of a question and utterance, as would be required in any reconstruction-based approach. Rather, the value that QUD takes is simply a question, one that is individuated in terms of a situation and an abstract. Fourth, and perhaps most importantly, we have something like an explanation for, a raison d'être, for the emergence

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[16] Cooper's paper offers a number of arguments from attitude reports, linguistic communication and ellipsis for the position that 'linguistic interpretation involves objects of information that integrate information from various different sources. In particular...that what is traditionally considered syntactic information in linguistic theory needs to be integrated into the kind of informational objects we would normally consider to be the semantic content of linguistic utterances.' (Cooper 1993, p.1). One proposal Cooper explores is that meanings, which he takes to be abstracts where the variables abstracted over represent the contextual parameters, should carry restrictions that pertain to the structure of the utterance-types of their constituents. In that paper, following on some earlier work on sluicing by the current author, Cooper suggests that such abstracts could be used to capture the inter-utterance case-dependencies also exhibited in sluicing, an idea further developed in the extended version of this paper.

of *syntactic* presupposition(s). This explanation is completely compatible with the fact that the *content* of the question is already available in the context, which as mentioned previously renders performing syntactic reconstruction each time an XP appropriate to serve as an answer is encountered an otiose processing strategy: In the 0-ary question case, that is, y/n-questions, phrasal utterances involve only sentential modifiers. There is no potential ambiguity, no associations to establish; no syntactic presuppositions carry over from the interrogative utterance. With unary wh-questions there is one association to be made, between the phrasal utterance and the role it fills or quantifies over. In the case of binary wh-questions, the syntactic presuppositions ensure that when a phrasal utterance occurs, each sub-utterance phrase associates with the right role.

The final virtue to mention about this type of account is that the syntax of the source does not play any role in *constructing* the interpretation of the short-answer.[17] That is, it is not *reused* in computing the content of the short answer. It is, therefore, entirely compatible both with long-term memory degradation of syntactic information and with cases, discussed in the extended version of the paper, where no overt utterance antecedent exists. Insofar as one can remember content and forget its structure the prediction is that one can produce an interpretable albeit not entirely syntactically felicitous ellipsis.

7.2 Abstracts with Restrictions

The notion of an abstract whose argument-roles carry restrictions is prevalent in situation semantics (see e.g. Gawron and Peters 1990, Barwise and Cooper 1991, Cooper 1993). For instance:

(47) a. $\lambda X \langle STAND, stand\text{-}er:X;+\rangle$
$\sqrt{} (s_0 ! \langle NAMED, `JOHN', X\rangle)$

b. $\lambda X \langle SEE, see\text{-}er:j, see\text{-}ee:X;+\rangle$
$\sqrt{} (s_0 ! \langle BOOK, X\rangle)$

Here the material to the right of $\sqrt{}$ is the proposition specifying the restrictions: thus, (47a) specifies a role for an entity that stands, carrying the restriction that it be named 'John', whereas (47b) specifies a role for an entity seen by j, carrying the restriction that it be a book. There are two basic components of the idea: *restricted objects* and *application of a restricted object to an assignment*.

(48)   Definition— restricted objects: given any object X and proposition p

$X \sqrt{} p = X$, if p is true

$= $ undefined, if p is false

In the case where p contains free parameters, p does not have a truth-value. In such a case, the restriction becomes a precondition on possible anchors for $X \sqrt{} p$: only anchors f such that p[f] is true need to be considered.[18] By the same token, when a parameter contained in a restricted object undergoes abstraction, the restriction becomes an appropriateness condition on that argument-role. This means that when this abstract is applied to an assignment, the application will be successful if and only if the entities in the assignment satisfy the restrictions.

(49)   Definition— application for restricted objects: given an abstract with restrictions, $\mu \sqrt{} p$, and an assignment f:

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[17] Of course, the syntax of the source played an important role in computing the content of the original question and this content is used in resolving the content of the short-answer.

[18] We are abusing notation somewhat here: 'p[f]' strictly speaking denotes here the result of substituting in p, as specified by the assignment f; we also use '$\mu[f]$' to denote the application of the abstract μ to the assignment f.

$$\mu \sqrt{\ } \text{ p o } [f] = \mu[f], \text{ if } p[f] \text{ is true}$$
$$= \text{undefined, if } p[f] \text{ is false}$$

As an example take (47a): let f be the assignment $[X \mapsto j]$: then

(50) $\lambda X \langle STAND, stand\text{-}er:X;+\rangle \sqrt{\ } (s_0 \ ! \ \langle NAMED, 'JOHN', X\rangle) \text{ o } [X \mapsto j] =$

$\langle STAND, stand\text{-}er: j;+\rangle$ if $(s_0 \ ! \ \langle NAMED, 'JOHN', X\rangle)$ is true, i.e. if:

$s_0 \models \langle NAMED, 'JOHN', j\rangle$

undefined otherwise

Thus, the abstract from (47a) can only apply to assignments for which the assigned object satisfies the condition: $s_0 \models \langle NAMED, 'JOHN', j\rangle$.

(50) shows that it is quite straightforward to impose appropriateness restrictions that involve *naming* because the name an entity bears is a property of that entity which transcends a given context. The problem is: how to relate the *entities* to which this abstract applies to *utterances* whose content they potentially constitute? A given entity e might in some context be the content of a nominative NP, but in others the content of an accusative NP or some other category. As a prelude to the solution, let us consider how signs are specified and selected in a sign-based grammar like HPSG.

7.3 Specifying Signs with Abstraction and Restrictions

In a sign-based grammar like HPSG (Pollard and Sag 1994), grammar rules are taken to specify *signs*, types of utterances. A sign is specified in terms of three attributes, a PHON(OLOGY) attribute, a SYNSEM attribute and in the case of signs that have constituents, that is *phrases*, a DTRS attribute, which specifies its (immediate) constituents.[19] It is *Synsem* objects that a head selects for: these encapsulate part-of-speech-hood, valency, case, agreement, and semantic content and context. Using abstraction and restrictions we can formulate this quite simply. As a starting point, I take the Situation Theoretic Grammar (STG) formulation of Cooper 1990, computationally implemented in Black 1992, where utterances are taken to be situation/event-like entities which in addition to such familiar attributes as SPEAKER/ADDRESSEE/LOCATION are also defined for attributes such as CONTENT and CATEGORY. An "NP utterance", say u_1, will involve facts such as the following:[20]

(51) a. $u_1 \models \langle CAT, NP[nom]\rangle \wedge \langle \ AGR, 3rd\text{-}person\text{-}singular\text{-}masculine \ \rangle$

$\wedge \langle \ CONTENT, X\rangle \wedge \langle NAMED, 'JOHN', X\rangle$

What of a functor utterance? The idea I propose is to use *restrictions* as a means for encoding the specifications the complements need to satisfy: in the prototypical case a complement projects two parameters, one is fed to an argument-role of the functor; the other represents the *utterance* of that complement, it is not a constituent of the *body* of the abstract, but figures solely in the restrictions. Thus, a vanilla transitive verb will involve utterances of the type exemplified here by u_3:

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[19]I am ignoring unbounded dependencies (UDC's) in the current discussion. PHON values will also not be referred to apart from my assumption that no utterances have a null PHON value.

[20]One point to note about (51) is that, following Cooper, all SOA's which involve an attribute of the utterance should be construed as shorthand for SOA's in which the utterance fills the role of predicate:

(i) $u_1 \models \langle CAT, u_1, NP[nom] \ \rangle \wedge \langle \ AGR, u_1, 3rd\text{-}person\text{-}singular\text{-}masculine \ \rangle$

$\wedge \langle \ CONTENT, u_1, X\rangle$

Here the self-reference is exploited to avoid the need to postulate situations whose identity and motivation is unclear. Consider that, alternatively, we decided to assume that some other situation, u_3 say, was the situation that supported the SOA's in (i) Such an assumption raises the questions: what is u_3? What other information does it carry? By contrast, once we reify utterances as real-world events/situations, the existence of u_1 is not at issue and the conditions in (i) can be taken as the information which characterizes it. For more detailed discusion of this point see the works by Cooper and Black.

(52) a. $u_3 \models \langle CAT, V[+fin]\rangle$

   b. $u_3 \models \langle CONTENT, \lambda u_1, X, u_2, Y(\textbf{INVITE,arg-1:Y,arg-2:X;})$
   $\sqrt{} (u_1 \; ! \; \langle CAT, NP[+acc]\rangle \wedge \langle CONTENT, X\rangle)$
   $\wedge (u_2 \; ! \; \langle CAT, NP[+nom]\rangle \wedge \langle CONTENT, Y\rangle \wedge \langle AGR, 3sing\rangle)$

Here u_1 and u_2 serve to as it were mediate between argument-role fillers and the structural conditions they might need to satisfy. Since u_1 and u_2 are not constituents of the *body* of the abstract in (52) (that which is in bold-face), the set of application-instances of the abstract is a (not necessarily proper) subset of the set of application-instances of the abstract in (53); the application instances that get thrown out involve fillers that do not satisfy the restrictions.

(53) $\lambda X, Y \langle INVITE, arg-1:Y, arg-2:X\rangle$

How does a phrase get formed? As far as category specification, we might use the standard HPSG inheritance principle. The content arises by functional application: this will be successful, given the definition of application for restricted objects in (49) if and only if the utterance(s) fed into the abstract together with the argument-role filler(s) satisfy the restrictions. It might seem a little bit strange that the utterance of the complement serves also as an argument of the content, its function there is (merely) as a "test", to ensure that the semantic entity fed in is indeed the content of an utterance with the right structure. This "redundancy" can be eliminated in favour of a notation that uses merely utterance-parameters: the argument-role fillers can be bypassed by treating 'CONTENT' as a function-symbol, just like in the following number theoretic lambda-term:

(54) $\lambda n.[Succ(n) \geq 5]$ ("the property of being a number whose successor is greater than 5")

(52) would then become:

(55) $u_3 \models \langle CONTENT, \lambda u_1, u_2 (INVITE, arg-1: CONTENT(u_1), arg-2:CONTENT(u_2)); \rangle$
   $\sqrt{} (u_1 \; ! \; \langle CAT, NP[+acc]\rangle)$
   $\wedge (u_2 \; ! \; \langle CAT, NP[+nom]\rangle \wedge \langle AGR, 3sing\rangle)$

The "redundant" format used in (52) makes it perhaps a little easier to see the relation between "normal" and "utterance-based" abstracts; (55) is to be regarded as the official formulation for which (52) serves as a more familiar substitute. Phrases, then, are specified as follows:

(56) a. $u_0 \models \langle CAT, CAT(u_1)\rangle \wedge \langle CONTENT, CONTENT(u_1) \circ CONTENT(u_2)\rangle$
   $\wedge \langle HEAD\text{-}DTR, u_1\rangle \wedge \langle COMP\text{-}DTR, u_2\rangle$

7.4 Questions and utterance abstracts

In the previous section I considered the essence of how signs get specified and selected in a theory like HPSG. I provided an alternative formulation of this specification using the tools of abstraction and restrictions and this lead one to posit abstracts some of whose roles are roles for utterances. The full version of the paper contains a revised specification for interrogative signs, which shows in particular how such contents can be put together. I also show there that, with certain modifications, such abstracts can both carry out the duties envisaged for 'abstracts with argument-roles that carry syntactic appropriateness restrictions' in section 7.1, as well as function as the abstracts with which questions are individuated. Let me here briefly explain the potential conflict: in 7.1 I proposed to associate with the interrogative sign 'who relies on whom' an abstract informally specified as in (44) repeated here as (57):

(57) $\lambda X, Y \langle RELY, reli-er:X, reli-ee:Y;+\rangle$
   RESTRICTIONS: utterance associated with X is of syntactic category NP[+nom], utterance associated with Y is of syntactic category PP[+on].

Given the discussion in the previous section, we can now see that (57) spells out as:

(58) $\lambda u_1, X, u_2, Y \langle RELY, reli-er:X, reli-ee:Y;+\rangle$
   $\sqrt{} (u_1 \; ! \; \langle CONTENT, X\rangle \wedge \langle CAT, NP[+nom]\rangle) \wedge (u_2 \; ! \; \langle CONTENT, Y\rangle \wedge \langle CAT, PP[+on]\rangle)$

It should be fairly clear that (58) is up to the job of both providing the right content for a short-answer and enforcing the syntactic presupposition—after all it is (one possible construal of the content of) an HPSG functor sign. It is less obvious that such an abstract can be used to individuate a question: I dub the standard, syntactic-restriction-*less* abstracts encountered in section 2 *pure abstracts*, whereas those posited in the previous section *utterance-argument abstracts*. The most concrete criterion of adequcy for abstracts as individuators of questions involves checking whether the answerhood relations specified by the utterance-argument abstract differ intrinsically from those specified by the pure abstract. The potential problem is that an entity e that is in the extension of the pure abstract will fail to be in the extension of the utterance-argument abstract since e does not constitute *the content* of any utterance. The way out, discussed and motivated in the extended version, is to modify the construal of an utterance-argument abstract μ by allowing other kinds of information-acquiring events in addition to linguistic utterances to constitute instantiators of the *"utterance argument"*. μ will now not merely relate entities to utterances of a certain structure which have e as their content, but will also relate any such e to other situations in which e is involved in some way. Of course once we make such a move, the attribute 'CONTENT' also needs to be construed more generally as a multi-modal term covering e.g. linguistic reference, gesture, and visual or auditory perception, whereas for all but the linguistic mode the attribute 'CAT' will not be applicable. This necessitates conditionalizing the appropriate structural presuppositions, a move independently motivated by the need to accommodate deictic, non-linguistic answers.

8   References

Asher, N. 1993, *Reference to abstract objects in English: a Philosophical Semantics for Natural Language Metaphysics*, Reidel: Dordrecht.

Barwise, J, 1979 'On Branching Quantifiers in English', *Journal of Philosophical Logic*, 8:47-80.

Barwise, J. and R. Cooper 1991, 'Simple Situation Theory and its graphical representation.' In: J. Seligman (ed.) DYANA Report R2.1.C.

Black, A. 1992 *Computational Situation Theory*, University of Edinburgh PhD Dissertation.

Cremers, C. 1983 'On the form and interpretation of Ellipsis.' In: A. ter Meulen (ed.)*Studies in Modeltheoretic Semantics*, Foris, Dordrecht.

Cooper, R. 1991 'Three lectures on Situation Theoretic Grammar', In: M. Filgueiras et al. (eds.) Natural Language Processings:Proceedings of EAIA 90, Lecture Notes in Artificial Intelligence no. 476, Springer Verlag, Berlin, pp. 101-140.

Cooper, R. 1993 'Integrating different information sources in linguistic interpretation'. In: Y.H. Lee (ed.) Proceedings of Chosun University Linguistic Seminar.

Corblin, F. 1994 'Multiple Negation Processing', HCRC Research Paper, University of Edinburgh RP-62

Gawron, M. and Peters, S. 1990 *Anaphora and Quantification in Situation Semantics*, CSLI publications, CSLI:Stanford.

Ginzburg, J. 1994, 'An Update Semantics for Dialogue'. In: H. Bunt, R. Muskens, G. Rentier (eds.) Proceedings of the International Workshop on Computational Semantics, ITK: Tilburg.

Ginzburg, J. 1995a, 'Quantificational Dynamics via Dialogue'. In: E. Shamir and M. Koppel (eds.) Proceedings of the 4th BarIlan Symposium on the Foundations of Artificial Intelligence.

Ginzburg J. 1995b, 'Resolving Questions, I'. Linguistics and Philosophy 18, 5:359-423.

Ginzburg, J. 1995c, 'Interrogatives: questions, facts and dialogue'. In: S. Lappin (ed.) Handbook of Contemporary Semantic Theory, Blackwell: Oxford.

Ginzburg, J. (to appear) *Questions and the Semantics of Interaction in Dialogue*, CSLI Publications: Stanford.

Groenendijk, J. and M. Stokhof. 1984. *Studies on the Semantics of Questions and the Pragmatics of Answers*. PhD Thesis, University of Amsterdam.

Hankamer, J and I. Sag 1976, 'Deep and Surface anaphora'. Linguistic Inquiry, 7:391-426

Hausser, R. 1983. 'On Questions'. In Kiefer 1983.

Hausser, R. and D. Zaefferer. 1979 'Questions and Answers in a Context Dependent Montague Grammar.' In: Guenthner and Schmidt (eds.) Formal Semantics and Pragmatics for Natural Languages. Reidel, Dordrecht.

Hull R. 1975 'A semantics for superficial and embedded questions in natural language.' In Keenan 1975.

Keenan, E. 1975. Formal Semantics of Natural Language, Cambridge University Press: Cambridge.

Kehler, A. 1994, 'Common Topics and Coherent Situations: interpreting ellipsis in the context of discourse inference', ACL 32.

Kiefer, F. (ed.) 1983 'Questions and Answers'. Reidel, Dordrecht.

Lakoff, G. 1971 'Presupposition and relative well-formedness'. In: D. Steinberg et al (eds.) Semantics: an interdisciplinary reader, UHP.

Landman, F. 1995, 'Plurals' In: S. Lappin (ed.) Handbook of Contemporary Semantic Theory, Blackwell: Oxford.

Morgan, J. 1973. 'Sentence fragments and the notion "sentence" '. In: B Kachru et al (eds.) Issues in Linguistics: papers in honour of Henry and Rene Kahane. UIP: Urbana.

Pollard, C. and I. Sag 1994, Head-driven Phrase Structure Grammar, CSLI and University of Chicago Press: Chicago

Prüst, H, R. Scha, and M. Van den Berg 1994, 'Discourse grammar and Verb Phrase Ellipsis', Linguistics and Philosophy 17

Rooth, M. 1992 'A theory of focus interpretation', Natural Language Semantics 1:75-116

Sag, I. and J. Hankamer 1984, 'Towards a theory of Anaphoric Processing', Linguistics and Philosophy 7.

Sher, G. 1991, The Bounds of Logic, MIT Press, Cambridge.

Steedman, M. 'Gapping as Constituent Coordination', Linguistics and Philosophy, 13:

Vallduví, E and E. Engdahl 1996 'Information Packaging in HPSG' In: C. Grover and E. Vallduví (eds.) Edinburgh Working Papers in Cognitive Science: Studies in HPSG , Centre of Cognitive Science, University of Edinburgh

Von Stechow, A. 1991 'Focusing and background operators' In: W. Abraham (ed.) Discourse Particles Benjamins: Amsterdam

Westerståhl, D. 'Branching Generalized Quantifiers and Natural Language'. In: P. Gärdenfors (ed.) Generalized Quantifiers, Reidel: Dordrecht.

Against underlying states*

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1   Introduction

The Davidsonian revolution has been a success. Davidson's (1967) proposal that the logical form of event sentences contains reference to an underlying event has been widely adopted in the last 15 years and has been extended in a number of ways with important and interesting results. This approach to the semantic representation of sentences has been applied to treatments of adverbial quantification (Berman 1987; de Swart 1991; von Fintel 1994), plurality and group action (Lasersohn 1988; Lasersohn 1990; Schein 1993), nominalization (Zucchi 1989; Parsons 1990), progressive aspect (Parsons 1989), tense (Partee 1984; Hinrichs 1986; Kamp and Reyle 1993) aspectual classes (Hinrichs 1985; Bach 1986; Krifka 1989) and perception sentences (Higginbotham 1983; Parsons 1990). Some of the popularity of Davidsonianism is surely due to the ease with which such analyses can be stated, especially in comparison with other well-known logical formalisms (cf. Montague (1974)). But the sheer quantity of data that is amenable to a Davidsonian analysis shows that there is something fundamentally right about Davidson's simple proposal.

Davidson argued that in order to give an adequate logical form for event sentences, we need to treat events as first class individuals. His basic idea was that a sentence such as (1a) should assigned a logical form like that in (1b), in which there is existential reference to an underlying event, which verbs and adverbs take an argument.

(1)   a. John called Mary yesterday.

b. $\exists e\ [\text{call}(j,m,e) \wedge \text{yesterday}(e)]$

Davidson's proposal has been most thoroughly defended in recent years by Parsons (1985, 1989, 1990) and Higginbotham (1985, 1996). These researchers have

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extended the basic proposal in two important was. First they have introduced thematic roles into the logical forms for sentences, so that the analysis of (1a) becomes not (1b) but (2).

(2) $\exists$ e [call(e) $\wedge$ Agent(e,j) $\wedge$ Patient(e,m) $\wedge$ yesterday(e)]

This style of logical form is commonly termed a "neo-Davidsonian" logical form. We won't have anything directly to say here about the advantages or disadvantages of the neo-Davidsonian logical forms as compared to Davidson's original ordered-argument account (but see Dowty (1991)). It is the other significant extension of Davidson's original approach that will be our central concern here: its extension to the analysis of stative sentences.

Davidson himself explicitly limited his account to event verbs, but such researchers as Parsons and Higginbotham have proposed that state verbs also have a hidden Davidsonian argument position. A simple stative sentence such as (3a) is taken to have a logical form like (3b), in which reference is made to an "underlying state" variable.

(3) a. John loves Mary.

b. $\exists$ s [love(s) $\wedge$ Agent(s,John) $\wedge$ Theme(s,Mary)]

This proposal has been widely adopted, and it is now common for sentences of English to be taken to refer to "events in the general sense, including states" or to "eventualities" (Bach 1986). This "hyper-Davidsonian" analysis of the logical structure of sentences is appealing in its uniformity: All sentences make existential reference to some kind of underlying entity; event sentences to underlying events and state sentences to underlying states.

In what follows, I will argue that against a Davidsonian-style account of stative sentences. I claim that state verbs and event verbs, are to be logical distinguished on the basis of their argument structure. Event verbs have an extra argument position which is filled by an event variable; stative verbs do not have such an extra argument position. This view of the state/event contrast was explicated at length by Galton (1984). Following him, Löbner (1988), Herweg (1991b) and Sandström (1993) developed accounts of tense and of narrative time which were based on Galton's account. In this paper we will present linguistic evidence that this account is the correct one.

2 Nonparallels between events and states

On the hyper-Davidsonian approach we would expect there to be a certain parallelism between the behavior of state verbs and the the behavior of event verbs. When the behavior of the event verb is explained by making reference to the existence of an underlying event variable, then we would expect that behavior to be replicated in the case of state verbs.

For example, the fact that an event verb modified by an adverbial such as *yesterday* is taken to describe an event that occurred at some time the day before, and not an event that lasted the whole previous day is given a seemingly simple explanation. The temporal relationship that should hold between the event and the time denoted by the noun *yesterday* is simply included in the meaning of the adverbial, so the meaning of *yesterday(e)* in the logical form is construed meaning that e is temporally contained in yesterday, or $e \leq$ *yesterday*. The logical form of (1a) would then be more explicitly spelled out as (4).

(4) $\exists$ e [call(e) $\wedge$ Agent(e,j) $\wedge$ Patient(e,m) $\wedge$ e $\leq$ yesterday]

The stative sentences (5a) would, on the hyper-Davidsonian account, be assigned the logical form (5b).

(5)   a. John was in Boston yesterday.

   b. $\exists$ s [in(s) $\wedge$ Agent(s,John) $\wedge$ Theme(s,Boston) $\wedge$ s $\leq$ yesterday]

This gives rise, however, to a false prediction. Given the logical form, (5a) should mean that the state of John being in Boston was temporally contained in yesterday, but this seems to be incorrect because (5a) has a prominent reading on which it means that John was in Boston all day yesterday, and perhaps longer. The state of John being in Boston need not be entirely included in yesterday for the sentence to be true.

A similar effect has been noted by Herweg (1991a) in relation to the past tense. The contrast he notes is:

(6)   a. ??John called Mary, and he is still calling her

   b. John was in Boston, and he is still there.

A past tense event sentence must refer to an event that is entirely in the past, while a past tense state sentence need might refer to a state that still holds, and therefore is not entirely in the past.

We might hope that these contrasts could be attributed to some other well-known intrinsic difference between states on the one hand and events on the other, such as their telicity or homogeneity properties, but this turns out not to be of any help. On the hyper-Davidsonian approach, domain of eventualities is taken to have a latice-like structure, and the Vendler (1967) classes are characterized in terms of the temporal subpart relation (Hinrichs 1985; Bach 1986; Link 1987; Krifka 1989):

(7)   a. S is a state sentences when: S holds of e if and only if S holds of all of the subparts of e.

   b. S is an activity sentences when: S holds of e if and only if S holds of all of the subparts of e (down to its minimal subparts).[1]

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[1] How exactly to characterize minimal parts is a problem (see Dowty (1979) and Hinrichs (1985) for discussion). We want to say that a long stretch of running is made up of sub-events

c. S is an accomplishment sentence when: If S holds of e, then S does not hold of any subparts of e.[2]

d. S is an achievement sentence when: If S holds of e then e has no subparts.

These characterizations lead directly to straightforward explanations of certain of the contrasts among the Vendler classes. For example, the fact that activities and states are acceptable with *for*-adverbial modification while accomplishments are not is taken to follow from the fact that *for*-adverbials introduce (quasi-) universal quantification over subparts, and, therefore, only eventualities that have subparts are compatible with *for* adverbials (Dowty 1979; Moltmann 1991).

It might seem that we could account for the state/non-state contrasts noted above, as well. Take, for instance, the time-span adverbial facts. Since states are homogeneous, a state that is included in yesterday might be part of a larger state that lasts all day yesterday (and perhaps longer), so while (5a) means only that there was a state of John being in Boston that was included in yesterday, this meaning is compatible with there also being a state of John being in Boston that lasted all day yesterday. This much is alright.

