

The Syntax and Semantics of Correlative Proforms *

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1. Introduction

The correlative construction involves a relative clause which is not adjacent to the nominal it is interpreted with; rather the relative clause precedes the clause containing the nominal. As an illustration, consider the Hindi correlative in (1) (from Srivastav 1991), where the relative clause is not embedded like the relative clause in the English translation.

- (1) [jo laRkii khaRii hai] vo lambii hai.
REL girl standing is DEM tall is
'The girl [who is standing] is tall.'

In the typological literature the term CORRELATIVE is often applied both to the construction in (1) and to sentences in which the relative clause follows the main clause (mirroring the word order of the English (2)), because in both cases the relative clause appears away from the main-clause nominal. Srivastav, however, argues that these two constructions have distinct syntactic and semantic properties and it is therefore misleading to refer to both as correlatives. She proposes that the relative clause in (1) is base-generated as left-adjoined to the matrix clause, while sentence-final relative clauses are extraposed NP-modifiers that originate inside the main clause. Thus only the structure in (1) is unusual from the point of view of English relativization; sentences with post-main-clause relatives are of the type of the English (2) where the relative clause has been extraposed:¹

- (2) The girl is tall who is standing.

Following Srivastav, I will use the term CORRELATIVE only for constructions with left-dislocated relative clauses, as in (1). The structure of correlatives can be represented schematically as in (3).² This representation reflects Srivastav's further proposal that the

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¹Andrews (1985) allows for base-generated post-main-clause relatives. Similarly, Dwivedi (1994) argues that the right-adjoined relative is a type of an afterthought restrictor. Because I will only be concerned with left-adjoined clauses here, the status of right-adjoined relatives will not be relevant.

²In Srivastav's analysis the main clause is an IP, rather than a CP. It will become clear later on in section 4 why I am taking the main clause to be a CP.

left-adjoined relative clause is syntactically and semantically similar to a free relative.³

- (3) $[_{CP} [\text{FREE RELATIVE}]_i [_{CP} \dots \text{PROFORM}_i \dots]]$

Thus correlatives involve a left-adjoined free relative coindexed with a nominal inside the main clause. Typically this nominal is a demonstrative pronoun (cf. *vo* in (1)) or a NP with a demonstrative determiner and this nominal is what I call the CORRELATIVE PROFORM.⁴

Previous analyses of correlatives have mainly concentrated on the syntax of the relative clause and the mechanism for its interpretation. Here I examine the syntactic status and the semantic contribution of the correlative proform. I present evidence that the proform is treated in the syntax like a *wh*-element. I also propose that the proform contributes a particular reading of *exhaustiveness* to the matrix proposition. In discussing the interpretative effect of the proform and its syntax I build on Iatridou's (1991, 1994) work on conditional *then*.

In the next section I present Iatridou's proposal about the meaning of *then*. Section 3 examines the semantic contribution of correlative proforms, establishing that the behavior of *then* is not idiosyncratic but is part of a larger pattern. Section 4 presents an analysis of the syntax of correlative proforms. The connection between the syntax and the meaning contribution of correlative proforms is discussed in the concluding section.

2. The Meaning of Conditional *Then*

Iatridou (1991, 1994) shows that the use of conditional *then* is not without meaning, as was usually assumed. She proposes that *if p, then q*, in addition to asserting $O[p]q$, presupposes $\neg O[\neg p]q$, where *O* is the operator restricted by the antecedent clause of the conditional.⁵ In other words, the speaker can felicitously use *then* only when s/he believes and/or wants to convey that there are cases in which, when $\neg p$ holds, $\neg q$ holds as well. To illustrate with an example, the conditional in (4) asserts (4a) and presupposes (4b):

- (4) 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. In some case in which Stefan is not happy he does not sing in the shower.⁶

Because of its presupposition in (4b) the conditional in (4) cannot be felicitously used if Stefan always sings in the shower, happy or not.⁷

³Free relatives get their name from the fact that they are not modifiers on an NP. The many interesting issues in the syntax of free relatives need not concern us here (for discussion see Bresnan and Grimshaw 1978 and Groos and van Riemsdijk 1979, among others).

⁴While in Hindi demonstratives function as proforms, in Bangla, as Bagchi (1994) shows, only anaphoric pronouns can be used as proforms and not deictic pronouns.

⁵Assuming an analysis of conditionals in terms of restricted quantification, as in Lewis (1975), Kratzer (1986), *O* is an overt modal or adverb of quantification, or an implicit generic operator/modal of necessity.

⁶The presupposition in (4b) is equivalent to the statement *Not in every case in which Stefan is not happy does he sing in the shower*, i.e., $\neg O[\neg p]q$.

