16 Conditionals

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1 Introduction

This chapter provides a survey of the major issues in the syntax of conditionals. We present and critically evaluate the findings in the literature pertaining to conditional structures. We furthermore advance a particular view, not articulated in its entirety before, namely that conditional clauses (e.g., *if*-clauses) are essentially free relatives of possible worlds. Similarly to the more familiar instances of free relatives of individuals, (i) conditional clauses likely involve clause-internal operator-movement to Spec, CP; (ii) they receive the interpretation of definite descriptions; and (iii) they may participate in correlative structures, as happens in the subcase of conditionals with the proform *then*.

Conditional structures involve an adverbial clause, often referred to as the conditional clause, antecedent or protasis (the underlined constituent in (1)), and a main clause, known as the consequent or apodosis. Conditional structures are interpreted, in general terms, with the proposition expressed by the antecedent clause specifying the (modal) circumstances in which the proposition expressed by the main clause is true. Thus, (1) states that the possible worlds/situations in which Andrea arrives late (the denotation of the conditional clause) are possible worlds/situations in which Clara gets upset (the denotation of the main clause).

(1) If Andrea arrives late, Clara will get upset.

Conditionals as in (1) are known as hypothetical conditionals. They are the most common kind of conditional structures discussed in the literature, and consequently, our contribution will mostly focus on them.

Other types of conditionals exist as well, notably relevance conditionals, as illustrated in (2a), and factual conditionals (cf. Iatridou 1991; also called premise-conditionals in Haegeman 2003), as in (2b):

(2) a. If you are thirsty, there is beer in the fridge.
b. If Fred is (indeed) so smart, why didn't he get the job?

In the case of relevance conditionals, clearly the antecedent does not specify the circumstances in which the proposition expressed by the consequent is true, as the latter is, in fact, asserted to be true (in the world of evaluation). Rather, the possible worlds/situations in which the proposition expressed by the antecedent is true are possible worlds/situations in which it is relevant, from the perspective of the speech act, that the proposition expressed by the consequent clause is true. It is as if in a relevance conditional, there is an implicit performative clause embedding the surface main clause, and this performative is the true consequent in a (hypothetical) conditional structure (*If you are thirsty, then* it is relevant for you to know *that there is beer in the fridge*).[1]

Factual conditionals are somewhat harder to distinguish from hypothetical conditionals. According to Iatridou (1991), the conditional clause in a factual

conditional is presupposed to be true. Haegeman (2003) notes that while in a hypothetical conditional the antecedent clause is integrated into the speech act of the matrix clause, the antecedent in a factual conditional has an independent illocutionary force.

We note some facts about the syntax of relevance and factual conditionals in section 5, but we remain primarily concerned with hypothetical conditionals in this introduction.

Conditionals are not unique in their overall structure; rather conditional clauses belong to a class of adverbial clauses that includes, among others, clausal adverbials of time, cause, and concession, as illustrated in (3):[2]

(3) a. If Andrea arrived late, Clara must have gotten upset.
b. When Andrea arrived late, Clara got upset.
c. Because Andrea arrived late, Clara got upset.
d. Although Andrea arrived on time, Clara got upset.

Like the other clausal adverbials, conditional clauses are typically introduced by a CP-related element, a complementizer or an operator in Spec, CP (cf. *if*, *when*, *because*, *although* in (3) above). And like the other adverbial clauses, conditional clauses may precede or follow the main clause. Historically, and typologically, clausal adverbials are related, though of course, in individual languages they may have undergone distinct development and as a result diverged from each other. For instance, in English, conditionals allow the presence of a proform in the main clause 'linked' to the adverbial clause (i.e., *then*), and concessives do too (i.e., *still*, *nevertheless*). However, *because*-clauses disallow such proforms, and *when*-clauses allow them only marginally (cf. (4)):

(4) a. If Andrea arrived late, then Clara must have gotten upset.
b. When Andrea arrived late, (*/??then) Clara got upset (??then).
c. Because Andrea arrived late, (*for that reason) Clara got upset (*for that reason).
d. Although Andrea arrived on time, (still/nevertheless) Clara (still/nevertheless) got upset.

In this chapter, we discuss both the internal and external syntax of conditional clauses: the structure of the adverbial CP and the way it is merged to the matrix clause. We draw some, though not extensive, parallels with the other kinds of adverbial clauses, and suggest a direction for their analysis in a uniform manner.

A caveat regarding the scope of our presentation is in order: here we only discuss in detail issues having to do with the syntax of conditionals. Some reference to their semantics is made, when necessary for the exposition, but it is not put in formal terms, and is not claimed to be in any way exhaustive. There is a vast philosophical literature on the topic of conditional reasoning and logic, and also a growing number of formal semantic analyses of conditionals in natural

language, to which we could not do a proper justice even in references (still, see Harper et al. 1981; Jackson 1991; among many others).

2 Defining conditionals

2.1 What is a conditional?

Before we begin, we have to clarify the basis on which we decide whether a particular sentence is a conditional or not. Above, we have defined conditionals as structures involving an adverbial clause interpreted as stating the conditions under which the proposition expressed by the main clause is true (or its truth is relevant, as in the case of relevance conditionals). Surely there are other syntactic ways to convey a conditional meaning. The following examples illustrate just such cases:

(5) a. Kiss my dog and you'll get fleas.
b. For you to do that would be nice.

Sentence (5a) is interpreted along the lines of *If you kiss my dog you'll get fleas*; similarly sentence (5b) receives a conditional interpretation such as *It would be nice if you do that*. Cases like these are not some peculiarity of English. In a number of languages a structure involving an imperative clause conjoined with a non-past indicative clause receives a conditional interpretation: the imperative clause is interpreted as the antecedent clause of a conditional, and the indicative clause in the coordination is interpreted as the consequent (cf. Clark 1993; Han 2000; among others). This structure-to-meaning mapping appears to be compositional, given that the coordinating conjunction *or* has the semantic import of the coordinating conjunction *and* plus negation of the proposition expressed by the imperative clause. In other words, whereas (6a), with *and* as the coordinator, is interpreted as *if* p, q (where p and q are the propositions denoted by the imperative and indicative clauses, respectively), (6b), with *or* as the coordinator, is interpreted as *if* $\neg$ p, q. The facts of (6) are furthermore cross-linguistically attested:

(6) a. Kiss my dog and you'll get fleas.
p *and* $q \rightarrow$ *if* p, q
b. Kiss my dog or you'll get fleas.
p *or* $q \rightarrow$ *if* $\neg$ p, q

Turning to (5b), here the relevant facts in deriving the conditional interpretation are the non-finiteness of the sentential subject, and the mood morphology in the main clause. In many languages a specialized mood, often called conditional mood, is employed in such cases.[3] Again, as in the case of the conjoined imperative, the two clauses involved in (5b) correspond systematically to the antecedent and consequent of a conditional: the non-finite sentential subject is interpreted as

the antecedent, and the main clause is interpreted as the consequent of a conditional. (See Pesetsky 1995 for a discussion of such structures.)

Do the regularities characterizing the structure-to-interpretation mapping in sentences such as the ones in (5) and their cross-linguistic availability justify considering these to be conditionals? We believe that comprehensive discussions of conditionality should include an investigation of cases such as these. The term 'conditional' in its strict sense, however, is being used in the literature only to refer to constructions involving an *adverbial* clause merged to a particular position in a main clause. We follow this convention here and discuss further only such adverbial structures, partly for reasons of space, partly because the literature has been almost exclusively devoted to the adverbial structures, but partly also because the conventional split isolates a well-defined class of cases whose properties can be fruitfully explored. The fact that we do not mention any further cases like the ones in (5) should not be taken to mean that they should be excluded from a wider study of conditional expressions.

2.2 *The marking of conditionals*

Languages use a variety of means to indicate that a particular syntactic structure is a conditional rather than some other construction that involves two clauses. Without an attempt to give an exhaustive description of the range of options and typological tendencies, we present in this section some of the common structural means of forming conditionals.

Overt marking of the protasis (the antecedent of the conditional) appears to be the commonest strategy, cross-linguistically (cf. Comrie 1986; Zaefferer 1991). This can be done by employing certain lexical items (i.e., free morphemes), through particular inflectional morphology, or by purely syntactic means (e.g., verb-movement).[4] The English *if*, the German *wenn* and *falls*, and the Mandarin Chinese *ruguo* exemplify the marking of an antecedent using lexical items, arguably functional elements in the CP-domain – complementizers or operators in Spec, CP:

(7) a. *If* it is sunny, I will go for a walk.
b. *Wenn* Steffi gewinnt, wird gefeiert. German
if Steffi wins Impers.Passive celebrate
'If Steffi wins, people celebrate.'
c. *Falls* Steffi gewinnt, wird gefeiert. German
in-case Steffi wins Impers.Passive celebrate
'In case Steffi wins, people celebrate.'
d. *Rúguǒ* Zhangsan hē jǐu, wǒ mà tà. Mandarin
if Zhangsan drink wine I scold him
'If Zhangsan drinks wine, I will scold him.'

Many languages use temporal *wh*-pronouns (e.g., German *wenn* 'when/if'[5]) as conditional markers (cf. Traugott et al. 1986). Other common lexical devices for

forming a conditional are interrogative complementizers/operators, e.g., English *if* is also used in embedded yes/no questions.[6]

The marker on the antecedent does not have to be a single lexical item. It can also be a phrase, as is the case with the English *in case*, and the Spanish *con tal que* literally 'with such that':

(8) Te perdono con tal que vayas. Spanish
To-you forgive-1s with such that go-Sbjv-2s
'I forgive you if you go.'

Languages can also mark the antecedent through inflectional morphology on the verb in the antecedent clause. Examples of such languages include West Greenlandic, Turkish, and Basque:

(9) **West Greenlandic (cf. Fortescue 1984):**
pakasa-anna-rukku pissanganar-niru-vuq.
surprise-just-2s.3s.COND be.exciting-more-3s.INDIC
'If you just surprise him, it will be more exciting.'

The inflection that serves as the overt marker of the antecedent clause need not be unambiguously conditional (i.e., only realized in conditionals). Some languages mark antecedent clauses by using imperative verbs (in the absence of a coordinating conjunction). Consider (10), from Jacab (forthcoming):

(10) Znaj ja kakoj-nibud' inostrannyj jazyk, Russian
know-imper.2sg I some-kind foreign language
rabotal by perevodčikom.
worked would translator-instr
'If I knew some foreign language, I would work as a translator.'

Morphosyntactically, conditionals like (10) differ from true imperatives in, at least, the absence of subject–verb agreement and the fact that they can be formed from verbs that do not normally appear in the imperative, such as *happen* or *turn out* (see Hacking 1998; Jacab forthcoming; for discussion). The imperative verb, which in imperatives can show number distinction, with forms for 2sg and 2pl, can only be 2sg in its use in this type of conditionals.[7]

The use of subjunctive morphology is another common formal device in building conditional antecedents. Consider the following examples from Russian in this respect (from Hacking 1998):

(11) Pročitala by ona etu stat'ju, ona smogla Russian
read-sg.fem subj she this-acc article-acc she can-sg.fem
by otvetit' na vaš vopros.
subj answer-inf to your question
'Had she read/were she to read the article, she would have been/be able to answer your question.'

Interestingly, when there is no conditional complementizer, as in the above Russian examples, the verb, whether marked as subjunctive or imperative, undergoes movement to C. I-to-C movement is in fact another formal mechanism for forming antecedents of conditionals, often employed by languages in the absence of any other indicator, lexical or morphological, of conditional marking.

In English, I-to-C movement is restricted to the antecedents of counterfactual conditionals (cf. Iatridou and Embick 1994), and also some future-less-vivid conditionals, i.e., conditionals that implicate that if p is the proposition expressed by the antecedent, $\neg p$ is more likely than p (the term 'future-less-vivid' is introduced in Iatridou 2000). In other languages, inversion is less restricted and is available in indicative conditionals as well, as the German example below illustrates:

(12) a. Had I known, I would not have gone.
b. Were he to come, we would not go.
c. Hast du was, dann bist du was. German
Have you something then are you something
'If you have something, then you are something.'

The preceding discussion might suggest that the explicit marking of the antecedent is cross-linguistically obligatory. This is not the case. In Bengali (cf. Comrie 1986) and Hindi, for example, it is the presence of the *then* which is obligatory, not the presence of the *if*:

(13) **Hindi (cf. McGregor 1995):**
(agar) mehnat karoge to safal hoge.
if hard-work do-Fut.2Pl then succesful be-Fut.2Pl
'If you work hard, you'll be successful.'

The marker of the apodosis (the main clause) in Bengali and Hindi is clearly of pronominal origin. Comrie (1986) notes that all instances of overt apodosis marking known to him involve particles, often of pronominal origin. He suggests that these may therefore be analyzable as resumptive pronouns.

Finally, there are conditional constructions where no overt marking of any sort seems to be necessary. Mandarin Chinese allows for conditional interpretation in the absence of any overt marking of conditionality, since *rugou* 'if' is optional, and so is the pronominal in the consequent clause *jiu* 'then':

(14) (rúguǒ) Zhangsan hē jǐu, wǒ (jìu) mà tā. Mandarin
if Zhangsan drink wine I then scold him
'If Zhangsan drinks wine, (then) I will scold him.'

However, Comrie (1986) notes that in the absence of any overt conditional marking, a sentence like (14) is ambiguous between a variety of relations holding between the two clauses (e.g., *if*/*when*/*because*).[8]

In summary, conditionals are formed through a variety of means. They share a basic bi-clausal structure, with the antecedent adjoined to the main clause, though, as we will see below in the discussion of adnominal conditionals, other adjunction possibilities are also attested. The internal syntax of the antecedent clause involves the CP-domain, where presumably clause-typing features are lexicalized by special complementizers or they trigger verb-movement. A particularly interesting question arises regarding the structure of conditionals: how, in the absence of a specialized marker, such as a conditional complementizer or conditional inflection, can a clausal adjunct receive the interpretation of a conditional? In other words, *ruguo* in Mandarin may be posited to carry the relevant features that a semantics for conditionals would need, and that would distinguish an adjunct clause headed by *ruguo* from one headed by, e.g., *because*. However, given that I-to-C movement in English is clearly not limited to conditionals, that is, it is also found in matrix questions, and in certain focus contexts,[9] why is it that an adjunct as in (12a) is interpreted as a conditional rather than as a *because*-clause? Similar facts obtain in other languages besides English that employ I-to-C movement in conditionals.

