Universal Concessive Conditionals and Alternative NPs in English

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1 Introduction

There are many ways in which language can describe the dependency of one occurrence on another and hence many varieties of conditional construction, including conditionals in 'if', 'when', 'since', and 'as', the absolutive conditionals of Stump (1985), and the correlative conditional construction ('the more, the merrier') discussed in Fillmore (1986). This paper will be concerned with investigating one species illustrated in (1a) and (1b).

(1) a. Whoever John chooses, the committee will approve him.
b. Whoever John chooses, there will be a loss of confidence.
c. The committee will be pleased with whoever John chooses.
d. The committee will approve whoever John chooses.

Sentences (1a) and (1b) are examples of something we will call the Universal Concessive Conditional (UCC).[1] Our first concern will be to argue that (1a) and (1b) are indeed examples of a conditional construction. A second will be to show that the protases of those conditionals are very closely related to English questions; and a third will be with the kind of NP shown in (1c), which is formally identical to the UCC protasis in (1a). These NPs have sometimes been called "free relatives"(for example, in Jacobson 1990). We will call them *alternative NPs*, anticipating the arguments that they, too, are related to questions, laid out in Section 2.2.

I will try to show below that some of the peculiarities of UCCs fall out from natural interactions of the properties of questions and conditionals. In particular, I will argue that UCCs share the presuppositions of questions. Essentially the same properties hold of alternative NPs, which will make certain alternative NPs a species of definite. The end result is that parallel UCC and alternative NP examples like (1a) and (1c) will sometimes end up conveying essentially the same meaning. We will see however that, due to the quantificational properties of the conditional construction, UCC sentences in general will have different discourse functions and different meanings from analagous alternative NP sentences.

Sentence (1b) illustrates a key point about the Universal Concessive Conditional (UCC), that there is no anaphoric or binding dependency between the protasis and the apodosis. If 'whoever John chooses' were treated simply as a universal quantifier, (1b) would be a case of vacuous binding.

[1] The name is due to Ekkehard Koenig, see Koenig (1986) for discussion. Actually the name is a slight misnomer; as with all conditionals, the quantificational force of UCCs may vary, as we shall see in Section 5.2. However, the name captures the core cases. The construction is most often used with universal force, and when universal has its strongest concessive character.

As evidence that (1a)and (1b) are in fact examples of a conditional construction, consider that it appears to occur in all conditional flavors, including counterfactual:

(2)

present generic:	Whatever John chooses, Mary is pleased with it.
	If John chooses something, Mary is pleased with it.
futurate present:	Whatever John chooses, Mary will be pleased with it.
	If John chooses something, Mary will be pleased with it.
futurate past:	Whatever John chose, Mary would be pleased with it.
	If John chose something, Mary would be pleased with it.
past/past:	Whatever John chose, Mary was pleased with it.
	If John chose something, Mary is pleased with it.
past/indeterminate:	Whatever John chose, Mary will be pleased with it.
	If John chose something, Mary will be pleased with it.
counterfactual:	Whatever John had chosen, Mary would have been pleased with it.
	If John had chosen something, Mary would have been pleased with it.

Although there are analogies between the UCCs and the the ordinary conditionals, there are clear differences as well. The kinds of situations (or worlds) quantified over may differ slightly from the analogous ordinary conditional. In the counterfactual case, the understanding seems to be that factual and non-factual alternatives alike are quantified over. The claim made is that it doesn't matter; the consequent holds whether factual or non-factual alternatives are chosen.

We will argue that a central feature of the UCC is a syntactic and semantic connection with questions. As a point of departure we note that there is a class of UCC protases that utilize the question complementizer *whether*. Within this class of cases, the UCC construction makes an interesting distinction:

(3)
a. Whether you eat or drink, you (still) get fat.
b. Whether you drink beer or wine, you (still) get fat.
c. Whether you think that Tom drinks beer or wine, he will (still) get fat.
d. Whether Mary hates John or John hates Mary the fact is that they don't get along.
e. Whether you eat or not, you (still) get fat.
f.*Whether you eat, you get fat.

Along side the constituent question analogues of the first examples, we have a set of questions in *whether*. Although as a question each of the antecedents in (3a) through (3d) is ambiguous between a yes-no question reading and an alternative-question reading, in each case it is a reading like the alternative question reading, accompanied by the list-intonation characteristic of alternative questions, which is relevant in the UCC construction. Also note that (3c) has only the interpretation on which 'or' takes wider scope than 'think'. The scope of the alternative disjunction must be the entire protasis of the conditional.

If, following Bolinger (1978), we take 'or not' questions like 'whether you eat or not' in (3d) to be alternative questions, the generalization is clear: The UCC construction admits alternative questions or wh-questions, but not, as (f) shows, plain yes/no questions.

Bolinger observes that 'or not' questions can not be answered simply 'yes' or 'no'. As with other alternative questions, some overt indication of which alternative holds is required.[2] Further evidence that 'or not' questions should in fact be classified with alternative questions can be found by considering verbs that select for yes/no questions, excluding alternative and constituent questions:

(4) a.*John doubted who came.
b. John doubted whether Mary came.
c. John doubted whether Mary or Sue came.
d. ? John doubted whether Mary came or not.

Example (4c), although grammatical, lacks the alternative question reading; and (4d) is anomalous.

An important question about the UCC construction is why yes-no questions are excluded. We will propose an account allong the following lines. Where many conditionals serve to describe dependence, the force of UCCs is to assert independence. Suppose we associate with certain questions a propositional fucntion f which defines, in a manner to be made precise below, a set of entities that answers the question. Then, schematically, the UCC construction does the following:

$$\begin{cases} \text{(a)}\, \forall x f(x) => g(x) \\ \text{(b)}\, \forall x f(x) => g \end{cases}$$

The case of (a) corresponds to (1a), where the *wh* variable occurs in both protasis and apodosis, and (b) corresponds to (1b), where the variable occurs only in the protasis. What the UCC construction asserts is that the truth of g or $g(x)$ is independent of the value of 'x', that is, of the answer to the question f is related to. In a very clear sense, the UCC is about 'f'; it tells us an important property of 'f', its irrelevance to g. We return to this point in Section 2.1, where we discuss the topic-like chjaracter of UCC protases (UCCPs). In the case of *wh-ever* UCCs, f will be a propositional function of the wh-variable, systematically related to but not identical with a constituent question denotation. We will argue that alternative questions should be related, in an analogous fashion, to a propositional function of an alternative variable whose domain is restricted to the explicitly supplied alternatives. The account of why UCCs exclude yes-no questions is thus located in the compositional semantics: UCCs assert that that the consequent is independent of the propositional function in the antecedent, and yes-no questions are not related to propositional functions.

Although we argue that UCCPs are clearly related to questions, there is ample evidence questions and UCCPs are distinct. Note that other than the above alternative questions in *whether*, no forms may double both as indirect questions and UCC protases. Syntactic constituent questions are not welcome in the UCC construction.

(5) *Which boys Mary danced with, John was displeased.

Nor are *wh-* words with *ever* allowed in indirect questions:

[2]The relevance of Bolinger's observation was pointed out by Mafred Krifka (pc).

(6) *John wonders whichever boys left.

Moreover, there are cases of UCCPs which are neither questions nor alternative NPs:

(7) a. No matter what John ate, he got sick.
b.*No matter whatever John ate, he got sick.
c.*Mary devoured no matter what John ate.
d.*Mary discovered no matter what John ate.
e. Either Alice or Simon will win. Either way the electorate will be swindled.

Examples (a) and (b) show that 'no matter', in complementary distribution to *ever*, performs an analogous function; (c) and (d) show that it does not thereby create either an NP or a question. Example (e) shows a special purpose proform that requires a disjunction of alternatives be in context, showing that UCC-like quantification is by no means limited to clauselike antecedents. We will return to the significance of this proform below.