⁷In the absence of *then* the conditional in (4) *conversationally implicates* that it is not the case that Stefan always sings in the shower. Indeed, in asserting *if p, q* in a situation where s/he knows that *q* obtains, the speaker would violate the Gricean Maxim of Quantity and would therefore be less than cooperative. Thus, upon hearing *if p, q* and working on the assumption that the speaker is following the Cooperative Principle, the hearer infers that it must be the case that *q* does not always hold. This is a typical case of generating

Von Fintel (1994) 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 question whether *then* contributes the meaning that *all* or *some* alternatives to the antecedent do not satisfy the consequent will be discussed briefly in sections 3 and 5.⁸

Next, I will examine several cases where the meaning contributed by *then* is incompatible with the meaning of the conditional and therefore the use of *then* is precluded. The behavior of correlative proforms in the same cases will be examined later and the reader will see that the contribution of conditional *then* is shared by all correlative proforms.

Because of its meaning, *then* is incompatible with asserted consequents. Thus, if the antecedent of the conditional exhausts all possibilities, *then* should be precluded. This is indeed what happens as seen in the following examples (all taken from Iatridou):

- (5) 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.

In (5a) the predicate *dead or alive* covers all possibilities (i.e., John is necessarily dead or alive). In (5b) the antecedent is the associate of *even*.⁹ 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 and Fauconnier 1975). Another way to have an exhaustive antecedent is to use a superlative or pragmatically determined end point of a scale (cf. Fauconnier 1975). Both (5c) and (5d) have scalarly exhaustive antecedents of this type. The examples in (5) are analogous in that their consequents are asserted due to the exhaustive nature of their antecedents. Since *then* is intended to contribute the meaning that at least in some cases the consequent doesn't hold, clearly its use cannot be appropriate.

Related to the above cases is the observation in von Fintel that *unless* conditionals prohibit the use of *then*. Consider (6) (from von Fintel 1994):

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

a conversational implicature by exploiting a Gricean maxim. That a conversational implicature is indeed at hand here is seen from the fact that it is cancelable. The following utterance is not infelicitous.

- (i) If Stefan is happy, he sings in the shower. This is so because he always sings in the shower.

Taking the contribution of *then* to be a presupposition, as in Iatridou's analysis, allows one to capture the fact that the use of *then* brings about an interpretation stronger than a conversational implicature.

⁸Iatridou's proposal that it is *some* rather than *all* alternatives to the antecedent that do not satisfy the consequent is based on the position that a conditional like the one in (i) is not interpreted as a biconditional and that this is so can be shown by the felicity of the continuation:

- (i) If Pete runs for president, *then* the Republicans will lose. If he doesn't run I don't know what will happen. They might lose or they might win.

⁹Care 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.

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.¹⁰ Under the approach pursued by von Fintel *unless p, q* 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, *then* is disallowed in *unless* conditionals.

The so-called RELEVANCE conditionals also prohibit the use of *then*. The antecedent in relevance conditionals is not part of the assertion but rather presents the conditions under which uttering the consequent would be relevant. In (7) (from Iatridou 1994), because the consequent is asserted, the unacceptability of *then* is to be expected.

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

Finally, *then* cannot appear in conditionals in which the antecedent is a presupposition of the consequent. Consider (8a, b) (again taken from Iatridou 1994):

- (8) 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 (8a) the contents of the antecedent are referred to in the consequent clause. The presupposition contributed by *then* requires evaluation of alternatives to the antecedent (i.e. situations where there are no clouds in the sky). But to evaluate such situations would mean that *it* would no longer have its original referent. Similarly, in (8b) *it* refers to the cake baked by Mary and 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 sum, Iatridou proposes that the use of *then* is not strictly speaking optional. For her and for von Fintel *then* contributes the meaning that in some/all of the cases when the antecedent is false, the consequent is also false. The clash between this meaning and the intended reading of the conditional results in the unacceptability of *then*; this happens in conditionals with asserted consequents and with consequents that presuppose the truth of the antecedents. The next section discusses the relationship between correlatives and conditionals and shows that the conditions on the use of *then*, discussed above, apply to all correlative proforms.

3. The Contribution of Correlative Proforms

3.1. Conditionals and Correlatives

Relating correlative proforms to conditional *then* is not coincidental. As Geis and Lycan (1989) point out, conditionals with *then* are the last remnant in English of a

¹⁰Assuming the Lewis-Kratzer approach to conditionals, the semantic representation of *unless p, q* is $O[\text{except } p][q]$. In other words, (6) is interpreted roughly as *All cases, except the ones in which it rains tomorrow, are cases in which I won't leave.*

once productive correlativization strategy.¹¹ Iatridou and von Fintel also point out the similarities between conditionals with *then* and a certain type of NP/PP dislocation in Germanic. The German example in (9) (from Iatridou) illustrates this construction:

- (9) Hans, *den* mag Maria.
 Hans him loves Maria
 ‘Hans, Maria likes him.’