3 Structural issues

We begin with a discussion of simple conditionals without *then*, like *If you open the refrigerator, it won't explode*. Once these basic cases have been discussed, we will look at conditionals with *then* and the different structural properties of other kinds of conditionals.

A basic observation is that *if*-clauses can be clause-initial or clause-final. To the limited extent to which they can be clause-medial, they must be set off by parenthetical intonation ((15), from Lasersohn 1996):

(15) a. **Clause initial:**
If you bother him long enough, John will give you five dollars.
b. **Clause final:**
John will give you five dollars if you bother him long enough.
c. **Clause medial:**
John, if you bother him long enough, will give you five dollars.
*John if you bother him long enough will give you five dollars.

We will address two questions concerning the *if*-clause here. First, what is the structural location of the *if*-clause with respect to the main clause? And second, what is the clause-internal syntax of the *if*-clause?

3.1 The position of merger of the if*-clause*

Greenberg (1963) states the following universal concerning the linear order between the antecedent and the consequent clause of a conditional.

Universal of Word Order 14:
In conditional statements, the conditional clause precedes the conclusion as the normal order in all languages.

Comrie (1986) claims that while many languages allow for both clause-initial and clause-final placement of the *if*-clause, there are also rigidly verb-final languages, where the clause-final option is unavailable.[10,11]

Greenberg and Comrie's observations are important, but it should be noted that they are observations about the surface positions of *if*-clause. Typological tendencies are compatible with *if*-clauses having an origin distinct from their clause-initial surface position. As we will see soon, there is evidence that the clause-initial/clause-final difference reflects difference in attachment height, and that at least some clause-initial *if*-clauses need to be derived via movement from clause-final *if*-clauses.

3.1.1 If-*clauses as adverbial clauses*

One logically possible analysis of conditional sentences is that the two clauses are coordinated syntactically, with *if* functioning as a 'true conjunction', to borrow a phrase from Jespersen (1954–1958). There have not been explicit syntactic proposals that the antecedent and consequent of conditional sentences are coordinated clauses, as far as we are aware.[12] There are, in fact, important differences between *if* and a coordinator like *and*. Whereas *if*-clauses can appear both sentence-initially and sentence-finally, the same is not true in the case of coordinated structures involving *and*/*but*/*or*:

(16) a. Joe will leave and/but/or Mary will stay.
b. * And/but/or Mary will stay, Joe will leave.

Furthermore, *only* and *even* can modify *if*-clauses but not second conjuncts in coordinations:

(17) a. Lee will give you five dollars only/even [if you bother him].
b. Lee will give you five dollars (*only/*even) [and/but/or Ken will give you ten].

In being able to appear both sentence-initially and sentence-finally conditional clauses are like other adverbial clauses:

(18) a. I will leave at noon/because you leave.
b. At noon/because you leave, I will leave.

Clear evidence that sentence-final *if*-clauses are constituents of the VP and therefore adverbials comes from VP deletion and *do so* anaphora. The most conservative interpretation of the data below is that the place holders refer back to

constituents, and therefore that the conditional clauses are constituents of the VP. Hence they are also adverbials (given that they are not nominal arguments):

(19) a. I will leave if you do and John will $_{\text{leave if you do}}$ too.
b. I will leave if you do and John will *do so* too.

Evidence for the adjuncthood of *if*-clauses also comes from their behavior under *it*-clefting. *If*-clauses can be clefted but not out of a *wh*-island ((20), from Collins 1998):

(20) a. It is if the student fails that the teacher will fire the TA.
b. ? It is if the student fails that Bill said that the teacher would fire the TA.
c. * It is if the student fails that Bill wonders why the teacher will fire the TA.

The severity of the violation in (20c) – what used to be analyzed as an ECP rather than a Subjacency violation – suggests that the *if*-clause is an adjunct (given that it is clearly not a subject).

The data involving modification by *only* and *even* (cf. 17), and VP ellipsis phenomena (cf. 19), provide strong evidence against the view that the antecedent and consequent of conditionals are coordinated. These data support the view that *if*-clauses are adverbials, like temporal phrases and clauses. Furthermore, pronominalization by *then* suggests that *if*-clauses are adverbials, since their anaphoric reflex – *then* – is an adverb.

3.1.2 Height of attachment

If sentence-initial *if*-clauses are in an adjoined position, then they are clearly adjoined to the main clause, as opposed to a constituent inside it.[13] As expected, sentence-initial *if*-clauses are not c-commanded by the subject of the main clause (cf. (21b)). Concerning the position of sentence-final *if*-clauses, there is evidence suggesting that adjunction to the main clause is not involved. Condition C judgments show that an *if*-clause in sentence-final position is c-commanded by the subject of the main clause. Consider example (21). Coreference between *she* and *Mary* is prohibited in (21a) but possible in the minimally distinct (21b, c). Given these facts, the *if*-clause must be adjoined at most as high as I', and if adjunction to a bar-level projection is to be avoided, the *if*-clause must be merged even lower:

(21) a. *She$_i$ yells at Bill if Mary$_i$ is hungry.
b. If Mary$_i$ is hungry, she$_i$ yells at Bill.
c. If she$_i$ is hungry, Mary$_i$ yells at Bill.

A direct object cannot c-command into an *if*-clause, irrespective of whether it is sentence-initial or sentence-final:

(22) a. Bill visits her$_i$ if Mary$_i$ is sick.
b. If Mary$_i$ is sick, Bill visits her$_i$.

We have so far concluded that a sentence-final *if*-clause is adjoined lower than IP but above the VP or at least higher than the object. Further evidence concerning the structural location of the sentence-final *if*-clause comes from VP topicalization. We see that while the *if*-clause can be topicalized with the VP, it does not have to be:

(23) I told Peter to take the dog out if it rains,
a. . . . and take the dog out if it rains, he will.
b. . . . and take the dog out he will if it rains.

Based on these tests, Iatridou (1991) proposes that sentence-final *if*-clauses involve VP-adjunction, while sentence-initial *if*-clauses involve IP-adjunction (or in some cases CP-adjunction, to accommodate sentences like the ones in (24)):

(24) a. If it rains, what shall we do?
b. If it rains, are we going to leave?
c. If he is right, what a fool I've been!

Saying that sentence-final *if*-clauses are adjoined to VP underdetermines their actual position. There is evidence from their interaction with negation which suggests that they can be adjoined below or above negation. Sentence-final, but not sentence-initial, *if*-clauses interact scopally with negation.[14]

As indicated by the two continuations provided, (25) is ambiguous between two readings, one where the negation takes scope over the entire conditional (= 25a), and another where the negation takes scope only over the main clause (= 25b):

(25) Mary doesn't yell at Bill if she is hungry
a. . . . but if she is sleepy. ($\neg > if$)
b. . . . since hunger keeps her quiet. ($if > \neg$)

The ambiguity may be due to LF-raising of the *if*-clause and scopal interaction with negation. Iatridou argues, however, that the ambiguity is the result of different levels of attachment. Combining VP topicalization and interaction with negation provides the relevant piece of evidence in favor of Iatridou's position:

(26) a. Smile at Bill if she is hungry though she doesn't . . . ($\neg > if$)
b. Smile at Bill though she doesn't if she is hungry . . . ($if > \neg$)

The above are unambiguous: in the former negation has scope over the *if*-clause and in the latter the scopes are reversed. This strongly suggests that a postverbal *if*-clause can adjoin at different sites – above negation and below negation.

3.1.3 A source for sentence-initial if*-clauses*

A natural question that arises is whether the clause-initial and clause-final positions for *if*-clauses are related by movement. There is evidence that at least some sentence-initial *if*-clauses have a source lower than their surface position. This evidence comes from the interpretation of sentences like (27):

(27) a. I think that if you leave I will leave.
b. If you leave, I think that I will leave.

In (27b), on the most plausible reading, there is no conditional relationship between the hearer's leaving and the speaker's thinking about leaving, contrary to what we would expect from the surface form. We can account for this by saying that the *if*-clause has been preposed from an underlying position within the scope of *think*, perhaps as in (27a). Of course, this is only evidence, furthermore indirect, of movement of the *if*-clause from one clause-initial position to another. It may still be the case that clause-initial antecedent clauses are never the result of movement from the VP-adjoined position in which the *if*-clause may also surface.

To further complicate the picture, along with evidence that certain sentence-initial *if*-clauses involve fronting from a lower position, there also seems to be evidence that not all sentence-initial *if*-clauses involve movement. The analysis is complicated by the fact that the *if*-clause is an adjunct and so its reconstruction is not obligatory (or alternatively, it can be merged counter-cyclically; cf. Lebeaux 1990). This can be seen by the absence of a Condition C violation in (28b):

(28) a. *She$_i$ yells at Bill if Mary$_i$ is hungry.
b. If Mary$_i$ is hungry, she$_i$ yells at Bill.

Either it is not obligatory (or not possible, assuming late merge) to reconstruct the sentence-initial *if*-clause to a sentence-final position, or base generation in a sentence-initial site is also an option.

Iatridou (1991) discusses a number of cases where she argues that reconstruction of the *if*-clause is obligatory. It should be noted, however, that her tests illustrate that reconstruction is obligatory only for a sentence-initial position. Her facts are silent about whether reconstruction to a sentence-final position is obligatory. The cases where Iatridou argues reconstruction is obligatory are like the ones in (27): the *if*-clause is construed below the matrix verb:

(29) If it rains, Mary believes/said/heard/assumed that Bill will come.

That these cases involve movement of the *if*-clause to a sentence-initial position and not base generation is demonstrated by the fact that the relationsip between the *if*-clause and the clause it is associated with is sensitive to islands:

(30) a. *If it rains Mary regretted/forgot/resented/recognized that Bill will come. (factive island)
b. *If it rains Mary didn't say that Bill will come. (negative island)
c. *If it rains Mary heard the rumor that Bill will come. (complex NP island)
d. *If it rains Mary wondered whether Bill will come. (*wh*-island)

In such cases, reconstruction is obligatory, as is shown by the Condition C effect in (31):[15]

(31) *If John$_i$ is sick, he$_i$ thinks that Bill will visit.

To derive the Condition C effect in (31), we only need reconstruction to the sentence-initial position in the embedded clause. Reconstruction to the sentence-final position of the embedded clause is not required. In fact there is evidence that reconstruction to the sentence-final position of the embedded clause is not obligatory. This is shown by the possibility of coreference between *John* and *he* in (32). Obligatory sentence-final reconstruction would induce a Condition C violation. Thus we can conclude that this is a case where the *if*-clause is generated clause-initially (below the matrix), and is then preposed to the sentence-initial position:

(32) If John$_i$ is sick Mary says that he$_i$ should take aspirin.

We have just seen that reconstruction of the *if*-clause to the sentence-final position is not obligatory. Is there evidence that reconstruction to the sentence-final position is ever possible? Given certain assumptions, it seems that there is. It is reasonable to assume that c-command has to obtain at some point in the derivation prior to spell-out, for anaphoric and variable binding.

In (33a) and (34a), the binder surface c-commands the bindee, and a binding relationship is possible. In (33b) and (34b), the binder does not c-command the bindee in overt syntax, but a binding relationship is still possible. We can take the possibility of binding as showing there must be a point in the derivation where the sentence-initial *if*-clause is in the c-command domain of the binder, i.e., in the sentence-final VP-adjoined position:

(33) a. John$_i$ will be happy if pictures of himself$_i$ are on sale.
b. If pictures of himself$_i$ are on sale, John$_i$ will be happy.

(34) a. Every mother$_i$ is upset if her$_i$ child is late from school.
b. If her$_i$ child is late from school, every mother$_i$ is upset.

Complications are introduced in (34b), where it seems that the quantifier *every mother* could scope over the conditional clause and bind a variable in the *if*-clause at LF. Note, however, that binding achieved in such a way would lead to an illegitimate Weak Crossover configuration.[16]

The proposal that reconstruction is necessary to receive a bound reading in (33) and (34) receives support from the fact that reconstruction for binding reasons can yield a Condition C violation:

(35) a. Every mother$_i$ is upset at John if he ignores her$_i$ child.
b. *Every mother$_i$ is upset at him if John ignores her$_i$ child.
c. *If John ignores her$_i$ child, every mother$_i$ is upset at him.

If QR applied to the spell-out of the sentence above, and QR and not reconstruction produced the configuration for variable binding, then we would have no account of why (35c) is ungrammatical. Therefore, it is reasonable to assume that reconstruction is necessary to obtain a bound-variable reading.

3.2 Clause-internal syntax of the if*-clause*

3.2.1 The location of if

It is quite commonly assumed that *if* is a complementizer. There is indeed evidence that *if* is within the CP-domain. But it turns out that it is not easy to find conclusive arguments as to its being in C. Furthermore, in some languages the counterpart to *if* is a *wh*-pronoun, suggesting that it is an element in Spec, CP, at least in these languages.

Let us begin with the arguments that *if* is within the CP-domain. *If* and *when* pattern differently than *until/before/after* with respect to anaphora possibilities:

(36) a. I will work until Joe leaves and Harry will work until then too.
b. *I will leave when/if Joe leaves and Harry will leave when/if then, too.
(vs. I will leave when/if Joe leaves and Harry will leave then, too.)

We see that it is possible to refer back to the complement of *after/before/until* with a pronoun but not to the complement/sister constituent of *if/when*. It is, however, possible to refer to the entire complex, i.e., to the *if/when* together. This situation resembles what we find with questions:

(37) Sean wonders whether Mirwais likes Madonna.
a. Rob wonders *that*, too.
b. *Rob wonders whether *that*, too.

The contrast between *if/when* and *until/before/after* suggests that the former are either in [Spec, CP] or C^0, while the latter are prepositions that take CP/IPs as complements.