We see the following properties converging in UCC constructions

1. Syntactic apparatus connected with questions appears.
2. Elements of the construction can be used with NPs which have a universal-like interpretation.
3. Both constituent questions and alternative question elements appear in the construction

This is a peculiar configuration of facts. It is thus quite striking to find the same configuration occurring in a language as different as Japanese in a construction whose semantics appear quite similar to the UCC construction. Thus consider the following examples in Japanese, modified from those in Gawron and Harada (1996):

(8) a. Dono kyoju-wo tazune-te-mo rusu-dat-ta.
Which professor-acc visit-GER-MO absent-be-PAST
whichever professor I/you visited, he was absent.
b. Tazune-ta dono kyoju-mo rusu-dat-ta.
Visit-PAST which professor mo absent-be-PAST.
whichever professor I/you visited was absent.
c. Dono-gakusei-ga kimasita-ka.
Which of the students came?
d. Dono-gakusei-mo kimasita.
All of the students came.

Example (a) shows a conditional construction in Japanese characterized by use of the particle 'mo' following the verb of the protasis, and the use of 'dono N' somewhere in the clause. Example (b) shows a related construction in which the 'mo'-particle follows a 'dono N' NP with a relative clause, which may receive a universal reading. Example (c) shows that in Japanese constituent questions 'dono N' NPs play a role analogous to *wh*-phrases in English constituent questions.

Example (d) shows that the relative clause of example (b) is not necessary. The particle 'mo' can give a universal reading to an unmodified 'dono' NP.

There are analogous examples with other members of the Japanese 'wh-'phrase paradigm. Thus three elements of the English construction in (1a) recur in the Japanese construction in (8a): (a) forms that may be questions with the appropriate syntactic marking show up as UCC protases; (b) a new form marks the conditional protasis function (*ever* in English, 'mo' in Japanese;) (c) closely related forms (still using *ever* or 'mo') may be used as freely occurring NPs, which *may* have universal force.

Finally, there are examples involving alternative question-like elements:

(9) a. Tabete-mo tabenakute-mo futoru.
eat-GER-MO eat-NEG-GER-MO get-fat.
Whether you eat or you don't eat, you get fat.

b. Tabete-mo non-de-mo futoru.
eat-GER-MO drink-GER-MO get-fat.
Whether you eat or you drink, you get fat.

c. Biru-mo wine-mo nomeba futoru.
Beer wine drink-COND-MO get-fat.
Whether you drink beer or wine, you get fat.

There are complexities here, such as the use of *mo* to mark NPs in (c),[3] and differences, such as the lack of any overt disjunction marking, but the basic similarity of a disjunctive conditional construction is striking.

Michaelis (1996) reports some analogous facts for a particle 'cũng' in Vietnamese:

(10) a. Cô ãy di dâu, anh ãy cũng muõn du theo.
Woman that go where, man that c. want go follow.
Wherever she goes, he wants to follow.

b. Ai cũng có-thê học duọc tiẽng Việt.
Who c. can learn language Vietnamese.
Anyone can learn Vietnamese.

c. Caí gì con chó dó cũng ăng.
CLF what CLF dog that c. eat.
That dog will eat anything.

Vietnamese 'cũng' shows both a UCC-like function and universal-NP function, in both cases interacting with words taken from the languages 'wh-word' paradigm. In both cases, Vietnamese has a somewhat different marking pattern from Japanese. In the conditional construction in (a), the Vietnamese 'concessive' marker 'cũng' goes into preverbal position in the main clause rather than on the dependent verb; and in non conditional cases, (b) shows that 'cũng' does not need to be adjacent to the wh-word that it 'universalizes.' The analogy between Japanese

[3]Japenese *mo* is an NP focus particle as well, in complementary distribution with *wa*.

'mo' and Vietnamese 'cũng' goes further than the resemblance to English UCCs and alternative NPs, however. The Japanese and Vietnamese particles also occur in sentence without wh-words, where they serve a variety of complex functions that seem to be related to English particles like 'even' and 'also', including marking ordinary concessive conditionals that would be translated into English using 'even if.'

Here we focus on the two functions illustrated in English. What we have is evidence for the cross-linguistic status of a construction that quantifies over a set of alternatives, conveniently marked through the use of question words. Why should question words and conditionals fall together so naturally? And why should they be linked to NP quantification?

Given the cross-linguistic evidence, it seems particularly important to get clear on the semantic function of *ever* in the English construction, which seems to be the closest analogue to Japanese *mo* and Vietnamese *cũng*. Although UCCPs and alternative NPs are frequently tied up in quantificational effects, we will argue, much as has been argued for *any* since Ladusaw (1980), that *ever* carries no quantificational force of its own. Following a suggestion in Harada and Honda (1999) for Japanese 'mo', we assume that *ever* invokes a pragmatic scale. Quantificational effects will be attributed to an interaction with pragmatic scales and scalar implicatures.

As evidence that *ever* carries no quantificational force of its own, consider the case of UCCPs with multiple *wh*-words:[4]

(11) a. Whoever buys whoever's/whosever property, the town council will still grant a building permit.

b.*Whoever buys whose property, the town council will still grant a building permit.

Note that *ever* is required on all the *wh-* words and that there is no double quantifcation effect here. Thus, *ever* shows behavior characteristic of concord elements rather than of an independent quantificational operator.[5]

2 Descriptive Preliminaries

2.1 Topic-like Nature of UCCPs

In Section 1 we claimed that the UCC construction was a conditional construction and that the preposed wh-clauses were the protases. This amounts to a semantic claim. Since any free-standing clause with appropriate verbal mood can be a conditional with pragmatically supplied antecedent constraints, the burden is to show that UCCs are always conditionals, and that what we have called the protasis must indeed contribute semantically to the antecedent required by the main clause. This shows that the *wh-* clause performs a syntactic and semantic function analogous to the *if* clause in ordinary conditionals.

We suggest in this section that a somewhat stronger claim may be justified: UCCPs not only contribute to the antecedent of the conditional, but the propositional function they are associated

[4]The fact that both *whoever's* and *whosever* are both grammatical in alternative NPs may argue argue that *ever*, like the Enlish possessive marker, is a clitic.

[5]For Japanese, in contrast, the corresponding particle *mo* shows up on the verb of the embedded clause and does not require any concord-like copying.

with is the topic. Thus, UCCPs not only constrain what the conditional quantifies over in the antecedent; they also constrain the contexts in which UCCs are appropriate.

The point can be made by contrasting a UCC with an alternative NP in some small discourses. Consider the following question-answer pairs:

(12) a. – Who will win?
$\left\{\begin{array}{l}\text{– Whoever the mayor supports will win.}\\ \text{– \# Whoever the mayor supports, he will win.}\end{array}\right.$
b. Who will the mayor support?
$\left\{\begin{array}{l}\text{– Whoever the mayor supports, he will win.}\\ \text{– \# Whoever the mayor supports will win.}\end{array}\right.$

The first reponses in discourses (a) and (b) are on point. Although the alternative NP response in (a) might be viewed as only a partial answer and the UCC reponse in (b) as a change of subject, both clearly acknowledge what the current subject is. The second responses in (a) and (b), on the other hand, are close to incoherent. We focus here on the UCCs. In the context of asking who will win, asserting that the victory of the mayor's candidate is independent of his identity is irrelevant. In the context of asking who the mayor's candidate is, the UCC in (b) may function as a way of claiming shared conversational goals can be satisfied without answering that question, but it clearly acknowledges what the question under discussion is.

Next consider the discourses in (13) in the context provided:

(13) – We've got to do everything we can to bring home John's message on jobs in the last week of the campaign.
– What's the difference?
$\left\{\begin{array}{l}\text{a. Whoever the mayor supports will win.}\\ \text{b. \# Whoever the mayor supports, he will win.}\end{array}\right.$

In marked contrast to the alternative NP sentence (a), the UCC sentence (b) is quite odd in this context. The UCC sentence is odd because it is about the efficacy of the mayor's support. It is appropriate if the topic of the discourse is who the mayor might support, or perhaps better, as the discourses in (12) suggest, if the topic is *the question* of who the mayor will support. It is thus irrelevant to the discourse in (13).

It is important to note that the issue here is not really that (13b) is a conditional and (13a) is not. One might still analyze the future tense in (a) as a modal conditional with a pragmatically supplied antecedent. In that case, the conditional means something like:

(14) (Even) if we do all that, whoever the mayor supports will win.

Under this understanding of the alternative NP sentence, it remains quite relevant to the discourse in (13b), and still contrasts sharply with the UCC variant.