This type of dislocation is a remnant of the correlative construction (hence its name CORRELATIVE DISLOCATION in von Fintel). The proform is a demonstrative pronoun and it has to appear at the beginning of its clause, just as in the Dutch (10), a true correlative.¹² The only difference between the two constructions is in the category of the dislocated constituent.

- (10) [*Wie* jij uitgenodigd hebt]_i, *die*_i wil ik niet meer zien.
 who you invited have that-one want I no longer see
 ‘The one you’ve invited, I don’t want to see him any longer.’

We see that there are good reasons to treat *then* as an anaphoric element of the correlative proform type. Let us turn now to the question of how the behavior of *then* compares to the behavior of correlative proforms.

3.2. Felicity Conditions on Correlative Proforms

Before we start the discussion of the contribution of correlative proforms, we need to consider the question of the optionality of their use. To illustrate the relevance of optionality consider the following. It is because both *if p, q* and *if p, then q* constructions are available that one can examine the differences between them and argue that *then* contributes a certain meaning to the conditional. Similarly, in order to isolate the meaning contribution of the correlative proform, we need both types of constructions, a correlative, as in (11a) and a construction closely related in meaning where the free relative clause is not dislocated but appears internally to the main clause, as in (11b).¹³

- (11) a. [_{CP} [free relative]_i [_{CP} ...proform_i...]]
 b. [_{CP} ...[free relative]...]

¹¹In the Indo-Aryan languages conditionals are formed as correlatives. The following Marathi sentences (from Andrews 1985) illustrate the use of locative and conditional adjunct clauses in correlatives; note the morphological parallelism between the relative pronouns and the demonstrative proforms, as well as the structural parallelism between the two clauses of the correlative construction.

- (i) a. [*Jithe* sawəli hoti]_i, *tithe*_i Ram bəsla.
 where shade was there Ram sat-down
 ‘Where there was shade Ram sat down.’
 b. [*Jə*r to ithə yel]_i, *tə*r_i mi tya-la goli marin.
 if he here comes then I-INST he-DAT bullet kill-will
 ‘If he comes here, then I’ll kill him.’

¹²(10) is from Groos and van Riemsdijk (1979) who do not characterize it as a correlative; they consider it as part of their investigation of the properties of free relative clauses.

¹³Conditionals with and without *then* also have different syntax (cf. Iatridou 1991, Iatridou and Kroch 1993).

As pointed out by Srivastav (1991) free relatives in Hindi cannot appear in argument position.¹⁴ Since the contrast between (11a,b) is lacking in Hindi (at least for arguments), this language is not going to be revealing with respect to the contribution of the proform. Languages like Modern Greek and those of the Slavic family are more suitable to test the behavior of correlative proforms. Although these languages are never, to my knowledge, mentioned in studies of correlatives, they have fairly productive correlativization but also allow free relatives to appear sentence internally (in argument or adjunct positions, depending on the status of the free relative). This is why the behavior of correlative proforms will be illustrated in this section with examples from Slavic and Modern Greek.

Let us turn now to the meaning contribution of the proform. I propose that, given a choice between constructions of the type (11a) and (11b), a statement $F(ree) R(elative)_i$, $proform_i q$ (where q is the main clause in a correlative minus the proform), in addition to asserting $FR q$ also presupposes that alternatives to the free relative do not make the main clause true. To illustrate with an example, consider the Russian correlative in (12):

- (12) [Kogo ljublju]_i, *togo*_i poceluju.
 whom love-1sg that-one will-kiss-1sg
 ‘I’ll kiss who I love.’

This correlative asserts that I will kiss the people I love. It also has a presupposition that I will not kiss the people that I do not love.¹⁵ In other words the proform contributes a reading of exhaustiveness to the main clause: the individuals that I will kiss are all and only those people that I love.¹⁶ Note that according to my proposal the interpretative effect of the proform is that *all* of the alternatives to the free relative make the main clause false. This is a stronger claim than the one put forward by Iatridou for conditional *then* and as such it corresponds to von Stechow’s account. The difference in the behavior of conditional *then* and of correlative proforms like the one in (12), though interesting, cannot be investigated at this point. A possible adjunct/argument distinction in the contribution of the anaphoric pronouns is discussed in the last section.

Next, I am going to examine environments that are not compatible with the proposed presupposition of the correlative proform. As proposed above, when a proform is used, it should not be the case that all alternatives to the antecedent satisfy the matrix proposition. Thus, if the antecedent clause is exhaustive and does not leave any alternatives to be evaluated, a proform should not be felicitous. Consider first the Modern Greek example in (13). In the absence of the proform, i.e. when the free relative is not dislocated, the fact that it exhausts all possibilities (taking rain and sunshine to be the only two possible weather conditions) has no effect on the acceptability of the sentence. When the proform is introduced and the exhaustive free relative becomes the dislocated antecedent in a correlative

¹⁴She relates this to the more general fact that in Hindi CPs cannot appear in case-marked positions.