The problem is that activities, which are also homogeneous in the appropriate sense, do not pattern with states, but rather with accomplishments and achievements. (8) appears not to have the same universal reading as (7).

(8) Peter played guitar yesterday.

The contrast in (9), perhaps makes this point more clearly.

(9) a. Bill was in Boston yesterday, in fact he was there all weekend.

b. ??Peter played guitar yesterday, in fact he played all weekend.[3]

Likewise the past tense cases, activities are contrasted with states:

(10) a. Bill was in Boston, and he is still there.

b. ??Peter played guitar, in fact he is still playing.

These state/activity contrasts are unexpected on the hyper-Davidsonian account, and lead to the conclusion that states must somehow be distinguished from all the other Vendler classes.[4]

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which are also runnings, but we probably don't want to call a taking a single step an event of running. This "minimal parts problem" has an analog in the nominal domain: We want to say that masses like "fruit salad" are homogeneous: any large serving of fruit salad is made up of smaller servings of fruit salad. But at the same time we don't want to call a single grape in a bowl a serving of fruit salad.

[2]There are problems with this definition as well that come from the treatment of such accomplishment sentences as *John drank a quantity of water* discussed by Zucchi and White (1996)

[3]There is an interesting reading of this in which it is acceptable, that on which guitar-playing is a habit, (cf. *I ate lunch at the Mensa yesterday, in fact I lunch at the Mensa all week*)

[4]Depraetere (1995) has made a similar point, arguing that the telic/atelic distinction must

Parsons (1990: pp. 184) suggests one way in which states and events are distinguished is taht that there is a convention of English that event denoting clauses are always taken to refer to maximal events, while stative clauses presumably do not. This stipulation would account for the data, of course, but would undercut intuitively pleasing parallelism of the hyper-Davidsonian approach. Why should event reference be maximal and state-reference not be? The answer I will give is that state reference need not be maximal, because it is not really reference. In what follows we will argue that state sentences and event sentences should not be assigned parallel logical forms, and therefore that the reason underlying states appear not to behave like other classes of eventualities is that they aren't really a class of eventuality at all.

2.1 The double-life of eventive sentences

Eventive sentences lead a semantic double life: On the one hand they behave like indefinite noun phrases, i.e. they can be said to introduce entities into the discourse model (Kamp 1981), and on the other hand they are used to make a claim which might be true or false, i.e. they pick out propositions of facts. This double life is mostly clearly illustrated by example. Consider the interpretation of the anaphors *it* and *that* in (11a) and (11b).

(11)   a. Smith stabbed Jones. It happened at noon.

   b. Smith stabbed Jones. That bothers me.

In (11a) the pronoun *it* appears to refer back to the stabbing event itself, while in (11b) the demonstrative *that* appears to refer to the fact that such an event occurred. These two potential antecedent that the event sentence *Smith stabbed Jones* makes available, then, is what is meant by the semantic double life.

It is quite clear that these anaphors refer to distinct objects. The pronoun in (11a), for example, cannot be said to refer to a fact, because predicates such as *happen*, do not take facts as subjects, although they do appear to take events as subjects

(12)   a. *The fact that Smith stabbed Jones happened at noon.

   b. The event of Smith stabbing Jones happened at noon.

Predicates such as *bother* do appear to take facts as subjects as (well as event subjects), however.

(13) The fact that Smith stabbed Jones bothers me.

The Davidsonian approach to event sentences provides a straightforward account of this double life: the underlying event that fills the event argument of

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be distinguished from the bounded/unbounded distinction, by which it appears she refers essentially to the stative/non-stative distinction.

an event verb is what event anaphors refer back to, while the entire sentence is what fact anaphors refer back to.[5]

On the hyper-Davidsonian account we would expect state sentences to exhibit this double life as well. The underlying state should, for example, provide an antecedent for state anaphors, which should be clearly distinct from fact or propositional anaphors. It is quite difficult to come up with convincing examples of state anaphora, however, for the simple reason that it is difficult to find predicates, analogous to *happen* or *occur* for events, which might be convincingly argued to take states as subjects, but not facts or propositions. We will come back to this issue in a bit.

The general point, however, is clear. On the hyper-Davidsonian account, we expect certain parallels to hold between eventive and stative verbs that reflect the purported parallel logical forms. Whenever there is a semantic contrast which is attributed to reference to underlying events, we would expect to find an analogous contrast for state verbs which should be attributed to underlying states. Of course there may be reasons for some mismatches: states aren't, after all, events. But for the most part we expect that contrasts which indicate the need for underlying events in the logical form of event sentences should should also be apparent for statives as well, and thereby indicate the need for underlying states in the logical form of state sentences.

In the next sections, however, we will look at a number of such contrasts, and find that our expectations are not met. There are phenomena which are quite clearly best analyzed by making reference to underlying events which are not evident for stative verbs. We will begin with the analysis of nominalization, as this is one of the clearer cases in which the underlying events analysis simply must be correct (Parsons 1990; Zucchi 1989).

2.1.1   Nominalization

We can distinguish three varieties of nominals: derived nominals, ing_{of} nominals, and gerundive nominals (to use Zucchi's (1989) terminology):

(14) a. John's performance of the song (derived)

   b. John's performing of the song (ing_{of})

   c. John's performing the song (gerundive)

Each of these nominals has a distinct semantic character. Of particular interest is the fact noted by Vendler (1968) that derived nominals and ing_{of} nominals display a clear semantic ambiguity in certain syntactic context. This ambiguity is evident in such sentences as (15a) and (15b).

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[5]Davidson argued that facts should not be represented in the logical form of sentences, because doing so starts a regress. If the sentence $2 + 2 = 4$ should be represented as *it is a fact that* $2 + 2 = 4$, then, he asks, shouldn't *that* sentence be represented as *it is a fact that it is a fact that* $2 + 2 = 4$? How would we know when to stop?

(15) a. John's performance of the song disappointed Mary.

     b. John's performing of the song caused some confusion.

(15a) may mean either that Mary was disappointed by something about John's performance (the "manner" reading) or that the very fact that John performed the song disappointed Mary (the "fact" reading). A similar ambiguity is evident in (15b). The ambiguity is quite naturally attributed to the the semantic double life of eventive verbs. We can simply say that the eventive nominals may be interpreted as either referring to an event or the proposition that that event occurred. The "manner" reading, then, corresponds to the event interpretation and the "fact" reading to the propositional interpretation of the nominal.

    Gerundives, on the other hand, are always unambiguous. (16) only means that it was the fact that John performed the song that disappointed Mary.

(16) John's performing the song disappointed Mary.

The gerundive nominalization process, then, appear only to make available propositional interpretations.

    As evidence for this analysis we can point to the fact that when an event nominal appears as the subject of a predicate such as *happen* or *occur* which select for events, only the "manner" or event reading is available:

(17) John's performance of the song occurred yesterday.

Furthermore, gerundives cannot appear in these contexts at all:

(18) ??John's performing the song occurred yesterday.

    On the hyper-Davidsonian analysis, statives should behave just like eventives, since underlying states should be able to play the same role as underlying events play. We should, then, expect to find a parallel ambiguity in the interpretation of nominalized stative verbs in the appropriate contexts. Again it is difficult to test this prediction. There is no regular form of state-nominal formation, to parallel the event-nominal ing_{of} process. Stative verbs are are exceptions to this process of nominalization, which itself is surprising on the underlying states analysis:

(19) a. *John's believing of the con man is pitiful.

     b. *John's having of a car should be discouraged.

State verbs *do* undergo gerundive nominalization:

(20) a. John's believing the con man bothered me.

     b. Mary's having a car is a big advantage.

But as we have noted already, these nominals always have only "fact" interpretations, and so are not expected to be ambiguous.

    The only cases we can test, then, are lexical nominals, as in (21).

(21) a. John's love of Sarah disappointed Mary.

b. Tina's ownership of the house bothered Jeff.

We don't, however, appear to find any systematic ambiguity: (21a) simply means that the fact that John loved Sarah disappointed Mary, and (21b) simply means that the fact that Tina owns the house

There are cases in which we might be tempted to hypothesize a "manner" interpretation for lexical state nominals, for example (22).

(22) John's knowledge of French disappointed his teacher.

(22) might be taken to mean that it was something about John's knowledge, for example its spottiness, that was what disappointed the teacher. In these cases we might well want to say that the nominal is ambiguous between a propositional denotation and something else. It is less clear, however, that this other thing should be an underlying state.

One reason to doubt that the ambiguity of (22) is evidence for an underlying state analysis is that only certain stative verbs exhibit this ambiguity. Such common stative verbs as *be*, *have*, *own*, and *hang* don't appear to, for example. Only those verbs such as *know* which are associated with abstract entities like as knowledge appear to exhibit the ambiguity. Furthermore, even in the case of these verbs, there doesn't seem to be any reason to hypothesize a *state* of knowing French, aside from the knowledge itself.

It might, at this point, be useful to point out that we are not arguing that there are no such thing as states in the domain of quantification. We certainly can discuss states as easily as we can discuss other abstract entities. We are, rather, arguing for the more restricted point that whatever states are, they are not analogous to events in the semantics of sentences. They do not fill argument roles of stative verbs, and therefore, we are claiming, stative sentences do not uniformly lead the double life that event sentences do. They are do not (generally) form ambiguous nominals; nor, as we will see in the next section, do they provide antecedents for a special type of anaphora or act as subjects of a special class of predicate.

2.1.2 State anaphora

In order to determine whether there was such a thing as "state anaphora," on analogy with the event anaphora we saw at the beginning of the section, we had to try to find a stative analog for *happen*. Such predicates as *hold*, which one might expect to apply to states, do not seem to work, however:

(23) John was sick. ???It held for a week.

There is, as far as I can tell, only, one predicate that might be said to hold of states, and that is the predicate *last*. In (24), *last* appears to apply to the state of the baby being asleep.

(24) The baby is asleep. *That/It* won't last long.[6]

Of course *last* also applies to any other kind of temporally extended object:

(25)   a. The party lasted for awhile.

     b. The trip lasted for ages.

Crucially, however, it cannot apply to *that*-clauses:

(26)   ??That the baby is sleeping won't last long.

It appears, then, that *last* does not take propositional subjects. We seem to have found a predicate that applies to states and events but not to propositions or facts, showing that states and events are parallel entities and that states are not to be identified with facts or propositions.

I would like to suggest, however, that this is a syntactic illusion. Although *last* cannot apply to *that*-clauses, it can take elements with propositional- or fact-type meanings as subjects. The evidence comes from gerundive nominals. We saw above that gerundives have only a fact interpretation. They are, however, syntactically treated as normal NPs and not as clauses. I would like to suggest, then, that the acceptability of (27) shows us that *last* can take as subject elements that are semantically interpreted as facts, so long as they are syntactically NPs.

(27) The baby being asleep won't last long.

My suggestion, then, is that the anaphors in (24) are simply fact or propositional anaphors.

There are, then, no obvious examples of predicates that apply only to to states, and even when we go looking, it is not clear that we find them. There are certain other examples which might, to the die-hard underlying-state defender be taken to show that there is reference to underlying states.[7]

(28) Fred was in love with Susan. It felt great.

These cases, however, seem more to be cases of **property** anaphora, than true state anaphors, since the correct paraphrases here seem to be property denoting phrases (cf. Chierchia (1984)):

(29)   a. *Being in love* with Susan felt great.

     b. It felt great *to be in love with Susan.*

These examples, then, don't seem to show the need for state anaphora either.

The evidence for state anaphora, then, is slim. The fact that we don't find evidence for something, of course, doesn't mean it doesn't exist, so we can at most say that the argument is inconclusive.

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[6]Thanks to Susan Rothstein for this example.

[7]These were pointed out to me by Fred Landman.

2.2 Adverbial modification

Adverbial modification is another domain in which we can adduce a contrast between event verbs and state. First there is the interesting distributional fact that in contrast to event verbs, there are no classes of adverbs that modify only state verbs. Adverbials such as *slowly* and *with a knife* modify only event verbs and not state verbs:

(30) a. John kissed Mary slowly.

    b. *John knew Mary slowly.

(31) a. John buttered the toast with a knife.

    b. *John was at home with a knife.

Adverbs such as *probably* and *last week* modify both event verbs and state verbs:

(32) a. John probably kissed Mary.

    b. John probably knew Mary.

(33) a. John probably kissed Mary last week.

    b. John was in NYC last week.

But we don't find adverbs that modify only stative verbs. On Davidson's account of adverbial modification this is as expected. He proposed that adverbials such as *slowly* are simply predicates of events, while adverbs such as *probably* modify sentences as a whole.

The treatment of event adverbs is, in fact, one of the better reasons to accept the underlying events analysis in the first place, as it explains in a straightforward and simply way a number of facts about adverbs which otherwise must be stipulated (see Wyner (1994) and Eckardt (1996) for extensive discussion). On the Davidsonian account, (34a) has the logical analysis in (34b).

(34) a. Brutus stabbed Ceasar in the back with a knife.

    b. $\exists e[\text{stab}(\text{Brutus},\text{Ceasar},e) \wedge \text{in-the-back}(e) \wedge \text{with-a-knife}(e)]$

This treatment explains in one shot both why it is that the linear order of such adverbials in a sentence is irrelevant and why it is that adverbials can be dropped, in other words why (35) is synonymous with (34a) and both (36a) and why (36b) are entailed by (34a) (and (35)).

(35) Brutus stabbed Ceasar with a knife in the back.

(36) a. Brutus stabbed Ceasar in the back.

    b. Brutus stabbed Ceasar with a knife.

Since the adverbs are treated as conjoined predicates of the event variable, the order is as irrelevant as the order of conjuncts in a first-order formula, and

dropping an adjectives preserves truth value because dropping such a conjunct always preserves truth value.

Not only is the underlying events approach to adverbs appealing, but it turns out to be necessary in order to explain certain basic entailment facts. As Parsons (1990) pointed out, (36b) and (36c) together **do not** entail (35a): It might be the case that Brutus stabbed Ceasar simultaneously in the back with a pitchfork and in the chest with a knife. This non-entailment follows from the underlying events approach since the two stabbing events can be distinguished.[8]

Returning to the search for underlying states, then, we note that on the hyper-Davidsonian we would expect to be able to construct similar examples using stative verbs. This seems to be quite difficult, however. If (37b) and (37c) are both true at the same time, they entail (37a)

(37) a. Brutus sits in the park under the tree.

   b. Brutus sits in the park.

   c. Brutus sits under the tree.

As Parsons notes there are certain constructions which appear not to follow this pattern, and that might indicate a need to refer to underlying states. Examples such as (38) might be such:

(38) a. The door is latched tightly with a string.

   b. The door is latched tightly

   c. The door is latched with a string.

The door could be latched loosely with a string, but tightly with a bolt, and so although both (38b) and (38c) would be true, (38a) would not be. There are a number of questions that arise for these examples, however. For example, in the situation described we would expect, if the underlying states account is correct, that (39a) and (39b) would not be contradictory.

(39) a. The door is latched tightly.

   b. The door is latched loosely.

It appears, however, that they are judged contradictory, and that to avoid the contradictory impression, we to have to introduce an implicit locative modifier of some sort:

(40) a. The door is latched tightly *here*.

   b. The door is latched loosely *there*.

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[8] Bennett (1977) noted what is essentially the same problem in the context of the treatment of adverbial quantifiers such as *twice*. He pointed out that *Kim touched Sandy twice* may be true in a situation in which Kim touches Sandy in two places at exactly the same time. To make sense of what is being counted, we must talk about events or something which essentially plays the same role as an event.

The need for locative modification doesn't seem to force us to introduce underlying states, however, as the location at which a sentence should be evaluated is one of the many pragmatic parameters whose values must be filled before a sentence can be evaluated at all. This is most clearly illustrated by weather sentences such as (41):

(41)   a. A (in New Zealand): It is warm.

     b. B (in Germany): It is cold.

That both (41a) and (41b) can be utter truthfully at the same time does not mean that we need to refer to underlying states, however.

In summary, then, we find that when we look to the analysis of intersentential anaphora, the analysis of nominalization, and the treatment of adverbs, we find that while eventive sentences display a dual character, which can be fruitfully analyzed as reflecting the fact that event sentences both pick out an underlying event and make an existential claim about this event, state sentences do not. We have found that, modulo a very few difficult cases, it is generally the case that wherever we might hypothesize the existence of an underlying state, we might just as well hypothesize the existence of a fact or proposition. States, then, if they exist at all, appear to be the same kind of thing as facts, but not the same kind of thing as events.

There is, however, one important domain of semantics research in which this parallel between states on the one hand and facts or propositions on the other appears not to hold, and this is the analysis of the small clause complements of perceptions verbs.

2.3   Perception sentences

The semantic contrast between between (42a) and (42b), discussed by Dretsky (1969), has been the focus of significant debate since Barwise (1981).

(42)   a. Kim saw Maria win the race.

     b. Kim saw that Maria won the race.

The distinction is intuitively clear: (42b) could be true even if Kim only viewed Maria getting a medal, but for (42a) to be true, Kim had to witness the race itself. Higginbotham (1983) argued that this contrast could be accounted for quite simply by assuming that "naked infinitive" (NI) complements such as *Maria win the race* denote events, while *that*-clause complements such as *that Maria won the race* denote propositions or facts. In sentences such as (42a), then, the perception verb indicates a relation between an individual and an event, the logical form of (41a) being something like (43):

(43) $\exists e$ [win(e, maria,the-race)] [$\exists$ e' [saw(kim,e,e')]]

In prose: there is one event of Maria winning the race and there is another event of Kim seeing this first event. In sentences such as (43b), however, the

verb simply indicates a relation between an individual and a proposition or fact.

The problem is that a similar contrast appears in (44), where the predicate is clearly stative.

(44) a. John saw Bill drunk.

      b. John saw that Bill was drunk.

Parsons (1990), Higginbotham (1996) and others take the semantic parallel between (42) and (44) to indicate that in such sentences as (44a), "small clause" complements like *Bill drunk* denote underlying states. In what follows, however, I will argue that these "stative" small clause complements of perception verbs differ both syntactically and semantically from naked infinitives.

Semantically, there is a clear contrast between a NI and stative small clauses. For (44a) to be true, John has to see Bill, while for (42a) to be true it is not so clear that Kim must see Mary. The minimal pair in (45) make this much more clearly.

(45) a. John saw the bomb explode.[9]

      b. John saw the bomb exploding.

For (45a) to be true John need not see the bomb itself, he might merely see the explosion. In the case of (45b) however, it it not at all clear that this is the case. There is, then, semantic motivation for supposing that the object of *see* is an event in (45a). In (45b), however, it might simply the NP *the bomb* that fills the object role of *see*.

Syntactically we see further distinctions, the most obvious of which may have already been noted; in contrast to eventive small clauses, stative small clauses are not headed by stative verbs, but rather by adjectives (or PPs). Stative **verbs** simply do not appear as naked infinitives in the complements of perception verbs:

(46) a. *John saw Mary own a car.

      b. *John saw Mary be drunk.[10]

      c. *John saw the socks sit on the floor.

Although stative verbs such as *own* are "individual-level" predicates (in the sense of Carlson (1977)) and are thus are independently restricted from appearing in this context,[11] even "stage-level" stative predicates, such as *be drunk* and verbs of the *sit, stand, lie* class, are ruled out as we see in (46b) and (46c). This discrepancy casts serious doubt on the proposed parallel.

Further doubt is cast by the fact that even simple conjunction tests show us that NIs and stative small clauses are of different type. Although NIs conjoin

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[9]This example is due to Ad Neeleman.

[10]We are disregarding the non-stative use of *be* here (Partee 1977)

[11]McNally (1994) argues convincingly, contra Kratzer (1989) that restrictions such as this are primarily pragmatic in nature.

freely with one another independently of the aspectual class of the verb,

(47) a. John saw Bill arrive and Mary leave.

     b. John saw Bill run home and Mary walk around.

and stative small clauses conjoin freely independently of the syntactic category of the predicate,

(48) a. John saw Bill drunk and Mary sober.

     b. John saw Bill at the fair and Mary tired.

these two classes do not conjoin with one another:

(49) a. ??John saw Bill drunk and Mary run home.

     b. ??John saw Bill at the fair and Mary walk around.

Stative small clauses, whatever they are, are simply not the same kind of thing as NIs.

And, we see further contrasts. There is no passivization out of NIs, although passivization out of stative small clauses is perfectly acceptable (Stowell 1983; Williams 1983; Heycock 1991)

(50) a. ??Mary was seen run.

     b. ??Bill was seen run.

(51) a. Mary was seen drunk.

     b. Bill was seen running.[12]

Stative small clauses also appear as complements of non-factive predicates such as *imagine* and *dream of*, and as the complements of picture nouns.

(52) a. John imagined Mary drunk/tall/at home/running.

     b. I bought a picture of him drunk/tall/at home/running.

NIs are acceptable in neither context (Higginbotham 1983).

(53) a. *John imagined Mary run.

     b. *I bought a picture of him run.

Finally, as Safir (1983) pointed out, stative small clauses can sometimes appear as subjects by themselves:

(54) John drunk is something I would really like to see.

NIs, however, can never appear as the subjects:

(55) *John kiss Mary is something I'd really like to see.

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[12]Participial forms such as *running* in general pattern with stative predicates (Vlach 1981)

A parallel account of stative small clauses and NIs, then, is clearly not desirable

This leaves us with the question of what the status of these stative small clauses is. I suggest that they are simply object depictives, and that the secondary predicate plays exactly the same role in perception sentences as the depictive predicate *raw* does in (56):

(56) Mary ate the meat raw.

While I don't want to argue for this point at length, there do seem to be a number of facts that point in this direction. First, "stative" small clauses, like depictives are always non-verbal. Second, "stative" small clauses can be controlled by the subject NP as well as the object NP, as depictives can.[13] And, finally, depictives can sometimes appear as subjects as well. Alongside (56) we have (57).

(57) Ground beef raw is something Mary really can't eat.

These parallels are quite compelling, and it is tempting to resurrect Carlsonian stages and to claim that a "small clause" such as *Maria drunk* or *the meat raw* simply denote drunk stages of Maria or raw stages of the meat. This would explain why such secondary predicates must be stage-level predicates and why they exhibit constituent-like behavior. Further contemplation of these issues would take us too far afield, however.

Whether this is the correct analysis of stative small clauses in not clear. What is clear, however, is that the parallelism between stative small clauses and NIs that might have suggested that they be assigned parallel analyses is not adequately deep to justify such a conclusion. Let us now return to the problem that we raised at the outset for the hyper-Davidsonian approach.

2.4   The time-span adverbial contrast revisited

In the beginning of the paper we noted that the fact that the semantic contrast between (58a) and (58b) is problematic for the hyper-Davidsonian approach.

(58)   a. John was in Boston yesterday.

b. Peter played guitar yesterday.

It is now time for us to explain how it is that a Galton-style logical contrast could explain these facts. We need to be somewhat more explicit about our treatment of sentence meanings. In particular, it will be important to understand the difference between an index of evaluation and an argument of a verb.

Following Lewis (1980) we take index of evaluation of a sentence to be those part of the context of utterance, namely that tuple of speaker, time, location, world (and perhaps other things) that on the one hand determine the truth value of a sentence, and on the other hand can be shifted by operators in the sentence.

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[13]NIs of course, can never have subject control. *John saw Mary leave* can never mean John saw Mary when John left.

On this view a proposition can be taken to be a function from indices to truth values, the classical possible worlds analysis of propositions being simply the most basic case. Propositional operators, then, can be taken to be functions from propositions to propositions. Arguments, however, are quite different. We take the traditional view that the arguments of a verb are the elements that combine with the verb to determine what proposition is being expressed by a sentence. A verb typically expresses as its meaning a relation among individuals, and the arguments to a verb are typically the individuals that are claimed to stand in that relation.

This much is elementary, but we make it explicit because the role of events is often confused. In many supposedly Davidsonian treatments of events, events are treated as indices of evaluation, and not as arguments (for example Lasersohn (1990)). It is clear, of course, that Davidson himself didn't intend this, and I think this general confusion is part of the reason that the hyper-Davidsonian account doesn't seem at first as pernicious as it is. All sentences have to be evaluated with respect to an index, therefore calling one kind of index an event and another kind of index a state is not particularly odd.

In fact, however, if we are to get full mileage from our Davidsonian analysis, events should not be treated as indices of evaluation, but rather as arguments. We do, however, have to relate our events to temporal and modal indices, if we are to make sense of the semantics event sentences. When (59) is uttered, for example, we have to assure that the leaving event is located in the past.

(59) John left.

It is here that the trick lies: We require that an event be located at the index of evaluation, in other words that for an event sentence to be true, the event itself has to be temporally located within the index of evaluation.

For simplicity we take there to be simply a single index, which we will denote with the meta-variables s, s' etc. and which has spatial, temporal and modal aspects all rolled up in one. One might think of these indices along the lines of Kratzer's (1995) situations: they are parts of worlds. An event sentence, then, is taken to be a property of events, so the truth condition of an event sentence in generally is expressed as follows:

(60) S(e) is true at index s iff there is an event e that satisfies S and e is included in s (i.e. $\exists\, e \in [[S]]$ and $loc(e) \leq s$

State sentences, on the other hand, are simply propositions, which can be modeled as sets of situations. A state sentence is true if the index of evaluation is one of the situations in this set:

(61) S is true in s iff $s \in [[S]]$

So the sentence *John loves Mary* is true in a situation s if that situation is one of those in which John loves Mary. This much is standard and straightforward.

We need to add a bit to this analysis: We want to adopt Parsons maximality operator as well, so we will say that for eventive sentences to be true, a maximal event picked out by a verb must be included in the situation of evaluation.