We take examples (12) and (13) to provide evidence that UCCPs are topic-like. This may be an abuse of terminology, because, as (1) shows, UCCPs can be robustly quantificational, and as the discourses in (12) and (13) suggest, the relevant "topics" may be propositional functions, which typically belong to comments. The main descriptive point is that UCCs impose certain

subject-matter restrictions on the state of the current discourse. We will not attempt to formalize this idea in the the analysis presented here, but we will try to keep the analysis consistent with it. UCCPs will be NPs adjoined to S's in a topic-like configuration. It is striking in this connection that that there are UCCPs which seem to function simply as proforms for previously determined alternatives, as in (7e).

Note that UCCPs can in fact be strongly referential, as one would expect of topics. Consider indicative versions of (13a) and (13b):

(15) a. Whoever the mayor supported won.
a. Whoever the mayor supported, he won.

Note that while (a) has a salient universal reading quantifying over different candidates the mayor supported, (b) strongly prefers a referential reading.[6] We will give *whoever the mayor supported* the same interpretation in (a) and (b) and attribute the referentiality in (b) to facts about the construction. The desire for a uniform analysis of this sort is one reason not to attribute the universal quantification in (b) to a universal operator internal to *whoever the mayor supported.*

Summing up, we observe that UCCPs are topic-like. Perhaps it is better to say that UCCs are appropriate when the *question associated with the UCCP* is the topic. This seems especially apt for those UCCPs that are inherently non-refential, such as those in (3), which are related to alternative questions.

2.2 Syntactic Arguments for a Question-source for UCCs and Free Questions

Presenting a number of arguments anticipated in Richardson (1995), we argue that alternative NPs should be related to questions rather than relatives, showing that they pattern with questions in many syntactic properties distinguishing free relatives from questions. The same arguments carry over to UCCPs.

The argument for the questionlike syntactic nature of alternative NPs hinges on four syntactic diagnostics:

(16) a. *Else:* The occurrence of *else* (Baker, Richardson)
b. The occurrence of a small class of question epithets alternative NPs (Baker, Richardson)
c. *Wh-paradigm:* The occurrence of *wh-* determiners *what*, *which*, *how + many*, *how + adj*
d. *Clefts:* The occurrence of clefts in alternative NPs

In the examples below, we abbreviate the argument by comparing alternative NPs with free relatives on one hand (which behave differently) and questions on the other (which behave the same). The facts in free relatives always follow those in relatives, showing that they have been correctly related to relative clauses. For a fuller discussion see Richardson (1995).

In contrast to free relatives and like ordinary questions, alternative NPs allow *else*:

(17) a. John will have room for whoever else Mary brings.

[6]To be clear, both sentences allow both readings. But there seems to be a clear preference for referentiality in the UCC sentence.

b.*John will have room for who else Mary brings.
c. John wondered who else Mary would bring.

In contrast to ordinary free relatives and like ordinary questions, alternative NPs allow epithets like *the hell*[7]

(18) a. John will do whatever on earth Mary tells him to.
b.*John will do what on earth Mary brings.
c. John wondered what on earth Mary would tell him to do.

Alternative NPs and questions allow the determiners *which* and *what*, and free relatives do not.

(19) a. John bought whichever/whichever books Mary bought.
b.*John bought which/what books Mary bought.
c. John wonders which/what story Mary read.

Note the determiner *which* is not a restrictive relativizer in standard English:[8]

(20) a.*The story which story John read was reprinted.
b.*The story what story John read was reprinted.

Again, the *wh-* specifier 'how' occurs in questions and alternative NPs, but not free relatives:

(21) a. Mary will eat however many cream puffs John eats.
b. Chicago will build however large a stadium New York builds.
c.*Mary will eat how many cream puffs John eats.
d.*Chicago will build how large a stadium New York builds.
e. John wonders how many stadiums New York has built.
f. John wonders how large a stadium New York has built.

In contrast to ordinary free relatives and like ordinary questions, alternative NPs allow the cleft construction:

(22) a. Whatever it was that John chose annoyed Sandra.
b.*What it was that John chose annoyed Sandra.
c. Sandra wondered what it was that John chose.

It is not entirely clear what constraint rules out clefts in relative clauses, but one possibility is incompatibility of the discourse functions focus and topic. If relativized elements are basically topiclike in nature and the cleft construction is a focusing construction, then the sentences in (22) may illustrate a discourse function clash, inherited by the true free relative in (22b). On the other hand, if questioned elements are basically focuslike elements, then no clash of function occurs in (22a).

[7]Other examples of such epithets:*on earth*, *in heaven's/God's name*, *the devil*, and *the fuck*.

[8]A determiner *which* relativizer does appear to be possible in loosely connected nonrestrictive relatives like "After many years the story finally appeared in printed form in *The Times*, which story was picked up and reprinted and eventually circulated throughout the civilized world." But this non-restrictive relative, if it is active in standard English does not carry over to free relatives.

2.3 Question and UCCP Presuppositions

We have examined some syntactic arguments for the close relationship of UCCPs and questions. Strong semantic evidence for the connection of UCCPs to questions can be found by examing the presuppositional properties of UCCs.

We have characterized UCCs as conditional constructions, but certain UCCs show features strikingly different from other conditionals: Thus while (23a) as a whole entails that John is standing on something, (23b) does not:

(23) a. Whatever John is standing on, it will collapse soon.
b. If John is standing on something, it will collapse soon.
c. If John is standing on the table, it will collapse soon.

One account of the distinction is that the UCCP somehow takes wide scope; but we will see in Section 5.2 that there are UCCPs using the adverb *usually*, which means that the quantificational force of a UCC varies like that of other conditionals, making it hard to see how a scope account could be made to work.

An attractive alternative is that UCCPs carry an existential presupposition. The presuppositions of the protasis of a conditional are typically entailed by the conditional as a whole. This is shown in (23c), which as a whole does entail the existence of a table.[9]

Note that the same assumption would explain the anaphora facts illustrated in (24):

(24) a. Whatever John is standing on, it will collapse soon. It's made of cardboard.
b. John read whatever book Susan read. He found it in the kitchen.

If the entities answering to the properties of the *wh*-word in (24a) is presupposed to exist already, then it is natural for a pronoun to be able to refer to it. Example (b) shows the same property carries over to alternative NPs. If they shared the existence presupposition, the anaphora properties would follow.

But if the UCCP of (23) does carry an existential presupposition, where does it come from? The possibility I want to explore is that this is a property shared with the questions UCCs are related to.[10]

2.3.1 Existential Presupposition of Constituent Questions

The claim that constituent questions carry existential presuppositions is not uncontroversial. For example Ginzburg (19??) argues against it. Consider the question in (25a).

[9]Note that alternative NPs show the same existence entailment (as noted also in Jacobson 1990 for the singular case):

Whatever John is standing on will collapse soon—namely, nothing.

[10]The account to be presented also assumes that presuppositions of the protasis of a conditional become presuppositions of the conditional as a whole. The essential observation about the presupposition-projecting properties of conditionals is in Langendoen and Savin (1971), somewhat more fully articulated in Karttunen (1973); and the dynamic account of presupposition in conditionals is due to Heim (1982). The semantics sketched in section 6 will show how such presuppositions are projected.

(25) a. Who shot Mr. Burns?
b. No one.
c. No one. There is no Mr. Burns. It's a cartoon!

The fact that (b) is a viable continuation would seem to suggest that (a) has no existential presupposition. Yet, as has often been observed in the literature, answers like (c) are also viable, and (c) clearly violates a presupposition carried by the name 'Mr. Burns,' that the name's bearer exist. Similarly although denying other sorts of presuppositions is difficult in positive sentences (Levin 1983), it is less difficult in negative sentences and questions:

(26) a. # John regrets eating bagels, because in fact he never ate any.
b. John doesn't regret eating bagels, because in fact he never ate any.
c. – Did Bill shoot the king of France?
– No because there never was one.

The facts appear to be that nothing rules out overt contradiction of presuppositions in questions. The question about cases like (25b), then, is, do they count as an answer to the question, or as a contradiction of its presupposition?

There seem to be three possible positions on the question of the existential presupposition of questions:

(27) a. Empty set answers to wh-questions are just like all other answers.
b. A wh-question doesn't have an existential presupposition. It has an *existential entailment.* [11]
c. A wh-question has an existential presupposition. If uttered in a discourse which does not entail the existential claim, it is infelicitous.