¹⁵(12) has the same assertion as (i), where the free relative appears in argument position inside the main clause. Sentence (i) does not share the presupposition that (12) has.

(i) Poceluju [kogo ljublju].
 will-kiss whom love-1sg
 ‘I’ll kiss who I love.’

¹⁶This is essentially the same phenomenon as the one referred to as STRONG EXHAUSTIVENESS in Groenendijk and Stokhof (1982). According to their analysis of *wh*-questions, the question *What did Mary read?* denotes the proposition *Mary read a, b, and nothing else*, in a world where Mary read *a* and *b*.

construction, the sentence becomes unacceptable.

- (13) [Ke otan vrexī ke otan exi ilio] (#*tote*) vjenumē ekso.
 and when rains and when has sun then go-1pl out
 ‘We go out when it is sunny and when it is raining.’

Consider also the case when the free relative is the associate of *even*. As discussed earlier, *even* is associated with an end-point of a scale over which universal quantification applies, and as a result, if it were to take the antecedent of a correlative as an associate, the antecedent would have concessive character and the main clause would be asserted. The Bulgarian example in (14) shows that the proform is disallowed in such a case. Without the proform, the sentence is acceptable showing that in principle free relatives can be the associate of *even*. It is only in the correlative construction that free relatives disallow *even*.

- (14) [Dori kojto se učī], (#*toj*) njama da spoluči.
 even who refl studies he will-not to succeed
 ‘Even who studies will not succeed.’

In both Bulgarian and Modern Greek the use of the conjunction together with the invariable subjunctive/infinitival particle (*da/na*, respectively) in free relatives results in the concessive reading of the free relative. The details of the analysis of this construction, though interesting, need not concern us here. We can use it though as another environment to test the behavior of correlative proforms. Again, the prediction is met; the correlative proform is disallowed, as the Modern Greek (15) shows.

- (15) [Oti ke na theli] (#*afto*) tha tu dhoso.
 what and to wants that will him give-1sg
 ‘I’ll give him whatever he wants.’

Next, consider the case of RELEVANCE free relatives.¹⁷ The free relative in the Modern Greek (16) states the circumstances under which uttering the main clause is relevant. In other words, the main clause is asserted and thus the proform is expected to be unacceptable. Since this is indeed what happens, we can conclude that correlative proforms behave like conditional *then* in one more environment.

- (16) [Otan tha ise etimi] (#*tote*) ime sto grafio mu.
 when will be-2sg ready then be-1sg in-the office my
 ‘When you get ready, I am in my office.’

Recall that Iatridou identifies another case prohibiting conditional *then*: namely, when the truth of the antecedent is a presupposition for the consequent. We can see that, again, correlative proforms behave just like conditional *then*. When the contents of the free relative are referred to in the main clause it is not possible to evaluate alternatives to the free relative and still preserve the anaphora. Since the presupposition associated with the proform requires evaluation of the alternatives to the antecedent, the proform should be unacceptable. That the prediction is met is evident from the Bulgarian example in (17):

¹⁷I use this name in analogy to the relevance conditionals discussed by Iatridou (cf. (7)).

- (17) [Kâdeto Maria se pojavi_i], (#*tam*) tova_i se zabeljazva.
 where Maria refl appears there this refl notices
 ‘Where Maria shows up, her appearance gets noticed.’

Example (18) from Modern Greek illustrates another case where the presupposition associated with the proform conflicts with anaphora. When alternatives to the free relative are evaluated, the pronoun in the main clause cannot have its original referent.

- (18) [Otan i Maria grafi vivlio_i], (#*tote*) o Janis to_i agorazi.
 when the Maria writes book then the Yanis it buys
 ‘When Maria writes a book Yanis buys it.’

Crucially, both (17) and (18) are acceptable in the absence of a proform.

The discussion so far shows that the presupposition associated with conditional *then* is a property of all correlative proforms. Because this presupposition leads to a conflict in a number of environments, the proform is not always allowed. The same environments that prohibit *then* in conditionals also prohibit correlative proforms. There is one more case where conditionals with *then* and correlatives behave alike, namely when the antecedent is the associate of *only*. Unlike the previous examples, this environment does not involve a meaning clash. Because of that, the behavior of *only* is puzzling, but the facts receive a natural explanation when the structure of correlatives is taken into account. The problem raised by *only*, as identified by Iatridou, is that *only if* conditionals are compatible with the presupposition of *then*, yet they disallow it:

- (19) Only if it is sunny (#*then*) will I/I will visit you.

Only if conditionals are expected to permit *then* because their assertion in fact strengthens the presupposition introduced by *then*. Whereas the use 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 satisfy q , that is, that all $\neg p$ cases are $\neg q$ cases.