(62) For eventives, S(e) is true with respect to s iff $\exists\, e \in$ [[S]] and max(e,[[S]]) and loc(e) $\leq$ s.

An event sentence, then, tells us that an event occurred, and must therefore at least partially locate that event temporally, while a state sentence simply makes a claim at a certain time and place.

Let us now turn to temporal operators. Like all propositional operators, these are taken to be "index shifters". They serve simply to shift the time of evaluation of a sentence. For example, the past operator is simply taken to sift the time of evaluation from the utterance time to a time that precedes the utterance time.

(63) Past(S) is true with respect to s iff S is true with respect to an $s' < s$.

Temporal adverbials such as yesterday, then are taken to locate the situation of evaluation:

(64) Yesterday(S) is true with respect to s iff S is true at s and an s is on the day before the day of utterance.

Now we can account for contrasts.

An event sentence such as (65a) in effect tells us that there was a maximal event of an certain type and that **that event** happened yesterday. The truth conditions for (65a), then, are characterized by the formula in (65b).

(65) a. Peter played his guitar yesterday

   b. $\exists\, s\, [s < now \wedge s \leq yesterday \wedge \exists\, e\, [loc(e) \leq s \wedge max(e) \wedge play(e,Peter,his\text{-}guitar)]]$

The guitar playing, then, must be completely in the interval of yesterday, because it must be a maximal event of that type. It cannot, then, be part of a larger guitar-playing event.

These contrast with the truth conditions for (66a), which are characterized in (66b).

(66) a. John was in Boston yesterday

   b. $\exists\, s\, [s < now \wedge s \leq yesterday\, [s \in in(John,Boston)]]$

The stative sentence is simply true (or false) of a time in the past, and this in no way implies that it can't be true (or false) at a time that includes that time. Since there is no reference to an underlying state, there is no failed parallelism here.

3 Conclusion

The argumentation here has been two-edged. On the one hand we have reviewed the arguments that show clearly how correct the Davidsonian account of sentence meaning is, on the other hand we have taken pains to make clear that the arguments that what holds for events doesn't hold for states. It should be clear from the discussion that we don't mean to say that there is by no means any such thing as a state, but rather that even if they do exist, they do not play the pervasive role that events do.

If in the final analysis the proposal that situations be taken to be indices of evaluation turns out to be wrong, and we have seen some reasons to believe that it is not wrong, and that therefore we need to adopt some form of underlying state analysis, it should be clear that this analysis must be one in which underlying states are not analogous to events in any way, but rather play a special role in the theory.

If, on the other hand, the evidence assembled turns out to point in the correct direction, then we are left with some conclusions of merit: First, it is clear that the neo-Davidsonian account of argument relations should be given up, certainly for stative verbs, and likely in general. Second, since we need not include underlying states in the ontology of eventualities, we can simply say that reference to eventualities is always maximal. And finally, we need not talk of stative events, because such things simply do not exist.

References

Bach, E. (1986). The algebra of events. *Linguistics and Philosophy 9*, 5–16.

Barwise, J. (1981). Scenes and other situations. *The Journal of Philosophy LXVIII*(7), 369–397.

Bennett, M. (1977). A guide to the logic of tense and aspect in English. *Logique et analyse 20*, 491–517.

Berman, S. (1987). Situation-based semantics for adverbs of quantification. In J. Blevins and A. Vainikka (Eds.), *Issues in Semantics*, Volume 12 of *UMass Occasional Papers in Linguistics*, pp. 45–68. Amherst, MA: GLSA, Linguistics Department, UMass.

Carlson, G. N. (1977). *Reference to Kinds in English*. Ph. D. thesis, University of Massachusetts, Amherst, Amherst, MA.

Chierchia, G. (1984). *Topics in the Syntax and Semantics of Infinitives and Gerunds*. Ph. D. thesis, University of Massachusets, Amherst.

Davidson, D. (1967). The logical form of action sentences. In N. Rescher (Ed.), *The Logic of Decision and Action*. Pittsburgh: University of Pittsburgh Press.

de Swart, H. (1991). *Adverbs of Quantification: A Generalized Quantifier Approach.* Ph. D. thesis, University of Gröningen.

Depraetere, I. (1995). On the necessity of distinguishing between (un)boundendness and (a)telicity. *Linguistics and Philosophy 18*(1), 1–19.

Dowty, D. R. (1979). *Word Meaning and Montague Grammar.* Dordrecht, Holland: D. Reidel.

Dowty, D. R. (1991). Thematic proto-roles and argument selection. *Language 67*(3), 547–619.

Dretsky, F. (1969). *Seeing and Knowing.* Chicago: University of Chicago Press.

Eckardt, R. (1996). *Events, Adverbs and Other Things.* Ph. D. thesis, University of Stuttgart.

Galton, A. (1984). *The Logic of Aspect.* Oxford: Clarendon Press.

Herweg, M. (1991a). A critical examination of two classical approaches to aspect. *Journal of Semantics 8*, 363–402.

Herweg, M. (1991b). Perfective and imperfective aspect and the theory of events and states. *Linguistics 29*, 969–1010.

Heycock, C. (1991). *Layers of Predication: The Non-Lexical Syntax of Clauses.* Ph. D. thesis, University of Pennsylvania.

Higginbotham, J. (1983). The logic of perceptual reports: An extensional alternative to situation semantics. *The Journal of Philosophy LXXX*, 100–126.

Higginbotham, J. (1985). On semantics. *Linguistic Inquiry 16*, 547–593.

Higginbotham, J. (1996). Perception sentences revisited. Oxford University, ms.

Hinrichs, E. (1986). Temporal anaphora in discourses of English. *Linguistics and Philosophy 9*, 63–82.

Hinrichs, E. W. (1985). *A Compositional Semantcics for Aktionsarten and NP Reference in English.* Ph. D. thesis, The Ohio State University.

Kamp, H. (1981). A theory of truth and semantic representation. In J. Groenendijk, T. Janssen, and M. Stokhof (Eds.), *Formal Methods in the Study of Language.* Amsterdam: Mathematical Centre.

Kamp, H. and U. Reyle (1993). *From Discourse to Logic.* Dordrecht: Kluwer Academic Publishers.

Kratzer, A. (1989). Stage and individual level predicates. In N. G. Report (Ed.), *Papers on Quantification.* University of Massachusetts, Amherst: Department of Linguistics.

Kratzer, A. (1995). Stage-level and individual-level predicates. In G. N. Carlson and F. J. Pelletier (Eds.), *The Generic Book*, pp. 125–175. Chicago: University of Chicago Press. [1989].

Krifka, M. (1989). Nominal reference, temporal constitution and quantification in event semantics. In R. Bartsch, J. van Benthem, and P. van Emde Boas (Eds.), *Semantics and Contextual Expression*. Dordrecht: Foris Publications.

Lasersohn, P. (1988). *A Semantics for Groups and Events*. Ph. D. thesis, The Ohio State University.

Lasersohn, P. (1990). Group action and spation-temporal proximity. *Linguistics and Philosophy 13*(2), 179–206.

Lewis, D. (1980). Index, context, and content. In S. Kanger and S. Öhman (Eds.), *Philosophy and Grammar*, pp. 79–100. D. Reidel Publishing Company.

Link, G. (1987). Algebraic semantics for event structures. In M. Stokhof and F. Veltman (Eds.), *Proceedings of the Sixth Amsterdam Colloquium*, pp. 243–262. University of Amsterdam, Institute for Language Logic and Information.

Löbner, S. (1988). Ansätze zu einer integralen semantischen Theorie von Tempus, Aspekt, und Aktionsarten. In V. Ehrich and H. Vater (Eds.), *Temporalsemantik. Beiträge zur Linguistik der Zeitreferenz*. Tübingen: Niemeyer.

McNally, L. (1994). Adjunct predicates and the individual/stage distinction. In E. Duncan, D. Farkas, and P. Spaelti (Eds.), *Proceedings of the Twelfth Wst Coast Conference on Formal Linguistics*, Stanford, CA, pp. 561–576. Stanford Linguistics Association: CSLI Publications.

Moltmann, F. (1991). Measure adverbials. *Linguistics and Philosophy 6*(14), 629–660.

Montague, R. (1974). *Formal Philosophy. Selected Papers of Richard Montague*. New Haven: Yale University Press.

Parsons, T. (1985). Underlying events in the logical structure of English. In E. LePore and B. McLaughlin (Eds.), *Actions and Events: Perspectives on the Philosophy of Donald Davidson*. Oxford: Blackwell.

Parsons, T. (1989). The progressive in English: Events, states and processes. *Linguistics and Philosophy 12*, 213–41.

Parsons, T. (1990). *Events in the Semantics of English: A Study in Subatomic Semantics*. Cambridge, MA: Massachusetts Institute of Technology.

Partee, B. H. (1977). John is easy to please. In A. Zampolli (Ed.), *Linguist Structures Processing*, pp. 281–312. Amsterdam: North-Holland.

Partee, B. H. (1984). Nominal and temporal anaphora. *Linguistics and Philosophy 7*, 243–286.

Safir, K. (1983). Small clauses as constituents. *Linguistic Inquiry 14*, 730–735.

Sandström, G. (1993). When-*clauses and the temporal interpretation of narrative discourse*. Ph. D. thesis, University of Umeå.

Schein, B. (1993). *Plurans and Events*, Volume 23 of *Current Studies in Linguistics*. Cambridge, MA: MIT Press.

Stowell, T. (1983). Subjects across categories. *Linguistic Review 14*, 285–312.

Vendler, Z. (1967). *Linguistics in Philosophy*. New York: Cornell University Press.

Vendler, Z. (1968). *Adjectives and Nominalizations*. The Hague: Mouton.

Vlach, F. (1981). The semantics of the progressive. In P. Tedeschi and A. Zaenen (Eds.), *Syntax and Semantics. Volume 14: Tense and Aspect*, pp. 271–292. New York: Academic Press.

von Fintel, K. (1994). *Restrictions on Quantifier Domains*. Ph. D. thesis, University of Massachusetts, Amherst.

Williams, E. (1983). Against small clauses. *Linguistic Inquiry 14*, 287–308.

Wyner, A. (1994). *Boolean Event Lattices and Thematic Roles in the Syntax ad Semantics of Adverbial Modification*. Ph. D. thesis, Cornell University.

Zucchi, A. (1989). *The Language of Propositions and Events: Issues in the Syntax and Semantics of Nominalization*. Ph. D. thesis, University of Massachusetts, Amherst.

Zucchi, A. and M. White (1996). Twigs, sequences and the temporal constitution of predicates. In *Proceedings of SALT VI*.

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VERB CLASSIFIERS AND NOUN INCORPORATION IN ISL

Introduction

This paper focuses on verb classifiers in Israeli Sign Language (ISL). I argue that verb classifiers do not form a unified class, but rather two classifier types are distinguished - theme classifiers and instrumental classifiers. The set of properties characterizing each type reveals striking similarities to the properties of two types of **Noun Incorporation** (NI) constructions in spoken languages, described and analyzed by Rosen (1989). I will argue that the distinction between the two types of classifier constructions in ISL is better accounted for by a lexical analysis of NI (such as suggested by Rosen) rather than by a syntactic one. The analysis I suggest also makes it possible to compare similar constructions in languages of different modalities, namely - sign languages (represented here by ISL) and spoken languages. I will claim that the differences between verb classifiers in ISL and NI in spoken languages follow from the modality difference, and in particular, how the concept of motion is encoded in languages of different modalities.

The paper is organized as follows: in section 1 I describe the phenomenon of NI, and present Rosen's (lexical) analysis. In section 2, verb classifier constructions in ISL are presented, and data are provided to support the claim that at least two classes of verb classifiers should be distinguished in this language. In section 3, I argue that these distinctions are best accounted for by applying Rosen's NI analysis to the ISL verb classifier constructions. Section 4 explores the differences between NI constructions in spoken vs. Signed languages. And section 5 forms the conclsions.

1. Noun Incorporation

1.1 The properties of NI

Noun Incorporation is a construction in which a nominal stem is attached to a verbal stem to yield a complex, derived V stem, as in 1 vs. 2:

1. *wa?hahninu?*   *ne?*   *oyekwa?*
   TNS.3sg.3N.buy.ASP   ART   3N.tobacco.NM
   'He bought the tobacco.'

2. *wa?haye?kwahni:nu?*
   TNS.3sg.3N.tobacco.buy.ASP
   'He bought tobacco.'

                   (Onondaga, cited in Rosen 1989;295, from Woodbury1975)

In 1, the NP *tobacco* appears as a separate word which heads its own phrase, and the verb is morphologically simple. In 2, however, *tobacco* is attached to the verbal stem *buy*, and forms one complex verb stem with it (*'tobacco-buy'*). It is this construction which is referred to as Noun Incorporation (NI).

Though the NI process is highly productive, there are restrictions on the possible nouns and verbs that may be involved in the process, and on the semantic relations which hold between them. Specifically, the incorporated noun may bear only a limited number of possible thematic roles with respect to the verb: the most likely candidates for NI are **patients** (realized as direct internal arguments of both transitive and intransitive verbs). Cross linguistically, external arguments, agents specifically, do not incorporate. And recipients, whether they are realized as the direct internal arguments or indirect arguments, do not incorporate. But in some languages, oblique arguments and adjuncts may undergo incorporation: typically these will be instruments and/or locations. Other obliques, such as benefectives, do not incorporate (Baker 1988;453).

There are also definiteness/specificity restrictions on the incorporated nouns: typically, incorporated nouns have a generic, non-specific reading. And nouns which are highly animate/human tend not to incorporate.

Other properties characteristic of NI constructions **in some languages** (but not in others) are the following:

I. 'doubling', i.e. the possibility of the nominal argument associated with the incorporated morpheme to appear as an independent N in the clause, heading its own projection:

3. *luqʷ-ila-inuxʷa-xa   luqʷ-i?*
   dish-make-expert-OBJ dish-NOMINAL
   'the dishmaker (of dishes)' (example from Kʷakʷ'ala, in Anderson 1992;30).

In 3, the doubled NP is a 'copy' of the incorporated N. But this is not typical of the 'doubling' construction in general: usually, the 'doubled' NP is a different lexeme altogether. This is illustrated in 4, where the incorporated root is *'fish'*, and the 'doubled' NP is *'Bullhead'* (a kind of fish).

4. ....*sha?te:ku niku:ti* **rabahbot** *wahu-tsy-ahni:nu   ki   rake?niha.*
      eight of-them   bullhead   he-fish-bought this my-father
      'My father bought eight bullheads.' (='My father fish-bought eight bullheads.')
(Mohawk, in Mithun 1984;870).

In languages which allow 'doubling', the only restriction on the 'doubled' NP is that semantically it should contain more semantic specification than (or at least - not less than) the incorporated morpheme. Thus, 5.a. is a possible NI construction, whereas 5.b. is not:

5.a. He animal-bought a dog

   b. *He dog-bought an animal. (Rosen 1989;297)

II. 'stranding' of modifiers, i.e. the ability of modifiers associated with the incorporated arguments to appear in the clause even when the head N is null.

6. *kanekwarunyu wa?-k-akya?tawi?tsher-u:ni.*
   3N-dotted-DIST Past-1sg.3N-dress-make
   'I made a polka-dotted dress.' (='I dress-made a dotted (one)'). (Mohawk, in Mithun 1984;870).

III. <u>A change in the argument structure of the derived verb</u>: in some languages the complex verb (derived by the NI process) has one argument less than its non-derived counterpart (i.e. a transitive verb undergoing NI becomes intransitive), while in other languages the number of arguments the verb takes is unaffected by the process.

Again, it should be emphasized that NI constructions in different languages behave differently with respect to the above properties. They are not characteristic of NI constructions in general, but rather they occur in some languages but not in others.

Any analysis of NI has to account for the thematic restrictions on the incorporated N, as well as the occurrence vs. non-occurrence of the three properties mentioned above.

In the next sub-section, I present Rosen's 1989 analysis of NI. Her work shows that the phenomenon of NI is better accounted for by a lexical analysis, rather than by a syntactic one. (This is also argued for by Discuillo and Williams 1987, and Anderson 1992). This analysis is essential for accounting for the data from ISL, which will be discussed in section 2.

1.2 Rosen's 1989 lexical analysis:

Rosen points out that NI constructions exhibit different clusters of properties in different languages. She distinguishes two different types of NI constructions: **classifier NI** and **compound NI**. These two types are characterized by different sets of properties: in classifier NI, 'doubling' and 'stranding' are allowed; and the argument structure of the verb is unaffected by the NI process. In compound NI, on the other hand, 'doubling' and 'stranding' are ruled out, and the argument structure of the verb is affected: the V+N complex takes one argument less than the basic V.

Rosen suggests that these distinctions fall out from an analysis where the two classes of NI are analyzed as two different <u>lexical</u> processes: classifier NI is regarded as a lexical process in which the incorporated N argument **is not** saturated within the V+N complex. The argument structure of the verb is therefore unaffected, and the complex verb has the same Case assigning properties and agreement pattern as the simple verb. The argument associated with the incorporated morpheme can thus be realized as an independent NP. This independent NP may have an overt head N, which accounts for the possibility of 'doubling'; or the head N may be null, but still modified by its 'stranded' modifiers (i.e. 'stranding')[1]. The main difference between the complex verb and the simple verb is that the former's range of complements is more restricted, since the incorporated root imposes more selectional restrictions on the host verb. The independent argument must be within the class of objects denoted by the incorporated root. This results in what seems like a classification system, where the incorporated morpheme classifies nouns according to their particular meaning (e.g. an animal, human, body, solid/liquid etc.), hence the name 'Classifier NI' to that type of construction.

Compound NI, on the other hand, is a lexical process in which the incorporated argument **is** saturated within the V+N complex, hence the argument structure of the verb is affected: a transitive verb undergoing incorporation becomes an intransitive one, and it would display intransitive agreement or case markings. 'Doubling' is ruled out by the Case filter or as a violation of the theta criterion, since the (complex) intransitive verb cannot assign Case or theta role to the direct object. And 'stranding' would be ruled out on the same grounds, since the stranded modifiers are associated with a Case-less and theta unmarked NP.

Rosen's data and analysis are summarized in the following table:

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[1]Rosen points out that stranding of modifiers (in those languages which allow 'stranding') occurs with non-derived verbs as well, i.e. it is a general property of these languages, independently of the NI constructions.

7. Rosen's 1989 lexical analysis proposes two types of NI

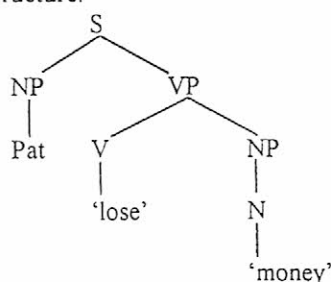|	Classifier NI	Compound NI
'doubling'	+	-
'Stranding'	+	-
affects V's argument structure	-	+
Analysis	A lexical process where the incorporated argument **is not saturated** within the V+N complex	A lexical process where the incorporated argument **is saturated** within the V+N complex

1.3 A lexical vs. A syntactic analysis of NI

Rosen argues that a syntactic analysis of NI (as suggested in Baker 1988) would fail to account for the distinctions between the two types of NI, and the specific clustering of properties characterizing each type.

Under a syntactic analysis, NI is regarded as syntactic movement, which operates over lexical categories rather than over maximal projections, and submits to the same principles that other movement processes obey. Under this analysis, an NI construction is formed by movement of the N^0 head of an NP argument into the V (head movement). This is illustrated in 8:

8. Baker's 1988 syntactic analysis of NI: NI is an instance of head movement.

a. D-structure:

```
            S
          /   \
        NP      VP
        |      /  \
       Pat    V    NP
              |     |
           'lose'   N
                    |
                 'money'
```

b. S-structure:

```
            S
          /   \
        NP      VP
        |      /  \
       Pat    V    NP
             / \    |
            N   V   N
            |   |   |
      money_i-lose  t_i
```
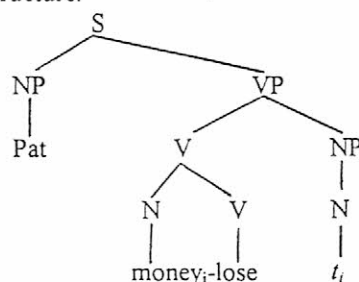
(Baker 1988;80)

The movement of the N^0 into V^0 creates a complex verb, and leaves a t, which, like all empty categories, is subject to the ECP . Such an analysis predicts 'doubling' to be ruled out altogether (since the head of the NP moves into V, and therefore cannot appear both incorporated and in its base position), and 'stranding' to be able to occur in all incorporating languages (since, if the head of the direct object incorporates by movement, it should be possible for its modifiers to be left stranded). It might be possible to stipulate some mechanism to account for the differences between languages with respect to these properties, (for instance by stipulating that in some languages incorporated nouns need Case, while in other languages they cannot be assigned Case (Baker 1988;126)), but such stipulations would fail to predict the specific clustering of these properties, which are explained straightforwardly under Rosen's lexical analysis.

Another weakness of the syntactic analysis is that it assumes that complex incorporating verbs should have a different syntactic behavior than their simple counterparts, since the complex verbs are the result of syntactic operations. Thus, a phenomenon such as 'stranding' is regarded as a 'by-product' of NI. If, however, 'stranding' co-occurs with simple, non-incorporating verbs as well, then a syntactic analysis of NI would not be applicable there. The grammar would then need two different explanations for 'stranding', which would cause redundancy, and would obscure the fact that 'stranding' is a unified phenomenon in these languages (as is pointed out by Anderson 1992, Di Sciullo and Williams 1987 and Rosen 1989).

Summary: The main points of Rosen's analysis are that there are two types of NI, and that the distinction between these two types is accounted for straightforwardly by a lexical analysis, but not by a syntactic one.

In the next sections I turn to data of verb classifier constructions in Israeli Sign Language (ISL). After presenting the data, I argue that the data can be explained and accounted for by

applying Rosen's NI analysis to the ISL classifier constructions. I further claim that this analysis of ISL supports a lexical rather than a syntactic analysis of NI

2. Verb Classifiers in ISL[2]

Classifiers in ISL are morphemes which classify a group of nouns on the basis of a salient feature: either their size and shape, some semantic similarity (such as 'vehicles'), or the way in which the object is handled. For examples, a C handshape is a classifier for cylindrical objects (e.g. cup, bottle); a B handshape is a 'vehicle' classifier (e.g. car, bus); a two handed F handshape classifies flat thin object handled with care (e.g. paper, document, a shirt)[3].

Phonologically, classifier morphemes in American Sign Language (ASL) have been traditionally analyzed as consisting only of values for handshape (Valli and Lucas 1992), and possibly orientation (Janis 1992). Janis also points out that thematically, the arguments associated with the classifiers bear the roles of themes or instrumentals .Verb classifiers in ISL are also associated with these two thematic roles. Some examples of classifiers of each type are presented in the following table:

9. Two types of classifiers in ISL[4]

Theme classifiers	Instrumental classifiers
cl:C 'a cylindrical object'	SPOON (SPOON-FEED)
cl:flat C 'a wide flat object'	FORK (FORK-EAT)
cl:CC 'a wide cylindrical object'	KNIFE (KNIFE-CUT)
cl:bCbC 'round flat object'	TELESCOPE (TELESCOPE-LOOK)
cl:B 'vehicle'	NEEDLE (NEEDLE-SEW)
cl:bO 'grasp a long thin object'	GUN (GUN-SHOOT)
cl:F 'grasp a thin object'	STRAW (STRAW-DRINK)
cl:FF 'handle (with care) a flat thin object'	HAMMER (HAMMER-BREAK)

---

[2] A note on terminology: the term 'classifier' is used both in the NI analysis above, and in the description of certain class of morphemes in sign languages. Though I think it is not accidental that this terms is used for both cases, it should be borne in mind that the term 'classifier' has a different use when describing sign languages.

[3] In the C handshape, the palm is 'cupped', as if holding a cup. In the B handshape, the palm is flat, fingers in contact. The F handshape is produced with the index touching the thumb, other digits extended and spread. See figure 1.

[4] 'cl' corresponds to classifier. The other letters represent handshapes.

To the best of my knowledge, all treatments of classifiers to date have treated them as a single class. I will argue that in ISL at least, a unified treatment cannot be maintained. Rather, two classifier types are distinguished - theme classifiers[5] and instrumental classifiers. Evidence which supports drawing such a distinction is provided in the following subsection.

2.1 Differences between THEME and INSTRUMENTAL classifiers

Theme classifiers and instrumental classifiers differ with respect to the following properties:

A. 'doubling': When a theme classifier is attached to a verbal root, a full NP co-referring to the classifier can occur freely, as is illustrated in 10 and 11 (the classifier morpheme and the doubled NP are in boldface. Indices indicate agreement marking):

10. **BOOK** $INDEX_b$ He_a $_aGIVE$-**cl:flatC**$_1$
    book   this   he   wide-flat-object-he-give-me
    'He gave me this book.'

11. PLEASE **CUP** $INDEX_a$ $_aHAND$-**cl:C**$_1$
    please   cup   this   cylindrical object hand-me .
    'Please hand this cup to me.'

Instrumental classifiers, on the other hand, generally do not allow 'doubling', as is shown by the contrast between 12 (where there is no 'doubling') vs. 13 (where the instrument is doubled):

12. I BABY $INDEX_3$ $_1SPOON$-$FEED_3$
    I baby this   me-spoon-feed-him
    'I fed the baby with a spoon.'

13. * I **SPOON** BABY $INDEX_3$ $_1SPOON$-$FEED_3$
    I spoon   baby this   me-spoon-feed-him
    'I fed the baby with a spoon.' (='I spoon-fed the baby with a spoon')

---

[5] I use the term 'theme' in a very specific meaning, as the argument in motion or being located. I draw a distinction between 'theme' and 'patient', the latter referring to the argument affected by the verb.