One difficulty with (a) is that it doesn't explain how question words can serve as the antecedents of pronouns. Wh-words license pronouns even when their questions go unanswered. Thus (25a) can certainly be answered:

(28) I don't know, but he's insane.

For the reasons noted above, positions (b) and (c) solve this problem.

The classic argument that an expression E carries a presupposition p involves embedding E under entailment blocking operators, to see if the embedding expression still implies the truth of p. It is difficult to find embedding contexts for UCCs and matrix questions. But the argument may straightforwardly be made for embedded questions:

(29) a. John wondered who shot Mr. Burns.
b. If John wondered who shot Mr. Burns, then he asked Mary.

[11] A difficulty with (b) is that it is not immediately clear what the "entailments" of a question are. There have been proposals in the literature for a similar notion, including one by Groenendijk and Stokhof (G & S). Briefly, the intuition is this: Whatever is systematically entailed by all possible answers to a question is entailed by the question.

c. It is clear who shot Mr. Burns.
d. It is not clear who shot Mr. Burns.
e. It is not clear that there was a crime committed.

As a starting point, (a), an embedded question verb *wonder*, has an entailment that someone shot Mr. Burns. The entailment persists in (b), where the clause occurs as the antecedent of a conditional, normally an entailment blocking context ('if p, then q' does not entail 'p'). Examples (c) and (d) show the same pattern for the embedded question adjective *clear*, using negation as the entailment blocking context ('$\neg p$' does not entail 'p'). Example (e) shows that *clear* is not factive, so there is no reason to suspect lexical properties of *clear* as the explanation of the entailments in (c) and (d).

There is at least one available entailment-blocking context for embedding UCCs and matrix questions, but there are problems interpreting the data.

(30) a. If Mary isn't here, then who shot Mister Burns?
b. If Mary isn't here, then whoever shot Mister Burns, he can't be the most likely suspect.

As desired, the existence entailment seems to carry. A potential problem with these examples is that they are 'epistemic' conditionals which announce a deduction on the part of the speaker. The entailment properties of these constructions are murky.

It appears that the sentences in (30) may be used as a challenge. That is, when someone has asserted Mary's absence, one may respond with (30a) as a way of refuting the claim. In such a context, Mary's absence really is being hypothetically assumed. It's still not clear, however, that the question is being posed in that hypothetical context, or whether it's even meaningful to talk about posing a question in a hypothetical context.

An independent argument for treating the existential of a question as a presupposition, rather than an entailment, is the suspendability (Horn 1972) of the existential claim. Presupposition, but not entailments generally can be suspended.

(31) a. Who—if anyone—shot Mr. Burns?
b. John regrets going to grad school — if in fact he did.
c. # John shot Mr. Burns —if indeed a gun was fired.

In the next section other question presuppositions are explored; if a variety of question presuppositions become properties of UCCs, then the case for presupposition projection into UCCs is strengthened, and with it the case for treating the facts in (23) as an example of presupposition projection.

2.3.2 Other Presuppositions of Questions

In a dynamic framework such as that of Heim (1982), sentences are partial functions from contexts to contexts; presuppositions are the restrictions on the domain of that function. In this framework, simple cases of presupposition projection are handled by the simple mechanism of function composition. If the semantics of Node A is computed by composing the semantics of

daughter B with the input context, then the felicity conditions of B will be inherited by A. This for example, is what happens for the simplest conditionals with respect to their protases. The conditional as a whole is validated by just those cases of the input context which, if they can be extended to validate the protasis, can also be extended to validate the apodosis. Testing this condition means evaluating the semantics of the protasis against the input context; therefore the conditional as a whole inherits the presuppositions of the protasis.

Not all conditionals can be handled by this means. Counterfactuals, for example, require revision of the input context; as a result, only the revised context will be required to satisfy the presuppositions of the protasis. There the story about what presuppositions can be projected out of a counterfactual protasis must include a story about what can be revised in a counterfactual.

Nevertheless, the general shape of a dynamic account of presupposition is the following: All things being equal, all presuppositions are equal. If one presupposition is projected, so should they all. Other accounts of presupposition projection share this property. Thus, if our account of the reference properties of UCCs is to be based on the presupposition projection, then all things being equal, it would be best if *all* the presuppositions of questions and UCCs were shared. Otherwise, the story will require additional apparatus.

Fortunately, no such additional apparatus appears to be needed. For example, determiner 'which', used in questions with singular nouns, appears to carry the presupposition that the questioned entity is one of a known set and is *unique* in carrying the question property:

(32) a. Which book did Mary read? # *War and Peace* and *Crime and Punishment*.
b. Whichever book Mary reads, Alice will criticize it. # Since Mary will read *War and Peace* and *Crime and Punishment*, Alice will criticize them.
c. Whatever Mary reads, Alice will criticize it. Since Mary will read *War and Peace* and *Crime and Punishment*, Alice will criticize them.

The UCC in (32b) appears to carry same presupposition.

Consider next the well-known cases of presuppositions of alternative questions, which as we have already seen, enter into the UCC construction along with constituent questions.

(33) a. Does John drink whiskey or beer?
b. Whether John drinks whiskey or beer, he will get fat.

On the alternative question reading, sentence (a) carries the presupposition that either John drinks beer or he drinks whiskey, and asks for the matter to be settled. The analogous UCC in (b) appears to carry the same presupposition.

Finally consider the felicity condition on questions that the answer is unknown to the speaker. Although, strictly speaking, this ought not to be regarded as a presupposition, because it can be suspended in 'quizmaster-question' and indirect question contexts, it is clearly linked to the discourse function of direct questions. Just as clearly, there is an implicature, discussed in Section 2.3, that speakers using descriptive UCCs and alternative NPs do not know the identity of their

referents.[12] Again, it is reasonable to suppose that this property is projected directly from a common source for questions, UCCs, and alternative NPs.

3 To be Explained

We will call the class of constructions including UCCPs and alternative NPs *free alternative constructions*. Then the previous sections have suggested that there are two important sets of facts to be explained about free alternative constructions.

- Shared syntactic properties of free alternative constructions and questions
- Shared presuppositions of free alternative constructions and questions

There are two kinds of accounts of these shared properties. First, one might propose that free alternative constructions are derived from questions. There is a serious objection to this idea, given all known theories of the semantics of questions. There is no way, given the denotation of a constituent question, to get at the property of individuals from which the constituent question semantics was built. But this is what would be required in order to derive alternative NPs from questions.

A second hypothesis is that free alternative constructions and questions are derived from a common source. This is the account we shall pursue:

> **Hypothesis A**: Free alternative constructions and questions are derived from a common source we call *pre-questions*.

To give a uniform treatment of question formation we will allow all questions to have pre-questions, but only constituent questions and alternative pre-questions will be related to free alternative constructions. The exclusion of yes-no questions will be due to the fact that free-alternative constructions are formed only from pre-questions denoting propositional functions; and a *wh*-like operator is required to form a propositional function denotation. In the case of constituent-questions this operator is supplied by the *wh*- phrase; in the case of alternative questions, it is supplied by a special alternative-forming version of disjunction. But nothing relates yes-no questions to a propositional function. Thus we have:

> **Hypothesis B**: Alternative questions and Wh-Questions form a natural semantic class.

There are besides a host of finer grained semantic facts to be accounted for:

(34) a. Scopal differences of UCCPs and alternative NPs
b. Quantificational Behavior of Alternative NPs
c. What does the *ever* add semantically?
d. Evocation of Scales by UCCPs

[12] This property of alternative NPs is noted in Jacobson (1990).

4 Alternative NPs

We turn first to the treatment of alternative NPs. The compositional treatment we will propose will build UCCPs up out of a variety of NPs, including alternative NPs, alternative question NPs (*whether John drinks whiskey or beer*), and proforms like *either way*. Thus the preliminary question is what their semantics is.

Consider the following sentences:

(35) a. Whoever the mayor endorsed made a large contribution to his campaign.
b. Every candidate the mayor endorsed made a large contribution to his campaign.
c. The candidates the mayor endorsed made a large contribution to his campaign.

Examples (a) and (b) share a reading on which each candidate the mayor endorses contributes a large sum to the mayor's campaign. We will call this the Q (or quantificational) reading. Example (c) has the Q-reading but it also has another reading on which the endorsed candidates collectively make a large contribution to the mayor's campaign; on this reading, which we will call the G (for group) reading, the portion that each endorsed candidate contributes may be small, as long as the contributions taken together total to a large sum. Neither (a) nor (b) has the G-reading. In not showing clear evidence of group readings, alternative NPs are like universally quantified NPs.