To decide on the the location of *if* in the CP-domain, researchers have looked at interrogative complements. Kayne (1991) in particular has argued that the conditional *if* and the interrogative *if* are one and the same. If so, we can conjecture that *if* in conditional clauses and in questions occupies the same position:

(38) a. * Lee knows [if [PRO to leave]].
b. Lee knows [whether [PRO to leave]].

Kayne (1991) argues that *if* is in C^0 while *whether* is in [Spec, CP]. The grammaticality contrast between (38a) and (38b) is argued to follow from the respective location of *if* and *whether*. In particular, (38a) is ungrammatical because *if* illicitly governs PRO.[17]

The explanation for the contrast in (38) is in need of reconsideration, however. Note that in English, *if* can take participial complements ((39), from the *Wall Street Journal* corpus):

(39) a. If elected, he has said that he will seek to renegotiate much of the country's foreign debt.
b. If convicted on all counts, the individuals could be imprisoned for as long as five years and fined $250,000 each.

Presumably *elected* and *convicted* have PRO subjects. It is not clear why government by *if* does not render these illegitimate. Furthermore, given minimalist aspirations to eliminate the notion of government from the theoretical apparatus, and given alternative accounts for the distribution of PRO based on case (cf. Lasnik 1995a, among others), the distinction in grammaticality in (38) may not be used to argue for a different syntactic location of *if* and *whether*.

The proposal that *if* is in C^0 receives some support from the complementary distribution of *if* and conditional inversion ((40), from Iatridou and Embick 1994):

(40) a. If John had eaten the calamari, he would have been better now.
b. Had John eaten the calamari, he would have been better now.

When conditional inversion takes place, an *if* may not be present. Pesetsky (1989b) and Iatridou and Embick (1994) propose that conditional inversion involves I-to-C movement. The complementary distribution of *if* and conditional inversion, and the analysis of conditional inversion as movement to C^0, suggest that *if* is in C^0.

On the analysis of *if* as a complementizer, the fact that its presence blocks conditional inversion may thus receive the same explanation as the root-embedded asymmetry with respect to V2 in languages such as German and Dutch. In these languages, when the complementizer is present the finite verb does not raise to C, but in main clauses, and in complements of certain verbs when there is no complementizer present, I-to-C movement obtains.[18] Note, however, that the complementarity between conditional inversion and the presence of a CP-related element is seen in German as well. Yet in German, *wenn* 'if, when' does not appear to have a different location whether it functions as a conditional marker or a relative pronoun.[19] Thus, the complementarity of *if* and conditional inversion is also not a conclusive argument in favor of *if* being a complementizer.

We have to conclude that there is suggestive but not conclusive evidence in favor of analyzing *if* in conditionals as a complementizer. Fortunately, not much hinges on this particular point. Conditional C^0 will have to have certain features, distinguishing it from other types of clauses, and whether *if* lexicalizes these features, or enters into a checking relationship in a Spec–head agreement with them, is of lesser importance. Furthermore, languages likely differ in this respect. Languages where the counterpart of *if* is a *wh*-related pronoun would merge it as a specifier of CP, possibly after extraction from within the clause (on that see further below), while other languages would merge the counterpart of *if* as a C^0.

3.2.2 The conditional–interrogative link

As noted above, Kayne (1991) has proposed that conditional and interrogative *if* are the same element. Presumably what is meant is that the featural content of *if* is the same whether it appears in a conditional clause or in an interrogative clause. This is in fact a phenomenon wider than English. For instance, in Bulgarian one of the ways to form a conditional clause is to use the interrogative complementizer *li*:

(41) a. Znae li anglijski, šte go vzemat na rabota.
know-3sg Q English will him take to work
'If he know English they will hire him.'
b. (Čudja se) znae li anglijski?
wonder-1sg refl know-3sg Q English
'I wonder whether he knows English/Does he know English?'

Similarly, antecedent clauses in Mandarin Chinese *dou*-conditionals have been analyzed by Cheng and Huang (1996) as interrogative clauses, showing that the parallels between conditionals and questions extend beyond the use of identical complementizers.

Furthermore, arguably, I-to-C movement is another formal instantiation of the close structural parallels between conditionals and questions. As Iatridou and Embick (1994) have pointed out, languages that exhibit I-to-C movement in conditionals also have I-to-C movement in questions. The facts of *if-/li-* use in questions and conditionals, and the facts of conditional inversion, can then be unified under the following generalization:

(42) Interrogative adjunct clauses are interpreted as conditionals.

A similar conclusion is reached on independent grounds in Izvorski (2001). It is argued there that free relative clauses used as free adjuncts (see (43)) depend for their interpretation on the following factors (in addition to some others): (i) having the structure and semantics of questions, and (ii) conditional interpretation being available to clausal adjuncts:

(43) Whatever Bill says, Mary will quit her job.

Further elaboration on the link between conditionals and questions comes from Larson's (1985a) suggestion of a covert operator in the Spec, CP of conditional and interrogative *if*-clauses. Larson (1985a) posits that in interrogative *if*-clauses there is a covert *whether* marking the scope of covert *or*. This covert *whether* is what makes *if*-interrogatives into *wh*-islands. It is the case that extraction of complements is degraded out of embedded yes/no questions, while the extraction of adjuncts and subjects is impossible:

(44) a. ? Who did you wonder if/whether Mary saw?
b. *Who did you wonder if/whether saw Mary?
c. *How/when did you wonder if/whether Mary fixed the car?

By Larson's proposal, the difference between interrogative and conditional *if*-clauses extends beyond their attachment site. Larson has a covert *whether* in the [Spec, CP] of an *if*-clause as well. (Conditional clauses, being adjuncts, are of course strong islands.)

We believe something like Larson's proposal to be on the right track. Arguably, conditional *if*-clauses have a structure, and correspondingly aspects of interpretation, similar to those of questions, including the presence of an operator in Spec, CP. Yet ultimately, conditionals and questions diverge in interpretation. Conditionals receive the interpretation of free relatives, that is, of definite expressions. Thus, there is indeed a link between conditionals and questions but this link is indirect, derivative of the link between free relatives and questions. Parallels between *if*- and temporal *when*-clauses have prompted Geis (1985) to argue that conditionals are species of relative clauses. Our proposal is a further step in this direction, arguing for an isomorphism between conditionals and free relatives.

Let us consider the relation between conditionals/free relatives and questions in some detail. *Wh*-questions and free relatives have a common structure (cf. (45a)). Some of the features in C^0 are common as well (presumably the one(s) triggering *wh*-movement), which accounts for common syncretisms across languages between questions and free relatives. Some of the features in C^0 are different, which leads to questions and free relatives being interpreted differently. Questions are interpreted as sets of propositions where the variable abstracted over (as a result of *wh*-movement) has been existentially quantified (e.g., Hamblin 1973; Karttunen 1977) (cf. the simplified (45b)). Free relatives are interpreted as definite descriptions, i.e., with the variable abstracted over being bound by a definite operator (e.g., Jacobson 1995, among others) (cf. (45c)):

(45) what John bought
a. LF: wh_x C^0 John bought x
b. $\lambda p[p = \exists x[\text{John bought } x]]$
c. $\iota x[\text{John bought } x]$

Turning to conditionals, our proposal that they are interpreted as free relatives amounts to the claim that they are definite descriptions of possible worlds. The

structure yielding this interpretation is analogous to the one in (45a) in all the relevant respects:

(46) if John arrives late
  a. LF: Op_w C^0 John arrives late in w
  b. ιw[John arrives late in w]

Conditionals involve abstraction over a possible world variable. The null operator in Spec, CP of *if*-clauses, and likely the *when* itself in, e.g., German conditionals, is a definite binder of the possible world variable.

Schein (2001) argues on independent grounds that *if*-clauses are plural definite descriptions of events. Similarly, that conditionals are interpreted as definite descriptions of possible worlds has recently been independently proposed by Schlenker (2001c). Within a general program of semantic uniformity (cf. Schlenker 1999, 2001c), he analyzes *if* as the counterpart of *the* applied to a description of possible worlds rather than of individuals. Thus *if p* denotes the closest *p*-world(s), whereas *the P* denotes the most salient *P*-individual(s). Schlenker points out that *if*-clauses, like definites, may be topicalized; that they may be coreferential with a world pronoun *then*, the way definites may be coreferential with individual pronouns; and that they may give rise to Condition C effects in certain structural configurations, just as definites can. We will return to Schlenker's proposal below, when we discuss in more detail conditionals with *then* and the parallels with correlatives.

We are now in a position to give an explanation for the conditional–interrogative link, to an extent that has not been previously achieved. The fact that *if* functions in many languages as both a conditional and an interrogative complementizer makes sense within the general proposal that conditionals are free relative clauses. In English, and in many other languages, this syncretism would be part of a more general structural parallelism between questions and free relatives in these languages.

3.2.3 The absence of low construals

The parallel between conditional clauses and free relatives suggested above is apparently challenged by certain facts, first noticed by Geis (1970). These facts led him to conclude in fact that conditionals should be given a distinct analysis from relative clauses, a position which he reversed in Geis (1985). Geis (1970, 1985) noted that whereas *when*-clauses are ambiguous as per extraction sites of the relative pronoun, *if*-clauses are not. Conditional statements employing overt headed relatives are ambiguous. We can further observe that conditionals formed with *in case* and conditionals formed with I-to-C movement are also not ambiguous and only allow for high construals:

(47) a. I will leave when you say you'll do.
  high construal: I will leave at time *t* s.t. at time *t*, you say that you'll leave (at time *t'*).

low construal: I will leave at time *t*. You said that you would leave at time *t*.

b. I will leave if you say you will do.
high construal: In situations *s*, you say you'll leave (in situations *s'*). In those situations *s*, I will leave.
*low construal: You say that in situations *s*, you'll leave. In those situations *s*, I will leave.

c. I will leave in any circumstance in which you say you'll leave.
high construal: In situations *s*, you say you'll leave (in situations *s'*). In those situations *s*, I will leave.
low construal: You say that in situations *c*, you'll leave. In those situations *c*, I will leave.

(48) a. I will leave in case you say you'll leave. (high construal only)
b. Had he said he would leave, I would have left. (high construal only)

The ambiguity in (47a, c) arises due to two possible sources for the adjunct phrase that undergoes A'-movement, *when* in (47a), *in which circumstances* in (47c). The lack of low construals in *if*-clauses suggests that *if*-clauses do not involve A'-movement of a covert adjunct.

One response would be to say, as Iatridou (1991) does, that *if*-clauses do not involve A'-movement. If this is the case, *if*-clauses would be perhaps more akin to reduced relatives where only the top-level argument can be abstracted over. Other than this difference, conditional constructions would be like free relative constructions. Still, we think that the explanation lies elsewhere.[20]

In lacking low construals, *if*-clauses resemble *because* and causal *since*-clauses. *Because* and *since* are sentential functions and not quantifiers, that is, they do not bind positions inside their clause. Thus in (49), my leaving has to be due to John's writing and not to Mary's leaving. In other words, it cannot be for the reason *r* such that John wrote that Mary left for reason *r*:

(49) I left because/since John wrote that Mary left.

This point can be made even sharper by abstracting away from the question of matrix vs. embedded extraction and corresponding ambiguities. The complement of *because/since* in (50a) gives the reason for Mary's leaving. This is not the case with (50b), where it is stated that the two events have the same cause:

(50) a. Mary left because/since the bell rang
reason for Mary's leaving = the bell ringing
b. Mary left for the reason for which the bell rang
reason for Mary's leaving = reason for the bell's ringing

Unlike the case of *because* and *since* clauses, however, judgments are not as clear cut with *if*-clauses. Thus Iatridou (1991) suggests that it is not in fact obvious

whether in (51) *if* has a construal like that in (50b), i.e., whether we have 'John will leave in any circumstance in which Peter calls Mary' or 'John will leave under the condition that Peter calls Mary.' The latter involves no variable-binding in the *if*-clause:

(51) John will leave if Peter calls Mary.

The above proposal gets locality by stipulating that *if*-clauses do not involve A'-movement. However, such a proposal seems less attractive for languages like German where the equivalent of *if* is *wenn*, which also appears in *when*-clauses. There seems to be no evidence suggesting that the syntactic behavior of *wenn* is different in conditional and in temporal clauses, i.e., it does undergo A'-movement in both cases. However, the locality effects seen in English conditionals are also found in German. When *wenn* is interpreted as a temporal pronoun it allows low construals; when it is interpreted as a conditional marker, it only allows high construals. So perhaps the explanation is not to be sought in the absence of a null operator, and corresponding absence of A'-movement in conditionals, but in the kind of variable that is being abstracted over.

Thus we believe that while *if*-clauses do not have low construals, they do in fact involve binding. Simplifying grossly, what is said in (51) is that the situations of Peter calling Mary all extend to situations of John leaving. So we do have a situation/world variable which is abstracted over. What is special about conditionals is that we can only abstract over the situation/world variable of the highest predicate. That perhaps situation/world variables only allow local abstraction has been suggested by Heim (p.c., to Iatridou 1991). Hence local A'-movement would proceed unconstrained. But if A'-movements creates a long-distance chain involving a situation/world variable, such a chain would be ruled out on independent grounds, which remain to be explicated.[21]

3.2.4 Conditional inversion

Forming conditionals through I-to-C movement is a cross-linguistically attested phenomeonon. On the basis of a survey of several Romance, Germanic, and Slavic languages, and Greek, Iatridou and Embick (1994) make several observations regarding conditional inversion.

First, it appears to be the case that languages which exhibit conditional inversion also have inversion in questions.[22] We are now in a position to account for this generalization. We could assume that V1 antecedents are interrogative clauses, and that they are interpreted as conditional in conformity with the principle in (42), which states that interrogative adjunct clauses are interpreted as conditionals. If V1 antecedents are structurally questions, then it follows that languages which have conditional inversion will have I-to-C movement in questions.

Second, Iatridou and Embick observe that V1 tensed adjunct clauses (i.e., clauses where I-to-C movement has occurred) are always interpreted as conditional and never as, e.g., *because*-clauses. This is an important generalization which we are now in a position to reduce to the principle in (42). This generalization

follows from our assumption above that V1 adjuncts are interrogative clauses and from the principle that interrogative adjuncts are interpreted as conditionals (cf. (42)).