'Doubling' can occur with instrumental classifiers only when more specific information about the instrument is added:

```
      ---------t------------
```
14. SPOON $_2$GIVE$_1$ I BABY INDEX$_3$ $_1$SPOON-FEED$_3$
    spoon you-give-me (topicalized) I baby this   me-spoon-feed-him
    'You know the spoon you gave me? I spoon-fed the baby.'

But even in such cases, that NP is usually marked by special prosodic features (topic facial expression, intonation break (terms taken from Sandler 1996)) suggesting that it is in a non-argument position; or another verb is added, thus creating two clauses, one containing the incorporated instrumental, the other - the full NP (and thus 'doubling' is avoided), as in 15:

15. PLATE$_a$ HAMMER$_b$ I $_a$GRAB$_b$ HAMMER$_a$
    plate$_a$ hammer$_b$ I it$_b$- grab$_a$ hammer-it$_a$
    'I broke the plate with a hammer' (='I grabbed the hammer and hammered the plate')

B. Stranding:

Theme classifiers allow stranding of modifiers (if the identity of the null head is recoverable from the context):

16. NEW INDEX$_a$ $_a$GIVE-cl:C$_1$
    new   this   give cylindrical object-me
    'Give me the new cup (over there).'   (='Cylindrical object-give me the new')

17. (In this picture I see two cars). RED   VEHICLE-GO-UP-HILL
    'The red (one) is going up hill.'   (='The red is vehicle-going up hill')[6]

Instrumental classifiers do not allow stranding (even when the identity of the null head is recoverable from the context):

---

[6]The same possibilities of stranding occur with simple, non-incorporating verbs in ISL as well (as is pointed out by Rosen (1989) for languages with classifier NI). The following sentence contains the verb SEND, which does not occur with theme classifiers, yet stranding is possible:

1. (I wrote two letters. a long one and a short one.) LONG$_a$ $_1$SEND$_b$ MOTHER MY
                                                        long   I-sent-her mother my
    'The long (one) I sent to my mother.'
This suggests that stranding in ISL is independent of classifier morphology.

18. *STAR$_{(distributive)}$ NEW   I TELESCOPE- LOOK
    stars   new   I   watch with telescope
    'I watch the stars with the new telescope.'   (='I telescope-watch the stars with the new (one)')

C. Referentiality:

The two types of classifiers differ with respect to the referential properties of the classifier morphemes:

Theme classifiers are usually associated with definite/ specific NP's:

19. **DOCUMENT INDEX$_a$**   I   (HE$_3$) $_1$GIVE-cl:**FF$_3$**
    document   this   I   he   thin flat object-give
    'I gave him this document.'

In 19, the theme classifier cl:FF is associated with DOCUMENT, which is both specific and definite in this sentence.

Instrumental classifiers have a non-referential reading: SPOON in SPOON-FEED does not refer to a specific spoon, but rather to a special manner of feeding[7].

D. Morphological status of classifiers:

The two types of classifiers differ with respect to their morphological status: theme classifiers are bound morphemes, i.e. affixes, while instrumental classifiers are noun roots. Evidence for this morphological difference comes from the following observations:

According to Sandler (1989), all free morphemes in ASL (and ISL as well) have to be characterized by some handshape, location and movement features (though underspecification is possible in some circumstances). Thus a morpheme which does not have specifications for all the above features is necessarily a bound morpheme, and has to attach to another morpheme (which supplies the 'missing features') in order to be pronounceable.

---

[7] This is reminiscent of compounding in English, for example. where the modifier noun looses its referential properties in compounds. For example. *baby* in *baby-sit* does not refer to a specific baby.

Theme classifiers are affixes; they have phonological specifications for handshape only. (a list of the handshapes of some theme classifiers is given in table 9, above).

Instrumental classifiers are noun roots; they may have phonological specifications for handshape, location and movement features. Some examples of the phonological specifications of instrumental classifiers are given in 20:

20. BINOCULARS   HAMMER   FORK   STRAW

	BINOCULARS	HAMMER	FORK	STRAW
Handshape	[OO]	[S]	[V]	[FF]
Location	[eyes]	[0]	[non-dominant hand]	[0]
Movement	[constant contact]	[reduplication]	[final contact]	[separate]

This phonological difference can explain why the attachment of instrumental roots and verb roots it is sometimes blocked. The attachment of instrumentals and verbs is a process which combines two free morphemes, and both may be specified for all relevant phonological features. If there is a clash between the specifications of any of the above features between the two roots, the construction is then phonologically constrained. Some examples of phonological clashes are given in 21:

21. BINOCULAR + LOOK $\Rightarrow$ *BINOCULAR-LOOK
     [constant contact] [no contact]

     TELESCOPE + $_2$LOOK$_1$ $\Rightarrow$ *$_2$TELESCOPE-LOOK$_1$
     [outwards movement] [inwards movement]

The fact that theme classifiers are affixes while instruments are roots, entails another difference between them: affixes of a language usually constitute a 'closed' class, in that its membership is fixed, and new elements are not easily added (Baker, 1988;141). While roots constitute an 'open' class. And indeed, the number of theme classifiers in ISL is rather limited, while the

number of instrumental roots is not, and in fact can be expanded or innovated as the circumstances demand[8].

Summary: The data above show that theme classifiers and instrumental classifiers have different properties and different distribution. Theme classifiers are affixes, they allow 'doubling' and 'stranding', and may be associated with a definite/specific NP. Instrumental classifiers, on the other hand, are noun roots, they do not allow stranding, and 'doubling', if possible at all, is marked. They have a generic meaning, hence they are not associated with a definite/specific NP.

3. ISL Verb Classifiers as NI

The properties characterizing theme classifiers on the one hand, and instrumental classifiers on the other hand, and the way they cluster, show striking similarities to the two NI constructions discussed above: theme classifiers share the properties of classifier NI (both allow 'doubling' and 'stranding'), and instrumental classifiers behave much more like compound NI (both rule out 'doubling' and 'stranding').

These similarities make Rosen's lexical analysis very appealing. The underlying assumption of such an analysis is that the two ISL classifier constructions are in fact instances of NI. Theme classifier constructions are then regarded as an instance of classifier NI, i.e. a lexical process of affixation where the incorporated morpheme does not satisfy an argument of the verb, thus allowing for 'doubling' and 'stranding'. Instrumental classifier constructions would be analyzed as compound NI, that is, a lexical process where the instrumental argument is satisfied within the V+N complex, hence it cannot occur as an independent NP in the clause[9] The 'compound nature' of the instrumental NI is further supported by the generic reading of the nominal root, since non-head nominals in compounds loose their referential properties.

---

[8]For example, one of our ISL consultants, when asked to translate to ISL the sentence *'He grabbed my book with a stick'*, invented a sign which could be glossed as 'STICK-GRAB', meaning 'to grab with a stick'.

[9]With some exception with respect to 'doubling', which is not ruled out altogether in ISL. This might due to some discourse factors still needed to be worked out.

This analysis is summarized in table 22:

22.

	THEME classifiers (i.e. classifier NI)	INSTRUMENTAL classifiers (i.e. compound NI)
'doubling'	+	rare and marked
'Stranding'	+	-
Morpheme type	affixes	noun roots
Analysis (following Rosen's 1989 NI analysis)	A lexical process where the incorporated argument is **not saturated** within the V+N complex	A lexical process where the incorporated argument is **saturated** within the V+N complex

A syntactic movement analysis would suffer from the same drawbacks as in the case of NI in spoken languages: it would fail to account for the specific clustering of properties characteristic of each type of verb classifiers, it would need a special mechanism to account for 'doubling', and would need a special mechanism to account for 'stranding' with non-derived verbs.

If we accept the analysis suggested above, then the following question arises: how can the difference between the two constructions be explained? In particular - why is it that with theme classifiers the argument is not satisfied within the complex V, whereas in the case of instrumental classifier - the argument is satisfied within the complex V?

A possible explanation involves the difference in the semantic and morphological properties of the two classifiers involved. Theme classifiers carry less semantic (and morphological) information than their referents. They denote only one (or in some cases, very few) salient feature of these nouns, and since several different nouns may be characterized by the same feature (e.g. cylindrical object), the classifier cannot uniquely identify an argument. It refers to a class of nouns, not to a unique member of this class. Therefore it cannot satisfy the argument

position in the argument structure of the verb, and the verb is free to take another (fully specified) NP as its argument.

Instrumental classifiers, being noun roots, carry the same semantic information as the nominal referents. Hence semantically they satisfy that position in the argument structure of the verb, making it impossible for another NP to be assigned this theta role[10].

But the question still remains as to why instrumentals cannot be subject to the same classificatory system as themes are. That is to say, why can't instrumentals be classified according to a salient feature, referred to by a classification morpheme? A possible direction for explanation is the following: in order for a classificatory system to arise, nouns have to be categorized on the basis of a salient feature, characteristic of a group of nouns. In the case of instrumentals, such a classification is very difficult to imagine, since each instrument is specifically designed to carry out a unique action. Each instrument is designed (or used) for a specific purpose, and has a particular manner of carrying out this activity. Hence it is difficult to find properties which are general enough to characterize a group of instruments, and at the same time to be salient enough (or 'important' enough) for the classification of these nouns <u>as instruments</u>. Thus the instrumental morpheme cannot have a general enough meaning for a classificatory system to be created, making only compound NI , but not classifier NI available[11].

Summary: In this section I argued that the distinctions between theme classifiers and instrumental classifiers in ISL is accounted for straightforwardly by adopting Rosen's analysis of NI. Such an analysis has the following implications: (a) Verb classifier constructions in ISL are claimed to be instances of NI constructions. (b) The ISL data provides additional support for a lexical analysis of NI over a syntactic one.

---

[10] Following Booij and var Haaften's (1988) terminology (in Spencer 1991;343) instrumentals. but not theme classifiers. are bound in the LCS of the verb. hence this position is not inherited by the argument structure. and is not projected into the syntax.

[11] This line of argumentation predicts that instrumentals in general, not only in SL's, would occur only in compound NI's. The relevant data in the literature is very scarce, but the very few examples of instrumental NI in spoken languages (which I found in the literature) confirm this prediction. Additional support for such an argumentation comes from literature on noun classifiers in various spoken languages (Craig 1986). In this extensive survey of classification systems in various spoken languages, I could not find any classification system which is based on features of the use of a class of nouns as instrumentals.

4.   Incorporation and UG

The analysis suggested in this paper argues that verb classifiers in ISL are instances of two types of NI. If this analysis is on the right track, one interesting question that arises is - what are the differences and similarities between NI in a signed language vs. spoken languages. As we saw above, there are many similarities. There is, however, an interesting difference between ISL and spoken languages: in ISL, classifier morphology is characteristic mainly of two kinds of arguments - themes (i.e. the object in motion or being located), and instrumentals. In spoken languages, on the other hand, the most typical argument undergoing NI is the patient argument. Though themes and instrumentals do incorporate in some spoken languages, they are much less frequent and regular than patient NI. According to Mithun 1984 "if a language incorporates N's of only one semantic case, they will be patients of transitive V's" (ibid., p.875). ISL does not seem to follow this generalization. Though patient classifiers occur with some verbs, they are much rarer than theme and instrumental NI's. To illustrate this difference, consider the following sentence:

23. I sewed a dress.

In spoken languages, the most likely candidate for incorporation is 'the dress' (the patient); whereas in ISL - it is the instrument (the needle or the sewing machine).

These observations call for an explanation. Particularly, the following questions need be considered:
(i) Why is it that in ISL it is themes and instrumentals that incorporate?
(ii) How to explain the differences between spoken languages and ISL (namely, that spoken languages incorporate mainly patients, while ISL incorporate mainly themes and instrumentals)?

My analysis so far is stated in thematic terms. In trying to answer these questions, I follow a particular theory of thematic roles, suggested by Jackendoff 1987, 1990. Under Jackendoff's theory, thematic roles are regarded as structural positions in the Lexical Conceptual Structure (LCS): they are not theoretical primitives, but rather derived from particular configurations of semantic primitives, such as GO, STAY, PATH, CAUSE, THING, and ACT. Jackendoff further suggests (1987) that thematic roles fall into two parts: motion and location theta roles (which include - source, theme and goal, i.e. they are the arguments of spatial semantic primitives), and action theta roles (which include agent and patient, i.e. the first and second arguments of ACT, respectively). These two types of thematic roles are represented on two different tiers - a thematic tier and an action tier. Thus an argument may be connected to two theta roles, one on each tier, as is shown in 24:

24. <u>Pete</u> threw the <u>ball</u>.
    source   theme   (thematic tier)
    agent   patient   (action tier)   (ibid., p.395)

It is this aspect of Jackendoff's theory (i.e. the distinction between two types of thematic roles) which is most appealing in the analysis of ISL, and the comparison between ISL and spoken languages.

Let us now return to the questions posited above:

(i) What do themes and instrumentals have in common which make them likely to incorporate in ISL?

According to Jackendoff's theory, themes are the arguments in motion (they are the semantic arguments of GO). As such they are associated with the thematic tier. Instrumentals under this theory could be treated as 'secondary themes': they move between the agent and the patient (as can be seen in the LCS representation of sentence 26, where the instrumental is the argument of GO on the means embedded representation).

25. Sue ate rice with a spoon .
[CAUSE   (SUE, GO (RICE, TO SUE'S MOUTH))]
[BY [GO (SPOON, FROM RICE TO SUE'S MOUTH))]]

Thus it seems that what themes and instrumentals have in common is that both undergo movement: the theme moves between points in space, and the instrument moves between the agent and the patient. It seems, then, that the key notion with respect to NI in ISL is that of **motion**: NI in ISL is related to the thematic tier, and specifically to the argument in motion - the theme (whether it is the primary theme, or the secondary theme, as in the case of instrumentals).

The concept of motion is also the key to understanding the difference between ISL (and presumably other signed languages as well) and spoken languages:

Movement is a salient feature of signed languages (as is pointed out in Brentari 1990, Perlmutter 1992 and Sandler 1993), because these are languages which are transmitted visually, through space. Movement is an essential component of the visual modality, since it enhances our visual perception. And since the motion of an argument can be expressed analogically by the movement of the hands between different points in space, it is to be expected that the concept of motion (and thematic roles associated with that notion, i.e. the spatial tier a-la Jackendoff) would be encoded grammatically in SL's. Spoken languages, on the other hand, are transmitted via the auditory channel, which cannot represent spatial relations by direct analogy, and therefore is not suited to represent actual motion analogically. Therefore, theoretically, spoken languages should not have preference to any one specific tier[12]. It turns out, though, that NI in spoken languages is related to the action tier, and specifically to the patient argument. The fact that arguments bearing other thematic roles (such as location and instrumentals) can also undergo NI in some languages, does not pose a problem for an analysis which follows Jackendoff's theoretical framework, since locations and instruments can be patients as well (on the action tier). In fact, instruments are also considered as secondary patients, since the agent acts on the instrument. This is illustrated in 26, which is the representation of the action tier of the sentence 'Sue ate the rice with a spoon': *the spoon*
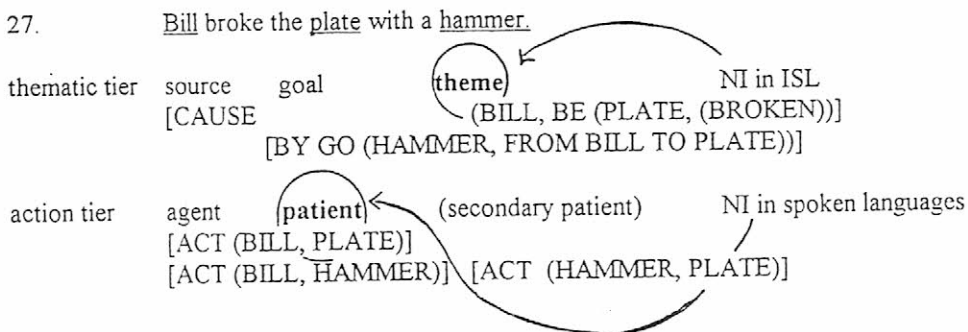
---

[12]Thanks to Wendy Sandler for pointing it out to me.

is the second argument of ACT on the embedded action tier (the second argument of ACT is the position of the patient).

26.　　[ACT (SUE, RICE)]
　　　　[ACT (SUE, SPOON)]　　[ACT (SPOON, RICE)]

Instruments, therefore, can incorporate in both ISL and in some spoken languages since they are both themes and patients. Patients, though, may incorporate in ISL only if they are also themes (undergoing movement, as for example in the case of 'putting on cloths' verbs), and themes may incorporate in spoken languages if they are patients as well. Thus, NI in both spoken and signed languages affects a specific thematic position, the difference being that in spoken languages NI is an operation on the action tier, whereas in SL's it is an operation on the thematic tier. This is represented schematically in 27.

27.　　　　　　Bill broke the plate with a hammer.

thematic tier　　source　　goal　　(theme)　　　　　　NI in ISL
　　　　　　　　[CAUSE　　　　　　　(BILL, BE (PLATE, (BROKEN)))]
　　　　　　　　　　　[BY GO (HAMMER, FROM BILL TO PLATE))]

action tier　　　agent　　(patient)　　(secondary patient)　　NI in spoken languages
　　　　　　　　[ACT (BILL, PLATE)]
　　　　　　　　[ACT (BILL, HAMMER)]　[ACT (HAMMER, PLATE)]

4　Conclusions

In this paper, I argued for the following:

- Theme classifiers and instrumental classifiers in ISLare instances of two types of NI constructions.
- The ISL data are best accounted for by a lexical analysis of NI.
- The analysis proposed here allows for a unified treatment of NI in both signed and spoken languages.

- The modality differences are attributed to the fact that NI operates on a different thematic tier: in ISL it is an operation on the thematic tier, and in spoken languages - on the action tier.

The analysis of ISL verb classifiers suggested in this paper is based on Rosen's lexical analysis of NI coupled with Jackendoff's theory of thematic roles. Such an analysis, in addition to being able to account for the data, can provide some insight as to the ways in which modality differences may influence and interact with otherwise similar grammatical processes in languages of the two modalities.
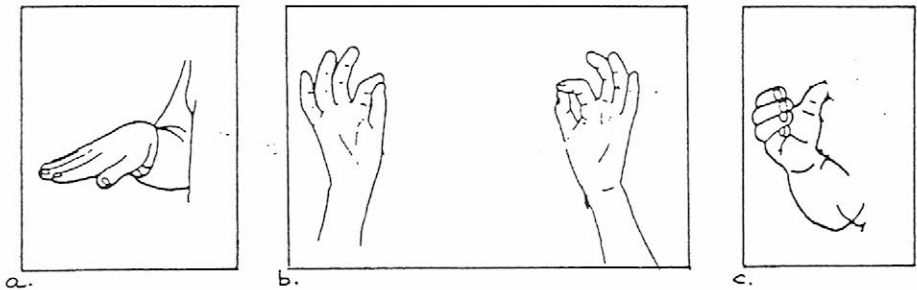
Figure 1: Examples of theme classifiers in ISL: (a) cl:B : 'vehicle'; (b) cl:FF : 'handle (with care) a flat thin object'; (c) cl:C : 'a cylindrical' object'.

References

1. Allen, K. 1977. Classifiers. *Language*, 53;285-311.

2. Anderson, S.R. 1992. *A-morphous morphology.* Cambridge university press, Cambridge.

3. Baker, M. 1988. *Incorporation: A theory of grammatical function changing*. Chicago University Press, Chicago.

4. Booij, G. and van Haaften, T. 1988. On the external syntax of derived words: evidence from Dutch. *Morphology Yearbook 1;29-44*.

5. Craig, C. 1986. *Noun classes and categorization*. John Benjamins, Philadelphia.

6. Di Sciullo, A. M. and E. Williams. 1987. *On the definition of word*. LI monograph 14. MIT Press, Cambridge.

7. Jackendoff, R. 1987. The status of thematic relations in linguistic theory. *LI* 18;369-411.

8. Jackendoff, R. 1990. *Semantic structures*. The MIT Press, Cambridge, Mass.

9. Janis, W. D. 1992. *Morphosyntax of ASL verb phrase*. Unpublished Ph.D. dissertation, State University NY at Buffalo.

10. Mithun, M. 1984. The evolution of noun incorporation. *Language*, 60;847-894.

11. Rosen, S. 1989. Two types of noun incorporation: a lexical analysis. *Language*, 65;294-317.

12. Sandler, W. 1989. *Phonological representation of the sign: Linearity and nonlinearity in ASL phonology*. Dordrecht, Foris.

13. Sandler, W. 1996. On the structure of the morphological component in ASL. A paper presented at the 7th international morphology meeting, Vienna.

14. Spencer, A. 1991. *Morphological Theory*. Blackwell, Oxford UK and Cambridge USA.

15. Supalla, T. 1982. *Structure and acquisition of verbs of motion in American Sign Language*. Ph. D. dissertation, University of California at San Diego.

16. Woodbury, H. 1975. Onondaga noun incorporation: Some notes on the interdependence of syntax and semantics. *IJAL* 41.10-20.

PERFECTIVE SENTENCES UNDER NEGATION AND DURATIVE ADVERBIALS:

A CASE OF TWO READINGS THAT ENTAIL EACH OTHER*

Anita Mittwoch

1. The problem

Adverbials like *for two weeks*, *until May 1st* select for imperfective (durative) predicates, as shown in (1)

(1) a. Mary worked for two weeks / until May 1st.
    b. #Mary started working for two weeks / until May 1st

But they are also licensed by the combination of perfective predicates with negation, as in (2):

(2) Mary didn't start working a. for two weeks / b. until May 1st.

Negation with imperfective predicates gives rise to ambiguity:

(3) a. Mary didn't work for two weeks / until May 1st
    b. Mary worked for less than two weeks /the interval bounded by May 1st
    c. Mary was unemployed (or idle) for two weeks / until May 1st

The reading in (3c) is the negation of (1a); that in (3c) is analogous to (2).

2. Previous analyses

The semantic analysis of the construction illustrated in (2) has been debated

for thirty years now. Klima (1964) argued for the bracketing in (4)

(4) for two weeks/until Monday (~ (Mary start working))[1]

In this analysis the adverbials, having wide scope, have their normal durative meaning, as universal quantifiers over temporal intervals (cf. Dowty 1977); the negative creates the potential for the imperfective environment required by the adverbial. Similarly, Mittwoch (1977a), Krifka (1987) Zucchi (1992), Asher (1993) and others.

The alternative analysis favoured by Karttunen (1976), Horn(1989), Linebarger (1987), Vlach (1993) and others assigns the adverbial narrow scope, as in (5):[2]

(5) ~ (for two weeks/until Monday (Mary make contact))

This bracketing entails that the adverbials do not have their normal meaning in (2), but rather function as existential quantifiers; *for* would mean something like `during' and *until* would be equivalent to `before'. Proponents of (5) call them negative polarity items.

Since $\sim\exists xFx \equiv \forall x\sim Fx$, the two analyses are logically equivalent. But linguistically they are distinct.

(6) and (7) contain event-based equivalents of (4) and (5) respectively.

(6) for_1 two weeks / $until_1$ May 1st (~($\exists$e (Mary start working)e))
(7) ~ (for_2 two weeks / $until_2$ May 1st ($\exists$e (Mary start working)e))

(6), where for_1 and $until_1$ represent the prepositions in their normal meaning, says that an imperfective condition, defined negatively as the absence of an event, holds for the whole of an interval measuring two weeks or an interval whose upper bound is May 1st. (7), with the negative polarity prepositions for_2 and $until_2$, says that it is not the case that a perfective event occurs at some point within an interval of two weeks or before the end of an interval.

In what follows the analysis in (4)/(6) will be called WSAdv (Wide-scope adverbial), that in (5)/(7) WSNeg (Wide-scope negation).

The main argument for WSAdv is of course based on simplicity: there is no need to postulate systematic polysemy for the prepositions. I shall come back to this point in Section 5.

As regards the bracketing itself, this would provide a straightforward account for the ambiguity with imperfective sentences in (3), without invoking polysemy for the verb, as postulated by Karttunen.[3] In (3b) the adverbial would have narrow scope (and be licensed by the imperfective predicate), whereas in (3c) it would have wide scope. Such an analysis of the ambiguity is supported by the German data in (8):

(8) a. Sie arbeitete nicht zwei Wochen / keine zwei Wochen.
      she worked   not   two weeks   /no   two   weeks   (=3 b)
  b. Sie arbeitete zwei Wochen (lang) nicht.
      she worked   two   weeks   long not   (=3 c)

Further evidence, at least for the possibility of this bracketing in English, derives from sentences like (9) in which the PP is preposed, since initial adverbials tend to have scope over the rest of the sentence.

(9) For two weeks / until May 1st she didn't even start working.[4]

In spite of the evidence provided by (8) and (9) doubts have been expressed about the status of negation as an operator that changes aktionsart, or creates an imperfective environment: *Not* would have to be a "stative verb" (Karttunen) or "would have to be given a special interpretation as a frequency adverb" (Vlach). This argument against WSAdv (and in favour of WSNeg) seems to me a weak one. As shown by the sentences in (10a-d) many adverbials can trigger frequentative readings:

(10) a. John woke up with a headache for two weeks.
    b. John woke up without an alarm clock for two weeks.
    c. John woke up at five for two weeks.
    d. John woke up in his own bed for two weeks.
    e. ?#John woke up for two weeks.