Other cases where one might expect to find group readings show a similar pattern:

(36) a. They gathered the candidates Clinton had campaigned for in the vice-president's office.
b. ? They gathered whoever Clinton had campaigned for in the vice-president's office.
c. ? They gathered every candidate Clinton had campaigned for in the vice-president's office.
d. John found the paintings he was looking for in opposite corners of the museum.
e.* John found whatever he was looking for in opposite corners of the museum.
f.* John found every painting he was looking for in opposite corners of the museum.

Some attempts to force G-readings on alternative NPs work better than expected, as in (a), but in such cases analogous universals are unexpectedly good too. Alternative NPs, in general, seem very reluctant to accept group readings, as well as quantificational apparatus reserved for groups:

(37) a. ? John gave whoever the mayor endorsed $100 apiece/each.
b. ? John gave every candidate the mayor endorsed $100 apiece/each.
a. John gave the candidates the mayor endorsed $100 apiece/each.

To explain Q-readings analogous to those in (35a), Jacobson (1990) proposes that free relatives (FRs) are semantically unmarked for number and may denote groups. Given the same kind of distributivity operator usually appealed to to explain the Q-reading of (35c), she then derives Q-readings for free relatives. But the patterns cited here make such an analysis less appealing for alternative NPs.

Are alternative NPs then universally quantified NPs? There are clearly cases for which this seems an unlikely possibility. It turns out that alternative NPs that use the determiners *whichever* are *whatever* are much more reluctant to admit a quantificational reading like that of (35a):

(38) Whatever/Whichever candidate the mayor endorsed made a large contribution to the mayor's campaign.

These facts might be explained, however, by appealing to the uniqueness presuppositions we argued for in Section 2.3.2. If alternative NPs built from *whichever* and *whatever* determiners have uniqueness presuppositions, they should only accept quantificational readings in contexts in which some kind of local accommodation is possible. That is, they should basically behave like definites. This leaves open the possibility of analyzing those alternative NPs as referential NPs, with no quantificational force of their own, like definites and indefinites in DRT and File-Change Semantics, and analyzing other alternative NPs as universals.

But there is evidence suggesting that no alternative NP should be analyzed as universal. Consider (39):

(39) a. John would accept every salary they offered.
b. John would accept whatever they offered.

Example (39a) is a little odd pragmatically, because it asks us to imagine John being offered an arbitrary number of salaries and accepting each. But given the most natural kind of context, one in which a fixed 'they' have placed a fixed job under negotiation, the only way John would be given a second offer was if he rejected the first one, and this is exactly what (39a) rules out.

On the other hand (39b) does not have the pragmatic oddity of (39a). This illustrates one problem with analyzing alternative NPs like *whatever they offered* as quantificational: They do not show the kind of double-quantification effects other universally quantified NPs show under external quantification.

On the contrary, the right description of (39b) seems to require analyzing the alternative NP as non-quantificational. Suppose we hypothesize some sort of job-application situation as setting the modal context (satisfying the job-existence presupposition of an offer). In a dynamic framework, this would be represented something like:

(40) $[\exists s \exists x \text{job}(s)(x) \Rightarrow \text{offer}(s)(\mathbf{they}, x); \text{accept}(s)(\mathbf{j}, x)]$

In this paper, we will work in a non-dynamic framework.[13] Basically, if one wants to keep the distinction between referential NPs and generalized quantifiers, this means one needs to treat definites and indefinites alike as free variables which may be overtly bound by a higher operator, in this case the conditional operator. We will represent the static equivalent of the above as:

(41) $[\text{job}(s)(x) \Rightarrow_{\{s,x\}} \text{offer}(s)(\mathbf{they}, x) \wedge \text{accept}(s)(\mathbf{j}, x)]$

[13] We present compositional rules in a static framework because there are numerous issues about extending the Groenendijk and Stokhof semantics for questions to a dynamic framework which take us beyond the scope of this paper.

The subscripts on the conditional arrow indicate the variables that need to be universally quantified over by the conditional operator.

This leaves us with a dilemma. There is much to be said for analyzing alternative NPs as referential, but if they are referential, and not plural, then where do quantificational readings like those in (35) come from?[14]

The analysis we will propose is the one proposed for the analogous NPs in Japanese in Harada and Honda (1999). Alternative NPs are referential NPs that invoke a pragmatic scale and denote an entity that takes a minimum value on that scale. Quantificational readings arise by scalar implicature. The function of *ever* is to signal invocation of the pragmatic scale.

For example (35a) the account has to be something like the following. The set of entities being measured is the set denoted by the propositional function associated with the alternative NP, call it S, the set of entities the mayor endorsed; the scale is an entailment ordering such that x is a mininum if and only if

$$\forall y \in \mathbf{S}\Box[\mathbf{ML}(x) \rightarrow \mathbf{ML}(y)]$$

Here ML should be taken to denote the property of making a large contribution to the mayor's campaign. The modality here reflects the intuition that the scale measures a likelihood: In all likely worlds, the implication holds. For a scalar implicature account, we want *whoever the mayor endored* to denote a minimum x and to presuppose the above implication. Let us define an operator Π that gives the pragmatic scale, and holds of the domain set, the scaling property, and the minimum on the scale.

$$\Pi(\mathbf{P}, \mathbf{Q}, x) \equiv \forall y \in \mathbf{P}\Box[\mathbf{Q}(x) \rightarrow \mathbf{Q}(y)]$$

In the intensional language of Gallin (1975), used in Section 6, this becomes:

$$\Pi(\mathbf{P}, \mathbf{Q}, x) \equiv \forall y \in \mathbf{P}\Box_i[\mathbf{Q}(i)(x) \rightarrow \mathbf{Q}(i)(y)]$$

If we assume that *ever* takes the propositional functions associated with *wh-* questions as its arguments, this gives it a determiner-like semantics, something like the following:

$$[\![ever]\!] = \lambda\mathbf{P}\lambda\mathbf{Q}[\mathbf{P}(x) \wedge \mathbf{Q}(x) \wedge \partial(\Pi(\mathbf{P}, \mathbf{Q}, x))]$$

In the framework of Gallin (1975) this becomes:

$$[\![ever]\!] = \lambda\mathbf{P}\lambda\mathbf{Q}\lambda i[\mathbf{P}(i)(x) \wedge \mathbf{Q}(i)(x) \wedge \partial(\Pi(\mathbf{P}, \mathbf{Q}, x))]$$

Here we use the ∂ symbol used in Beaver (1993) to encode presupposed material.[15] So *ever* is basically an referential determiner like *a* or *the* which carries a presupposition that the entity denoted by the NP is a mininum on a scale. This would give a sentence like (35a) a semantics like the following:

$$[\mathbf{endorse}(x)(\mathbf{m}) \wedge \mathbf{ML}(x) \wedge \partial(\Pi(\lambda y[\mathbf{endorse}(y)(\mathbf{m})], \mathbf{ML}, x))]$$

[14] The dilemma here is of course reminsicsent of the problem of free-choice *any*.

[15] The operator is actually only defined (and perhaps only definable) in a dynamic framework. We use it here as a placeholder to make clear how presupposition projection issues interact with the compositional semantics.

It is worth pointing out that the scalar apparatus we have associated with *ever* resembles the apparatus needed for the focus particle *even*:

(42) JOHN even made a large contribution to the mayor's campaign.

Here the NP *John* must denote a person unlikely to make a large contribution, with the implicature that others more likely to did as well. The difference between *even* and *ever* on this analysis is that *ever* makes explicit a set of entities being measured on the scale and occurs inside the NP defining that set. It is suggestive that, as discussed in Harada and Honda (1999), the Japanese particle *mo* may be be used to mark referential NPs like proper names and can then have a function very like that of *even*. Beyond this, the tightness of the connection between *even* and *ever* is an intriguing open issue.

It is important to note the invocation of a scale is optional for alternative NPs. All singular alternative NPs quite robustly allow readings on which their referent uniquely satisfies the alternative NP description. Thus a definite reading is quite possible for (35a). Obviously, when the propositional function defined by the *wh* phrase determines a set with a single member, the pragmatic scale can do no work.