Third, Iatridou and Embick point out that V1 conditional clauses may not be focused. In particular, they show that V1 antecedents may not be the associates of focus adverbs like *only* and *even* and of constituent negation; that they may not be clefted; and that they may not be used as answers to questions. The sentences below illustrate these findings:

(52) a. *Only had I thought that he was sick would I have called him.
b. Only if I had thought that he was sick would I have called him.

(53) a. ??Even had Joe served truffles Kathy would not have been happy.
b. Even if Joe had served truffles Kathy would not have been happy.

(54) a. *It is had John come that Mary would have left.
b. It is if John had come that Mary would have left.

(55) Under what circumstances would Mary have come?
a. # Had she been offered many artichokes.
b. If she had been offered many artichokes.

Iatridou and Embick propose that the truth-value of the proposition expressed by a V1 conditional has to be discourse-old, i.e., there is a requirement not just that the proposition has been under discussion but that also its truth-value is known. This raises some issues with respect to indicative conditionals. If Iatridou and Embick's suggestion is on the right track, the requirement that the truth-value of the proposition expressed by a V1 conditional be known may be the reason why conditional inversion is so restricted in indicative conditionals, given that indicative conditionals do not come with the presupposition or implicature that the truth-value of their antecedent is known. Yet some languages allow conditional inversion in indicative conditionals (e.g., the German examples (12c) and (59c) below). It remains an open question how the discourse-old requirement is to apply to cases like these.[23]

One possibility to explore is that the inability of V1 conditional antecedents to be focused may be derived from their syntactic position. In the discussion of sentence-initial and sentence-final *if*-clauses above we noted that some sentence-initial antecedents are moved from a lower position in the clause, whereas some have to be analyzed as having been base generated as clausal adjuncts. Later we will see evidence for the relation between conditionals and correlative structures. As a preview, correlative adjuncts are base generated outside of the clause and are coindexed with a proform (in the case of conditionals the proform is *then*). As a result of this structure, correlative clauses may not be focused. If V1 conditional antecedents are in fact base generated in a correlative structure, then it will follow that they should not be able to be focused.

The tests for base generation of the V1 antecedent clause, however, are not conclusive. The absence of Condition C effects with sentence-initial V1 conditionals is in conformity with a proposal that suggests that such antecedents are generated in a clause-adjoined position and not moved there. Yet of course, there is the possibility that V1 antecedents are generated in a lower position but reconstruction is not forced, given that they are adjuncts:

(56) a. Had Mary$_i$ been hungry, she$_i$ would have yelled at Bill.
b. *She$_i$ would have yelled at Bill had Mary$_i$ been hungry.
c. Mary$_i$ would have yelled at Bill had she$_i$ been hungry.

When reconstruction is forced for the purposes of variable-binding, the following paradigm obtains:

(57) a. Had pictures of himself$_i$ been on sale, John$_i$ would have been happy.
b. Had John ignored her$_j$ child, every mother$_j$ would have been upset.

(58) a. *Had John$_i$ ignored her$_j$ child every mother$_j$ would have been upset at him$_i$.
b. *Every mother$_j$ would have been upset at him$_i$ had John$_i$ ignored her$_j$ child.
c. Every mother$_j$ would have been upset at John$_i$ had he$_i$ ignored her$_j$ child.

The examples above show that V1 conditionals are apparently able to reconstruct to a lower position, for the purposes of variable-binding. If V1 clauses were not able to reconstruct, presumably the examples in (57) would have been ungrammatical. Condition C effects obtain, as (58a) shows, indicating that indeed reconstruction is forced for variable-binding. Thus, unfortunately, we cannot reach a conclusion with respect to Iatridou and Embick's generalization regarding the impossibility of focusing a V1 conditional antecedent.

Finally, Iatridou and Embick point out that inversion in counterfactual conditionals is more widely attested than inversion in indicative conditionals; that is, if a language allows inversion in indicatives it will also allow it in counterfactuals, whether the conditional clause is sentence-initial or sentence-final. German is an example of a language where sentence-initial V1 conditional antecedents may be either indicative or counterfactual, but sentence-final ones may only be counterfactual ((59), from Iatridou and Embick 1994):

(59) a. Susanne wäre abgefahren wäre Hans gekommen. German
Susanne would-have left had Hans come
'Susanne would have left if Hans had come.'
b. *Susanne geht kommt Hans
Susanne goes comes Hans
'Susanne goes if Hans comes.'

c. Kommt Hans dann geht Susanne.
comes Hans then goes Susanne
'If Hans comes then Susanne goes.'

In English, as mentioned earlier, counterfactual and future-less-vivid conditionals allow inversion, but indicative conditionals disallow it. The facts are the same in sentence-final conditional clauses:

(60) a. Had he come, we would not have gone.
b. Were he to come, we would not go.
c. Should he come, we would not go.
d. *Does he come, we will not go.
e. *Is he coming, we will not go.

Unlike the two generalizations which we were able to reduce to a single principle, on the assumption that V1 clauses are syntactically questions, this generalization turns out to be harder to explain. It is not clear why counterfactuals (and future-less-vivid conditionals) should more easily allow conditional inversion than indicative conditionals. Perhaps we should rephrase the question and refer to the principle in (42). It may be the case that some languages place restrictions on the kind of interrogative clauses in adjunct position that may be interpreted as conditional. Clearly, more research into this question is necessary.

It is interesting to further note that V1 and non-inverted counterfactual conditionals differ with respect to the implicature of counterfactuality. As often observed (e.g., Stalnaker 1975; Karttunen and Peters 1979; Palmer 1986) counterfactuality in conditionals is implicated, not asserted. The example given to illustrate this is as follows:

(61) If the patient had the measles, he would have exactly the symptoms he has now. We conclude, therefore, that the patient has the measles.

This examples shows that although a counterfactual conditional does convey that the proposition expressed by the antecedent is false, this inference is an implicature because it is cancellable. Similarly, one can assert the falsity of the proposition expressed by the antecedent without redundancy:

(62) If the butler had done it, we would have found blood on the kitchen knife. The knife was clean, therefore the butler did not do it.

Interestingly, Iatridou and Embick (1994) point out that in V1 conditionals the counterfactuality inference cannot be cancelled. Consider the contrast in the examples below (from Iatridou and Embick 1994):

(63) a. If he had brokn his leg in his childhood, which, in fact, he did, he would have exactly this type of scar.

b. # Had he broken his leg in his childhood, which, in fact, he did, he would have exactly this type of scar.

Iatridou and Embick make the conjecture that the discourse-old status of the proposition expressed by a V1 conditional is responsible for the non-cancellability of the counterfactuality inference.

4 The conditional–correlative link

Correlative constructions involve a free relative clause adjoined to the matrix clause and coindexed with a proform inside it (cf. Srivastav 1991b; Dayal 1996; among others):

(64) [free relative]$_i$ [. . . proform$_i$ . . .]

In many languages conditionals are correlative structures themselves or are historically derived from correlative constructions. The *if*-clause is the correlative clause, and *then* is a correlative proform. Our proposal that *if*-clauses are free relatives, i.e., definite descriptions of possible worlds, naturally predicts that they should be able to appear in the correlative construction.

Geis (1985), von Fintel (1994), and Izvorski (1997b), among others, have suggested that conditional constructions are related to correlatives. Geis was perhaps the first to note that conditional constructions in English are the remnants of a strategy of correlativization that was once more productive in the language.

Treating some conditionals as correlatives helps us to understand several aspects of the behavior of conditionals cross-linguistically. In languages where correlativization is a productive strategy, it is apparent that conditionals are correlatives (e.g. Marathi) ((65), from Pandharipande 1997):

(65) a. *(dzar)* tyāne abhyās kelā *tar* to pā hoīl.
if he-ag studying do.Pst.3MSg then he pass be.Fut.3S
'If he studies, he will pass (the exam).'

b. *dzo* māṇūs tudzhyā śedzārī rāhto *to* māṇūs
which man your neighborhood-in live-Prs.3MSg that man
lekhak āhe.
writer is
'The man who lives in your neighborhood is a writer.'
(Lit. 'Which man lives in your neighborhood, that man is a writer.')

In addition, treating conditionals as correlatives helps to explain facts concerning the semantic contribution of *then* (section 4.1), the syntax of conditionals with *then* (section 4.2), and constraints on stacked *if*-clauses (section 4.2). There are also some challenges that need to be faced by a theory that treats conditionals as correlatives, and these are discussed in (section 4.3).

4.1 Then *as a correlative proform*

One of the arguments for treating conditionals as correlatives is the existence of *then*, which is plausibly analyzed as the correlative proform corresponding to the *if*-clause. Treating *then* as a correlative proform is advantageous because we are able to provide a very general analysis of its syntax and semantics. Its semantic properties turn out to be properties shared by correlative proforms, and its syntactic properties turn out to be shared by correlative constructions more generally. Here we review a few properties of *then* and how they are part of the larger picture of correlative constructions.

4.1.1 The semantic contribution of then

Conditional *then* appears to have hardly any interpretive contribution. Its presence in conditionals is not required (except in reduced conditionals; see below), and the difference in meaning between *if p*, *q* and *if p*, *then q* is not obvious. For this reason, in semantic discussions *then* is usually either treated as part of a discontinuous logical connective *if . . . then* or simply ignored. Iatridou (1991, 1994) challenges the view that conditional *then* is semantically vacuous. She proposes that *then* is associated with a particular presupposition; when this presupposition is incompatible with the meaning of the conditional, the appearance of *then* is precluded.

Specifically, Iatridou proposes that a statement of the type *if p*, *then q* has the assertion of a conditional without *then*, and that, in additon, *then* contributes the presupposition that at least some of the $\neg$ *p*-cases are $\neg$ *q*-cases.

To illustrate with an example, the conditional in (66) asserts (66a) and presupposes (66b):

(66) If Stefan is happy, *then* he sings in the shower.
   a. In every case in which Stefan is happy, he sings in the shower.
   b. Not in every case in which Stefan is not happy does he sing in the shower.

The presupposition in (66b) is in effect a statement that there is some case in which Stefan is not happy and he does not sing in the shower. Thus (66) cannot be felicitously uttered if the speaker wants to convey that Stefan always sings in the shower, happy or not.

The interpretative contribution of conditional *then* is discussed in von Fintel (1994) as well. Von Fintel assumes Iatridou's proposal about the meaning of *then* but also differs from her in one respect. For him the use of *then* triggers a (conventional) implicature that alternatives to the antecedent (all $\neg$ *p* cases) do not satisfy the matrix proposition.

The meaning contribution of conditional *then* is of particular interest here, because Izvorski (1995) shows that correlative proforms behave quite similarly to conditional *then*. In particular, Izvorski proposes that, given a choice between structures like (67a) (a correlative) and (67b) (a free relative in argument or

adjunct position inside the clause, i.e., a non-dislocated free relative), the structure with the proform is associated with a presupposition that alternatives to the free relative do not make the main clause true:[24]

(67) a. $[_{CP}$ [free relative]$_i$ $[_{CP}$ . . . proform$_i$ . . .]]
b. $[_{CP}$ . . . [free relative] . . .]

Thus, we see that there are good reasons to treat conditional *then* as an anaphoric element of the correlative proform type.

Next, we briefly examine several cases where *then* is unacceptable. The examples fall in two categories; namely, *then* is not felicitous (i) when the consequent of the conditional is asserted, and (ii) when the consequent presupposes the antecedent.

The set of examples in (68–70) illustrates the case of the asserted consequent. If the antecedent explicitly exhausts all possibilities (as in (68a)), is the associate of *even* (as in (68b)),[25] or is scalarly exhaustive (as in (68c) and (68d)), *then* is precluded (examples from Iatridou):

(68) a. If John is dead or alive, (# *then*) Bill will find him.
b. Even if John is drunk, (# *then*) Bill will vote for him.
c. If I were the richest linguist on earth, (# *then*) I (still) wouldn't be able to afford this house.
d. If he were to wear an Armani suit, (# *then*) she (still) wouldn't like him.

Consider (68a). Because the predicate *dead or alive* does not allow for alternatives (i.e., John is necessarily dead or alive), the conditional asserts that Bill will find John. Predictably, *then* is not acceptable. Similarly, in (68b), the conditional without *then* asserts that Bill will vote for John under any circumstances. As in the previous case, the antecedent is exhaustive: the use of *even* is associated with universal quantification over a scale; the associate of *even* marks an end-point on the scale and the proposition is taken to hold for all other alternatives to the associate on the scale (cf. Horn 1969; Fauconnier 1975; Karttunen and Peters 1979; Rooth 1985). The appearance of *then* brings about the presupposition that in some state of affairs Bill will not vote for John, which clearly clashes with the assertions of the sentence. Therefore, *then* is unacceptable in *even if* conditionals. Yet another way to have an exhaustive antecedent is to use a superlative or pragmatically determined end-point of a scale (cf. Fauconnier 1975). These cases are completely analogous to *even if* conditionals, and *then* behaves in a similar fashion, as (68c) and (68d) show.

Related to the above cases is the observation in von Fintel (1994) that *unless* conditionals also prohibit the use of *then*. This fact is illustrated in (69) (from von Fintel 1994: 96):

(69) Unless it rains tomorrow, (# *then*) I won't leave.

The behavior of *unless* conditionals with respect to *then* is predicted by Iatridou's proposal in combination with von Fintel's analysis of the semantics of *unless* clauses. Von Fintel proposes that *unless* is an exceptive operator on the restrictive clause of conditionals. Assuming the Lewis–Kratzer (cf. Lewis 1975; Kratzer 1986) approach to conditionals, *unless p*, *q* receives a semantic representation *Op [except p] [q]*, i.e., (69) is interpreted roughly as *All cases*, *except the ones in which it rains tomorrow, are cases in which I won't leave*. Under the approach pursued by von Fintel, *unless p*, *q* is paraphrasable as *except if p, q*, and it asserts that for all the alternatives to *p*, *q* holds. Since the presupposition associated with *then* requires at least some of the $\neg p$ cases to be $\neg q$ cases, clearly *then* is expected to be disallowed in an *unless* conditional.