In the absence of an appropriate trigger, sentences are interpreted episodically, which accounts for the ill-formedness of (10e). Moreover the trigger has to be sentence-internal, regardless of whether it is an adverbial or a negative. (11b), adapted from an example in Asher (1993:217), is paralleled in this respect by (12):

(11) a. John didn't wake up for ten hours.

    b. John didn't wake up. #It lasted ten hours.

(12) John woke up with a headache. #It lasted two weeks.[5]

Not is distinguished from the adverbials in (10a-d) only inasmuch as the frequentative reading it can induce gives rise to an interpretation in which the durative situation is completely homogenous: the negative situation holds at every moment of the relevant interval.

    Independent evidence that negation can induce a durative reading is provided by (13):

(13) The telephone rang for the second time. Mary still did not wake up.

A second argument in favour of WSNeg has been based on sentences in which the adverbial is found in a subordinate clause governed by a negated verb in the higher clause, or in the scope of a downward entailing verb, as in (14), though it should be pointed out that not all speakers feel comfortable with such sentences.

(14) a. I don't think Mary will start working for two weeks/until May 1st.

    b. He refused to yield until the fees were paid him. (cited in OED).

    c. Having quite abandoned all hope of our appearing until the morning (cited in OED with gloss 'before')

This argument loses weight if "negative raising" is regarded as essentially a pragmatic phenomenon, specifically if, following Horn (1989:343ff), we treat it as "a short-circuited implicature" (i.e. an implicature that is calculable but not normally calculated by speakers) to the effect that that the negative is interpreted downstairs.

    One cast iron piece of evidence for the availability of WSNeg in English is provided by sentences with focused *not until* and to a lesser extent focused *not for*, as pointed out in Brée (1983:)

(15) a. Not until that moment did he arrive

    b. It was not until that moment that he arrived

Corresponding examples with *for* adverbials are less acceptable:

(16) a. ?Not for two weeks did he arrive.

    b. ?It was not for two weeks that he arrived.

König (1990:169) cites an attested example:

(17) That night she was strained, but she had a good night and it was not for
several days that she broke down again.

De Swart (forthcoming) argues for the possibility of WSNeg with *until*-phrases
on the basis of two sets of data which involve some downward entailng operator
other than straightforward negation:

(18) a. He bought almost nothing until she told him she wanted it.

    b. He invited few people until he knew she liked them.

"The problem is", she writes, "that we cannot split the NP into a quantifier
part and a negation part, where the quantifier would take wide scope over the
proposition as a whole, but negation takes narrow scope with respect to the
until-phrase". I am not sure whether this rules out a WSD analysis. For the
sentences in (18) entail the inferences in (18') and it may just be that this
would be sufficient to license the *until*-phrase:

(18') a. $\exists x$ (until she told him she wanted x (not (he bought x)))

    b. $\exists x$ (until he knew she liked x (not (he invited x)))

The second set of data that de Swart invokes for WSNeg includes the sentences
below:

(19) a. I'm damned if I'll hire you until you shave off your beard.

    b. Why get married until you absolutely have to.

    c. They are too cautious to expect real peace and dignity for black men
until at least their grandsons'era.

    d. I doubt that Ernie arrived until after midnight.

Here too one might argue that the negative inference connected with these examples
is sufficient to account for the *until*-phrase.[6]

Examples (15) to (17) and perhaps (18) and (19) show that WSNeg is available in English; they do not show that it is the only possible analysis for the sentences in (2).

The discussion so far has led to a tie. Both analyses must be available. This is also the conclusion arrived at independently by de Swart. In Section 4 I shall present fresh evidence, based on coordination, strengthening this conclusion. But before presenting the relevant data, I shall turn to the pragmatics of the construction in (2).

3. Pragmatic inferences licensed by (2)

It is generally recognized that analyses based only on bracketing and an account of the prepositions does not exhaust the meaning of the sentences in (2). Such sentences normally license two further inferences:

(a) The interval involved is relatively long. This inference is not predicted by either analysis on its own (i.e. without further assumptions) but is compatible with both. For WSAdv it would say that there is an expectation in the context that the interval for which it is true that Mary did not start working should have been less than two weeks / should not have lasted till May 1st. The corresponding version for WSNeg says there is an expectation that Mary should have started working within an interval shorter than two weeks / ending before May 1st.

(b) The negated event occurs at the termination of the interval: Mary did start working after a week / on May 1st -- what Declerck (1995) calls '(sense of) actualization'.

Here we run into empirical disagreement about the data. If the inference is cancellable, it is predicted by WSAdv, since positive sentences have a similar, cancellable, inference. Thus (1a), repeated below, is normally taken to imply:

(1a) Mary worked for two weeks / until May 1st.
(20) Mary worked for no more than two weeks / only till May 1st.

Cancellation of this inference for (20) is illustrated in (21):

(21) Mary worked for at least two weeks / till at least May 1st; for all I know she is still working.

The inference in (18) has all the hallmarks of scalar generalized conversational implicatures.

If the corresponding inference for negative sentences like (2) is not, or not always, cancellable, it is not predicted by either analysis. In the history of the debate, the position that the inference is not cancellable has been associated with proponents of the negative polarity (WSNeg) theory. According to Karttunen (1974), the inference follows from the entailment in (2), i.e. *Mary did not start working before Monday* together with a presupposition *Mary started working before Monday or on Monday*.

Before evaluating the empirical evidence regarding cancellability I shall present an outcrop of WSNeg that builds these pragmatic inferences more directly into the meaning of the construction. According to König (1991:169) *not...until* can be analyzed as being at least on the way to developing into a discontinuous focus particles, equivalent to scalar *only* in (22) and to German *erst* and Dutch *pas*.

(22) Mary only started on May 1st.

As with these particles, the positive inference (actualization) would be a presupposition rather than a conversational implicature.

Declerck (1995) is essentially a development of this suggestion. Declerck argues that *not...until* in sentences like (2) is a case of "negative lexilization...a steretyped unit (similar to *not many, not infrequently*, etc.)".(p.54)[7] Actualization is a presupposition (though Declerck also claims that it is asserted, in fact more salient than the negative entailment) and not cancellable. Presumably, though, it should be cancellable in the way that presuppositions can normally be cancelled, for example by means of a conditional clause which has the presupposition for its propositional content. Declerck's position, it seems to me, really demands that the inference is an entailment. When the *until*-phrase is preposed, as in (9) and (23a), or separated from the rest of a sentence by a comma, which presumably corresponds to a break in intonation, as in (23b) the structure, according to Declerck, is WSAdv, and actualization is cancellable and therefore an implicature.

(23) a. Until 9, John did not wake up.
  b. He didn't run away, until the police came.[8]

I now turn to the empirical evidence concerning cancellability. Proponents of non-cancellability have usually confined themselves to sentences in the past tense. I shall start with sentences referring to the future, where cancelling the implicatre should be easier for the obvious reason that our knowledge about the future is less certain than our knowledge about the past. In accordance with my practice in the rest of the paper I shall give examples with *for* as well as *until*.

(24) a. Knowing Mary, she won't start working for at least another two weeks, if at all.

(25) a. Knowing Mary she won't start working until the last moment, if then.
 b. That won't happen till after the American elections, if then.
 c. No vigorous pressure will be put on Israel till after November--if at all.

(25b and c are attested examples.) Ardent defenders of the position that the inference is a presupposition might still argue that what is being cancelled, or suspended, in these examples is a presupposition rather than a conversational implicature. This would not work, however, for the examples below:

(24') Knowing Mary, she wont start for at least another two weeks, and she might never start at all.

(25'b) That won't happen till after the American elections, perhaps never.

With sentences in the present perfect the inference is cancelled by the context, rather than explicitly:

(26) a. Mary hasn't written for two weeks.
 b. Mary hasn't come until now.

Even with the past tense, cancellation is not impossible; the sentences in (27) are not, I think, contradictory, and (28) does not imply, in my speech, that Mary forgave the insult before she died:

(27) a. Mary didn't leave for at least two hours; for all I know she is still there.
 b. Mary didn't leave till at least 5 ; she might still be there.

(28) Mary did not forgive the insult till/to her dying day.

Notice that sentences with focused *not until*-phrases, especially fronted ones, do not permit cancellation:

(29) a. # Not until May 1st, if then, did/will Mary start working.
      b. ? It was not until May 1st, if then, that Mary started working.

I have shown that the extreme version of non-cancellability espoused by Karttunen and Declerck is untenable. I would however concede that the inference that a change occurs at the point designated by the *until*-phrase or by the end of the interval designated by the *for*-phrase is stronger in negative than in positive sentences. This may be due to the fact that the entailments of a negative sentence yield less information than those of a positive one. Notice also that the inference (a), to the effect that the interval in which the event did not occur is a long one, is not affected by cancellation of (b). It appears not to be cancellable.

4. WSAdv and WSNeg in the light of coordination tests

I shall now submit the two analyses WSAdv and WSNeg to tests involving coordination.

WSAdv predicts that it should be possible for one adverbial to apply to conjoined affirmative and negative constituents. This test is already used by Klima (1964) with the example in (30):

(30) The nurse came in at five o'clock, until which time the patient had remained calm and hadn't even opened her eyes once.

The prediction is further borne out by the sentences in (31):

(31) a. John was a bon viveur and didn't take the pledge for many years /
         until he met Mary.
      b. He was a member of the committee but didn't come to a single meeting
         for six months.
      c. It didn't rain although it was overcast from morning till night.

    d. John didn't smoke even one cigarette and Bill kept to his diet
       for two whole weeks / until Christmas.

    e. I stared at the page without noticing the mistake until it was pointed
       out to me/ until it suddenly seemed to jump at me.

    f. Nobody failed till last year because the exams were easier.

    g. Until last year the exams were easier and I don't think anybody ever
       failed.

    h. For a whole hour we ordered (a) taxi and (it) didn't come. (overheard
       in Hebrew)

Notice that examples (31b, d, e) carry an inference of actualization. Notice furthermore that "negative raising" as in (31g) does not prevent such conjunction, a clear indication that it does not force us to accept WSNeg. The argument from conjunction also applies to

(32) For two weeks / until last Monday only John was here

which has a reading that licenses the inferences:

    a) For two weeks / until last Monday John was here

    b) For no part of the same two weeks / period till last Monday was anyone
       except John here

and strongly suggests that after the two weeks / after last Monday someone else was here too.

    The conjoined sentences in (33) cast doubt on the claim that all the examples in (19) above provide evidence for WSNeg. The relevant examples are repeated below for convenience:

(19) a. I'm damned if I'll hire you until you shave off your beard.

    c. They are too cautious to expect real peace and dignity for black men
       until at least their grandsons'era.

(33) a. Until you shave off your beard you will just wash the dishes and I'll
       be damned if I give you a rise.

    b. Until last year he allowed himself to be pushed around because he was
       too cautious to launch out on his own.

WSNeg predicts that sentences exhibiting VP conjunction should, by de Morgan's law and English idiom, be convertible to sentences with VP disjunction. Thus the a. sentences below should be convertible to the b. sentences:

(34) a. [John was expected to arrive on Monday and leave on Tuesday. However] he didn't arrive till Wednesday and he didn't leave till Friday.

    b. ...he didn't arrive till Wednesday or leave till Friday.

(35) a. After that he didn't touch a drop of alcohol for two years and he didn't light a cigarette for three.

    b. After that he didn't touch a drop of alcohol for two years or light a cigarette for three.

(36) a. In those days you couldn't vote till you were twenty-one and you couldn't hold a public office till you were twenty-five.

    b. In those days you couldn't vote till you were twenty-one or hold public office till you were twenty-five.

Not everybody I have consulted accepted the b. sentences, but many people did. They can thus serve to support the availability of WSNeg. Note that disjunction is compatible with cancellation of the actualization inference:

(37) He won't write for at least two months or phone till he gets to Lhasa, if then. I won't be surprised if we don't hear from him at all.

The evidence presented in this section thus provides further support for the preliminary conclusion of Section 2 that WSAdv and WSNeg must both be available in English.

5. Evidence for polysemy of prepositions denoting an interval or one of its ends:

The first argument in favour of WSAdv given in Section 2 was simplicity: the prepositions *for* and *until* could be given a unitary meaning. In view of our finding that WSNeg must also be available, we are forced to the conclusion that these prepositions must indeed be polysemous. In this section I shall present evidence showing that such polysemy is not in fact all that unusual.

a) English *since* has a universal meaning, shown in (38a) and an existential meaning shown in (38b)

(38) a. Mary has been a professor since October.
    b. Mary has received a promotion since October.

(The same applies in many other languages, though usually the two meanings are associated with different tense forms.) The negative sentence (39) thus has two analyses which entail each other; like the two analyses of *for* and *until*, they are differentiated by the interpretation of the preposition together with a difference in scope between the adverbial and negation. (Mittwoch 1988:207ff.)

(39) Mary has not been here since 1980.

b) In Hebrew (modern as well as Biblical) the preposition *ad* can mean *'until'*, *'by (the time that)'*

(40) a. ha-memšala   tišlot   ad   šnat 2000.
        the government will rule till year 2000
    b. ha-memšala   tipol   ad sof   ha-šana.
        the government will fall by end (of) the year

Similarly German *bis*.
c.) In Yorkshire English *while* is found with the meaning 'until'

(41) a. I will wait while you get back.
    b. Don't wait while October before getting rid of it (Galton 1987)

Something similar seems to apply to the Latin conjunction *donec*, which can mean both 'until' and 'while', and perhaps Italian *finche*.

On the basis of this (admittedly sporadic) evidence, what is unusual about the temporal prepositions considered in this paper is not so much their polysemy as the fact that one reading is confined to negative contexts.

It should also be noted that *until* and *for* do not fit the usual explanations for the function of NPIs put forward in Ladusaw (1980:207ff), Linebarger (1987) and Dowty (1994).

6. Conclusion and wider implications.

It has been shown that WSAdv and WSNeg are both present in the grammar of English, probably to varying degree for different speakers, and in different contexts. Since in the majority of contexts either analysis is possible, it is conceivable that speakers can communicate by means of sentences like (2) with complete efficiency even though they have different analyses in their heads. It is also conceivable that individual speakers vacillate with respect to the analysis which they assign to the construction.

There is no necessary link (*pace* some advocates of WSNeg) between actualization and WSNeg, except in examples with focused *not...until*, as in (29). The inference can be quite robust in sentences in which coordination indicates WSAdv, as in some of the examples in (31b,d,e); and it appears to be cancellable even when coordination forces WSNeg.

Whenever linguists have faced conflicting analyses of a construction they have proceeded from a working assumption that both cannot be correct, and have accordingly striven to find *the* correct one. On the whole, the assumption is a useful one. But it may have its limits. Hankamer (1977) examined a number of disputed constructions for which, he concluded, both proposed analyses must be correct. The same conclusion is arrived at in Mittwoch (1977b) on the basis of a different construction.[9] Natural languages may have more of such "double-jointed" or "Janus-faced" constructions than we suspect.

NOTES

* Thanks to Johan van der Auwera for helpful advice, and to Susan Rothstein, Joseph Taglicht and Jonathan Ginzburg for discussion of examples.

1. Klima discussed only *until* phrases.

2. Similarly to Klima, Karttunen as well as Linebarger and Horn confine themselves to *until*, though Karttunen adds in a footnote: "Much of the same kind of argument that is given here for distinguishing between two kinds of *until*-phrases could be given for recognizing two types of time adverbials formed with *for*".

3. According to Karttunen the reading in (3c) would be due to the verb being used as an inchoative.

4. Thus (i) below is ambiguous between the readings in (iia) and (iib) but (iii) has only the reading (iib):

(i)   Mary did not go to school three times.
(ii) a. Mary went to school fewer times than three.
     b. There were three occasions when Mary did not go to school.
(iii)   Three times Mary did not go to school.

5. Asher's example actually had *this* instead of *it*. I have substituted *it*, since the *this* version sounds acceptable to me.

6. English has an idiomatic expression with the italicized durational adverbial shown in (i):
(i) I haven't seen him *for donkey's years*.
For some speakers the adverbial has to cooccur with negation, so that it looks like an NPI, and therefore the whole sentence would have to be WSNeg. There may however be an alternative explanation. Longman's English Dictionary also

cites

(ii) It's donkey's years since I've seen him.

(iii) That was donkey's years ago.

The expression *it's two years / three months since...* has the peculiarity that, unlike normal *since*, it licenses *any*. Zwarts (1996:306) cites a number of examples from a corpus collected by Jack Hoeksema, e.g.

(iv) It's two weeks since anyone was towed away from outside their door, the Computerland clerk tells me.

I would hazard a guess that speakers for whom (iii) is well-formed would also accept

(v) It's donkey's years ago that anybody actually lived there.

It therefore seems that rather than being itself an NPI, the expression *(for) donkey's years* has the peculiarity that it must take scope over a negative expression or one suggesting a negative inference.

7. I subsume Declerck's theory under WSNeg since it gives negation wide scope and *until* a meaning different from that in positive sentences. Declerck denies that in his theory it is an NPI.

8. Another account based on the premiss that *not...until* functions as one unit is Hitzeman (1991).

9. Some of the issues involved in Hankamer's discussion are somewhat dated by now. The most convincing one is the issue of whether the italicized phrase in (i) is in the matrix or whether *for* acts as a complementizer and *you* is the subject of the complement clause:

(i) I have a stool for you to sit on.

The issue in Mittwoch (1977) is whether the root modals are two-place or one-place predicates.

REFERENCES

Asher, Nicholas. 1993. *Reference to Abstract Objects in Discourse*, Dordrecht: Kluwer.

Brée, D.S. 1983. "The durative temporal subordinating conjunction: *since* and *until*". Journal of Semantics 4: 1-46.

Declerck, Renaat. 1995. "The problem of *not...until*". *Linguistics 33: 51-98*.

Dowty, David. 1994. "The role of negative polarity and concord marking in natural language reasoning". *SALT* 4:....

Galton, Antony. 1987. 'The logic of occurrence'. In xxx eds. *Temporal logics and their Applications*. New York: Academic Press.

Haspelmath, Martin 1997. *From Space to Time*. Lincom.

Hankamer, Jorge. 1977. "Multiple analyses". In C.N. Li (ed), *Mechanisms of Syntactic Change*. Austin and London: University of Texas Press 583-605.

Hitzeman, Janet. 1991. "Aspect and adverbials". *SALT* 1: 107-125.

Horn, Laurence. 1989. *A Natural History of Negation*. Chicago: Chicago University Press.

Karttunen, Lauri. 1974. "Until". *Papers from the Tenth Regional Meeting of the Chicago Linguistics Society*: 284-297.

Klima, Edward S. 1964. "Negation in English". In J. Fodor and J.J. Katz (eds), *The Structure of Language*. Englewood Cliffs: Prentice Hall, 246-323.

König, Ekkehard. 1991. *The Meaning of Focus Particles: A Comparative Perspective*. London: Routledge.

Krifka, Manfred. 1989. *Nominalreferenz und Zeitkonstitution: Zur Semantik von Massentermen, Pluraltermen und Aspektklassen*. Munich: Fink.

Ladusaw, William A. 1980. *Polarity Sensitivity as Inherent Scope Relations*. New York and London: Garland.

Linebarger, Marcia C. 1987. "Negative Polarity and Grammatical Representation". *Linguistics and Philosophy* 10(3): 325-387.

Mittwoch, Anita 1977a. "Negative Sentences with Until". *Papers from the Thirteenthth Regional Meeting of the Chicago Linguistics Society*: 410-417

Mittwoch, Anita. 1977b. "Equi or raising or both--another look at the root modals and at permissive *allow*". *Papers in Linguistics* 10(1-2): 55-75.

Mittwoch, Anita. 1988. "Aspects of English aspect: On the interaction of perfect, progressive and durational phrases". *Linguistics and Philosophy* 11: 203-254.

Swart, Henriette de. forthcoming. "Meaning and use of *not...until*". *Journal*

of Semantics.

Vlach, Frank. 1993. "Temporal Adverbials, Tenses and the Perfect". *Linguistics and Philosophy* 16(3): 231-283.

Zucchi, Alessandro (1990) "The Aspect of Negation". ms.

Zwarts, Frans. 1995. "Nonveridical contexts". *Linguistic Analysis* 25(3-4): 286-312.

Two Types of Derived Accomplishments [1]

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Several recent studies of the resultative construction (Hoekstra 1984; Rappaport Hovav and Levin to appear) offer a uniform analysis of the two sets of sentences below, which all exemplify accomplishments derived from activities.

(1)   a.   The dog barked the neighbor awake.

        b.   The phone rang me out of my slumber.

        c.   Sleep your wrinkles away!

        d.   They drank the teapot dry.

        e.   The cattle ate the field bare.

(2)   a.   Tracy washed the soap out of shirt.

        b.   Pat rubbed the oil into the wood.

        c.   Sandy wiped the crumbs off the table.

        d.   The weaver rinsed the dye out of the material.

        e.   Terry swept the leaves off the sidewalk.

In contrast, in this paper we argue that these two sets of examples represent distinct phenomena and are derived in different ways. Our analysis provides a syntactic derivation for the examples in (1) and a lexical derivation involving the creation of a new lexical entry for those in (2). Thus, we will refer to the two types of examples, respectively, as syntactically-derived and lexically-derived accomplishments. We show, furthermore, how, if the distinction we draw is correct, the phenomena under discussion argue against a pure syntactic encoding of event structure (Borer 1994, in press; Erteschik-Shir and Rapoport 1995; Ghomeshi and Massam 1995; Goldberg 1995; Hoekstra 1992; Ritter and Rosen to appear), since such an encoding cannot naturally capture the difference between the two types of accomplishments.

In section 1 we set out the similarities between the examples in (1) and (2)—similarities that have been used to argue for a uniform account. Next, in section 2 we show that there are significant differences between the two that suggest a uniform account is untenable. After introducing our model of verb meaning in section 3, we present accounts of each set of examples as two distinct types of derived accomplishments in sections 4 and 5. Finally, in section 6 we discuss the implications of the two types of derived accomplishments for efforts to provide an entirely syntactic encoding of event structure.

1 The Uniform Approach

A uniform account of the two types of examples seems to be motivated by several common properties reviewed below.

• Both types of examples involve accomplishments derived from activities, as illustrated by applying standard aspectual tests to an example of each type. The (a) sentences

show that the verbs are basically activities, the (b) sentences show that the uses in (1) and (2) are accomplishments.

(3)   a.   They drank for/*in two minutes.

       b.   They drank the teapot dry in/*for two minutes.

(4)   a.   Pat rubbed the wood for/*in two minutes.

       b.   Pat rubbed the oil into the wood in/for two minutes.

• Both types of examples involve two postverbal constituents, an NP and either a PP or an AP, with the latter predicated of the former.

• Both types of examples contain a postverbal NP that does not correspond to the verb's "normal" object. Consider first the examples in (1). The verbs in sentences (a)-(c) can be characterized as basically intransitive, so any object they take is not their "normal" object. Though the verbs in (d)-(e) can be used transitively as well as intransitively with an unspecified object interpretation, they cannot take the postverbal NPs in (1) as their sole complements, as shown in (5). The "normal" objects they take in their transitive use are chosen from different semantic fields than the postverbal NPs in (1). As discussed in Carrier and Randall (1992) and Levin and Rappaport Hovav (1995), these verbs are in their unspecified object sense in examples such as (1).

(5)   a.   ∗ The dog barked the neighbor.

       b.   ∗ The phone rang me.

       c.   ∗ Sleep your wrinkles!

       d.   ∗ They drank the teapot.

       e.   ∗ The cattle ate the field.

Turning now to (2), the verbs in these examples typically take objects that can be characterized as "surfaces" rather than "stuff": *Tracy washed the floor, Pat rubbed her arm.* They cannot take the postverbal NPs in (2) as their sole object, as shown in (6). The claim that a "surface" is the normal object of these verbs receives support from the fact that each sentence in (6) is acceptable on the somewhat nonsensical interpretation that the object is interpreted as a surface. That is, the interpretation of (6a) is that the bar of soap itself is washed, rather than being used to clean something else.

(6)   a.   ＊Tracy washed the soap.

        b.   ＊Pat rubbed the oil.

        c.   ＊Sandy wiped the crumbs.

        d.   ＊The weaver rinsed the dye.

        e.   ? Terry swept the leaves.

On the basis of the shared properties, Hoekstra (1992) argues that in all examples such as those in (1) and (2) the verb is followed by a small clause (SC) in which an XP denoting an achieved state is predicated of the postverbal NP, as schematized in (7).

(7)   [NP V [$_{sc}$ NP PRED]] (Hoekstra 1992: 163, (55))

A small clause analysis is appealing as it reflects the shared properties of the two types of examples directly. First, the accomplishment interpretation can be tied to the syntactic configuration that the verb is found in. Accomplishments are characterized by a particular resulting state, and the small clause complement of the verb encodes this resulting state and the argument that it is predicated of. Second, the small clause by its very nature gives rise to two postverbal complements. Finally, the small clause

analysis directly embodies the observation that the postverbal NP is not an argument of the verb since this NP is not a sister of the verb, but rather is inside the small clause that is itself the sister of the verb.

2 A Second Look at the Data

Although the shared properties of the two types of examples make a common analysis initially attractive, there is ample reason to question whether a uniform analysis is, in fact, viable. We now present evidence, much of it discussed briefly in Levin and Rappaport Hovav (1995), that suggests the two types of examples represent distinct phenomena and should be given different analyses.