The same effect can be observed in the case of correlatives. When the free relative clause is the associate of *only*, the correlative proform cannot felicitously appear. The Hindi example in (20) illustrates this fact.

- (20) # [sirf jo laRkii khaRii hai] vo lambii hai.
 only REL girl standing is DEM tall is
 ‘Only the girl who is standing is tall.’

In proposing possible solutions for the problem Iatridou notes that other elements that prevent the *if*-clause from appearing in the Spec, CP position of the main clause behave like *then* in disallowing *only*:¹⁸

- (21) # Only if it rains what will we eat?

I will pursue the idea that structural considerations are preventing the appearance of *only* in the presence of *then*, proposing that the reason for the incompatibility lies in the conflict between the left-dislocated nature of the free relative in the correlative construction and the

¹⁸Similarly, Iatridou shows that *if*-clauses that do not count for V2 in German, cannot be modified by *only*.

focus-sensitive nature of *only*. Note that *only* is not inherently incompatible with correlative proforms, including *then*. As (22) shows, when *only* takes *then* as an associate rather than the *if*-clause, the resulting sentence is grammatical:

(22) If he comes *only then* will she leave.

Similarly, *only* can felicitously take the proform in correlatives as its associate, as illustrated by the Hindi example in (23):¹⁹

(23) [jo laRkii khaRii hai] sirf vo lambii hai.
REL girl standing is only DEM tall is
'Only the girl who is standing is tall.'

That the associate of *only* needs to be focused is uncontroversially accepted (cf. Jackendoff 1972, among many others on the topic of association with focus). The antecedent in the correlative construction, however, cannot be focused, as it is left-dislocated and part of the background. Other ways of focusing the antecedent in correlatives also result in ungrammaticality. In Hindi, the emphatic particle *hii* cannot take the antecedent in the correlative as its associate; it has to focus the proform (see (24)). Similarly, the relative clause in the Bulgarian correlative in (25) cannot be focused by the focusing clitic *li*.

(24) a. * [jo laRkii khaRii hai] hii vo lambii hai.
REL girl standing is EMPH DEM tall is
'The girl who is standing is tall.'
b. [jo laRkii khaRii hai] vo hii lambii hai.

(25) [Kakvoto si obeštal] li, (*tova) šte napraviš?
what are promised Q-foc that will do-2sg
'Are you going to do what you've promised?'

The incompatibility between the proform and *only* is a direct result of the structure of correlatives: *only* requires a focused associate, yet the relative clause is dislocated and cannot be focused. When the free relative is inside the main clause and the proform is therefore absent, there is no incompatibility and *only* can freely appear.

3.3. Unifying *Then* and Correlative Proforms

A final problem needs to be resolved, however, before we can conclude that *then* and correlative proforms behave alike. Iatridou and von Stechow agree that if the interpretation of the correlative dislocation construction (cf. (9)) is the same as that of conditionals with *then* we would expect the NP-dislocation in (26) to be unacceptable, which is not the case:

(26) Alle haben die Vorlesung verstanden. Hans hat sie verstanden. Maria hat sie verstanden. Und unser Freund Peter, *der* hat sie auch verstanden.
'Everybody understood the lecture. Hans understood it. Maria understood it. And our friend Peter, *der* understood it too.'

¹⁹If *then* is dislocated, it too cannot be the associate of *only*:

(i) # If it rains *only then* what will we eat?

The use of *der* should be associated with a presupposition that alternatives to the dislocated NP, i.e., people other than Peter, do not satisfy the matrix proposition. Yet the previous discourse explicitly states that all the alternatives to Peter make the matrix proposition true. I would like to suggest that the use of a focus-sensitive adverb (in this case *too*) is what is relevant here. Thus, the correlative dislocation in (26) is interpreted roughly as in (27):

(27) And also our friend Peter, *der* too understood it.

Such sentences are not problematic for the unified analysis of conditional *then* and correlative proforms since the same facts obtain in the case of conditionals. Consider (28) which is based on an example from von Stechow. In the absence of focus sensitive adverbs the last conditional does not license the appearance of *then*.

(28) We will definitely play soccer. If the sun shines we will. If it is cloudy and cold we will. And if it rains (*#then*) we will/And also if it rains *then* too we will.

Of course, it still remains to be explained why the use of a proform is allowed in (27) and (28), given that the alternatives to the antecedent clearly satisfy the matrix proposition, contrary to the presupposition of the proform.²⁰ But at least we can conclude that correlative proforms and *then* behave alike in all respects. The findings in this section confirm Iatridou's and von Stechow's suggestion that the meaning contribution of *then* is not a lexical idiosyncrasy but can be derived from the configurational properties of the *if p, then q* construction.