Finally, relevance conditionals also prohibit *then*. Their antecedent does not form the restrictive clause of an operator (in a Lewis–Kratzer-style approach) but rather presents the conditions under which the information provided by the consequent would be relevant. Since the consequent in relevance conditionals is always asserted, the unacceptability of *then* is to be expected:

(70) If you are thirsty, (# *then*) there's beer in the fridge.

In (70) *then* would bring about the meaning that at least in some situations in which the hearer is not thirsty, there will not be beer in the fridge, which contradicts the assertion of the sentence.

The second set of cases in which *then* cannot appear in conditionals is when the antecedent is a presupposition of the consequent. Consider (71a) and (71b) (from Iatridou):

(71) a. If [there are clouds in the sky]$_i$ (# *then*) it$_i$ puts her in a good mood.
b. If Mary bakes [a cake]$_i$, (# *then*) she gives some slices of it$_i$ to John.

In (71a), in order for the consequent to be evaluated, *it* has to have a referent and therefore the antecedent should be true, i.e., the cases considered should be the cases in which there are clouds in the sky. However, the presupposition contributed by *then* is exactly that in some alternatives to the antecedent, i.e., situations where there are no clouds in the sky, the consequent is false. But to evaluate situations where there are no clouds in the sky would mean that *it* would no longer have its original referent. Thus, predictably, *then* is not permitted in (71a). In (71b) the consequent also has to presuppose the truth of the antecedent for the licensing of anaphora. Since in (71b) *it* refers to the cake baked by Mary, it requires the truth of the antecedent for establishing its reference. The use of *then*, on the other hand, requires evaluating at least some cases where the antecedent doesn't hold, thus preventing felicitous anaphora.

In discussing the environments that prohibit the use of conditional *then*, Iatridou (1994) identifies a problematic case: *only if* conditionals are compatible with the presupposition of *then*, yet they disallow it:

(72) # Only if it is sunny (#*then*) will I visit you.[26]

Only if conditionals are expected to permit *then* because their assertion in fact strengthens the presupposition introduced by *then*. Whereas the appearance of *then* requires that some of the $\neg p$ cases be $\neg q$ cases, the *only if* conditional asserts that none of the alternatives to p satisfies q; that is, that all $\neg p$ cases are $\neg q$ cases. The clash between *only* and *then*, then, is a puzzle. And, of course, *only* is not inherently incompatible with conditional *then*. When *only* takes *then* as its associate, rather than the antecedent clause, the sentences are grammatical:

(73) If he comes only then will she leave.

The solution to this problem cannot be quite as straightforward as the suggestion that *only* is a quantificational element and cannot be left-dislocated, together with its antecedent, on analogy with *everyone/someone* in the case of left dislocation in (74):

(74) *Everyone$_i$/someone$_i$, Mary likes him$_i$.

The reasons for this are several. First, treating *only* as a dyadic quantifier taking the antecedent and the consequent clause of conditionals as its arguments is problematic. Instead, as shown by von Fintel (1997), *only* is better analyzed as an operator on propositions. If so, constraints against left dislocation of *only* and the *if*-clause are harder to formulate, as the two do not form a constituent.

A second problem, as Iatridou points out, is that the discussion about *then* is situated within a semantic theory of conditionals that takes any conditional to be a quantificational construct, with the *if*-clause restricting an overt or covert operator. But then, *then* is expected to be always precluded, as in its presence the *if*-clause must be left-dislocated. We cannot simultaneously hold that the #*only if . . . then* problem is due to the fact that left-dislocated clauses do not make good restrictors of quantificational operators, and still analyze *if p then q* conditionals as quantificational constructions.

A solution to the # *only if . . . then* problem has been suggested in Izvorski (1997b). She proposes that the relevant factor in the behavior of proforms in the presence of *only* is a clash in the requirements of focus: the associate of *only* needs to be focused, yet the antecedent in the correlative construction cannot be focused.

4.1.2 The distribution of then

The proform *then* may be present without an overt *if*-clause:

(75) A: John might come.
B: Well, then I will leave.

However, with an overt *if*-clause, *then* may appear only if the *if*-clause is sentence-initial:

(76) a. If John leaves, I will come home.
b. If John leaves, then I will come home.

(77) a. I will come home if John leaves.
b. * Then I will come home, if John leaves.

More generally, an overt *if*-clause needs to be structurally adjacent to the *then*-clause with which it is associated ((78), from Izvorski 1997b; also see Collins 1998):

(78) a. If it rains, *then* I think that we should stay at home.
b. * If it rains I think that *then* we should stay at home.

Correlative proforms can, in general, stand by themselves. Cross-linguistically they tend to be drawn from the class of demonstrative pronouns and in the absence of a correlative clause to restrict what they pick out, they just behave like ordinary demonstratives. This is why *then* can appear by itself (cf. 75). The relationship between a correlative proform and the correlative clause involves binding and thus requires c-command. (77b) is ungrammatical because the correlative clause (= the *if*-clause) does not c-command the correlative proform. In addition to the c-command requirement, there is also a locality requirement that holds between the correlative clause and correlative proform. There are different ways of stating this requirement, but the intuition is that the surface location of the *then* marks a predicate that combines with the *if*-clause. Thus the *if*-clause and the *then* must be structurally adjacent. (78b) is ungrammatical due to the failure of structural adjacency.

The assimilation of conditionals with correlatives also helps us to explain the distribution of *then* in stacked *if*-clauses. As discussed earlier, the presence of *then* in a conditional is not obligatory. However, if more than one *if*-clause is present, then only the most deeply embedded *then* may be omitted. All others must be present ((79), based on an example in Kratzer 1986):

(79) If you are back before eight, *(then) if the roast is ready, *(then) if we are both hungry, (then) we will have dinner together.

These facts are reminiscent of facts concerning stacked relative clauses discussed by Jacobson (1983), who noted that when more than one relative clause modifies a DP, all but the innermost relative clause must have overt material in its COMP domain, i.e., there must be an overt relative operator or an overt relative complementizer:

(80) every man (who/that) I like *(who/that) I invited

However, it is not plausible to analyze *then* as a relative pronoun. For one thing, it is the *if*-clause that we have analyzed as a free relative. It is well known that correlatives, unlike headed relative clauses, do not allow stacking. This falls out naturally from the semantics of correlatives which involve variable-binding. Once a correlative clause binds a correlative proform, that correlative proform cannot be bound by another correlative clause. In contrast, headed relative clauses combine with the head they modify by set-intersection, which imposes no such limitation. It is plausible that the requirement for overt *then* has a similar source. The lowest *if*-clause can combine directly with the main clause, and hence it does not require a *then*. The higher *if*-clause cannot combine directly with the main clause, because there is only one position for an *if*-clause and it is already occupied by the lowest *if*-clause. Any further modification requires an overt *then* which is bound by the next highest *if*-clause. A *then* can only be bound by its immediately superior *if*-clause. Therefore all but the lowest *if*-clauses need to appear with an overt *then*. According to this analysis there are never any truly stacked *if*-clauses.

4.2 Structure for conditionals with then

Collins (1998) and Iatridou (1991) have noted that there is a contrast between extraction from the main clause of a conditional with *then* and from a conditional without *then*. Extraction out of consequents of conditionals is degraded, but extraction out of the consequents of conditionals which have *then* is perceived to be worse:

(81) **Clefting (from Collins 1998):**
   a. ? It is the TA that if the student does poorly, the teacher will fire.
   b. ?* It is the TA that if the student does poorly, then the teacher will fire.

(82) **Question formation (from Collins 1998):**
   a. ? Which TA did John say that if the student does poorly, the teacher would fire?
   b. ?* Which TA did John say that if the student does poorly, then the teacher would fire?

It is possible to cleft *if*-clauses. However, clefting of the *if*-clause is blocked in the presence of *then* ((83–4), from Collins 1998):

(83) a. It is if Bill comes home that Mary will leave.
   b. * It is if Bill comes home that *then* Mary will leave.

(84) a. It is if Bill comes home that John said (that) Mary would leave.
   b. * It is if Bill comes home that John said (that) *then* Mary would leave.

Finally, the presence of *then* blocks adjunct extractions ((85–6), from Collins 1998):

(85) a. How did John say that Bill would fix the car if Mary brought the tools?
b. (?) How did John say that if Mary brought the tools, Bill would fix the car?
c. * How did John say that if Mary brought the tools, then Bill would fix the car?

(86) a. Why did John say that Bill would be upset, if Mary left?
b. (?) Why did John say that if Mary left, Bill would be upset?
c. * Why did John say that if Mary left, then Bill would be upset?

Iatridou (1991) and Collins (1998) propose structures which reflect the fact that extraction from conditionals with *then* is degraded. We have already seen that sentence-initial *if*-clauses without *then* can be handled as involving IP/CP adjunction and that sentence-final *if*-clauses involve VP-adjunction. The basic intuition that Iatridou and Collins's structures capture is that conditionals with *then* involve additional structure which provides an extra barrier to movement. Due to this extra barrier, extraction is degraded.

Collins entertains the following structures for conditional with *then*. The extra FP layer is responsible for making extraction of the consequent clause degraded:

(87) a. $[_{FP}$ *if*-clause $[_{F'}\ [_{F}$ then$]\ [_{IP} \ldots]]]$
b. $[_{FP}$ *if*-clause $[_{FP}$ then $[_{F'}\ F^0\ [_{IP} \ldots]]]]$

While Collins does not actually choose (87a) over (87b), he suggests that the structure in (87b) is unable to account for the fact seen in (83) and (84), namely that *if*-clauses can only be clefted in the absence of a *then*. This is putatively so because both (87b) and the structure assumed for *then*-less sentence-initial conditionals involve adjunction. Collins notes that in both these structures the *if*-clause crosses no barriers, and thus clefting should be good irrespective of the presence of *then*. The contrast between the location of the *if*-clause in a sentence-initial conditional without *then* (IP-adjunction) and in (87a) (= [Spec, FP]) is exploited by Collins within a Barriers-style extraction theory to derive the difference in grammaticality between (83a) and (83b), and (84a) and (84b), respectively.

The fact in (83) and (84) can be offered an alternative explanation, however. As Collins notes, the structure in (87b) resembles (88), which is a structure that has been proposed for topicalization:

(88) $[_{CP}$ NP $[_{CP}$ Op$_i$ $[_{C'} \ldots]]]$

If-clauses have been claimed to be *topics* (cf. Haiman 1978, 1993), and so the structure in (87b) is preferable, since it captures the affinity between conditional constructions and topicalizations. The structure in (87b) also makes the parallel with correlatives clearest. Let us consider a variant of this structure:

(89) [*if*-clause]$_i$ [then$_i$ $[_{IP} \ldots$ t$_i$]]

This variant of (87b) eliminates the functional projection FP. The main reason for postulating FP was to provide a barrier that would degrade the extraction of arguments and block the extraction of adjuncts. This blocking effect is created in (89) by the movement of *then*. We assume that *then* needs to move to create a predicate (cf. Heim and Kratzer 1998).[27]

That we need to move *then* is shown by contrasts like the following (= (78); from Izvorski 1997b; also see Collins 1998):

(90) a. If it rains, $then_i$ I think that [we should stay at home t_i].
b. * If it rains, I think that *then* we should stay at home.

For further arguments that the correlative proform undergoes obligatory movement in a number of languages, see Izvorski (1996b). This A'-movement of *then* makes further movements out of the main clause Subjacency violations.

The ungrammaticality of *then* with clefted *if*-clauses can be related to the marginality of variable-binding in *it*-clefts:

(91) a. No Italian man_i loves his_i mother.
b. ???/* It is no Italian man_i who loves his_i mother.

Under the proposed structure, there needs to be a relationship of variable-binding between the conditional clause and *then*. The clefted structures with *then* are bad because the structure of the *it*-cleft does not provide an appropriate configuration for a variable-binding relationship to hold between the *if*-clause and the *then*.

What happens when there is no *then*? In these cases, the *if*-clause, being an adjunct, can be merged at the IP-level (sentence-initial) or VP-level (sentence-final). As discussed earlier, there seems to be some evidence that an IP-level *if*-clause has two sources: it may have been merged there or it may have moved there from a VP-adjoined position. In the absence of *then*, the *if*-clause behaves like an ordinary free relative.

We could have assumed that in the absence of an overt *then*, there is always a covert *then*. However, this option can be ruled out. If a covert *then* was obligatorily present, it would move like the overt *then* and therefore block adjunct extractions. We would not find any extractability contrasts that depended upon the presence of *then*.

4.2.1 If-*clauses as definites*

As mentioned earlier, two recent semantic treatments of conditional clauses analyze them as plural definite descriptions (cf. Schein 2001; Schlenker 2001c). This is exactly the interpretation that conditionals would receive if they are free relatives involving abstraction over possible worlds. Free relatives involving abstraction over individuals are interpreted as plural definite descriptions of individuals (cf. Jacobson 1993; Dayal 1996). The semantic arguments put forth by Schein and Schlenker are outside the scope of this chapter, but we will present some of the syntactic facts that Schlenker uses in support of his proposal.

Schlenker notes that if *if*-clauses are definite world descriptions which furthermore can be doubled by a world pronoun (*then*), we would expect them to share the binding properties of referential elements. In particular, it can be shown that *if*-clauses are subject to Condition C of the Binding Theory ((92), from Schlenker 2001):

(92) a. [If it were sunny right now]$_i$ I would see people who would then$_i$ be getting sunburned.[28]
b. * I would then$_i$ see people who would be getting sunburned [if it were sunny right now].$_i$
c. Because I would then$_i$ hear lots of people playing on the beach, I would be unhappy [if it were sunny right now].$_i$

The examples make reference to the time of utterance, as a result of which *then* has to be interpreted modally and not temporally. Crucially, backward anaphora between the pronoun and the *if*-clause is possible, as (92c) shows, yet when the pronoun c-commands the *if*-clause, co-reference is precluded. As Schlenker notes, the natural conclusion is that *if*-clauses, like other R-expressions, are subject to Condition C of the Binding Theory.