• There are more restrictions on the "result phrases" in the examples in (2) than those in (1). The former take only directional PPs as the result phrase, contrasting with the more varied types of result phrases in (1). Furthermore, the NPs in the PP result phrases in (2) all correspond to the verb's "normal" direct object. Compare *Tracy washed the soap out of the shirt* to *Tracy washed the shirt.* This relationship does not hold of the examples in (1): *The phone rang me out of my slumber*, but **The phone rang my slumber.*

• The examples in (1) are much more transparently derived from the intransitive form of the verb than those in (2). They are all based on verbs which are (i) intransitive (e.g., *sleep* in (5c)) or (ii) independently allow their objects to be omitted (e.g., *eat* in (1e)). Obligatorily transitive verbs do not allow the type of postverbal complements characteristic of (1), as the following examples show.

(8)   a.   * The enemy bombed the residents homeless.

          (meaning: The enemies bombed the city)

      b.   * The bears frightened the campground empty.

          (meaning: The bears frightened the campers)

          (Carrier and Randall 1992:187, (37a))

While the examples in (1) all preserve the meaning the verb usually has when it appears without the object, this is clearly not the case for the examples in (2). For instance, *Tracy washed the soap out of the shirt* does not preserve the reflexive meaning usually associated with *Tracy washed*. Furthermore, some verbs in (2) do not not normally allow their objects to be omitted at all. Consider, for example, *rub*: *Pat rubbed.*

• The postverbal NP in examples of the type in (2) readily form middles, while the postverbal NPs of the examples in (1) typically do not form felicitous middles.

(9)   a.   This dye rinses out easily.

      b.   This kind of oil rubs into the wood easily.

(10)   a.   ?? These people bark awake easily.

       b.   ?? This teapot drinks dry easily.

• We are unaware of any language which does not have, at least to a limited extent, alternations of the type in (2). Languages which have resultative constructions of the type in (1) are relatively rare. Languages which have alternations of the type in (2) but not of the type in (1) include Hebrew, French, and Italian. We illustrate with examples from Hebrew.

(11) a.   Titeti et ha-ricpa.

            I.swept ACC the-floor

            'I swept the floor.'

    b.   Titeti et ha-perurim me-ha-xeder.

            I.swept ACC the-crumbs from-the-room.

            'I swept the crumbs from the room.'

    c.   *Satu et ha-kumkum yaveS/?ad yoveS.

            they.drank ACC the kettle dry/to dryness

3   An Account of Possible Verb Meanings

In Rappaport Hovav and Levin (1995, to appear), we present an explicit theory of the derivation of verb meanings and their associated argument realizations. Using this theory as a starting point, we provide a nonuniform account of the derivation of the two types of accomplishments which captures both the similarities and the differences between them. In this section we summarize the major components of this theory. The following sections present our account.

This theory takes as its starting point a distinction between two aspects of a verb's meaning which is made either implicitly or explicitly by many researchers in lexical semantics (Grimshaw 1993; Hale and Keyser 1993; Jackendoff 1990, 1996; Rappaport Hovav and Levin 1995, to appear; Pinker 1989; among others). We term these the "structural" and the "idiosyncratic". The structural aspects of verb meaning are the grammatically-relevant aspects; they define the semantic classes of verbs whose members share syntactically- and morphologically-salient properties. Thus, they determine argument expression. The structural components of meaning turn out to be those that

define the various ontological types of events. In contrast, the idiosyncratic facet of verb meaning serves to differentiate a verb from other verbs sharing the same structural aspects of meaning; that is, it distinguishes between the members of semantic classes of verbs. The idiosyncratic component is not relevant to the verb's grammatical behavior. For convenience, we henceforth refer to the idiosyncratic element of meaning as the "constant," following its typical treatment in lexical semantic representations that take the form of a predicate decomposition.

Reflecting the existence of the two distinct components of verb meaning, our theory recognizes two types of building blocks of verb meaning. First, there is a basic stock of lexical semantic templates. As stated above these define the inventory of possible events, which following others (e.g., Foley and Van Valin 1984; Van Valin 1990, 1993; Pustejovsky 1991, 1995), we define in terms of aspectual verb types in the Vendler (1957)-Dowty (1979) sense. For this reason, we refer to these as lexical event structure templates.

$[\text{ x ACT}_{<MANNER>} \text{ (y) }]$	(activity)
$[\text{ x } <STATE>]$	(state)
$[\text{ BECOME } [\text{ x } <STATE>]]$	(achievement)
$[[\text{ x ACT}_{<MANNER>}] \text{ CAUSE } [\text{ BECOME } [\text{ y } <STATE>]]]$	(accomplishment)
$[\text{ x CAUSE } [\text{ BECOME } [\text{ y } <STATE>]]]$	(accomplishment)

(From Rappaport Hovav and Levin to appear)

Second, there is an open-ended set of constants encoding "core" verb meanings, as described above. Each constant is associated with an ontological categorization, chosen from a fixed set of ontological types (e.g., state, thing, location, manner, ...), and with a name (i.e., a phonological string). The constant determines the minimal number of arguments of the associated event (see also Goldberg 1995; Van Hout 1996). The on-

tological category of the constant determines its basic association with a lexical event structure template; such associations are specified via a set of canonical realization rules. We consider the pairings of constants and lexical event structure templates effected by the canonical realization rules to constitute a basic verb meaning; the "name" associated with a particular verb meaning is contributed by the constant (Rappaport Hovav and Levin in press). Since the constant specifies what is idiosyncratic to a particular verb—i.e., its "core" meaning—we will say that the verb lexicalizes the constant. To take an example, the verb *rub* lexicalizes a constant which specifies a certain manner of surface contact involving motion; due to the nature of this type of surface contact, this verb is associated with two arguments, the actor and the surface, and is basically associated with an activity lexical event structure.

Extended verb meanings are built in a monotonic fashion, by a process of template augmentation, whereby existing templates may be augmented up to other possible templates. Stated differently, template augmentation must create meanings that are consistent with the inventory of lexical event structure templates. The well-formedness conditions constraining the association of lexical event structure templates—whether basic or derived via template augmentation—with syntactic structures presented in Rappaport Hovav and Levin (to appear) are set out below; for further discussion see Rappaport Hovav and Levin (to appear).

(12) **Subevent Identification:** Each subevent in the event structure template must be identified by a predicate in the syntax.

(13) **Argument Realization:**

    a.   There must be at least one argument XP in the syntax per subevent in the event structure template.

    b.   Each argument XP in the syntax must be associated with an identified subevent in the event structure template.

To show how the theory works, we briefly review a case study presented in Rappaport Hovav and Levin (to appear) which compares two verb classes: verbs of surface contact and motion (e.g., *wipe*, *rub*), which are basically two-argument activity verbs, and externally-caused change of state verbs (e.g., *break*, *dry*), which are basically two-argument accomplishment verbs. These two types of verbs differ in terms of the options for argument expression they have available, with the verbs of surface contact showing considerably more options for argument expression than the change of state verbs. From the perspective of this paper, what is of particular interest is that although verbs of surface contact may be followed by NPs that are not their "normal" objects (see section 1), this option is unavailable to externally caused change of state verbs.

We trace the differences in the behavior of the two types of verbs to a difference in their lexical event structures. An externally caused change of state verb is basically associated with an accomplishment event structure—a complex event structure consisting of activity and change of state subevents.

(14) $[\, [\, x \, \text{ACT} \,] \, \text{CAUSE} \, [\, \text{BECOME} \, [\, y \, <STATE> \,] \,] \,]$

Such an event structure is the most complex structure available in the inventory of lexical event structure templates and cannot be further agumented via template aug-

mentation. In contrast, verbs of surface contact such as *wipe* have a basic association with an activity lexical event structure, which includes only a single subevent.

(15) [x ACT$_{<MANNER>}$ y]

Activity event structures can be augmented via template augmentation to give the more complex accomplishment template if there is an additional predicate to identify the additional subevent included in this template; only in this way can the well-formedness conditions, particularly (12), on the associations between event structure and syntactic structure be met. As we elaborate in sections 4 and 5, English has a variety of predicates that serve this function, giving rise, for example, to argument expressions and meanings such as the removing sense of *wipe* in *Terry wiped the crumbs off the table* or the putting sense in *Terry wiped the crumbs into her hand*. Comparable options are unavailable to *break*: since the state in the change of state subevent is specified by the constant associated with this verb, there is no way to vary the result of the action. Thus, *break* does not show the range of meanings that *wipe* does.

This account also explains previously observed differences in the range of direct objects available to the two types of verbs (Dowty 1991; Fillmore 1967, 1977) and differences in their behavior with respect to unspecified objects. In fact, this account is able to capture the generalization mentioned above that verbs which allow postverbal NPs that do not correspond to the "normal" direct object are always basically activities and not accomplishments. A verb that is basically an accomplishment, such as *break*, has a complex event structure template with two subevents, as in (14). Therefore, by the well-formedness condition (13a), such verbs must have two arguments, and specifically, these arguments must be the actor of the activity subevent and the patient of the change of state subevent. Consequently, these verbs do not allow unspecified objects,

as shown in (16), nor do they allow objects other than the "normal" object, as shown in (17).

(16) *Kelly broke again tonight when she did the dishes.

(17) Kelly broke the stick against the fence.
(cannot mean *Kelly broke the fence*; compare *Kelly hit the stick against the fence*)

In contrast, activity verbs in their basic use have only a single subevent in their lexical event structure template, so that if, given the constant they lexicalize, they do take two arguments, they can leave one unexpressed since well-formedness condition (13a) only requires one argument per subevent. (Of course, semantic conditions on the unexpressed argument must be met; see Rappaport Hovav and Levin to appear for discussion.) Thus, the verb *sweep* lexicalizes a constant associated with a sweeper and a surface, but this verb can be used intransitively as in *Terry swept*. If the basic activity event structure template is augmented via template augmentation to give the template in (18), then a second argument will need to be expressed, but this argument must be the argument of the added change of state or location.

(18) [[x ACT y] CAUSE [BECOME [z <*STATE*>]]]

In particular, the second argument associated with the activity subevent need not be expressed even when a second argument needs to be expressed. Thus, these verbs will show flexibility as to their objects, allowing objects that are not their "normal" objects. However, the unacceptability of a sentence such as *Terry wiped the crumbs* on the interpretation comparable to the acceptable *Terry wiped the crumbs off the table* shows

that these nonstandard objects are licensed by the result phrase rather than by the verb itself.

We now consider the two types of derived accomplishments under discussion in the context of this theory of verb meaning and argument expression. We begin in the next section with examples of the type in (2); we turn to examples of the type in (1) in the following section.

4 An Analysis of Lexically-derived Accomplishments

In section 2, we presented extensive evidence that the examples in (2) represent a distinct phenomenon from those in (1). In this section we show how the evidence supports an analysis of (2) as accomplishments lexically derived via template augmentation from activities, where a single verb has two distinct but related lexical event structures and hence two distinct lexical entries. The association of the same verb name with two related lexical semantic representations arises because the constants associated with verbs are prototype concepts and can be associated with a number of distinct but related events in constrained ways which we elucidate.

A verb in a particular use is a "constant" associated with a particular event structure template. Since the constants are prototype or cluster concepts (Austin 1940; Goldberg 1995; Lakoff 1987; Rosch 1973; Wittgenstein 1953), the same constant can be associated with a range of event types, as long as they are "similar enough". Part of the task of developing an explicit theory of possible verb meanings is articulating exactly what "similar enough" means. We propose that when one lexical event structure is created from a second by the process of template augmentation, sharing the same constant, they can both have the same name. In the case of the verbs of surface contact, we assume

that the pure surface contact meaning is the basic meaning and the removal or putting meaning, which is characteristic of the accomplishments in (2), is derived by template augmentation, as suggested in the previous section. We assume that this process is lexical since it gives rise to two distinct, but related lexical entries associated with the same verb name, where both lexical semantic representations meet the requirements of basic lexical entries.

One verb name can be associated with two related lexical semantic representations with the same constant if the derived verb meets certain semantic and syntactic constraints which we set out below.

First, the material added by template augmentation must be appropriately identified in the syntax; that is, it must meet the well-formedness conditions, (12) and (13). Second, the added material must be compatible with the constant that the verb lexicalizes. Specifically, it must be construable as part of a prototypical event of the type named by the verb. We assume that any result which is a typically intended result of an activity can be construed as part of a prototypical event with the name of that activity. (See Kiparsky (in press) for discussion of a similar constraint on the interpretation of English denominal verbs.) Consider the verb *rub*. An event of rubbing typically involves the intention of application of stuff to a surface, in addition to the motion of something over a surface. This licenses the addition of the second subevent in (18).[2]

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[2]An event of rubbing can also involve the removal of a substance from a surface, as in *Lucy rubbed the markings off the furniture*, giving rise to a second, removal meaning. As we note in Levin and Rappaport Hovav (1991), specific verbs of surface contact differ as to whether they have both putting and removing meanings available; this depends on whether the manner lexicalized in the verbs can be used for one or both purposes in the real world. Thus, verbs like *rub* and *wipe* show both options. When the manner can be used only to remove a substance or only to apply it, then only one option is available. For example, the verb *vacuum* can have the removal extended sense and not the putting extended sense (*Andrea vacuumed the sand off the floor/*Andrea vacuumed the sand into the corner*).

Third, the augmented event structure must be that of a possible lexical item. Specifically, we agree with Kiparsky (in press: (5b)) that "Simple predicates refer to single events (and consequently, simple causatives refer to direct causation)". Thus, if the resulting lexical event structure is a causative structure, it must be construable as a single unitary core event, i.e. it must be able to be interpreted as direct causation. (See section 6 below for further discussion of the nature of direct causation.)

These constraints explain the restricted range of result phrases which can appear in the lexically-derived accomplishments. In the case of the class of verbs under discussion, verbs of surface contact, the removal of a substance from a surface (or the application of a substance to a surface) can be conceived of as directly caused by the action of the surface contact and as part of a prototypical event of surface contact. Moreover, the reason the added subevent contains the "normal" direct object (even if it does receive a different syntactic expression) is that it is in just such instances that the "result" can be seen as directly caused and part of a prototypical event of the appropriate sort.

On our analysis lexically-derived accomplishments are NOT derived from the unspecified object form of an activity. Therefore, the existence of lexically-derived accomplishment uses of verbs that do not normally allow unspecified objects (e.g., *rub*) does not pose a problem.

Furthermore, given our analysis it is not surprising that the objects of lexically-derived accomplishments can easily become the subjects of corresponding middles. We assume, following Condoravdi (1989), that the middle has a generic interpretation where it predicates an inherent characteristic property of the subject of the middle which determines the progress of the event denoted by the verb. The direct objects in the examples in (2) are appropriate as such derived subjects, since they denote participants which undergo the change of location denoted by the verbs, and thus, their inherent

properties can determine the progress of the event.

Finally, as mentioned, we expect to find verbs showing activity and lexically-derived accomplishment uses in all languages since the availability of both uses of a single verb is inherent in the nature of verb meaning. Languages may differ as to the number of verbs of this type they may have, but those verbs of this type that are included in a language's verb inventory would be expected to show activity and lexically-derived accomplishment uses.

5   An Analysis of Syntactically-derived Accomplishments

We propose that the accomplishments in (1) do NOT involve the creation of a second, accomplishment lexical entry from an activity one. Rather, we propose they are derived via a syntactic process of complex V^0 formation involving an activity verb and the result phrase. That is, a complex predicate is formed from a verb and either an AP or PP, possibly, along the lines described in Neeleman (1993) and Neeleman and Weerman (1993). Although we describe this as a syntactic process of complex predicate formation, more research is necessary to determine whether this process is, in fact, syntactic or whether it is actually a lexical process that involves the composition of two argument structures. What is important for us is that this process does not involve the creation of a new accomplishment lexical entry for a verb that is basically associated with an activity lexical entry, and, therefore, certain constraints on lexically-derived accomplishments will not be expected to apply to syntactically-derived accomplishments.

As noted in section 1, there are many languages which lack syntactically-derived accomplishments. We attribute their absence to differences among languages in the rules

of complex predicate formation they have available (if any). Only some languages have the rule deriving complex V^0s with PPs and APs. Other languages may have rules of complex predicate formation involving other syntactic categories; for example, it is possible that certain compound verbs of South Asian languages and the restructuring verbs of Romance languages represent V–V complex predicates (Butt in press). Still other languages may simply disallow complex predicates. In contrast, we have not found, and do not expect to find, a language lacking the lexically-derived accomplishments because the properties of verb meaning that give rise to them are universal.

The same well-formedness conditions, (12) and (13), constrain the relation between event structure and syntax for both the syntactically-derived and lexically-derived accomplishments. The shared constraints account for the generalization that both are built on verbs which are basically activities and not on verbs which are basically accomplishments. As discussed in section 3, only verbs whose basic association is with an activity event structure template allow the postverbal NP not to correspond to the normal direct object. Verbs whose basic association is with an accomplishment template must have two arguments since the template has two subevents, and there must be distinct arguments in the syntax to identify each of the subevents.

However, since syntactically-derived accomplishments do not involve the creation of a new basic lexical entry, they need not be construed as unitary core events, nor do they have to denote events of direct causation. Thus, *bark awake* is clearly not a possible simplex lexical item.

Furthermore, the added material in a syntactically-derived accomplishment need not be part of a prototypical event named by the base verb. For example, a prototypical event of barking is simply a sound emission event; it does not include any participants beyond the barker, and specifically need not include anyone awoken by the barking (cf.

(1a) above), nor does barking have the typical intention of waking someone associated with it.

The absence of this constraint also explains why the postverbal NPs in (1) do not easily become the subjects of corresponding middles. Since these are not prototypical participants in the event denoted by the verb, there is no reason that any inherent property of theirs needs to determine the progress of such an event. For example, since *the neighbor* in (1a) is not a basic participant in an event of barking, no characteristic of a neighbor need determine the progress of the event of barking. If, as Goldberg (1995) claims, some middles based on syntactically-derived accomplishments are indeed acceptable, we would predict that it is because in these instances there is a closer potential connection between the postverbal NP and the event denoted by the verb.

6   Should Event Structure Be Read off of the Syntax?

We now consider the broader implications of the two types of derived accomplishments for the question of whether event structure should receive a purely syntactic encoding, as recently proposed by a number of researchers (e.g., Borer 1994, in press; Hoekstra 1992; Ritter and Rosen to appear; among others). The existence of the two distinct types of accomplishments is not easily captured in a framework in which event structure is directly read off of the syntax: there is no obvious way to distinguish between a result phrase added lexically and a syntactically-added one since they both receive the same syntactic encoding. Furthermore, we will argue that an effort to support the syntactic encoding of event structure by reducing a constraint on possible verb meanings to a syntactic constraint fails. Not only is the coverage of the syntactic constraint empirically inadequate, but a natural constraint on event structure can

serve the same purposes as the syntactic constraint, rendering at least this syntactic constraint superfluous. (See Kiparsky (in press) for another argument to this effect based on the nature of English denominal verbs.)

Hoekstra (1992) uses the resultative construction to illustrate how the number, type, and projection of arguments associated with a verb depends on the event type of the sentence and not the verb's meaning. On his account, event structure is encoded—or read off of—the syntax. The accomplishment interpretation of a resultative construction, for example, is derived from a syntactic configuration in which an activity verb has a result small clause sister. Hoekstra supports this view of event structure by claiming that certain constraints on the range of meanings that verbs may acquire can be reduced to well-known syntactic constraints. (See Hale and Keyser (1993, in press) for arguments along similar lines intended to handle different phenomena.) Consider the observation that verbs do not usually appear with more than one "telicizing" phrase (Goldberg 1995; Levin and Rappaport Hovav 1995; Tenny 1987), as illustrated in (19).

(19) * The kids ran the soles off their shoes to the park.

Hoekstra assumes that a VP is telic if it includes a small clause in which an XP predicates a result state of an NP, even in the absence of an overt XP, as in *Kim broke the vase*, where H assumes that there is an abstract result XP predicated of the thing broken; for this reason (20) is ruled out by the restriction against two telicizing phrases.

(20) * Kim broke the dishes off the table.
　　　 (meaning: Kim broke the dishes and as a result they went off the table; cf. *Kim squeezed the ball through the crack*)

Hoekstra proposes that the restriction against two telicizing phrases reduces to a syntactic restriction against two small clause complements for a single verb. Hoekstra also attributes the ungrammaticality of resultatives such as (21) to the same constraint, providing additional support for it.

(21) * The psychopath killed the village into a ghosttown.
    (Hoekstra 1992: 161, (40f))

This sentence, which involves an obligatory transitive verb with a postverbal NP that is not its normal object, would otherwise be problematic for Hoekstra's small clause account, which allows verbs to freely take small clause complements. The reason this sentence is ruled out according to Hoekstra is that since *kill* is an accomplishment it takes a small clause complement that predicates the result state of its normal object; the resultative small clause would then be a second small clause complement.

A more comprehensive look at the distribution of telicizing phrases reveals that the constraint against two such phrases DOES hold of syntactically-derived accomplishments, which do not allow two overt telicizing phrases, but does not necessarily hold of lexical accomplishments, whether basic or derived. To see this, consider the following examples, which we take to involve lexical accomplishments; as discussed in Levin and Rappaport Hovav (1995), such examples are at least on the surface problematic for the constraint against two telicizing phrases.

(22) a. The cook cracked the eggs into the glass.

   b. Terry sliced the mushrooms into the bowl.

   c. They emptied the tank into the sink.

Goldberg (1995) notes that each of these sentences involves a change of state which is typically accompanied by a change of location. Specifically, an accomplishment verb is followed by a PP denoting a change of location attained by the theme simultaneously with the change of state denoted by the verb. It appears that this is allowed only if the change of location is a typically intended result of the change of state (cf. (20)). Since each change is encoded by a small clause on Hoekstra's account, such sentences violate Hoekstra's restriction against two small clauses and are ruled out, contrary to fact.

We offer an alternative account in which a natural constraint on event structure precludes the illicit cases with two telicizing phrases in (19) and (20), while allowing the erstwhile problematic cases in (22). Recall that on our account, the basic constraint on a lexically-derived accomplishment is that it denote a unitary core event, i.e., one of direct causation. Croft (1991:262) describes the "idealized cognitive model" of a simple event—an event that can be lexicalized as a verb; one of the defining properties of such events is that they involve nonbranching causal chains. We propose that it is this property that is at the root of the observed constraint against two telicizing phrases. In most instances the two results that two telicizing phrases represent instantiate a branching causal chain since there is no necessary connection between them. The examples in (22) are the exception, as in these the usual intention is to bring the two results about simultaneously, suggesting that there is only a single causal chain despite the two results. Thus, the nonbranching causal chain property which Croft attributes to simple events can be seen as a constraint on event structure which limits the complexity of a unitary event of direct causation. This constraint both renders Hoekstra's syntactic constraint superfluous and provides insight into the restriction on two telicizing phrases. Furthermore, we noted that the violations of the constraint against two telicizing phrases involve lexically-derived accomplishments; the reason on

our account is that the constraint itself has its source in the nature of what constitutes a simple event. On the other hand, syntactically-derived accomplishments are subject to true syntactic constraints. Whether these accomplishments involve small clauses or complex predicate formation, two result phrases cannot be accommodated either because of the constraint against two small clauses or because of constraints on the number of arguments associated with a complex predicate.

References

Alsina, A., J. Bresnan, and P. Sells, eds. (in press) *Complex Predicates*, CSLI Publications, Stanford University, Stanford, CA.

Austin, J.L. (1940) "The Meaning of a Word", in *Philosophical Papers*, Oxford University Press, Oxford.

Borer, H. (1994) "The Projection of Arguments", *UMOP 17: Functional Projections*, GLSA, Amherst, MA, 19-47.

Borer, H. (in press) "Passive without Theta Grids", in S. Lapointe, ed., *Morphological Interfaces*, CSLI Publications, Stanford, CA.

Butt, M. (in press) "Complex Predicates in Urdu", in A. Alsina, J. Bresnan, and P. Sells, eds. (in press).

Butt, M. and W. Geuder, eds. (to appear) *The Projection of Arguments: Lexical and Syntactic Constraints*, CSLI Publications, Stanford, CA.

Carrier, J. and J.H. Randall (1992) "The Argument Structure and Syntactic Structure of Resultatives", *Linguistic Inquiry* 23, 173-234.

Condoravdi, C. (1989) "The Middle: Where Semantics and Morphology Meet", *MIT Working Papers in Linguistics 11: Student Conference in Linguistics 1989*, MIT, Cambridge, MA, 16-30.

Croft, W.A. (1991) *Syntactic Categories and Grammatical Relations*, University of Chicago Press, Chicago, IL.

Dowty, D.R. (1979) *Word Meaning and Montague Grammar*, Reidel, Dordrecht.

Dowty, D.R. (1991) "Thematic Proto-Roles and Argument Selection", *Language* 67, 547-619.

Erteschik-Shir, N. and T.R. Rapoport (1995) "A Theory of Verbal Projection", unpublished ms., Ben-Gurion University of the Negev, Beersheva, Israel.

Fillmore, C.J. (1967) "The Grammar of *Hitting* and *Breaking*", in R. Jacobs and P. Rosenbaum, eds., *Readings in English Transformational Grammar*, Ginn, Waltham, MA, 120-133.

Fillmore, C.J. (1977) "The Case for Case Reopened", in P. Cole and J.M. Sadock, eds., *Syntax and Semantics 8: Grammatical Relations*, Academic Press, New York, NY, 59-81.

Foley, W.A. and R.D. Van Valin, Jr. (1984) *Functional Syntax and Universal Grammar*, Cambridge University Press, Cambridge, UK.

Ghomeshi, J. and D. Massam (1995) "Lexical/Syntactic Relations without Projection", *Linguistic Analysis* 24, 175-217.

Goldberg, A.E. (1995) *Constructions: A Construction Grammar Approach to Argument Structure*, University of Chicago Press, Chicago, IL.