4. The Syntax of Correlative Proforms

Having discussed the meaning contribution of correlative proforms I now turn to the question of their syntactic status. I propose that the correlative proform undergoes *wh*-movement, either overt or at LF, depending on the language. This movement is essential for the realization of the binding relation between the free relative clause and the proform. In Srivastav's (1991) analysis, the antecedent clause in the correlative construction functions as a generalized quantifier that binds a variable in the main clause, namely the proform. In other words, Srivastav needs to assume that the main clause in the correlative is interpreted as an open sentence. My proposal that the proform undergoes *wh*-movement provides a natural explanation for why this should be so. The movement of the proform establishes an operator-variable structure which is straightforwardly interpreted as a predicative term.

The rest of this section provides evidence in support of the position that the correlative proform undergoes *wh*-movement. Let us begin the discussion with conditional *then*. Previous work on the syntax of *then* (Collins 1989, Iatridou 1991, Iatridou and Kroch 1993, von Stechow 1994) has established that *then* is a maximal projection in Spec, CP of the consequent clause of the conditional. The antecedent in this case is adjoined to CP.²¹ While the evidence that *then* is in Spec, CP of the consequent clause is very convincing,

²⁰The same problem is raised by sentences like (i), as noticed by Iatridou.

(i) And even if it rains even then we go out.

²¹That this is indeed the syntax of the *if p, then q* construction, can be deduced from a number of facts. As observed by Collins (1989) *then* blocks extraction out of the consequent clause of conditionals and interferes with the selectional requirements of a higher verb. *Then* also counts as the first element for V2. Iatridou and Kroch (1993) further discuss that embedded conditionals with *then* behave as CP-recursed structures.

the common assumption is that it is base-generated there. However, a closer examination of the relevant data shows that a more appropriate analysis will be that *then* is *wh*-moved to Spec, CP. For one, *then* cannot appear in an embedded clause (as noted in Collins 1989):

- (29) 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.

Although *then* belongs to the embedded part of the consequent (i.e. it is not my thinking that is conditional on the weather, it is the proposition that we should stay at home), it can only appear in the highest Spec, CP. Furthermore, *then* is sensitive to islands. Observe the contrast in (30). The (a) sentence is acceptable because the bridge verb allows extraction of *then* to the highest Spec, CP in the consequent. The sentence in (30b), on the other hand, is unacceptable because the complex NP disallows extraction.²²

- (30) a. If it rains tonight, *then* I believe that it will be cold tomorrow.
 b. If it rains tonight, (**then*) I believe the forecast that it will be cold tomorrow.

Further examples of island violations are given in (31). Again, as before, the judgements on the acceptability of *then* are meant to reflect the possibility of interpreting it in the embedded clause of the consequent.^{23,24}

- (31) a. If she finishes the project, *then* I expect that she will be promoted.
 b. If she doesn't finish the project (??*then*) I regret that she won't be promoted.
 c. If she finishes the project, (??*then*) I wonder whether she will be promoted.

Given the island effects, it is reasonable to conclude that *then* is moved to (the highest) Spec, CP of the consequent rather than being base-generated there.

Let us turn now to correlative proforms. In languages with no overt *wh*-movement the correlative proform may remain in-situ and does not have to immediately follow the adjunct free relative (cf. Hindi (32)). Island effects can be observed, suggesting that the proform undergoes movement at LF. Example (33) (from Srivastav) shows that correlative proforms in Hindi cannot be inside a complex NP.²⁵

²²The only reading that (30b) could have is the unlikely one where my present belief in the weather forecast is conditional on tonight's rain. Using a future matrix verb unsurprisingly improves the sentence:

(i) If it rains tonight, *then* I will believe the forecast that it will be cold tomorrow.

But of course in this case, *then* belongs to the matrix clause of the consequent: the sentence is interpreted as asserting that tonight's rain will influence my belief system in a particular way.

²³The acceptability of (31b, c) in the absence of *then* suggest that the *if*-clause itself is not extracted from the islands but is rather base-generated as adjoined to the main clause. Independent evidence that this is indeed the case comes from examples like the following:

(i) If Mary_i finishes the project, she_i expects/believes that she will be promoted.

If the antecedent clause of the conditional was base-generated below the main clause and then extracted to its pre-main clause position, the sentence would be bad on the coindexed reading because of a Condition C violation. (The question then arises of how the *if*-clause gets to be interpreted within the scope of the matrix verbs, which I am not going to address here.)

²⁴As David Pesetsky pointed out to me, the conditions on extractability are similar to those of *neg*-raising. Here however I cannot pursue the implications of this suggestion.

²⁵In Hindi finite clauses are islands for (covert) extraction. For some speakers at least proforms are unacceptable in embedded finite clauses.

(i) * [Sita_j jo banaa-tii hai]_i Ram-ne Ramesh-se kaha ki Anoop_j voh_i khaa-ta hai
 Sita REL make-HAB is Ram-ERG Ramesh-INSTR said that Anoop DEM eat-HAB is
 'Ram told Ramesh that Anoop eats what Sita makes.'