4.3 *Some apparent problems for the conditional–correlative link*

We have sketched some of the arguments, both conceptual and empirical, for treating conditionals with *then* in English as a kind of correlative construction. We believe that, on the whole, the evidence supports the analysis of conditionals as correlative constructions and *if*-clauses as free relatives. However, there are still some hurdles that this assimilatory analysis has to get over.

One may be the absence of low construals in the case of *if*-clauses, discussed earlier. Free relatives normally allow the variable abstracted over to be long-distance bound by the *wh*-operator. We suggested that possibly the nature of world variables is such that they need to be locally bound. Still, the issue needs further research.

Another problem arises in the apparent availability of reconstruction in the presence of *then*. Let us go over the analysis of conditionals with and without *then*:

(93) a. **Sentence-final *if*-clause:**
Bill will [$_{VP}$ [$_{VP}$ leave] [$_{CP}$ if Mary comes]].
b. **Sentence-initial *if*-clause, no *then*:**
Structure 1: merger in VP-adjoined position followed by fronting:
[$_{IP}$ [$_{CP}$ If Mary comes]$_i$ [Bill will [$_{VP}$ [$_{VP}$ leave] t$_i$]]]
Structure 2: merger in IP-adjoined position:
[$_{IP}$ [$_{CP}$ If Mary comes] [$_{IP}$ Bill will leave]]
c. **Sentence-initial *if*-clause, then**:
[$_{IP}$ [$_{CP}$ If Mary comes]$_i$ [$_{IP}$ then$_i$ [Bill will [$_{VP}$ [$_{VP}$ leave] t$_i$]]]

Note that according to the structures in (93), a sentence-initial *if*-clause can originate lower than its surface position only when there is no *then*. When a *then* is present, it is the *then* that moves, and not the *if*-clause.

However, an argument for reconstruction comes from cases like (94) and (95), where the *if*-clause appears separated from the structure it modifies:

(94) *If John$_i$ is sick, he$_i$ thought that Bill would visit.

(95) *If John$_i$ is sick, then he$_i$ thought that Bill would visit.

Under the proposed analysis, at LF the *if*-clause would appear in the c-command domain of *he*. This explains why coreference between *he* and *John* is ruled out in (94). However, as far as we can tell, the coreference judgments stay the same even if a *then* is present.

By the structures in (93), only the *then* has raised in (95). The *if*-clause is merged high. Hence the Condition C effects seen in (95) are unexpected.[29]

5 Factual and relevance conditionals

The conditionals we have discussed so far are also known as hypothetical conditionals. They are the prototypical example of the conditional construction, but in fact there are also two other types of conditionals.[30] Relevance conditionals, also called 'conditional speech acts', are illustrated below:

(96) a. If I may be honest, you are not looking good
b. If you want to know, 4 isn't a prime number.
c. If you are thirsty, there is beer in the fridge.

The *if*-clause in relevance conditionals specifies the circumstances in which the consequent is discourse-relevant, not the circumstances in which it is true.

Factual conditionals, on the other hand, carry the presupposition that someone (other than the speaker) believes the proposition expressed by the *if*-clause to be true:[31]

(97) A. This book that I am reading is really stupid.
B. I haven't read it but if it is so stupid you shouldn't bother with it.

(98) A. My friend Joe, whom you haven't met, is very smart.
B. Oh yeah? If he's so smart why isn't he rich?

Languages may employ distinct complementizers/operators to introduce factual conditionals. For instance, in Bulgarian, *štom* 'when, given that' may be used in factual conditionals but not in hypothetical or relevance conditionals, which employ *ako* 'if'.

Relevance and factual conditionals exhibit syntactic behavior distinct from that of hypothetical conditionals. Here we will examine a number of syntactic differences.

5.1 Relevance conditionals

Relevance conditionals cannot contain the world proform *then*:

(99) a. #If I may be honest, then you are not looking good
b. #If you want to know, then 4 isn't a prime number.
c. #If you are thirsty, then there is beer in the fridge.

If a *then* is nevertheless used, then the interpretation changes to one of a hypothetical conditional. This follows from the analysis of the semantic contribution of *then* proposed by Iatridou (1994), and discussed above.

In Dutch (and other V2 languages) the *if*-clause of a hypothetical conditional behaves like the first element for V2, but the antecedent of a relevance conditional does not:

(100) a. Als Jan weggaat ga ik ook weg.
if John away goes go I also away
'If John goes away I will go away too.'
b. *Als Jan weggaat ga ik ook weg.
c. Als je het wil weten 4 is geen priem getal.
if you it want know 4 is no prime number
'If you want to know 4 is not a prime number.'
d. *Als je het wil weten is is geen priem getal.

Again, if a V2 order is forced on a relevance conditional, then it is coerced into a hypothetical:

(101) Als je honger hebt is er een boterham op de tafel.
if you hunger have is there a sandwich on the table
'If you are hungry there is a sandwich on the table.'

The relevance conditional can only be embeded under speech-act verbs:

(102) a. John said that if you are thirsty there is beer in the fridge.
b. *John believes that if you are thirsty there is beer in the fridge.

There is evidence that even when it is sentence-final, the *if*-clause of a relevance conditional is attached high, to IP/CP. Relevance conditionals cannot be fronted by VP$_f$ronting (or left stranded):

(103) a. *Look sick if I may say so though John does . . .
b. ?? Look sick though John does if I may say so . . .

5.2 Factual conditionals

The proposition expressed by the *if*-clause in a factual conditional is presupposed, as evidenced by the fact that the *if*-clause cannot associate with focus:

(104) *She only should leave [if she is so unhappy].

(105) a. It is if I drink too much wine that I get dizzy.
(Haegeman and Wekker 1984)
b. *It is if you like her so much that you should invite her.

Like hypothetical but unlike relevance conditionals, factual conditionals accept the proform *then*:

(106) a. If it is stupid then you shouldn't bother with it.
b. If he's so smart then why isn't he rich?

Like the *if*-clause in a hypothetical conditional, but unlike the antecedent in relevance conditionals, the *if*-clause in factual conditionals behaves as the first element for V2:

(107) a. Als je zo ongelukkig bent moet je weggaan. Dutch
if you so unhappy are must you leave
'If you are so unhappy you must leave.'
b. *Als je zo ongelukkig je moet weggaan.

Factual *if*-clauses cannot be preposed together with the VP in case of VP fronting; however, they can be stranded:

(108) a. * Leave this place if he is so unhappy though he should . . .
b. * Leave this place though he should if he is so unhappy . . .

The above facts suggest that the sentence-final *if*-clause in a factual conditional is adjoined higher than the VP. Yet Condition C effects also obtain, suggesting that the *if*-clause is not as high as the matrix IP/CP:

(109) *He$_i$ should leave if Bill$_i$ is so unhappy.

Generally, factual *if*-clauses share properties with appositives. As with appositives, no binding into factual *if*-clauses is possible:

(110) a. Every boy$_i$ saw the teacher who flunked him$_i$ walk away.
b. *Every boy$_i$ saw John, who flunked him$_i$ walk away.

(111) a. Every boy$_i$ yells at Bill if he$_i$ is hungry.
b. *Every boy$_i$ should leave if he$_i$ is so unhappy.

Parasitic gaps are possible in hypothetical conditionals but not in factual conditionals. This contrast cannot be attributed to a difference in attachment sites, because the anti-c-command requirement between the parasitic gap and the licensing variable is satisfied, no matter what the attachment of the *if*-clause is. Rather, this characeristic of factual antecedents is attributable to their similarity to appositives, i.e., they do not permit any dependence that is not satisfied in the clause itself:

(112) a. Who should she invite if she sees again?
b. *Who should she invite if she likes so much?
c. Bill, who she should invite if she sees again . . .
d. *Bill, who she should invite if she likes so much . . .

5.3 *Stacking* if*-clauses of different types*

The discussion above shows that *if*-clauses of different types attach at different levels. If they appear together, predictably ordering restrictions apply. Sentence-final *if*-clauses appear in the order hypothetical, factual, relevance:

(113) a. You should leave [$_{FC}$ if you are so unhappy] [$_{RC}$ if I may say so].
b. *You should leave [$_{RC}$ if I may say so] [$_{FC}$ if you are so unhappy].

(114) a. You should invite her to tea [$_{HC}$ if you see her again] [$_{FC}$ if you like her so much].
b. *You should invite her to tea [$_{FC}$ if you like her so much] [$_{HC}$ if you see her again].

(115) a. Peter takes his dog out [$_{HC}$ if it rains] [$_{RC}$ if you want to know].
b. *Peter takes his dog out [$_{RC}$ if you want to know] [$_{HC}$ if it rains].

(116) You should invite her to tea [$_{HC}$ if you see her again] [$_{FC}$ if you like her so much] [$_{RC}$ if I may say so].

6 Other conditional structures

6.1 *Adnominal conditionals*

The conditionals discussed so far have involved antecedents adjoined to clausal constituents (IP, VP). We have suggested that these should be analyzed on a par with free relative clauses, which sometimes appear clause-internally and sometimes in correlative structures. Lasersohn (1996) introduces a class of conditionals which he calls *adnominal* conditionals, where, he argues, the antecedent clause is adjoined to an NP:

(117) But we all know the consequences if we fail.

The structure that Lasersohn suggests has the *if*-clause internal to a DP:

(118) [Det [NP *if*-clause]]

This structure resembles closely the structure for headed relative clauses. Adnominal conditionals can thus be seen as the headed relative counterpart of VP/IP adjoined conditionals, which have been analyzed here as free relative clauses.

Since adnominal conditionals appear DP-internally, they can occur in positions where other DPs can, but where conditional clauses cannot. We have seen earlier that *if*-clauses cannot appear clause-medially unless they are set off by parenthetical intonation:

(119) a. John, if you bother him long enough, will give you five dollars.
b. * John if you bother him long enough will give you five dollars.

In contrast, adnominal conditionals can appear in clause-medial positions without requiring parenthetical intonation:

(120) a. The fine if you park in a handicapped spot is higher than the fine if your meter expires.
b. The outcome if John gets his way is sure to be unpleasant for the rest of us.

Evidence for the DP-internal location of the adnominal conditional is also provided by evidence from coordination, as well as the fact that a DP containing an adnominal conditional can be further modified by a relative clause:

(121) a. [[The location if it rains] and [the location if it doesn't rain]] are within five miles of each other.
b. The [[consequences if we fail] [that he mentioned]] are not nearly as bad as the [[consequences if we fail] [that he didn't mention]].

In certain cases, it seems plausible to treat the nominal expression modified by the adnominal conditional as a concealed question. If we do this the exceptionality of adnominal conditionals (modifying NPs instead of VP/IPs) seems to disappear:

(122) a. We all know the consequences if we fail.
b. We all know [what the consequences will be if we fail].

However, Lasersohn points out that such an approach is not generally tenable, because not all nominals modified by adnominal conditionals appear as complements of verbs that take interrogative complements.

Lasersohn considers another approach where the nominal modified by the adnominal conditional could be treated as a concealed free relative:

(123) a. the consequences if we fail
b. what(ever) the consequences would be if we fail

This approach seems initially plausible but requires much further justification. For one, the free relative *whatever the consequences would be* replaces *the consequences*. This means that the structure of the adnominal construction must be [[Det N] *if*-clause], and not [Det [N *if*-clause]]. Now consider (121b), which involves restrictive modification by a relative clause. To restrictively modify the free relative, the relative clause must be associated with *the consequences*. However, what it needs to really modify is *consequences [if we fail]*, and there does not seem to be any constituent in the free relative with equivalent semantics.

Instead Lasersohn provides a semantics to interpret [N *if*-clause] structures directly. According to his semantics, [N *if*-clause] picks out objects in the denotation of N in the words where the *if*-clause holds. The objects in the denotation of N have to exist in the world where the *if*-clause holds but need not exist in the actual world. Therefore an adnominal conditional gives us a way of making reference to non-existent objects.

6.2 Reduced conditionals

Typically, the consequents of conditionals constitute well-formed sentences by themselves:

(124) a. If it is sunny, then I will go to the park.
b. Then I will go to the park.

Schwarz (1998) discusses a class of conditionals from German where the consequent does not constitute a well-formed sentence by itself:

(125) **Reduced conditional:**
a. Wenn einer den Peter besucht, dann der Hans.
if someone-Nom the-Acc Peter visits then the-Nom Hans
'If someone visits Peter then it's Hans.'
b. Wenn der Hans wen besucht, dann den Peter.
if the-Nom Hans someone-Acc visits then the-Acc Peter
'If Hans visits someone then it's Peter.'

(126) a. *Dann der Hans
then the-Nom Hans
b. *Dann den Peter
then the-Acc Peter

Reduced conditionals can be related to the corresponding unreduced conditional by supplying material from the antecedent. Thus (125a, b) can be taken to involve the following reductions respectively:

(127) a. Wenn einer **den Peter besucht**, dann $_{\text{besucht}}$ der
if someone-Nom the-Acc Peter visits then the-Nom
Hans $_{\text{den Peter}}$.
Hans
'If someone visits Peter then it's Hans.'

b. Wenn **der Hans** wen **besucht**, dann $_{\text{besucht der Hans}}$
if the-Nom Hans someone-Acc visits then
den Peter.
the-Acc Peter
'If Hans visits someone then it's Peter.'

However, reduced conditionals seem to have several properties, both syntactic and semantic, that suggest that they are not merely reduced versions of their unreduced counterparts.[32] Structurally reduced conditionals differ from full conditionals in that *dann* 'then' is obligatory in reduced conditionals but optional in full conditionals. Interpretively, too, reduced conditionals differ from full conditionals on several properies identified by Schwarz (1998). The first difference is that the antecedent of a reduced conditional must contain an indefinite:

(128) **Indefiniteness requirement:**

a. *Wenn ich den Karl besuche, dann immer den Peter.
if I the-Acc Karl visit then always the-Acc Peter

b. Wenn ich den Karl besuche, dann besuche ich immer den
if I the-Acc Karl visit then visit I always the-Acc
Peter.
Peter
'If I visit Karl then I always visit Peter.'

c. Wenn ich wen besuche, dann immer den Peter.
if I someone-Acc visit then always the-Acc Peter
'If I visit someone then it's always Peter.'