Grimshaw, J. (1993) "Semantic Structure and Semantic Content in Lexical Representation", unpublished ms., Rutgers University, New Brunswick, NJ.

Hale, K.L. and S.J. Keyser (1993) "On Argument Structure and the Lexical Expression of Syntactic Relations", in K.L. Hale, and S.J. Keyser, eds., *The View from Building 20*, MIT Press, Cambridge, MA, 53-109.

Hale, K. and J. Keyser (in press) "On the Complex Nature of Simple Predicators", in A. Alsina, J. Bresnan, and P. Sells, eds. (in press).

Hoekstra, T. (1988) "Small Clause Results", *Lingua* 74, 101-139.

Hoekstra, T. (1992) "Aspect and Theta Theory", in I.M. Roca, ed., *Thematic Structure: Its Role in Grammar*, Foris, Berlin, 145-174.

Hout, A. van (1996) *Event Semantics of Verb Frame Alternations*, Doctoral dissertation, Tilburg University, Tilburg, The Netherlands.

Jackendoff, R.S. (1990) *Semantic Structures*, MIT Press, Cambridge, MA.

Jackendoff, R.S. (1996) "Conceptual Semantics and Cognitive Linguistics", *Cognitive Linguistics* 7, 93-129.

Kiparsky, P. (in press) "Remarks on Denominal Verbs", in A. Alsina, J. Bresnan, and P. Sells, eds. (in press).

Lakoff, G. (1987) *Women, Fire, and Dangerous Things*, University of Chicago Press, Chicago, IL.

Levin, B., and M. Rappaport Hovav (1991) "Wiping the Slate Clean: A Lexical Semantic Exploration", *Cognition* 41, 123-151.

Levin, B. and M. Rappaport Hovav (1995) *Unaccusativity: At the Syntax-Lexical Semantics Interface*, MIT Press, Cambridge, MA.

Neeleman, A. (1994) *Complex Predicates*, Research Institute for Language and Speech, Utrecht University, The Netherlands.

Neeleman, A. and F. Weerman (1993) "The Balance between Syntax and Morphology: Dutch Particles and Resultatives", *Natural Language and Linguistic Theory* 11, 433-475.

Pinker, S. (1989) *Learnability and Cognition: The Acquisition of Argument Structure*, MIT Press, Cambridge, MA.

Pustejovsky, J. (1991) "The Syntax of Event Structure", *Cognition* 41, 47-81.

Pustejovsky, J. (1995) *The Generative Lexicon*, The MIT Press, Cambridge.

Rappaport Hovav, M. and B. Levin (1995) "The Elasticity of Verb Meaning", *IATL 2: Proceedings of the Tenth Annual Conference of the Israel Association for Theoretical Linguistics and the Workshop on the Syntax-Semantics Interface*.

Rappaport Hovav, M. and B. Levin (to appear) "Building Verb Meanings", in M. Butt and W. Geuder, eds.

Rappaport Hovav, M. and B. Levin (in press) "Morphology and Lexical Semantics", in A. Zwicky and A. Spencer, eds., *Handbook of Morphology*, Blackwell, Oxford.

Ritter, E. and S.T. Rosen (to appear) "Delimiting Events in Syntax", in M. Butt and W. Geuder, eds.

Rosch, E. (1973) "Natural Categories", *Cognitive Psychology* 4.

Tenny, C.L. (1994) *Aspectual Roles and the Syntax-Semantics Interface*, Kluwer, Dordrecht.

Van Valin, R.D. Jr. (1990) "Semantic Parameters of Split Intransitivity", *Language* 66, 221-260.

Van Valin, R.D., Jr. (1993) "A Synopsis of Role and Reference Grammar", in R.D. Van Valin, Jr., ed., *Advances in Role and Reference Grammar*, John Benjamins, Amsterdam, 1-164.

Vendler, Z. (1957) "Verbs and Times", *Philosophical Review* 56, 143-160. Also in Z. Vendler (1967) *Linguistics in Philosophy*, Cornell University Press, Ithaca, NY, 97-121.

Wittgenstein, L. (1953) *Philosophical Investigations*, MacMillan.

On the (Non-)Strict Locality of Feature Checking Relations

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This paper concerns itself with the consequences of certain *wh*-constructions in Iraqi Arabic, Hindi and German for the Minimalist theory of Feature Checking. In Chomsky 1993/95 it is suggested that feature-checking relations are universally subject to a strict notion of locality and may only be effected when a functional head and an associated X^0 or XP co-occur locally in Spec-head or head-adjoined configurations. Such locality constraints on feature-checking consequently require *movement* of the X^0/XP to the checking head at some derivational point, if not *overtly* then necessarily during some *covert* continuation of the derivation, so directly entailing the existence of LF as a discrete syntactic level formed by this movement. In such a model it then also becomes necessary to adopt an 'Economy' principle of Procrastinate to account for why the covert movement option would seem to be selected whenever possible.

In sections 1.0 and 2.0 of the paper we attempt to show that the patterning of simple *wh*-questions in Iraqi Arabic and Hindi is incompatible with such a notion of strict locality taken as a *universal* constraint on operations of feature-checking, and claim that XPs in certain instances may actually be feature-checked 'in situ' and without raising to the Spec of their licensing head at any point in a derivation. We then propose that the checking domain relevant for the licensing of *wh*-features may in fact be subject to cross-linguistic parametric variation in terms of its particular locality value and in Iraqi Arabic/Hindi essentially corresponds to the 'Tense Domain' of a +Q Comp. Partial *Wh*-Movement structures in German examined in section 3.0 and similar Iraqi Arabic/Hindi *wh*-expletive-type questions considered in section 4.0 are then suggested to add further support to the contention that a *wh*-phrase need not necessarily raise to the Spec of a +Q Comp to establish a *wh*-checking relation, and lead to the proposal that expletive elements may ultimately alter the basic checking locality of a functional head. Finally, reflecting briefly on the broader theoretical consequences of such proposals in section 5.0, it is noted that if 'non-local' feature-checking

can indeed be shown to be available and licensed with certain *wh*-dependencies, it may then be possible to suggest that other feature-checking relations in which no pre-Spell-Out movement is observed are similarly satisfied non-Spec-head-locally, leading to the possibility of a linguistic model without LF and the economy principle of Procrastinate.

1.0 Iraqi Arabic

Iraqi Arabic[2] (IA) is a language in which *wh*-phrases may remain in situ at PF, as shown in examples (1/2):

(1) Mona shaafat   *meno*?
     Mona saw   whom
     Who did Mona see?

(2) Mona raadat [tijbir Su'ad   [tisa'ad   *meno*]]?
     Mona wanted to-force Su'ad   to-help   who
     Who did Mona want to force Su'ad to help?

However, it is not possible for a *wh*-phrase to occur in situ in a *non-finite/tensed* clause which does not also (potentially) contain a +Q Comp, as in (3) below where the matrix verb tsawwarat 'think' necessarily selects a declarative complement CP:

(3) *Mona   tsawwarat   [cpAli ishtara *sheno*]
     Mona   thought   Ali   bought what
     Intended: What did Mona think that Ali bought?

Although the Comp of the matrix clause in (3) may indeed be +Q, parallel to that in (1/2), and although the +Q Comp of a higher clause may also license a *wh*-phrase in situ in a lower *-finite* clause as in (2), the *+finite* nature of the embedded CP in (3) appears to block the establishment of such a dependency here. Descriptively it seems that a *wh*-element must be licensed by a (c-commanding) a +Q Comp occurring within its immediate 'tense domain',

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[2] All Iraqi Arabic data here is taken from Wahba 1990 and Ouhalla 1994.

where the tense domain (TD) of a *wh*-phrase is delimited by the first finite-CP node dominating the *wh*-phrase. In (1) and (2) this corresponds to the matrix CP, hence even though the *wh*-phrase is located in an embedded clause in (2), its TD· may nevertheless contain a +Q Comp. In (3) however, the bracketed CP is the TD of the *wh*-phrase <u>sheno</u>, and as there is no possible +Q Comp in this domain, the occurrence of the *wh*-element is illicit.

Formally it might then be suggested that the licensing of a *wh*-phrase results from movement at LF to a +Q Comp, and that the ungrammaticality of examples such as (3) may be taken to indicate that tensed CPs are barriers to such raising. However, tensed CPs do not seem to constitute islands for extraction in IA, and significantly it is found that not only *may* the *wh*-phrase in (3) undergo movement to the matrix clause out of its containing tensed CP, but when it does do so overtly the result is a fully well-formed question:

(4)   *Sheno*$_i$ tsawwarit   Mona [Ali   ishtara t$_i$]?
       what   thought   Mona Ali   bought
       What did Mona think Ali bought?

If one makes the assumption that operations of movement occurring both prior to and after the point of Spell-Out should be subject to the same set of locality constraints, in this respect following Chomsky's 1993/95 proposal that computational principles and constraints upon them should be taken to apply in a fully uniform way throughout a derivation,[3] then the acceptability of (4) is clear indication that movement of the *wh*-phrase in (3) should not in fact be blocked from taking place at LF. If this is indeed so, and if the occurrence of the *wh*-phrase raised in the +Q Comp of the higher clause results in an acceptable structure in (4), then the contrast in grammaticality betweeen (3) and (4) can arguably only be ascribed to considerations of derivational 'timing' - while nothing would bar *LF* movement of the *wh*-phrase in (3) to a position in which it is clearly licensed in (4), such LF raising would simply come 'too late' in derivational terms to satisfy the relevant *wh*-licensing conditions and critically must take place *prior* to Spell-Out, as in (4). Taking all operations of movement to be triggered by a need to check morphological features (as per Chomsky 1993/95), one

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[3] Or otherwise recognize a derivationally significant level of S-Structure relative to which any differing sets of constraints applying to the pre- and post-Spell-Out portions of the derivation might be stated.

may then conclude that *overt* raising of the *wh*-phrase in (4) results in successful checking of *wh*-features between the *wh*-phrase and the +Q Comp prior to S-O, and that the ungrammaticality of (3) is due to a failure to check *wh*-features by this derivational point. In this sense the contrast between (3) and (4) is argued to be a direct parallel to that observed in (5) and (6):

(5)   *Did not John come. (intended to be a statement)

(6)   John did not come.

While no locality principles would block *LF* raising of the subject DP [John] in (5) to its position in (6), crucially this raising must be made prior to Spell-Out in order to check the strong features present in $AgrS^0/T^0$; where such features remain unchecked at Spell-Out in (5) the resulting string is fully unintelligible, just as above in (3).

The paradigm in (1-4) also allows one to draw the conclusion that it is formal properties of *wh*-phrases themselves which require satisfaction/licensing here rather than any of a +Q Comp, in Minimalist terms that it is *wh*-features carried by *wh*-phrases which need checking and not any assumed present on the +Q C^0. As noted relative to examples (1) and (2) Iraqi Arabic is a language in which all *wh*-phrases may remain in situ at Spell-Out (so long as they occur in the tense domain of the +Q Comp), unlike English-type languages where raising of a *wh*-phrase to Comp is always forced to occur prior to Spell-Out. If *wh*-raising need not occur in (1/2), then a +Q Comp in Iraqi Arabic cannot be taken to contain strong *wh*-operator features which clearly would *always* require overt raising of a *wh*-phrase for pre-Spell-Out checking. *Wh*-movement in Iraqi Arabic instead seems to relate directly to the *wh*-phrase itself and its position relative to the +Q Comp - if the *wh*-phrase occurs in some kind of opaque domain, then raising to a higher position/domain is forced, if the *wh*-phrase is base-generated in the tense domain of a +Q Comp then no movement is required. Assuming again that movement may only take place for feature-checking purposes, this obviously means that *wh*-features carried by the *wh*-phrase itself must be checked by the raising observed in examples like (4). Such a conclusion would then seem to constitute rather strong evidence against Chomsky's 1995 suggestion that +interpretable features (such as *wh*) will only require

take place within larger domains.[4]

Checking of *wh*-features in Iraqi Arabic is therefore now suggested to take place between a +Q Comp and a *wh*-phrase occurring in any position within the tense domain of the +Q Comp, either as a result of simple base-generation of the *wh*-phrase in the tense domain of the +Q Comp *or* pre-Spell-Out movement into this domain (i.e. the *wh*-raising to Comp seen in (4)). Although *wh*-feature-checking is thus not bound to be strictly Spec-head local, it nevertheless is still constrained by some notion of locality, this being defined relative to tense - a *wh*-phrase will only be licensed in the immediate tense domain of the +Q Comp. In addition to the noted tense-domain restriction on *wh*-feature-checking, there are actually also certain other locality restrictions on the licensing of *wh*-phrases in Iraqi Arabic which appear to correspond more closely to familiar constraints on applications of *movement*. As illustrated in examples (9) and (10), *wh*-phrases may not occur in situ in either relative clauses or *wh*-islands (with scope higher than the +Q Comp of the *wh*-island itself):

(9)   *Mona 'urfit [il-bint$_i$ [illi$_i$ t$_i$ ishtarat *sheno*]]
       Mona knew the-girl who   bought   what
       *What$_i$ did Mona know the girl who bought t$_i$?

(10)   Mona nasat [*li-meno* tinti *sheno*]
       Mona forgot to-whom to-give what
       NOT: What did Mona forget whom to give to?

As such constituents are indeed islands for syntactic extraction and movement, it might then be argued that an LF movement analysis of in situ *wh*-phrases should in fact be pursued, despite the above given evidence to the contrary. However, we will however suggest that these island-like locality restrictions on *wh*-phrases ultimately do not constitute any good evidence in favour of an LF movement approach and may instead actually be used to support the alternative proposals put forward here.

Ouhalla 1994 has noted that if the *wh*-elements in (9) and (10) are *overtly* extracted

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[4] Noting it is not possible to suggest that any 'empty wh-operator' raises to Comp from the in situ wh-phrases (as Watanabe 1991 proposes is the case in Japanese); if this were to be so, then it should also be possible for such an empty operator to raise to the +Q Comp from wh-phrases occurring in embedded tensed CPs and examples like (3) would incorrectly be predicted to be well-formed.

from their containing island environments the resulting questions are markedly less unacceptable than when the *wh*-phrases remain in situ in the islands:

(11)   ??*Sheno*$_i$ nasat Mona [*li-meno* tinti t$_i$]?
         what   forgot Mona to-whom to-give
         What did Mona forget to whom to give?

(12)   ??*Sheno*$_i$ 'urfut Mona [ilbint illi ishtarat t$_i$]?
         what   knew Mona the-girl who bought
         What did Mona know the girl who bought?

Whereas (9) and (10) are both completely unacceptable and unintelligible as questions, Ouhalla suggests the reduced acceptability of (11) and (12) is typically that of regular Subjacency violations, resulting (simply) from the illicit extraction of an element from within an island configuration. Given that (9) and (10) are significantly worse and perhaps may not be assigned any coherent interpretation it must be assumed that they are violating some constraint *other* than Subjacency.[5] If one assumes that the licensing of *wh*-phrases (checking of *wh*-features) is in some way critical for their interpretation, and adopts the suggestions made above as to how and at what derivational point such licensing/checking must occur, the difference in acceptability between (9/10) and (11/12) can actually be predicted - in the latter the *wh*-phrases move to a +Q Comp by Spell-out and so are successfully checked by this point, their interpretation as interrogative *wh*-phrases being licensed; in achieving this however, a pure constraint on movement is violated (Subjacency), resulting in the reduced acceptability judgements. In (9) and (10) by way of contrast, the *wh*-phrases do not appear in a domain where their *wh*-features can be checked by Spell-Out and so the structures will automatically crash, the *wh*-elements not being licensed as *wh*-phrases and hence not allowing for any interpretation.

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[5] Indeed, if the well-formedness requirement on *wh*-phrases were just to be that they occur raised in a +Q Comp by LF, one might expect that (9/10) should perhaps be less unacceptable than (11/12), or even fully grammatical, given that LF movement of the *wh*-phrase might be able to proceed in a way different from that in (11/12) where straight and direct extraction from an island environment has occurred. For example, LF raising might be able to make use of island-Pied Piping operations, as suggested in Nishigauchi 1990, or of the QR-dependent extraction mechanism outlined in Fiengo et al 1988. That (9/10) are actually worse than (11/12) then strongly indicates that some property of the sentences must crucially be satisfied before S-O.

Thus although the unacceptability of *wh*-phrases in situ in certain extraction islands might initially prompt one to an LF movement approach, there are good reasons for assuming that LF *wh*-movement does *not* in fact take place - both the contrasts in (9/10) and (11/12) and the unacceptability of *wh*-phrases in situ in non-island embedded tensed CPs. If this is the case, then the ungrammaticality of (9/10) with *wh*-elements in situ in *wh*- and CNP islands cannot be accounted for in terms of constraints on movement, and it must be conceded that there may also exist island-like locality constraints on purely *non-movement* (licensing) relations - a claim which has however previously been argued for by Cinque 1991 (relative to the island-sensitivity of Clitic Left Dislocation structures in Italian) and Bresnan 1976 (on Comparative Deletion), hence one that is not without independent support.[6]

Having thus argued above that strict Specifier-head locality would not appear to constitute a universal constraint on feature-checking relations on the basis of data in Iraqi Arabic (and that *wh* is a feature essentially in need of checking on *wh*-phrases rather than just on a +Q Comp), we now turn to Hindi and show that evidence of a parallel kind may also to be found in other languages, strengthening and supporting such conclusions.

2.0 Hindi

In Hindi,[7] just as in Iraqi Arabic, all *wh*-phrases may occur in situ at PF and there is no requirement that a +*wh*+Q Comp be filled by any *wh* item prior to Spell-Out, unlike English/German etc:

(13) Raam-ne   [Mohan-ko   *kise*   dekhne ke liye]   kahaa?
      Ram-erg   Mohan-erg   whom   to see for   told
      Who did Ram tell Mohan to look at?

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[6] It is likely that the *wh*-island cases involve minimality as a representational constraint on the licensing of certain interpretations - a *wh*-phrase must be bound by the first c-commanding +Q Comp; such a constraint would also seem to be operative in *wh*-questions in Chinese and Japanese for the majority of speakers. Regarding the inability of *wh*-phrases to occur in relative clauses, this may possibly relate to specificity, which can similarly block the licensing of *wh*-phrases in relative clauses in Japanese, see Nishigauchi 1990.

[7] The Hindi data here is taken from Mahajan 1990.

However, whereas *wh*-phrases may occur in situ in embedded *non-finite* CPs, as per (13) above, they may not do so in equivalent *tensed* clauses:[8]

(14)   *Raam-ne   kahaa [ki   kOn   aayaa hE]?
        Ram-erg   said   that   who   has come
        Who did Ram say has come?

Such tensed CPs nevertheless are not islands for extraction, and as with Iraqi Arabic, not only may a *wh*-phrase undergo overt raising from a tensed clause, but when this occurs in examples like (14) the result is a perfectly acceptable question-form:

(15) kOn_i Raam-ne   kahaa ki t_i aayaa hE
        who   Ram-erg   said that   has come
        Who did Ram say has come?

Therefore, as with Iraqi Arabic, one is forced to assume that although *LF* raising to the +Q Comp in (14) must be possible and would furthermore result in a configuration which is well-formed *at PF/Spell-Out*, such hypothetical raising would come too late in the derivation to satisfy certain properties of the *wh*-question. As pre-Spell-Out *movement* of the *wh*-phrase in (15) will save (14) from otherwise being unacceptable, and as a +Q C^0 in Hindi does not always require a *wh*-element in its Specifier position (hence cannot be taken to be generated with strong *wh*-operator features), it can again only be concluded that *wh*-raising in (15) takes place to check *wh*-features carried by the *wh*-phrase itself prior to Spell-Out. If *wh*-phrases in Hindi must therefore be feature-checked by S-O, where other *wh*-phrases are seen to occur quite licitly in situ (as in (13)), these wh-phrases must be assumed to be licensed and feature-checked in their *in situ* positions and consequently not in any strict Spec-head relation with the checking head C^0. Feature-checking is then once more attested to be possible 'long-distance', though again constrained by tense factors and blocked where a *wh*-phrase occurs in situ in a tense domain which does not contain the +Q Comp (14).

We also find evidence in Hindi similar to that presented in Iraqi Arabic that *all wh-*

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[8] Unless there is a *'kyaa'* question-particle in the superordinate clause, such an alternate question-formation strategy also occurring in Iraqi Arabic - see section 4 for discussion.

As the real *wh*-phrase raises to a position *lower* than the +Q Comp which represents its interrogative scope, such structures have been referred to as 'Partial (*Wh*-)Movement' constructions.

The essential problem that Partial Movement (PM) poses for standard checking theory (as per Chomsky 1995) is as follows. If movement of a *wh*-phrase is triggered by a need to check *wh*-features, and if every application of movement must result in a feature-checking relation being established, then *partial* movement of a *wh*-phrase should also result in the checking of *wh*-features carried by the *wh*-phrase. However, in PM structures such as (20) the *wh*-phrase critically undergoes raising to a -Q Comp, a position in which its *wh*-features cannot be checked if the strict locality condition on feature-checking is assumed - it should only be possible for the *wh*-phrase to check its *wh*-features in the Spec of the higher +Q Comp.

Considering the phenomenon further, (21) shows that partial movement of a *wh*-phrase is *obligatory* in the presence of a *wh*-expletive. This contrasts with the behaviour of secondary *wh*-phrases in multiple *wh*-questions which are not only free to remain *in situ* (22), but crucially may *not* undergo any partial movement raising (23):

21) *Was glaubst du [dass Hans wen gesehen hat]?
     what believe you that Hans whom seen has
     intended: Who do you think that Hans has seen?

22) Wer glaubt [dass du wen gesehen hast]?
     who believes that you whom seen have
     Who thinks you saw who?

23) *Wer glaubt [wen_i du t_i gesehen hast]?
     who believes whom you seen have
     intended: Who thinks you saw who?

Such a pattern argues strongly against any suggested attempt to motivate the PM of a *wh*-phrase in terms of the checking of non-*wh* features. Supposing movement of the *wh*-phrase in (20) might in fact be ascribed to non-*wh* features which plausibly could be present on the -Q Comp - perhaps *focus,* or other D-features associated with V2 (as proposed in Fanselow & Mahajan 1996), then clearly such structures would *not* present any difficulty for Checking

Theory, as the *wh*-phrase would occur in a standard Spec-head checking relation with the relevant functional head. Such a position is however basically untenable in the face of (21-23); if focus or other C-related D-features may be present and trigger raising of a *wh*-phrase in the embedded clause in (20), then parallel raising of the secondary *wh*-phrase should be possible for the same reasons in (23), yet sentences such as (23) are consistently judged to be completely unacceptable. Furthermore, if examples like (22) with a *wh*-phrase in situ in the lower CP indicate that an embedded -Q C *need* not carry any focus features triggering *wh*-raising (or its V2-D-features might be satisfied by simple insertion of an overt complemetizer dass), then it should *always* be possible for a *wh*-phrase to remain in situ in an embedded non-interrogative clause if the focus/D-features of C are absent or otherwise satisfied by dass. Nevertheless, sentences such as (21) where a *wh*-phrase remains in situ in the lower CP and a *wh*-expletive occurs in the higher +Q Comp are fully ungrammatical. Consequently it would not seem possible to attribute partial *wh*-movement to the checking of any non-*wh* features assumed present on a -Q Comp, and all attempts to analyze PM as relating solely to potential checking requirements of an embedded -Q Comp critically miss the important generalization that PM is obligatory where a *wh*-expletive occurs in the higher +Q Comp but not permitted where a substantive *wh*-phrase occupies this position, hence that it is the nature of the *wh*-element filling the higher +*Q Comp* which is directly responsible for the occurrence of Partial Movement.

Examples (24) and (25) illustrate another significant property of PM constructions. Not only is it necessary for a *wh*-phrase to raise to the -Q Comp of an embedded clause in the presence of a *wh*-expletive in the +Q Comp, PM of the real *wh*-phrase must target a particular -Q Comp - that of the tensed CP *immediately* below the CP containing the +Q Comp. While (25) where PM has indeed occurred to such a position is found to be fully acceptable, (24) with *wh*-raising only as far as the Comp of the lowest clause is ill-formed and ungrammatical:

24) *Was glaubst du [dass Hans meint [mit wem$_i$ Jakob t$_i$ gesprochen hat]]?
what believe you that Hans thinks with whom Jakob spoken has
intended: Who do you believe Hans thinks Jakob spoke to?

25)   **Was** glaubst du [**mit wem**$_i$ Hans meint [t$_i$ dass Jakob t$_i$ gesprochen hat]]?
       what believe you with whom Hans thinks that Jakob spoken has
       Who do you believe Hans thinks Jakob spoke to?