Such a scalar account of *ever* makes an interesting prediction concerning the interaction of universal readings with negation:

(43) a. Bill did not campaign for whoever the mayor endorsed.
b. Bill did not campaign for every candidate the mayor endorsed.

Consider how the scalar implicature account works for (a). First, we try a scale ranking people for their likelihood NOT to be campaigned for, making x a minimum on that scale.

$$[\mathbf{endorse}(\mathbf{m})(x) \wedge \neg\mathbf{campaign\text{-}for}(\mathbf{b})(x) \wedge \partial(\Pi(\mathbf{endorse}(\mathbf{m}), \lambda y \neg\mathbf{campaign\text{-}for}(\mathbf{b})(y), x))]$$

This asserts that Bill did not campaign for the endorsed x he was least likely not to campaign for (most likely to campaign for) and yields the implicature that for all endorsed y he was more likely not to campaign for, he did not campaign for y. In other words, the implicature cranked out gives the universal wider scope than the negation.

Suppose we next try a scale in which the negation has been left out, in effect, scoping the alternative NP inside the negation:

$$\neg[\mathbf{endorse}(\mathbf{m})(x) \wedge \neg\mathbf{campaign\text{-}for}(\mathbf{b})(x) \wedge \partial(\Pi(\mathbf{endorse}(\mathbf{m}), \lambda y \mathbf{campaign\text{-}for}(\mathbf{b})(y), x))]$$

In this case, the scale does no work. We are told that the minimum x was not campaigned for, but the p[resupposition licenses a universal inference only in the case when x *is* campaigned for. Thus, no universal reading can result from this scoping.

The claim is thus that (43a) should lack a reading consistent with there being some endorsed candidates Clinton did campaign for, a reading that is quite salient for (b).[16] This prediction seems to be correct. Discourse (a), in contrast to (b), is contradictory.

[16]The facts for *Bill refused to campaign for whoever the mayor endorsed* are quite parallel, but the account is somewhat more problematic. There is a salient reading under which the alternative NP (and the universal force) scopes under *refuse* and over negation. On this reading, the scale property needs to include the negation, as in (43). Short of lexical decomposition, it is not obvious how to give alternative NP such a scoping.

(44) a. # Clinton did not campaign for whoever the mayor endorsed. But he did campaign for some of the mayor's candidates.
b. Clinton did not campaign for every candidate the mayor endorsed. But he did campaign for some of the mayor's candidates.

Summing up, we have argued for analyzing all alternative NPs as referential NPs, with apparent quantificational effects accounted for by appeal to pragmatic scales.

5 UCCs

We have proposed that UCCs are built out of alternative NPs composed with their main clauses in a topic-like construction. We discuss syntactic and semantic issues. What are UCCPs syntactically? We assume they are NPs, although the evidence is admittedly far from decisive. Semantically, we discuss the idea that the situation (or world) variables associated with alternative NPs in UCCs need to function like antecedent clause situation variables in ordinary conditionals, interacting with the modality of the particular conditional type to determine the referentiality of the NPs.

5.1 What are UCCPs syntactically?

Constituents like *whoever John chooses* might reasonably be analyzed either as NPs or as clauses. In this section we argue for treating them as NPs. First it is worth pointing that constituents constraining the antecedents of conditionals are a mixed bag. The following sentences should all probably be analyzed as conditionals with the 'preposed' constituent constraining the antecedent.

(45) a. The classier the paint job, the more you need alloy wheels. (Fillmore 1986)
b. With his red cap and green breeches on, John would look quite dapper.
c. ? Any dish John cooked, Mary would (usually) be pleased.
d. Either way, the electorate will be swindled.

Example (d) is particularly relevant to the case of UCCs, since it has the semantics of quantifying over a disjunction of alternatives, and what is preposed seems to be an NP.

UCCPs do not allow pied-piped prepositions.

(46) *To whatever city we travel, we will need good locks on our suitcases.

This is true of alternative NPs as well. The simplest account of this coincidence is to have the alternative NPs themselves occurring in the UCC construction. There is some motivation for treating the alternative questions as NPs too:

(47) Whether John ate creampuffs or napoleons is not the issue.

Thus we provisionally adopt the analysis that all UCCPs are NPs.[17] For simplicity, we will assume a single rule combining *ever* with any pre-question denoting a propositional function to

[17] A remaining syntactic mystery about all UCCPs, whether alternative questions or alternative NPs, is the exclusion of all infinitival questions. Since this a restriction shared with free relatives, it may have something to do with NP-hood, although it is not shared by embedded alternative questions in subject position.

yield an NP. We assume that in the case of alternative questions, this has no pronounced effect. That is,

whether + ever = whether.

The semantic idea is that the scalar effects we attribute to *ever* extend to all UCCPs, alternative NPs and alternative questions. On the syntax side, nothing hangs on this except a saved rule.

5.2 Quantificational Nature of UCCs

Since Lewis (1975) pointed out sentences like

(48) Most of the time, if a man buys a horse, he pays cash for it.

writers studying the semantics of conditionals have made reference to the quantificational nature of conditionals, identifying the protasis with the restrictor and the apodosis with the scope. The question that then arises as to what, exactly, is being quantified over in (48); various writers have made reference to situations, cases, occasions, or events. For ease of exposition we will refer to quantification over situations.

The question we now address is what needs to be counted or quantied over in UCCs.

(49) a. If John cooks, Mary is usually pleased.
b. Whatever dish John cooks, Mary is usually pleased.

The meaning of example (a) can be paraphrased roughly as follows: In most situations in which John cooks, Mary is pleased. We will focus a way of the UCC in (b) which differs crucially. What is relevant in evaluating the truth of (b) is counting dishes, not cooking situations. Consider the following state of affairs:

(50) John cooked twenty dishes on one occasion, pleasing Mary with each; and on eight others John cooked a dish apiece, and on each of those eight occasions Mary was displeased.

In these circumstances, sentence (a) has a reading on which it is false, but sentence (b) does not. Crucially, sentence (b) seems to require that dishes be counted. What this shows is that the variable asssociated with the *wh-* word has a special status in UCC conditionals: It must be one one of the variables quantified away by the selective binding of conditional formation, and one of the variables *counted* when the conditional force is evaluated. This is consistent with what we called the topic-like nature of UCCPs in Section 2.1. UCCs are about whatever the UCCP is about; and in a quantificational context, aboutness means quantifying over (see Partee 1991).

Three of the key elements in what Partee (1991) calls the Lewis-Kratzer-Heim analysis of conditionals are collected in (51):

(51) 1. Conditionals involve quantification, with the restrictor of the quantifier identified with the protasis, and the nuclear scope identified with the apodosis.
2. Conditionals can quantify over situations (or something very like them).

3. The exact quantificational force of a conditional is determined by sentence level operators (such as quantificational adverbs). The conditional construction only determines restrictor and nuclear scope of a quantification; and universal force is only a kind of default invoked when no overt operator is present.

Example (49b) shows that claims (1) and (3) are upheld for UCCs. We next argue for the importance of situations in the account of UCCs.

We return to an example discussed in Section 2.3. here reproduced as (52):

(52) Whatever John is standing on, it will collapse soon.

Recall that this sentence as a whole entails that there is something John is standing on. Following the discussion in Section 2.3 and abstracting away from numerous details, we propose the following as the semantics for (52):

(53) $[\,\partial[\exists z\,\text{stand-on}(s_0)(\mathbf{j},z)] \wedge [\text{stand-on}(s_0)(\mathbf{j},x) \wedge \partial[\text{present}(s_0)]\,]] \Rightarrow_{\{s_0,x\}} [\text{soon-collapse}(s_0)(x,y)]$

The antecedent of the conditional breaks into two components, a presupposition derived from the question (within the scope of the operator ∂), and an asserted component, which claims of x that John is standing on it, The presupposition requires that there exists a situation s_0 in which John is standing on something. The conditional further presupposes that it be a situation overlapping with the time of utterance. Thus, the sentence as a whole requires a present situation in which John is standing on something.

Consider in contrast a non-referential example.

(54) Whatever$_i$ John reads, Mary will read it$_i$ next.