The second distinction is shown in (129), which shows that reduced conditionals introduce presuppositional requirements that unreduced conditionals do not:

(129) **Presupposition effect:**

a. !!Wenn ich was zum Lesen mitnehme, dann immer
if I something to read along-take then always
meine Brille.
my glasses
'If I take something to read then it's always my glasses.'

b. Wenn ich was zum Lesen mitnehme, dann nehme ich immer
if I something to read along-take then take I always
meine Brille mit.
my glasses along
'If I take something to read then I always take my glasses.'

(129a) comes with a presupposition to the effect that glasses are something to read, and so it is perceived to be deviant. There is no such presupposition associated with (129b).

Schwarz refers to the third distinction as the *exhaustiveness* effect. This effect is exemplified by (130):

(130) **Exhaustiveness effect:**

a. Wenn ich wen besuche, dann immer den Peter.
if I someone-Acc visit then always the-Acc Peter
'If I visit someone then it's always Peter.'
(I cannot visit anybody other than Peter.)

b. Wenn ich wen besuche, dann besuche ich immer den Peter.
if I someone-Acc visit then visit I always the-Acc Peter
'If I visit someone then I always visit Peter.'
(I may visit people other than Peter.)

(130a, b) are both grammatical. However, as indicated, they differ in their truth-conditions.

According to Schwarz, these differences between reduced and unreduced conditionals follow if we assume that both the antecedent and the consequent clause in a reduced conditional make reference to the same event. In contrast, the antecedent and the consequent of an unreduced conditional can make reference to distinct events.

The indefiniteness requirement illustrated by the ungrammaticality of (128a) comes about as follows. Since (128a) is a reduced conditional, both the antecedent and the consequent make reference to the same event. For the truth of (128a), it is necessary that events of my visiting Karl are events of my visiting Peter. Now by the minimality of events, an event of my visiting Karl cannot simultaneously be an event of my visiting Peter. Thus (128a) is false if there is an event of my visiting Karl. From de Swart (1993), we know that multi-case conditional are felicitous only when there are at least two distinct events for the proposition expressed by the antecedent. The sentence is thus false whenever it is felicitous. In other words, it presupposes that it is false. Schwarz suggests that sentences that presuppose their falsehood are ungrammatical. This is why (128a) is ungrammatical.

The presupposition effect and the exhaustiveness effect also follow from the assumption that reduced conditionals involve the same event, and that events are minimal. For the truth of (129a), the minimal event of my taking something to read must involve my glasses. For this event to be truly minimal, my glasses

must be something to read. If not, we could always remove them and have a more minimal event. This is why (129a) presupposes that my glasses are something to read. The unreduced conditional in (129b) does not introduce such a presupposition because here the antecedent and the consequent make reference to distinct events. The event corresponding to the antecedent and the event corresponding to the consequent are both minimal, but since they are distinct events, minimality of events can be satisfied without presupposing that glasses are things to read.

The exhaustiveness effect follows similarly. For the truth of (130a), a minimal event of my visiting someone must be a minimal event of my visiting Karl. However, as noted earlier, a minimal event of my visiting Karl cannot also be a minimal event of my visiting Peter. Again, the possibility of having distinct events in the antecedent and the consequent of a unreduced conditional is responsible for the absence of an exhaustiveness effect. Since the antecedent and the consequent pick out distinct events, a minimal event of my visiting someone does not have to be identified with minimal events of my visiting Karl. The possibility is left open that there are minimal events of my visiting Peter.

6.3 Chinese bare conditionals

Bare conditionals in Chinese involve no obligatory overt marking in either the antecedent or the consequent clause. Optionally, *jiu* 'then' may be present in the consequent clause. It is, however, not clear whether the presence of *jiu* 'then' is not in fact indicative of another conditional structure in Mandarin Chinese – a conditional introduced by the complementizer *ruguo* (what Cheng and Huang 1996 call *ruguo*-conditional), given that *ruguo* 'if' may be dropped in certain cases.

Bare conditionals are further characterized by the presence of one or more *wh*-words in the antecedent clause matched by an equal *wh*-word in the consequent (cf. Cheng and Huang 1996). This last requirement is what distinguishes bare conditionals from *ruguo*-conditionals, given that *ruguo* 'if' need not appear overtly:

(131) shei yan shei, shei jiu xiang shei.
who plays who who then resemble who
'If X plays the role of Y, X then will resemble Y.'

The two other types of conditional structures in Chinese, *ruguo*- and *dou*-conditionals, may have *wh*-words in the antecedent. However, they need not have an anaphoric element in the consequent clause, and if they do, the anaphor cannot be a *wh*-word itself:

(132) a. *ruguo ni kandao shei qing jiao shei lai jian wo.
if you see who please tell who come see me
'If you see someone, please tell him/her to come see me.'

b. ruguo ni kandao shei qing jiao tal/Ø/na-ge-ren lai
if you see who please tell him/Ø/that-CL-person come
jian wo.
see me
'If you see someone, please tell him/her/that person to come see me.'

The interpretation of bare conditionals involves unselective binding by the (possibly covert) operator present in conditionals (as in Kratzer 1991), in the analyses of Cheng and Huang (1996) and Chierchia (2000). The two analyses differ as to the exact interpretation they assign to *wh*-words. Whereas for Cheng and Huang the *wh*-words are variables, bound DRT-style, for Chierchia they start out existentially quantified, but then a pair (one for each clause) of disclosure operators, associated with the conditional operator, removes the existential quantifier, and leaves the *wh*-words to be bound by the conditional operator. The two approaches' articulated LFs are given below:

(133) a. Operator$_i$ λ x_i [. . . x_i . . .] λ x_i [. . . x_i . . .] (Cheng and Huang 1996)
b. Operator$_i$ λ x_i [. . . $\exists x_i$ x_i . . .] λ x_i [. . . $\exists x_i$ x_i . . .] (Chierchia 2000)

A schematized LF of a bare conditional, and its interpretation, would be as follows:

(134) a. Operator$_i$ [. . . wh$_i$ . . .][. . . wh$_i$ . . .]
b. $\forall$x [. . . x . . .][. . . x . . .]

In sum, it is the syntactic dependency between the operator and the variables that it binds that make bare conditionals conditional.

7 Conclusion

Various questions arise in the syntax of conditionals, as we have seen in this chapter. We have tried to present some of the most important issues, and to relate distinct proposals that exist in the literature. We have also proposed a view that is distinct from previous analyses of conditionals, namely that conditional clauses are free relatives of possible worlds. Accordingly, conditionals with *then* are correlative structures. This view makes a number of facts about the syntactic behavior of conditionals and their interpretation fall out naturally.

Needless to say, many interesting questions have remained unaddressed. We have alluded to some, while some have not even been mentioned – these include, among others, issues of compositionality with *only if* and *even if* conditionals, exceptive and concessive conditionals, and the link with exceptive and concessive structures more generally.

NOTES

1 For this reason, relevance conditionals are often called speech act conditionals.

2 Some of these clausal adverbials are known as adverbials of contingency in traditional grammar (cf. Quirk et al. 1985): conditionals (e.g., *if q*, *p*), resultatives (e.g., *p*, *so q*), causatives (e.g., *because q*, *p*), exceptives (e.g., *p*, *except (that) q*), purpose clauses (e.g., *p*, *so that q*), and concessives (e.g., *although q*, *p*), where *p* is the proposition expressed by the main clause, and *q* is the proposition expressed by the adverbial clause.

3 See Iatridou (2000), who argues that the conditional mood is further decomposable, and one of its constituents is a past tense morpheme, which, however, is interpreted not along a temporal but along a modal dimension.

4 By 'purely syntactic' we mean the absence of accompanying insertion of a specialized lexical item or the appearance of specialized inflection. Of course, syntax still underlies the use of lexical items such as the complementizer *if*, or the licensing of conditional inflection on the verb.

5 Technically, the 'when/if' ambiguity obtains only in non-past clauses since past tense temporal adverbials require a different temporal relative pronoun, *wann*.

6 Finally, epistemic and optative modality, copulas, and topic markers are typologically very often employed in conditionals (cf. Traugott et al. 1986); some examples are given below:

(i) **Arrernte (cf. Wierzbicka (1997)):**
   a. Ingwenthe *peke* kwatye urnte-me.
      tomorrow maybe water fall
      'Perhaps it will rain tomorrow.'
   b. Kwatye *peke* urnte-me, ayenge petye-tyekenhe.
      water maybe fall 1sgS come-Vb-Neg
      'If it rains I won't come'

7 And, given the absence of subject-verb agreement, pro-drop in such conditionals is impossible in Russian. All these features, in addition to the adjoined status of the conditional clause, distinguish a conditional such as (10) from a conjoined imperative with a conditional meaning, as in (i), again from Jacab (to appear).

(i) Udar' menja i ty ob etom požaleješ! Russian
   hit-2sg me and you-sg about this regret
   'Hit me (you-sg) and you will be sorry about it.'

8 Similar facts obtain in the case of free adjuncts in English. A free adjunct such as the one in (i) can be interpreted as an adjunct of condition, cause, or concession, depending in part on the tense of the matrix clause:

(i) a. Working hard, I will finish at 8.
   b. Working hard, I finished at 8.

Stump (1985) proposes that the grammar assigns a conjunctive interpretation to a free adjunct structure (*I (will) work(ed) hard and I will finish(ed) at 8*), with context providing the eventual interpretation.

9 Consider (i):

(i) a. Never before has Dana seen anything like this.
b. Only with Rebecca will Pat be happy.

10 A language in which Comrie claims this is the case is Turkish. As far as we have been able to verify with native speakers, however, all the following word orders are possible in Turkish:

(i) a. Biz eger hava günesli ol-ur-sa disari çik-acag-iz.
we if weather sunny be-pres.-cond. out go-fut.-2pl
'If it is sunny we will go out'
b. Biz disari çik-acag-iz eger hava günesli ol-ur-sa
we out go-fut-agr.2nd.pl if weather sunny be-pres.-cond.
'We will go out if it is sunny'
c. Eger hava günesli ol-ur-sa biz disari çik-acag-iz.
if weather sunny be-pres.-cond. we out go-fut.-2pl
'If it is sunny, we'll go out.'

11 Additionally, Greenberg and Comrie's typological claim may need to be qualified. Geis (1985) cites Zwicky (p.c.) for the claim that there are languages which cannot place *if*-clauses in sentence-initial position. We have not been able to verify this claim for a particular language.

12 Geis (1985) points out that Heinämäki (1974) proposed that temporal connectives like *when*, *before*, and *until* be analyzed as coordinating conjunctions. Given the similarities between *when* and *if*, it seems reasonable to assume that Heinämäki's proposal could extend to *if*.

13 Assuming an approach to adverbials as specifiers of functional projections, as in Alexiadou (1997) and Cinque (1999), would naturally involve an analysis of sentence-initial *if*-clauses as specifiers of a covert functional head.

14 In this they resemble *because* clauses:

(i) Mary didn't vote for Bush because she supported Nader.
a. . . . she voted for Bush because she is rich. ($\neg$ > *because*)
b. . . . she voted for Nader. (*because* > $\neg$)

See Linebarger (1987) for extensive discussion of cases like these.

15 This sentence only has a reading where John's thinking is conditional on his being sick, i.e., where the matrix clause is part of the consequent.

16 Unless, just by virtue of being adjoined to IP as a result of QR, the quantifier can have scope over the IP-adjoined adverbial clause. May (1985) proposed, in fact, that quantified expressions adjoined to IP can be interpreted in each other's scopes.

17 This test cannot be replicated in conditionals, since infinitival conditionals are ungrammatical in English:

(i) a. * If to come, Bill will leave.
b. * When to come, Bill will leave.

The ungrammaticality of (ia) follows if we assume that *if* is in C^0 and illicitly governs PRO. (Of course, this account retains government as a theoretical construct, and uses

it further to constrain the distribution of PRO, and both of these approaches have been challenged.) The location of *when* in [Spec, CP] does not predict the ungrammaticality of (ib). The ungrammaticality follows if we assume that (i) non-interrogative *when*-clauses are free relatives, and (ii) infinitival free relatives are ungrammatical in English, and perhaps cross-linguistically (cf. Izvorski 1998). Note further that treating conditional *if*-clauses analogously to free relatives would give (ia) and (ib) a uniform explanation.

18 Consider (i), which is a case of V2 in an embedded clause, which obtains in case the complementizer is not present:

(i) a. Er sagt dass die Kinder diesen Film gesehn haben. German
he says that the kids this film seen have
'He says that the kids have seen this movie.'
b. Er sagt diesen Film haben die Kinder gesehen.
he says this film have the kids seen
'He says that the kids have seen this movie.'

The facts of (i) are particularly telling, because if it were only for the root-embedded asymmetry of V2, we could not conclude much, given that a similar root-embedded asymmetry exists in English questions, where matrix questions exhibit I-to-C movement but embedded ones do not, despite the fact that *wh*-phrases are considered to be in Spec, CP and not in C^0.

19 The absence of inversion, i.e., V2 in German *wenn* clauses follows from the fact that *wenn* clauses are free relatives, and free relatives, unlike questions, do not permit V2.

20 It has to be noted that the ambiguity obtains only with sentence-final *when*-clauses. When *when*-clauses are sentence-initial, only local (high) construals are available:

(i) When you say you'll leave, I'll leave.(unambiguous)

At least this is the case with neutral intonation. If the *when*-clause is interpreted as focused then ambiguity becomes a possibility, which may be due to the fact that in such a case the *when*-clause is moved from sentence-final position.

Sentence-initial *when*-clauses would still presumably involve A'-movement. Thus an account of the absence of low construals in terms of absence of A'-movement is undermined.

21 Philippe Schlenker suggested to us the relevance of Orin Percus's work in this respect. Percus (2000) argues that some world variables need to be locally bound.

22 Curiously, while in English contracted negation can be moved with I to C in questions, it may not be in conditionals. The following sentences are from Iatridou and Embick (1994):

(i) a. Hadn't he seen the car coming?
b. *Hadn't he seen the car coming, he would have been killed.
c. Had he not seen the car coming, he would have been killed.