- (32) [Ram-ne Sita-ko jo kitaab dii]_i Bill-ne Sara-ko *voh*_i dikhaa-ii.
 Ram-ERG Sita-DAT REL book give-PERF Bill-ERG Sara-DAT DEM show-PERF
 ‘Bill showed to Sara the book that Ram gave to Sita.’
- (33) * [jo vahãã rahtaa hai]_i mãĩ yeh baat ki *vo*_i nahĩ ayaa jaantii hũũ.
 REL there live is I this matter that DEM not came know is
 ‘Who lives there, I know the fact that he did not come.’

In languages with overt *wh*-movement the proform is fronted to the highest Spec, CP obligatorily, as the Bulgarian sentences in (34) show. As expected, the proform is sensitive to islands (cf. the Bulgarian example (35)):

- (34) a. [Kolkoto pari iska]_i *tolkova*_i misli će šte i dam.
 how-much money wants that-much thinks that will her give-1sg
 ‘She thinks that I’ll give her as much money as she wants.’
 b. *[Kolkoto pari iska]_i, misli će šte i dam *tolkova*_i.
 c. *[Kolkoto pari iska]_i, misli će *tolkova*_i šte i dam.
- (35) [Kakto im kazah]_i, *taka*_i čuh (**sluha*) će sa postâpili.
 how them told-1sg that-way heard-1sg the-rumor that are done
 ‘I heard (the rumor) that they had acted the way that I had told them to.’

In addition to the covert/overt movement distinction between languages, further variations in *wh*-movement (i.e., extraction from indicative vs. subjunctive clauses, possibility vs. prohibition of left-branch extractions, whether or not topics are allowed to precede the *wh*-word) obtain in the case of correlative proforms. These facts cannot be considered here in detail because of the lack of space but they provide further support for the position that the correlative proform is treated like a *wh*-phrase by the syntax.²⁶

The behavior of proforms in multiple correlatives gives additional evidence in support of the syntactic analysis of proforms advocated here. In multiple *wh*-fronting languages all of the proforms have to be fronted to Spec, CP, as illustrated in the Russian example in (36):

- (36) a. [Kto kogo ljubit], *tot o tom* i govorit.
 who whom loves he of him and speaks
 ‘Everybody speaks about the person they love.’
 b. *[Kto kogo ljubit], *tot* i govorit *o tom* .

Parametric variation in the extraction and in the ordering of *wh*-phrases between multiple *wh*-fronting languages is also reflected in multiple correlativization. While in Bulgarian and Romanian all *wh*-words need to be fronted to the matrix clause, in Serbo-Croatian, Polish and Czech only one *wh*-pronoun can undergo long *wh*-movement while the rest may move only locally in the embedded clause (cf. Rudin 1988).²⁷ As expected, only one correlative proform can be fronted to the matrix clause in multiple correlatives in the latter group of languages. The following examples from Serbo-Croatian illustrate this fact:

²⁶These findings support Srivastav’s position that the proform behaves more like a phonetically realized trace than like an English type resumptive pronoun.

²⁷Rudin notes, and my native speaker consultants confirm, that the facts are more complicated and that for some speakers certain verbs allow extraction of more than one *wh*-word from a clause.

- (37) a. [Kome se kako predstaviš], *taj* misli da *tako* treba da te tretira.
 whom refl how present-yourself he thinks that thus should to you treat
 ‘The way you present yourself, this is how people think they should treat you.’
- b. ?* [Kome se kako predstaviš], *taj tako* misli da treba da te tretira.

Superiority effects in the ordering of multiple *wh*-words and the distribution of clitics and parentheticals with respect to multiple *wh*-words are all mirrored in the case of correlative proforms. Again, these facts cannot be illustrated here but they too confirm the conclusion that can be drawn from the discussion in this section, namely that proforms undergo movement that is subject to the same parametric variation that the movement of *wh*-phrases is.²⁸ The implications of this proposal for the interpretation of the correlative proforms will be discussed in the next section.

5. Do the Syntax and Semantics Come Together?

Here I presented an account of the syntax and the meaning of correlative proforms. I showed that the proform undergoes *wh*-movement and that it contributes a presupposition that alternatives to the free relative do not make the main clause in the correlative true. The question that arises is whether the syntax and the semantic contribution are related in any way. We already saw that the syntax ensures the compositional interpretation of the main clause as the predicative expression necessary for proper binding. Given that *wh*-movement plays an essential role in the correlative construction, the question is whether the contribution of the proform is also an effect of the syntactic movement.