Note that this has no entailment of the existence of a book John is presently reading and thus no entailment of a specific book. If both (52) and (54) are conditionals, our problem now is to account for the difference between them. Why does (52) entail the present existence of something John is standing not while (54) does not?

Abstracting away from the details of the question semantics and how it becomes part of the conditional (these details are presented in Section 6), the semantics of (54) will be

$[\,\partial[\exists z \wedge \text{book}(y) \wedge \text{read}(s_0)(\mathbf{j},z)] \wedge [\text{read}(s_0)(\mathbf{j},y) \wedge \partial[\text{non-present}(s_0)]\,]] \Rightarrow_{\{s_0,x\}} [\text{read-next}(s_0)(\mathbf{m})(y)]$

Note that the situation variable s_0 is now constrained to be non-past, which include future situations. In contrast to (53), this semantics as a whole presupposes that there is some present or future event in which John reads something. The existence entailment disappears, but the sentence still imposes an expectation that John will read something.[18] The past or nonpastness of the situation variable will roughly correlate with the tense morphology of the conditional in ways that are beyond the scope of this paper to account for. As a check that verbal tense and mood play the key role here, consider the ordinary conditionals corresponding to (52) and (54).

[18]Both semantics allow for a universal reading, but the pragmatic fact that John can only stand on one thing at a time blocks a universal reading for (53). Conditional quantfication thus offers a way of obtaining universal readings which is quite independent of the scalar implicature account in of Section 4.

(55) a. If John is standing on something, it will collapse soon.
b. If John reads a book, Mary will read it next.

Example (a) quantfies over situations overlapping with the timeof utterance, (b) over non-past situations.

An alternative account of (53) would be to make the situation variable s_0 be free. This would make the entire conditional an assertion about some particular discourse-marker s_0 which must already be available in the discourse, with the accompanying presupposition that in that situation s_0, John be standing on something. This might also be the right account of the strong referentiality of topic-like examples like (15), discussed in Section 2.1, which seems to be shared with (52). Such conditionals would no longer quantify over situations. They collapse into simple assertions about the referent of the alternative NP. In the semantics of Section 6, we always identify the alternative NP situation variable with the situation variable quantified away by the conditional, omitting any treatment of free situations variables.

6 Sketch of a Semantic Analysis

The semantics proposed below assumes previous work on question and conditionals. The novel elements are the analysis of *ever* discussed in Section 4 and an attempt to rework the semantics of alternative questions to make them fall into a natural class with *wh-* questions.

6.1 Groenendijk and Stokhof Semantics for Questions

We turn first to the re-analysis of alternative questions. For Groenendijk and Stokhof (1984), $[_{\text{S:[wh,+que]}}$Whether Bills walks] translates into Ty2 Gallin 1975 as:

$$\lambda i \lambda j [\, [\text{walk}(i)(\mathbf{b})] = [\text{walk}(j)(\mathbf{b})] \,]$$

This is what they call a propositional concept, a function from worlds to propositions. For any world i, the question concept takes you to the proposition that answers the given question in i.

For G&S $[_{\text{S:[wh,+que]}}$Which boy walks] translates as:

$$\lambda i \lambda j [\, \lambda x[\text{boy}(i)(x) \wedge \text{walk}(i)(x)] = \lambda x[\text{boy}(j)(x) \wedge \text{walk}(j)(x)] \,]$$

For G&S $[_{\text{S:[wh,+que]}}$Whether Mary drinks whiskey or beer] translates as:

$$\lambda i \lambda j [\, [\text{drink}(i)(\text{m})(\text{w})] = [\text{drink}(j)(\text{m})(\text{w})] \wedge [\text{drink}(i)(\text{m})(\text{b})] = [\text{drink}(j)(\text{m})(\text{b})] \,]$$

Note the conjunctive translation here, which is the correct translation given the assumptions of G&S. Using disjunction would yield answer propositions that were too weak. For a world in which John drank whiskey and not beer, we would get the proposition that John drinks whiskey or beer or neither.

We modify the translation of $[_{\text{S:[wh,+que]}}$Whether Mary drinks whiskey or beer] to:

$$\begin{aligned} \lambda i \lambda j [\lambda x[(\text{beer} = x \vee \text{whiskey} = x) \wedge \text{drink}(i)(\text{m})(x)] = \\ \lambda x[(\text{beer} = x \vee \text{whiskey} = x) \wedge \text{drink}(j)(\text{m})(x)]] \end{aligned}$$

Here we have chosen to parallel the constituent question semantics as much as possible, yielding a translation that might be paraphrased *what, whiskey or beer, does John drink*, or *what does John drink, whiskey or beer*. This gives us the same function as G&S's translation, but we have managed to express it with a disjunction. We sketch below how this might be acheived compositionally. A further refinement not shown here would be to capture the associated presupposition that one or ther other of the alternatives holds. We discuss this in the Section 7.

For G&S $[_{\text{S:[wh,+que]}}$Whether Bills walks or not] translates as:

$$\lambda i \lambda j [\,[\text{walk}(i)(\text{b})] = [\text{walk}(j)(\text{b})] \;\wedge\; [\neg\text{walk}(i)(\text{b})] = [\neg\text{walk}(j)(\text{b})]\,]$$

This is completely equivalent to the translation of *whether John walks*.

We modify this to:

$$\begin{aligned}\lambda i \lambda j [\lambda p [(p = \lambda i \text{walk}(i)(\text{b}) \vee p = \lambda i \neg\text{walk}(i)(\text{b})) \wedge p(i)] = \\ \lambda p [(p = \lambda i \text{walk}(i)(\text{b}) \vee p = \lambda i \neg\text{walk}(i)(\text{b})) \wedge p(j)]\,]\end{aligned}$$

This is roughly *which proposition holds, that John walks or that John doesn't walk*. This is equivalent to the G&S translation.

6.2 Semantics of Pre-Questions

We hypothesize constituents we call pre-questions which we characterize as S:[wh,-que] and feed a question formation rule. All questions are derived from pre-questions, but only constituent and alternative pre-questions denote propositional functions. Yes-no pre-questions denote propositions. Thus yes-no questions cannot feed the NP formation rules that provide the antecedents for UCCs.

The pre-question $[_{\text{S:[wh,-que]}}$Which boy walks] translates as:

$$\lambda i \lambda x [\text{boy}(i)(x) \wedge \text{walk}(i)(x)]$$

The pre-question $[_{\text{S:[wh,-que]}}$Whether Mary drinks whiskey or beer] translates as:

$$\lambda i \lambda x [(\text{beer} = x \vee \text{whiskey} = x) \wedge \text{drink}(i)(\text{m})(x)]$$

And the pre-question $[_{\text{S:[wh,-que]}}$Whether Bills walks or not] translates as:

$$\lambda i \lambda p [(p = \lambda i \text{walk}(i)(\text{b}) \vee p = \lambda i \neg\text{walk}(i)(\text{b})) \wedge p(i)]$$

In contrast the pre-question $[_{\text{S:[wh,-que]}}$Whether Bills walks] translates as something of a different type, a proposition.

$$\lambda i [\text{walk}(i)(\text{b})]$$

6.3 Rules Consuming Pre-Questions

In the following rules we assume the translation of *ever* given in Section 4, written here as $mboxever'$.

Question formation is the same for all S:[wh,-que]s, whether they denote propositional functions or not: $[_{\text{S:[wh,+que]}}\,[_{\text{S:[wh,-que]}}\alpha\,]\,]$, where $\alpha\prime = [\![[_{\text{S:[wh,-que]}}\alpha\,]]\!]$:

$$[\![[_{\text{S:[wh,+que]}}\alpha\,]]\!] = \lambda i\lambda j[\alpha\prime(i) = \alpha\prime(j)]$$

This just gives the G&S semantics, with the revisions indicated above.

For alternative NPs[19] we simply add *ever*: $[_{\text{np:[wh,+ever]}}\,\text{ever}\,[_{\text{S:[wh,-que]}}\alpha\,]\,]$, where $\alpha\prime = [\![[_{\text{S:[wh,-que]}}\alpha\,]]\!]$:

$$[\![[_{\text{NP:[]}}\,\text{ever}\,\alpha\,]]\!] = \text{ever}\prime(\alpha\prime)$$

For the semantics of UCCs, we will scope the alternative NPs using a free (pragmatically assigned) property, letting scalar properties be determined by the pragmatics. We assume the conditional operator is supplied by the construction. See Partee (1991) for the intriguing suggestion that such a conditional-like operator might generally be the assertion operator connecting topics and main clauses. Note that capturing the situation variable of the NP works out very cleanly in the Gallin/G&S semantics, because it is the first argument of the intensional NP-denotation. Of course a host of difficulties plaguing a static semantics, involving other variables that may need to be captured, including donkey variables, are not dealt with.