23 There is some suggestion that non-counterfactual inverted conditionals are special – in Icelandic and Old English, indicative inverted conditionals are not technically 'indicative', since the raised verb in C has to be subjunctive:

(i) a. Ef hann hefur faridh eg kom. Icelandic (Iatridou and Embick 1994)
if he has-pres.ind. gone I come
'If he has gone, I will come.'
b. Hafi hann faridh eg kom.
has-pres.subj. he gone I come
'If he has gone, I will come.'
c.* *Hefur hann faridh eg kom.
has-pres.ind. he gone I come
'If he has gone, I will come.'
d. *Ef hann hafi faridh eg kom.
if he has-pres.subj. gone I come
'If he has gone, I will come.'

The subjunctive is also used in concessive ('although, even though') clauses, which are normally taken to presuppose the truth of the proposition they express.

24 The choice condition is meant to restrict the proposal to languages which allow 'optionality' of this kind, as there are languages which do not permit free relatives inside the clause (e.g., according to Srivastav 1991b, free relatives in Hindi cannot appear in argument position). For this latter type of language see Bhatt (2002).

25 Care should be taken to interpret the whole antecedent as the associate of *even*. In cases when some constituent of the antecedent is the associate of *even*, *then* should be acceptable.

26 The other syntactic option, without verb-raising, is also unacceptable:

(i) #Only if it is sunny *then* I will visit you.

27 It is also plausible that *then*, being a bare NP-adverb in the sense of Larson (1985a), needs to be merged lower in the tree where it can be licensed. In this it would differ from an *if*-clause, which could be merged high or low.

28 We find this example slightly marginal. It becomes perfect with *then* A'-moved to the front of the matrix clause. This does not affect Schlenker's argument.

29 These effects are a problem only if we assume that reconstruction effects imply movement. As much work on connectivity has argued, such an assumption is far from obvious.

30 The discussion in this section is based on Iatridou (1991).

31 Thus, the antecedent *if p* in a factual conditional can always be substituted by *if it is true that p*.

32 Though see Romero (2000) for an alternative analysis of reduced conditionals in German. Romero argues that the distinctions between full and reduced conditionals can be derived without stipulating different LF representations for full and reduced conditionals.

REFERENCES

Alexiadou, Artemis (1997). *Adverb Placement: A Case Study in Antisymmetric Syntax*. Berlin: John Benjamins.

Bhatt, Rajesh (2002). Locality in Correlativization. *Natural Language and Linguistic Theory* 21: 485–541.

Cheng, Lisa and C.-T. James Huang (1996). Two Types of Donkey Sentences. *Natural Language and Linguistic Theory* 14: 121–163.

Chierchia, Gennaro (2000). Chinese Conditionals and the Theory of Conditionals. *Journal of East Asian Linguistics* 9: 1–54.

Cinque, Guglielmo (1999). *Adverbs and Functional Heads: A Cross-linguistic Perspective*. New York: Oxford University Press.

Clark, Bill (1993). Relevance and "Pseudo-Imperatives." *Linguistics and Philosophy* 16: 79–121.

Collins, Chris (1998). A Note on Extraction from Conditionals. In: *Cornell Working Papers in Linguistics 16*. Niken Adisasmito-Smith and Toby Doeleman (eds.). Ithaca: Cornell University.

Comrie, Bernard (1986). Conditionals: A Typology. In: *On Conditionals*. Elizabeth Closs Traugott, Alice ter Meulen, Judy Reilly, and Charles Ferguson (eds.), 77–102. Cambridge: Cambridge University Press.

Dayal, Veneeta (1996). *Locality in Wh-Quantification: Questions and Relative Clauses in Hindi*. Dordrecht: Kluwer.

Emonds, Joseph (1985). *A Unified Theory of Syntactic Categories.* Dordrecht: Foris.

Fauconnier, Gilles (1975). Pragmatic Scales and Logical Structure. *Linguistic Analysis* 6: 353–375.

Fintel, Kai von (1994). Restrictions on Quantifier Domains. PhD dissertation, Amherst, University of Massachusetts.

Fintel, Kai von (1997). Bare Plurals, Bare Conditionals and Only. *Journal of Semantics* 14: 1–56.

Fortescue, Michael (1984). *West Greenlandic*. London: Croom Helm.

Geis, Michael L. (1970). Adverbial Subordinate Clauses in English. PhD dissertation, MIT.

Geis, Michael L. (1985). The Syntax of Conditional Sentences. In: *Studies in Generalized Phrase Structure Grammar*. Michael L. Geis (ed.), 130–159. Columbus, OH: Department of Linguistics, OSU.

Greenberg, Joseph H. (1963). Some Universals of Grammar with Particular Reference to the Order of Meaningful Elements. In: *Universals of Language*. Joseph H. Greenberg (ed.), 73–113. Second edition. Cambridge: MIT Press.

Hacking, Jane F. (1998). *Coding the Hypothetical: Comparative Typology of Russian and Macedonian Conditionals*. Amsterdam: John Benjamins.

Haegeman, Liliane (2003). Conditional Clauses: External and Internal Syntax. *Mind and Language* 18/4: 317–339.

Haegeman, Liliane and Herman Wekker (1984). The Syntax and Interpretation of Future Conditionals in English. *Journal of Linguistics* 20: 45–55.

Haiman, John (1978). Conditionals are Topics. *Language* 54: 565–589.

Haiman, John (1993). Conditionals. In: *Syntax: An International Handbook of Contemporary Research*. Joachim Jacobs, Arnim von Stechow, Wolfgang Sternefeld, and Theo Vennemann (eds.). Berlin: de Gruyter.

Hamblin, Charles L. (1973). Questions in Montague English. *Foundations of Language* 10: 41–53.

Han, Chung-hye (2000). *The Structure and Interpretation of Imperatives: Mood and Force in Universal Grammar*. New York: Garland.

Harper, William, Robert Stalnaker, and Glenn Pearce (1981). *Ifs: Conditionals, Belief, Decision, Chance and Time*. Dordrecht: Reidel.

Heim, Irene and Angelika Kratzer (1998). *Semantics in Generative Grammar*. Oxford: Blackwell.

Heinämäki, Orvin (1974). Semantics of English Temporal Connectives. PhD dissertation, Austin, University of Texas.

Horn, Laurence (1969). A Presuppositional Analysis of *Only* and *Even*. In: *Papers from the Fifth Regional Meeting of the Chicago Linguistics Society.* Alice Davison, Georgia Green, and Jerry Morgan (eds.), 98–107. Chicago: Chicago Linguistic Society.

Iatridou, Sabine (1991). Topics in Conditionals. PhD dissertation, Cambridge, MIT.

Iatridou, Sabine (1994). Clitics and Island Effects. In: *University of Pennsylvania Working Papers in Linguistics 2*. Roumyana Izvorski and Victoria Tredinnick (eds.), 11–30. Philadelphia: University of Pennsylvania Linguistics Club.

Iatridou, Sabine (2000). The Grammatical Ingredients of Counterfactuality. *Linguistic Inquiry* 31: 231–270.

Iatridou, Sabine and David Embick (1994). Conditional Inversion. In: *Proceedings of the North Eastern Linguistic Society 24*. Mercè Gonzàlez (ed.), 189–203. Amherst: Graduate Linguistics Student Association.

Izvorski, Roumyana (1996b). The Syntax and Semantics of Correlative Proforms. In: *Proceedings of the North Eastern Linguistic Society 26*. Kiyomi Kusumoto (ed.), 133–147. Amherst: Graduate Linguistics Student Association.

Izvorski, Roumyana (1997b). The Present Perfect as an Epistemic Modal. In: *Proceedings of SALT VII*. Aaron Lawson and Eun Cho (eds.). Ithaca: Cornell University Press.

Izvorski, Roumyana (1998). Non-Indicative *Wh*-Complements of Possessive and Existential Predicates. In: *Proceedings of the North Eastern Linguistic Society 28*. Pius Tamanji and Kiyomi Kusumoto (eds.), 159–173. Amherst: Graduate Linguistics Student Association.

Izvorski, Roumyana (2001). Free Adjunct Free Relatives. In: *Proceedings of the Nineteenth West Coast Conference on Formal Linguistics*. Roger Billerey and Brook Lillehaugen (eds.), 232–245. Somerville: Cascadilla Press.

Jacab, E. (forthcoming). Non-Canonical Uses of Russian Imperatives. *Journal of Slavic Linguistics*.

Jackson, Frank (1991). *Conditionals*. Oxford: Oxford University Press.

Jacobson, Pauline (1983). *On the Syntax and Semantics of Multiple Relative in English*. Bloomington: Indiana University Linguistics Club.

Jacobson, Pauline (1995). On the Quantificational Force of English Free Relatives. In: *Quantification in Natural Languages*. Emmon Bach, Eloise Jelinek, Angelika Kratzer, and Barbara H. Partee (eds.), 451–486. Dordrecht: Kluwer.

Jespersen, Otto (1954–1958). *A Modern English Grammar on Historical Principles*. 7 vols. London: Allen and Unwin.

Karttunen, Lauri (1977). Syntax and Semantics of Questions. *Linguistics and Philosophy* 1: 3–44.

Karttunen, Lauri and Stanley Peters (1979). Conventional Implicature. In: *Presupposition*. Choon-Kyu Oh and David A. Dinneen (eds.), 1–55. New York: Academic Press.

Kayne, Richard (1991). Romance Clitics, Verb Movement and PRO. *Linguistic Inquiry* 22: 647–686.

Kratzer, Angelika (1986). Conditionals. In: *Papers from the Twenty-second Regional Meeting of the Chicago Linguistic Society.* Anne Farley, Peter Farley, and Karl-Erik McCullough (eds.). 1–15. Chicago: Chicago Linguistic Society.

Kratzer, Angelika (1991). Modality. In: *Semantics: An International Handbook of Contemporary Research*. Arnim von Stechow and Dieter Wunderlich (eds.). Berlin: de Gruyter.

Larson, Richard (1985a). Bare NP-Adverbs. *Linguistic Inquiry* 16: 595–621.

Lasersohn, Peter (1996). Adnominal Conditionals. In: *Proceedings of SALT VI*. Teresa Galloway and Justin Spence (eds.), 154–166. Ithaca: Cornell University Press.

Lasnik, Howard (1995a). Case and Expletives Revisited: On Greed and Other Human Failings. *Linguistic Inquiry* 26: 615–633.

Lebeaux, David (1990). Relative Clauses, Licensing and the Nature of the Derivation. In: *Proceedings of the North Eastern Linguistic Society 20*. Juli Carter, Rose-Marie Déchaine, Bill Philip, and Tim Sherer (eds.), 318–332. Amherst: Graduate Linguistics Student Association.

Lewis, David (1975). Adverbs of Quantification. In: *Formal Semantics of Natural language*. Edward L. Keenan (ed.), 3–15. Cambridge: Cambridge University Press.

Linebarger, Marcia (1987). Negative Polarity and Grammatical Representation. *Linguistics and Philosophy* 10: 325–387.

May, Robert (1985). *Logical Form: Its Structure and Derivation*. Cambridge: MIT Press.

McGregor, Ronald Stuart (1995). *Outline of Hindi Grammar*. Oxford: Oxford University Press.

Palmer, Frank (1986). *Mood and Modality*. Cambridge: Cambridge University Press.

Pandharipande, Rajeshwari V. (1997). *Marathi: A Descriptive Grammar*. London: Routledge.

Percus, Orin (2000). Constraints on Some Other Variables in Syntax. *Natural Language Semantics* 8: 173–229.

Pesetsky, David (1989b). Language Particular Processes and the Earliness Principle. Unpublished manuscript, Cambridge, MIT.

Pesetsky, David (1995). *Zero Syntax: Experiencers and Cascades*. Cambridge: MIT Press.

Quirk, Randolph, Sidney Greenbaum, and Geoffrey Leech (1985). *A Comprehensive Grammar of the English Language*. London/New York: Longman.

Romero, Maribel (2000). Reduced Conditionals and Focus. In: *Proceedings of SALT X*. Brendan Jackson and Tanya Matthews (eds.), 149–166. Ithaca: Cornell University Press.

Rooth, Mats (1985). Association with Focus. PhD dissertation, Amherst, University of Massachusetts.

Schein, Barry (2001). Adverbial, Descriptive Reciprocals. In: *Proceedings of SALT XI*. Rachel Hastings, Brendan Jackson, and Zsofia Zvolenszky (eds.). Ithaca: Cornell University Press.

Schlenker, Philippe (1999). Propositional Attitudes and Indexicality: A Cross-Categorial Approach. PhD dissertation, MIT.

Schlenker, Philippe (2001a). The Hypothesis of Semantic Uniformity. Unpublished manuscript, Cambridge, MIT.

Schlenker, Philippe (2001c). A Referential Analysis of Conditionals. Unpublished manuscript, Cambridge, MIT.

Schwarz, Bernhard (1998). Reduced Conditionals in German: Event Quantification and Definiteness. *Natural Language Semantics* 6: 271–301.

Srivastav, Veneeta (1991b). The Syntax and Semantics of Correlatives. *Natural Language and Linguistic Theory* 9: 637–686.

Stalnaker, Robert (1975). Indicative Conditionals. *Philosophia* 5: 269–286.

Stump, Gregory (1985). *The Semantic Variability of Absolute Constructions.* Dordrecht: Reidel.

Swart, Henriëtte de (1993). *Adverbs of Quantification: A Generalized Quantifier Approach*. New York: Garland.

Traugott, Elizabeth Closs, Alice ter Meulen and Judy Reilly (1986). *Conditionals*. Cambridge: Cambridge University Press.

Wierzbicka, Anna (1997). Conditionals and Counterfactuals: Conceptual Primitives and Linguistic Universals. In: *On Conditionals Again*. Angeliki Athanasiadou and René Dirven (eds.). Amsterdam/New York: John Benjamins.

Zaefferer, Dietmar (1991). Conditional and Unconditionals: Crosslinguistic and Logical Aspects. In: *Semantic Universals and Universal Semantics*. Dietmar Zaefferer (ed.), 210–236. Berlin: Foris.