Some evidence that the syntax is relevant for the exhaustive interpretation of the main clause comes from pairs like those in (38) (from Russian). Both examples involve a left-dislocated free relative clause coindexed with a pronoun inside the main clause. The only difference between the two is in the nature of the anaphoric pronoun. In (38a) the pronoun is a demonstrative and is obligatorily fronted; the pronoun in (38b) is a personal pronoun and appears in situ. Both sentences have the same assertion, namely that we will appoint the people you suggest. Sentence (38a) also has the presupposition that we will appoint only people suggested by you; (38b) does not have such presupposition.²⁹ Therefore, the fact that the free relative is dislocated cannot alone account for the meaning contribution of the pronoun.³⁰

²⁸This analysis identifies the reason for the structural parallelism between the two correlative clauses, known as the CORRELATIVE DIPTYCH (Lehmann 1984): the parallelism obtains because the word order in the free relative and in the main clause of the correlative construction is derived by the same syntactic mechanism.

²⁹The only difference in interpretation between (38b) and (i), where the free relative is in argument position, is attributable to the fact that in the former the free relative is left-dislocated. (38b) is akin to the English-type left-dislocation in sentences like *John, we'll appoint him*. As is well-known, resumptive pronouns of this type are felicitous inside islands. On this view, the sentence in (38b) is not a correlative and the pronoun is not a correlative proform.

(i) My vyberem [kogo ty predložiš’].
 we will-appoint whom you suggest
 ‘We’ll appoint who you suggest.’

³⁰Von Stechow relates the contribution of *then* to the fact that the antecedent is dislocated. The sentences in (38) show that while left-dislocation is a necessary condition for the exhaustive interpretation of the correlative construction it is not sufficient.

- (38) a. [Kogo ty predložiš']_i *togo*_i my vyberem.
 whom you suggest that-one we will-appoint
 'We'll appoint who you suggest.'
- b. [Kogo ty predložiš']_i my vyberem *ego*_i.
 whom you suggest we will-appoint him
 'We'll appoint who you suggest.'

Since the use of a demonstrative pronoun and *wh*-movement go hand in hand, as we see in (38), we cannot definitively conclude which of the two is triggering the presupposition that alternatives to the free relative do not satisfy the matrix proposition.³¹ Even though we cannot establish a causal relationship between the *wh*-like nature of the proform and its exhaustive interpretation, the connection between the two becomes suggestive when the semantics of different *wh*-constructions is considered. The exhaustive interpretation in *wh*-questions is discussed in Groenendijk and Stokhof (1982) (see footnote 16). Jacobson (1990) analyzes exhaustiveness in free relatives.³² Given that all *wh*-constructions are associated with exhaustiveness effects, it is at least plausible that the exhaustive meaning contributed by the proform stems from the fact that the proform acts like a *wh*-element.³³

To sum up, in this paper I provided evidence that correlative proforms have the distribution of *wh*-phrases. I also showed that proforms contribute a reading of exhaustiveness; namely, the interpretation that all and only those variable-assignments that make the antecedent free relative clause true also make the main clause in the correlative true. The discussion of the syntactic and semantic behavior of proforms naturally leads to the question of whether the interpretative effect has roots in the syntax. This question cannot be definitively answered yet. Exhaustiveness effects in *wh*-constructions are themselves not entirely understood. The parallels drawn here offer at least the promise of contributing towards the larger issue of the mapping between syntax and semantics in *wh*-constructions.

³¹Some indication that it is not the deictic nature of the correlative proform that is involved in the interpretation comes from the fact that in Bangla deictic pronouns cannot function as correlative proforms (cf. footnote 4).

³²Jacobson accounts for the exhaustiveness effects by proposing that free relatives denote maximal individuals, essentially giving free relatives the semantics of definites. She also extends her analysis to the semantics of questions. See Rullmann (1995) for a recent account of exhaustiveness in all *wh*-constructions, including comparatives as well, in terms of maximality.

³³Potentially, this proposal has further implications. Recall that Iatridou's and von Stechow's accounts of the meaning contribution of *then* differ in whether they take some or all alternatives to the antecedent to fail to make the consequent true in the presence of *then*. Since *then* is not an argument, a contrast like that in (38) will be impossible to deduce on the basis of word order. When *then* appears in the beginning of the main clause, it could have been moved there or it could have been base-generated in the appropriate position for sentential adverbials. If the latter, then it would function not as a correlative proform, but as a resumptive pronoun of the English type. Some indication that this is on the right track comes from the fact that *then* can appear inside islands, just like English-type resumptive pronouns: *If she doesn't finish the project, I regret that then she won't be promoted* (cf. (31b)). When *then* is not a correlative proform but a resumptive pronoun, an exhaustive interpretation is not to be expected, and some alternatives to the antecedent would be allowed to satisfy the matrix proposition. I will leave this as a possible suggestion for handling the fact that conditionals with *then* are not always interpretable as biconditionals (cf. footnote 8).

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