What the contrast in (24/25) then shows is that PM must bring a *wh*-phrase into a certain proximity with the +Q Comp (occupied by the *wh*-expletive), hence that PM ultimately is oriented towards the +Q Comp and does not take place to satisfy properties of clauses lower than that headed by the +Q C. Furthermore, this movement must necessarily take place prior to Spell-Out; in (24) there is nothing to block *LF* movement of the *wh*-phrase raising it to the position it occupies in (25) (or indeed to the matrix) given that overt movement is seen to be possible in (25). The paradigm thus recalls that discussed in sections 1.0 and 2.0, where it was suggested that the ill-formedness of *wh*-phrases in certain embedded tensed CPs in IA/Hindi could not be attributed to the impossibility of LF extraction from such environments, and overt pre-Spell-Out movement was argued to be necessary to satisfy *wh*-checking requirements prior to PF. Here again, if locality constraints on operations of movement are taken to apply uniformly throughout a derivation, the unacceptability of (24) cannot be attributed to any LF movement being blocked by Tense, Tense not barring raising earlier in the derivation; rather it would seem that a feature-checking requirement must be satisfied via movement of the *wh*-phrase to an appropriate position occurring *prior* to Spell-Out.[11]

In sum then, PM/*wh*-expletive structures have the following relevant properties: a) where a *wh*-expletive occurs in a +Q Comp obligatory movement is triggered in a lower clause, b) only the movement of a *wh*-phrase (and not a non-*wh* XP) will render a *wh*-expletive structure acceptable, c) *wh*-phrases may not ordinarily undergo movement to a -Q Comp in the absence of a *wh*-expletive, and d) this movement of the *wh*-phrase must take

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[11] That PM must occur prior to Spell-Out argues against an otherwise interesting analysis of such structures developed in Horvath 1996 (for Hungarian), involving LF clausal replacement of the *wh*-expletive in the +Q Comp. There it is suggested that PM of the *wh*-phrase to the (-Q) Comp of a lower CP results in *wh*-feature percolation to the CP node, this allowing subsequent Pied Piping of the whole *wh*-CP to the *wh*-expletive at LF. However, if expletive-associate replacement need only take place at LF, there seems to be no reason why PM of the real *wh*-phrase should be forced to occur prior to Spell-Out; such movement should both be possible at LF, and indeed be forced to delay until this point due to economy reasons (i.e. Procrastinate).

place prior to Spell-Out and must bring it into a certain proximity with the +Q Comp. Putting such properties together it is apparent that some form of licensing relation obtaining between a +Q Comp and a wh-phrase must be satisfied by Spell-Out; given that (obligatory) movement is involved and that the necessary licensing involves the pairing of a +Q Comp and an element with a wh specification, the only conclusion it seems possible to draw is that a wh-feature checking relation must result from PM. Adding in property d), that this checking relation must be satisfied prior to Spell-Out, then finally brings one to the same general conclusion as earlier made on the basis of wh-question patterns in IA/Hindi, namely that (wh)feature-checking relations are *not* always subject to Chomsky's strict Spec-head locality constraint. Here the wh-phrase in PM constructions clearly does not occur in the Spec of the licensing/checking +Q C head at the derivational point by which wh-feature-checking must indeed have been effected (i.e. Spell-Out), and the wh-checking relation must consequently be taken to be satisfied within a wider notion of locality (though one that is still subject and sensitive to tense factors, vis the contrast in (24/25)).[12]

4.0   Wh-expletives in Iraqi Arabic and Hindi

We now return to Iraqi Arabic and Hindi and consider an alternative wh-question strategy to that examined in sections 1.0 and 2.0 based on the use of wh-expletives, such a strategy bearing an interesting ressemblance to the German PM question types above. Although it has been suggested in the literature that wh-expletive questions of both IA/Hindi and German/Hungarian types involve some form of LF clausal raising (e.g. Mahajan 1990 on Hindi, Horvath 1996 on Hungarian), essentially bringing the wh-phrase within its containing clause to a position within the strict checking domain of the associated +Q Comp, once again we will argue that these structures can only be analyzed as instances of 'non-local' (wh) feature-checking, and suggest that the wh-expletive may function to alter and extend the wh-checking domain of a +Q C.

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[12] For reasons of space we do not attempt to present a full analysis of PM constructions here, the interested reader is referred to Simpson 1995a for more detailed discussion.

In sections 1.0 and 2.0 it was shown that *wh*-phrases in IA and Hindi may not occur in non-interrogative embedded tensed CPs, and that pre-Spell-Out *wh*-raising to the TD of a higher +Q Comp is forced to take place to license such structures:

(3)   *Mona   tsawwarat   [$_{CP}$Ali ishtara **sheno**]
       Mona   thought   Ali   bought what
      Intended: What did Mona think that Ali bought?

(4)   **Sheno**$_i$ tsawwarit   Mona [$_{CP}$Ali ishtara **t**$_i$]?
       what   thought   Mona Ali   bought
      What did Mona think Ali bought?

(14)   *Raam-ne   kahaa [ki   **kOn** aayaa **hE**]?
       Ram-erg   said   that   who   has come
      Who did Ram say has come?

(15)   **kOn**$_i$ Raam-ne   kahaa [ki   **t**$_i$ aayaa **hE**]?
       who Ram-erg   said   that   has come
      Who did Ram say has come?

In addition to movement however there is another way (resulting from a different numeration) in which the meanings of (4) and (15) may grammatically be expressed. If a *wh*-expletive element occurs in the higher clause, the *wh*-phrase can in fact licitly remain in situ in the lower tensed CP. In both IA and Hindi the *wh*-expletive derives from the word for 'what' in the language, this paralleling the similar source of *wh*-expletives in German and Hungarian (in IA the *wh*-expletive either occurs as *sheno* in front of the subject, or pre-verbally reduced to *sh*-):

26)   sh-tsawwarat   Mona [$_{CP}$Ali ishtara **sheno**]
      WHAT thought   Mona Ali   bought what
      What did Mona think that Ali bought?

27)   Raam-ne   **kyaa**   kahaa [$_{CP}$ki **kOn** aayaa **hE**]?
      Ram-erg   WHAT   said   that who has come
      Who did Ram say has come?

The additional licensing effect induced by the presence of the *wh*-expletive is however not

unrestricted; a *wh*-phrase must occur in the tense domain immediately adjacent to and dominated by that containing the +Q Comp and the *wh*-expletive in order to be licensed. While this restriction is satisfied in (26/27) above, in (28) and (29) the TD immediately dominated by that of the +Q Comp/*wh*-expletive is CP2, and as the *wh*-phrase does not occur in this TD but in a still lower TD (CP3), the structures are ill-formed:

28)   *[$_{CP1}$raam-ne **kyaa** socaa [$_{CP2}$ki ravii-ne kahaa [$_{CP3}$ki **kOn saa aadmii** aayaa thaa]]]?
        Ram-erg WHAT thought that Ravi-erg said that which man came
        intended: Which man did Ram think that Ravi said came?

29)   *[$_{CP1}$**sh-i'tiqdit** Mona [$_{CP2}$Ahmed tsawwar [$_{CP3}$Ali sa'ad **meno**]]]?
        WHAT-believed Mona Ahmed thought Ali helped who
        intended: Who did Mona believe Ahmed thought Ali helped?

Movement of the *wh*-phrase to the TD adjacent to that containing the +Q C/*wh*-expletive is then necessary to render the sentences acceptable:

30)   [$_{CP1}$raam-ne **kyaa** socaa [$_{CP2}$ki **kOn saa aadmii**$_i$ ravii-ne kahaa [$_{CP3}$ki t$_i$aayaa thaa]]]?
        Ram-erg WHAT thought that which man Ravi-erg said that came
        Which man did Ram think that Ravi said came?

It should also be noted that *all* *wh*-phrases which occur base-generated in a TD not immediately adjacent to the TD containing the +Q Comp and the *wh*-expletive must be raised into such a domain, hence (31) is unacceptable due to the occurrence of the *wh*-phrase kis-ko in CP3 and raising of this element to CP2 in (32) immediately restores grammaticality:

31)   *[$_{CP1}$raam-ne **kyaa** socaa [$_{CP2}$ki **kOn**$_i$ ravii-ne kahaa [$_{CP3}$ki t$_i$ **kis-ko** maaregaa]]]?
        Ram-erg WHAT thought that who Ravi-erg said that whom will-hit
        intended: Who did Ram think that Ravi said will hit who?

32)   [$_{CP1}$raam-ne **kyaa** socaa [$_{CP2}$ki **kOn**$_i$ **kis-ko**$_k$ ravii-ne kahaa [$_{CP3}$ki t$_i$ t$_k$ maaregaa]]]?
        Ram-erg WHAT thought that who whom Ravi-erg said that will-hit
        Who did Ram think that Ravi said will hit who?

Although sentences of the type in (28) (and (29)) may indeed be saved via movement of the

wh-phrase to the TD adjacent to that of the +Q Comp and *wh*-expletive, the basic form of (28) is also found to be acceptable if a second *wh*-expletive is present in the numeration and occurs in the TD intervening between the matrix and the lowest TD occupied by the *wh*-phrase:

33)   [$_{CP1}$raam-ne **kyaa** socaa [$_{CP2}$ki ravii-ne **kyaa** kahaa [$_{CP3}$ki **kOn** aayaa thaa]]]?
       Ram-erg   WHAT thought that Ravi-erg WHAT said that who came
       Who did Ram think that Ravi said came?

The data here seems to show strong parallels to that found in PM structures. In both German and IA/Hindi *wh*-expletive questions a *wh*-phrase is forced to occur in some tense-defined local relation to the +Q Comp and the *wh*-expletive - in both types of language the *wh*-phrase may not occur in a tensed CP separated from the tensed clause containing the +Q Comp/*wh*-expletive by another intervening tensed CP, so German (24) is in this sense directly parallel to Hindi (28). It is then found that movement of the *wh*-phrase to the intermediate tensed CP will save the structures in both language types, with German (25) being equivalent to Hindi (30). We have further noted above in (33) that the addition of a second *wh*-expletive in Hindi provides an alternative method to render sentences such as (28) grammatical, and this same patterning can also be found in German - the basic structure of (24) is acceptable if a second *wh*-expletive occurs in the Comp of the intermediate tensed CP:

34)   **Was** glaubst du [**was** Hans meint [**mit wem**$_i$ Jakob t$_i$ gesprochen hat]]?
       what believe you what Hans thinks with whom Jakob spoken has
       Who do you believe Hans thinks Jakob spoke to?

Such similarities have not surprizingly led to similar analyses being proposed (independently) for Hindi/IA-type languages and languages with Partial Movement. One particular type of analysis pursued in Horvath 1996 for PM structures in Hungarian and in Mahajan 1990 for *wh*-expletive questions in Hindi suggests that the clause containing the real *wh*-phrase must raise to the *wh*-expletive and the +Q Comp at LF in a process of expletive-associate CP

replacement.[13]   In such analyses the *wh*-phrase is effectively brought into the strict checking domain of the +Q Comp at LF (i.e. its Spec position)[14] and checking of *wh*-features between the *wh*-phrase and the +Q Comp will consequently comply with Chomsky's notion of strict locality. Here we will suggest however that there are simple reasons why an LF clausal Pied Piping Hypothesis cannot in fact be maintained and that what Hindi/IA and PM languages have in common is not any CP-associate-expletive replacement operation but rather the extension of a checking domain via the use of (*wh*-)expletive elements.

Effectively there are two main arguments which militate against *any* form of LF raising approach, i.e. not only analyses of clausal-replacement but also the possibility that a *wh*-phrase raises *directly* to the +Q Comp without any pied piping of the CP it occurs in. The first of these relates to our consideration in sections 1.0 and 2.0 of the licensing conditions on *wh*-phrases in IA/Hindi in non-*wh*-expletive questions. There it was argued at length that the patterning of *wh*-elements observed may only receive coherent explanation if it is assumed that *wh*-phrases in IA/Hindi critically (all) require (*wh*-)feature-checking *prior* to Spell-Out/PF. Given that the data reviewed provided clear indication that the *wh*-feature-checking requirement did indeed relate to *wh*-features on *wh*-phrases themselves (and not to any possibly strong *wh*-features on the +Q Comp), it is reasonable to presume that this licensing specification remains a constant (lexically-encoded) property of *wh*-phrases in *all* the syntactic environments such elements are found, hence that *wh*-features carried by *wh*-phrases require feature-checking prior to Spell-Out also in *wh*-expletive questions.   This being so, any

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[13] Srivastav 1994 (on Hindi) also suggests that the CP containing the *wh*-phrase replaces the *wh*-expletive, but takes this to be a semantic rather than a syntactic operation.

[14] As briefly indicated in footnote 11, in Horvath 1996 it is suggested that the *wh*-features of the partially-moved *wh*-phrase are percolated to the CP node and will therefore be visible in the Spec of the +Q Comp when the CP is raised to this position. Minor modifications to the account in Mahajan 1990 can also be proposed to give the same essential result. The mechanics of Horvath's analysis for PM in Hungarian in fact might seem to be more plausible for languages such as Hindi rather than Hungarian or German - as remarked on in footnote 11, if clausal pied piping need only occur at LF, there is no obvious reason why the PM assumed to be necessary for *wh*-feature percolation to the CP should be forced to take place *prior* to Spell-Out. In Hindi and IA by way of contrast there is no overt PM in sentences such as (26/27); it may then be suggested that the *wh*-phrase raises to SpecCP of its containing clause at LF, percolating its *wh*-features to the CP node and thereby triggers movement of the whole CP to the Spec of the +Q Comp. However below it will be argued that there are in fact a number of reasons to reject a clausal pied piping analysis also for Hindi and IA.

movement necessary for the licensing of *wh*-features on *wh*-phrases should obviously be forced to take place *overtly* and not at LF (either via clausal pied piping or direct extraction) - i.e. any type of *LF* movement would simply occur too late in the derivation to satisfy pre-Spell-Out checking.

The second argument is underlyingly similar in nature and relates to the contrast observed in examples such as (27), (28) and (30) repeated below:

27) Raam-ne   **kyaa**   kahaa [$_{CP}$ki **kOn** aayaa hE]?
     Ram-erg   WHAT   said   that   who   has come
     Who did Ram say has come?

28) *[$_{CP1}$raam-ne **kyaa** socaa [$_{CP2}$ki ravii-ne kahaa [$_{CP3}$ki **kOn saa aadmii** aayaa thaa]]]?
     Ram-erg   WHAT thought that Ravi-erg said that which man   came
     intended: Which man did Ram think that Ravi said came?

30) [$_{CP1}$raam-ne **kyaa** socaa [$_{CP2}$ki **kOn saa aadmii**$_i$ ravii-ne kahaa [$_{CP3}$ki t$_i$ aayaa thaa]]]?
     Ram-erg   WHAT thought that which man   Ravi-erg said that came
     Which man did Ram think that Ravi said came?

Supposing one were to suggest (despite the arguments above) that *wh*-features on *wh*-phrases need only be checked by *LF* and that this is furthermore effected via a process of clausal pied piping, if one then attempts to account for the contrast between (27) and (28) by proposing that LF movement of a CP to a *wh*-expletive/a +Q Comp critically requires that a *wh*-phrase occur *immediately within* that tensed CP as in (27) and not in a lower tensed CP as in (28), a serious problem immediately arises when (30) is taken into consideration. Essentially it should be possible for the *wh*-phrase in (28) to raise to CP2 (and the position occupied by kOn saa aadmii in (30)) *at LF* itself and thereby give rise to the necessary input configuration for the CP-raising which would also occur at this level. As (30) shows, tensed CPs do not block overt movement of *wh*-phrases, and assuming as before that locality constraints on movement apply uniformly throughout the derivation, this should allow for a purely *LF* sequence consisting of movement of the *wh*-phrase to CP2 (first), followed by raising of the CP to the *wh*-expletive/the +Q Comp, yet (28) is noted to be fully unacceptable. That movement of the *wh*-phrase is actually forced to occur *prior* to Spell-Out (as in (30)) and may not be delayed until LF (though syntactically not blocked here) would then seem to strongly

indicate that licensing of the *wh*-phrase must indeed be effected via this movement prior to Spell-Out/PF, hence that the *wh*-features carried by *wh*-phrases must be checked before Spell-Out also in *wh*-expletive questions, as we have suggested above.[15]

A consequence of the above conclusion is clearly that the *wh*-phrases in (27) and (30) must be (*wh*-)feature-checked in the positions in which they are seen to occur at PF and *not* in the Spec of a +Q Comp after hypothetical clausal pied piping at LF. We now reflect on what role the *wh*-expletive might actually play in licensing such structures prior to S-O. In sections 1.0 and 2.0 it was suggested that the *wh*-checking domain of a +Q C in IA/Hindi in fact corresponds to its (immediate) Tense Domain and is not restricted to its Specifier or head-adjoined positions, contra general assumptions in Chomsky 1993/95; considering a wider range of languages, in Simpson 1995b it is further proposed that the *wh*-checking domain of a +Q Comp is subject to cross-linguistic parametric variation and may take on a number of different values. Here in *wh*-expletive questions, if pre-Spell-Out checking of *wh*-features is assumed, the checking relation between a *wh*-phrase and the +Q Comp is effected within a wider notion of locality than in non-expletive *wh*-questions, being possible between a +Q C and a *wh*-phrase in the adjacent tense domain. We therefore suggest that the effect and function of the *wh*-expletive is indeed to alter and extend the checking domain of the +Q Comp, increasing it to include the adjacent TD, that just as the *wh*-checking domain of a +Q C may ultimately take on different values across different languages, so too within a single language the *wh*-checking locality may be altered to a different value via the use of such an expletive type element.

Considering examples (27/28/30) again, if a *wh*-phrase is base-generated within the 'extended' *wh*-checking domain of the +Q Comp where a *wh*-expletive is used as in (27), the *wh*-phrase may be licensed in its in situ position; where however a *wh*-phrase is base-generated outside of this locality as in (28), it will be forced to raise overtly into the TD adjacent to that containing the *wh*-expletive and the +Q Comp for *wh*-checking prior to Spell-

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[15] A third more general argument against LF-CP raising may be added if one adopts Chomsky's 1995 suggestion that LF movement in fact involves only pure feature-attraction; if Pied Piping of lexical material containing morphological features is essentially only forced for reasons of PF convergence and features may raise without any lexical host at LF, then clearly no large scale constituent raising should accompany instances of LF *wh*-feature attraction.

Out (30). Alternatively if a second *wh*-expletive occurs as in (33), this will extend the *wh*-checking domain of the +Q C further to include the TD adjacent to and dominated by the TD occupied by this second expletive, with the result that the *wh*-phrase may be licensed in its in situ position and movement to a higher TD need not take place. An essentially parallel account can be offered for the PM data in section 3.0. Contrasts such as those between (24) and (25) were there suggested to indicate that the *wh*-phrase must raise to establish a *wh*-feature-checking with the +Q Comp prior to Spell-Out; such 'partial movement' may then be taken to be necessary to bring the *wh*-phrase into a certain local relation with the +Q C, with raising to the SpecCP position of a lower clause arguably making it (minimally) visible in the higher clause containing the +Q Comp, just as raising to an intermediate SpecCP position of a *wh*-phrase containing an anaphor may make the latter visible for binding in an immediately higher clause, e.g.:[16]

35) John$_k$ wondered [$_{CP}$[which pictures of himself$_k$]$_i$ Mary had thrown away t$_i$]

Where a second *wh*-expletive occurs as in (34), the locality within which a *wh*-checking relation between the *wh*-phrase and the +Q C can be effected is extended further, and raising of the *wh*-phrase need only target the Comp of its own clause rather than that of of the intermediate CP, this paralleling the extension of the *wh*-checking locality in Hindi (33).

So, to briefly summarize sections 3.0 and 4.0, we have noted that *wh*-phrases in *wh*-expletive questions in IA/Hindi and German display a patterning quite different from that found in non-expletive questions, with *wh*-phrases in IA/Hindi being licensed in embedded non-interrogative clauses and *wh*-phrases in German not being forced to raise directly to a +Q Comp, in both cases then effectively a (partial) relaxation of the locality relation between a *wh*-phrase and its associated +Q C. In both types of language it was also argued that the *wh*-feature checking relation between a *wh*-phrase and the +Q Comp needed to be established *prior* to Spell-Out/PF; given that the *wh*-phrase however does not occur raised to the Specifier

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[16] Alternatively one can suggest that raising to SpecCP brings the *wh*-phrase to a position minimally external to TP and the tense specifiaction of a lower clause, hence out of some lower tense domain and into a higher one.

of the +Q Comp by Spell-Out in such structures, we therefore again concluded that a *wh*-feature checking relation may indeed be 'non-local' in the sense of not complying with Chomsky's strict Spec-head locality conditions on feature-checking. Finally, differences in the locality assumed to constrain *wh*-feature-checking relations in expletive and non-expletive questions in IA/Hindi and German were suggested to relate to the possibility for an expletive element to induce and select a different locality value for the checking domain of a +Q Comp, this reflecting in part more general proposals that the *wh*-checking domain of a +Q C may cross-linguistically take on different values.

5.0   Concluding Remarks

In Chomsky's 1993 'A Minimalist Program for Linguistic Theory.' the proposal is made that grammatical relations should all be taken to be highly local in nature; syntactic movement is then suggested to be a direct reflex of strict and universal locality conditions constraining the licensing of certain dependencies, with UG permitting only two possible configurations for the licensing or 'checking' of morphological features shared by functional heads and associated XP/X^0 elements - the Spec-head configuration for XPs and head-adjunction structures for X^0 heads. Stemming fundamentally from a drive to encode maximal simplicity in the design of a linguistic model rather than being necessarily forced by heavily data-driven arguments or any immediate inadequacies (in terms of data coverage) of the preceding GB model (i.e. with case-licensing of objects in complement-of-V/P as opposed to Spec positions), such suggestions remain programmatic and clearly should be subjected to linguistic testing. A principal aim of this paper has been to suggest that there is in fact a variety of empirical data and evidence arguing against the hypothesis that the licensing of XPs with morphological features may only be effected in the Specifier position of an associated checking head. Considering the distribution of *wh*-elements in Iraqi Arabic, Hindi and Partial Movement structures in German, it was argued that the patterning observed appears incompatible with the set of assumptions laid out in Chomsky 1993/95 and instead requires a different approach. We suggested both that all *wh*-phrases carry *wh*-features in need of checking in IA/Hindi and that *wh*-phrases may be feature-checked in *any* position within the tense domain of a +Q

Comp, hence that the TD of a +Q Comp effectively is its (*wh-*)checking domain. Taking this notion of a *wh*-checking domain then not to be universally fixed in its locality value but essentially subject to potential cross-linguistic variation, an examination of *wh*-expletive questions in sections 3.0 and 4.0 resulted in the further proposal that the checking domain of a functional head may actually be altered within a single language and possibly extended with the use of expletive elements.

Such suggestions based on *wh*-paradigms clearly give rise to a number of questions concerning feature-checking relations in non-*wh* dependencies. If the evidence presented has indicated that feature-checking cannot be *universally* constrained by the strict locality assumed in Chomsky 1993/95 and may in fact relate elements occurring in wider domains without any movement to the checking head, it may be possible to suggest that 'non-local' checking also obtains in other non-*wh* dependencies, as for example where argument DPs and inflected verbs are checked by Agr/T heads. If *overt* movement of the relevant DP/verb is not observed to occur, one might attempt to propose that here again the X^0/XP is checked in situ and 'non-locally', parallel to the case of *wh*-phrases occurring base-generated in the tense domain of a +Q Comp in IA/Hindi. Pursuing such an approach to its extreme may then theoretically allow one to suggest that no movement at all takes place after Spell-Out, that all feature-checking in fact occurs in the overt syntax (often 'non-locally' in broader checking domains), and consequently that Spell-Out may actually be fully isomorphic with LF, the structures created by such a point being the essential *syntactic* input forms to interpretation (the effects of QR might then be attributed to purely semantic operations, e.g. Cooper Storage). Whether and to what extent it may be realistically possible to attempt to maintain such a view is clearly a matter for debate and further investigation; however, once it is conceded that relations of feature-checking are not *universally* constrained by a notion of rigid and strict locality, the absolute need for covert movement operations to comply with such constraints is ultimately no longer forced in the theory.

References

Bresnan, J. (1976). Evidence for a Theory of Unbounded Transformations. <u>Linguistic Analysis</u>. Vol **2** no.4

Chomsky, N. (1993). <u>A Minimalist Program for Linguistic Theory</u>. MIT Occasional Papers in Linguistics No.1

Chomsky, N. (1995). <u>The Minimalist Program</u>. MIT Press, Cambridge, MA

Cinque, G. (1991). <u>Types of A'-Dependencies</u>. MIT Press, Cambridge

Fanselow, G. & A. Mahajan. (1996) Partial Movement in German and Hindi. GLOW Talk, Athens.

Fiengo, R, Huang, C.-T.J, Lasnik, H, Reinhart, T. (1988). The Syntax of *Wh*-in-Situ. <u>WCCFL Proceedings</u>. **7**: 81-98

Horvath, J. (to appear) *Wh*-expletives and Partial Movement

Huang, C.-T.J. (1982). Logical Relations in Chinese and the Theory of Grammar. Ph.D thesis, MIT.

Mahajan, A. (1990). The A/A-bar Distinction and Movement Theory. PhD thesis, MIT

McDaniel, D. (1986). Partial and Multiple *Wh*-Movement. <u>Natural Language and Linguistic Theory</u>. **7**:565-604

Nishigauchi, T. (1990). <u>Quantification in the Theory of Grammar</u>. Dordrecht, Kluwer.

Ouhalla, J. (1994). Remarks on the Binding Properties of *Wh*-in-Situ. ms, Queen Mary and Westfield College, London.

Simpson, A. (1995a) Partial *Wh*-movement and the Locality of Feature Checking. in: <u>SOAS Working Papers in Linguistics</u> **5**:211-231 ed: S.Jensen

Simpson, A. (1995b). *Wh*-Movement, Licensing and the Locality of Feature-Checking. Ph.D. thesis, SOAS, University of London

Srivastav, Vaneeta. (1994). Scope marking as indirect *Wh*-dependency. <u>Natural Language Semantics</u> **7**:137-170

Wahba, W.A-F.B. (1991). LF movement in Iraqi Arabic. <u>Logical structure and linguistic structure</u>, eds. Huang, C.-T.J. and R. May:253-276, Kluwer

Watanabe, A. (1991). Wh-in-situ, Subjacency, and Chain Formation. ms. MIT