Finally, the topic-like copnstructin that combines alternative NPs with Ss to give the UCC construction: For $[_{\text{S:[cond]}}\,[_{\text{np:[wh,+ever]}}\,\alpha\,]_x\,[_{\text{s:[]}}\,\beta\,]\,]$, where $\alpha\prime = [\![[_{\text{np:[wh,+ever]}}\,\alpha\,]_x]\!]$ and $\beta\prime = [\![[_{\text{s:[]}}\,\beta\,]]\!]$:

$$[\![[_{\text{S:[cond]}}\,\alpha\,]]\!] = [\alpha\prime(s)(\text{P}_0) \Rightarrow_{\{s,x\}} \beta\prime(s)$$

Note that we have written the rule to apply to alternative NPs, but the semantic operations here may well extend to a wider class of cases.

6.4 Special Semantics of Disjunction

We turn now to the question of how to derive the kind of semantics we have assumed for alternative NP pre-questions.

The idea we pursue is that a special meaning of disjunction produces *wh*-phrase like meanings. We thus begin by recalling the G&S translation of a em wh-NP like *which boy*:

$$\lambda i\lambda P\lambda x[\text{boy}(x) \wedge P(i)(x)]$$

[19]The rule given will yield the wrong denotations for certain alternative NPs. Our assumption has been that the alternative NP always denotes what the *wh-* variable denotes. But as is often the case, pipe-piping makes the facts more complicated:

(i) Mary will eat however many cream puffs John eats.
(ii) Whosever beer this is can have it back. (Richardson)

In (i), the alternative NP denotes cream puffs, not a number. In (ii), an example of Richardson's cited by Jacobson, it denotes what we would expect on our account, the owner of the beer, not the beer. Taken together these examples show that the formation of alternative NPs need to keep track of two different variables, much as gap and *wh*-variable dependencies need to be kept separate in the semantics of questions and relative clauses.

Note that the denotation of a *wh*-phrase differs from an ordinary NP denotation only in that scoping it in yields a propositional function instead of a proposition.

The scheme is to define a family of special disjunction rules creating alternative pre-questions. For example, the rule for an alternative question disjunction of two NPs with meanings α_1 and α_2 is:
(56)

$$\lambda i \lambda P \lambda x[\,[\alpha_1(i)(\lambda z[z = x]) \vee \alpha_2(i)(\lambda z[z = x])] \wedge P(i)(x)]$$

This rule would yield the following simplified result for the alternative question NP *whiskey or beer*:
(57)

$$\lambda i \lambda P \lambda x[(\text{whiskey} = x \vee \text{beer} = x) \wedge P(i)(x)]$$

Conmpare this to the *wh*-phrase denotation above. This, too, is an operator which can be scoped in to create a propositional function.

Analogous rules can be formulated for disjunctions of S's and VP's. For a disjunction of S's with meanings p_1 and p_2, we have:
(58)

$$\lambda i \lambda p[(p_1 = p \vee p_2 = p) \wedge p(i)]$$

For a disjunction of VPs with meanings P_1 and P_2:
(59)

$$\lambda i \lambda \wp \lambda P[(P_1 = P \vee P_2 = P) \wedge \wp(i)(P)]$$

A single rule now covers "quantifying in" of *wh*- and alternative disjunction NPs, where $[\![\text{NP}]\!] = \alpha$ and $[\![\text{S}]\!] = \beta$:
(60)

$$\lambda i[\alpha(i)\lambda y[\beta(i)]\,]$$

An analogous rule will account for "quantifying in" VPs, where $[\![\text{VP}]\!] = \alpha$ and $[\![\text{S}]\!] = \beta$:
(61)

$$\lambda i[\alpha(i)\lambda P[\beta(i)]\,]$$

Obviously, polymorphous rules are possible here. The main goal of this section is simply to show what the general semantics of *wh*-type alternative constituents would look like. Although a general approach along these line would require quantifying in rules for various types, there is some evidence that this is required for disjunction independently of alternative questions: Parallel to our examples (3a) through (3c) for *whether*, we have the following cases for *either*, including VP disjunction.

(62) a. Either you eat or drink.
b. Either you drink beer or wine.
c. Either you think that Tom drinks or smokes.
d. Either you drank or not.

As in (3c), the only available interpretation for (62c) appears to be a disjunction wider than *think*. Thus, the two co-conjunctions *either* and *whether* appear to act as *scope-markers* for the disjunction. Example (d) shows the extremely restricted 'or not' construction with *either*, suggesting that *either* and alternative question *whether* form a small paradigm of co-conjunctions that occur in co-construction with *or*.

7 Conclusion

In this paper we have proposed a very close relationship between UCCPs and questions. All three constructions are derived from a common source, pre-questions that denote propositional functions. In turn, UCCPs enter into a topic-like construction with main clauses to yield the UCC construction.

The semantics given in Section 6 left open the treatment of presuppositions. The general form of the account is quite clear. For a pre-question with translation ϕ, the presupposition is:

(63)

$$\lambda i[\phi(i) \neq \emptyset]$$

This is the proposition that the extension of the propositional function not be empty. For alternative pre-questions, this is the presupposition that one of the disjuncts must be true; for constituent pre-questions this is the existential presupposition that the question have a non-empty answer.

Pre-questions with determiners *which* and *what* need the stronger presupposition that effectively makes the derived alternative NPs definite. For the pre-question *Which boy walks*, for example:

(64)

$$\lambda i[\mathbf{Card}(\lambda x[\text{boy}(x) \wedge \text{walk}(i)(x)]) = 1]$$

None of this makes very clear why the alternative questions and constituent questions should share an important presuppositional property. On the kind of account sketched here, disjunction and *wh-* words would have to carry along these properties independently. Nor is there yet anything to be said yet about possible connections with focus constructions, which like alternmative questions show intonational peculiarities, though different ones, and also seem to exploit alternatives, although in a different way, and which also may carry existential presuppositions. It may be that pre-questions, focus constructions, and negative polarity constructions all need to be accounted for using something like the alternatives and that the deeper roots of the presuppositional properties of these constructions lie there. This is suggested by the kind of treatment

of negative polarity items pursued in Krifka (1996), but there is a great deal of work to be done in fleshing such a thought out.

The other connection that seems to have deeper roots is the connection between questions and a pragmatic scale operator. We have offered no particular reason why an operator like *ever* should enter into the formation of conditionals with elements of questions. And yet, the facts of three languages suggest that there ought to be one. There is clearly more to be said here.

We close with a remark on one aspect of the treatment proposed here, the suggestion that there is a deep connection between alternative questions and constituent questions. In particular, we have gone so far as to give disjunctions in alternative questions *wh-* phrase-like denotations, making a syntactic claim about a special class of disjunction constituents.

There is independent evidence of a close relationship between *wh*-phrases and disjunctions in alternative questions, Both constituents, in contrast to yes-no questions, have list-pair readings:

(65) a. What does everyone drink. (Chierchia 1990)
b. Does everyone drink light beer or dark?
c. Does everyone drink beer?
d. Who drinks everything?
e. Does John or Mary like everyone?

Thus (a) has a reading which can be answered as a list, pairing drinkers with drinks, and so can (b). In contrast, (c) cannot be answered with a list pairing domain members with yes and no. Example (d) illustrates the C-command or weak-crossover like restriction on such readings (see Chierchia 1992) for a constituent question, and (e) shows it for an alternative question.[20] Neither sentence has pair-list readings.

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[20]There are differences between NP disjunctions in alternative questions and *wh-* phrases as well. In particular the two can not be free mixed to yield multiple wh-questions:

(i) Who drinks what?
(ii) Who drinks whiskey or beer?
(iii) What do Sam or Bill drink?
(iv) Who swims or fishes?

(i) has a multiple wh reading but (ii), (iii) and (iv) do not. Indeed, it is difficult to even utter these preserving the list intonation of altrernative questions.

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