



**HÁSKÓLI ÍSLANDS**

**Hugvísindasvið**

# **The Whether Report:**

*Reclassifying Whether as a Determiner*

**B.A. Essay**

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**May, 2012**

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## Abstract

This paper examines the use of *whether* in complement clauses for the purpose of determining the exact syntactic and semantic status of *whether* in these clauses. Beginning with a background to the complementizer phrase, this paper will note the historical use of *whether*, and then examine and challenge the contemporary assertion of Radford (2004) and Newson et al. (2006) that *whether* is a wh-phrase. Furthermore, this paper will investigate the preclusion of *whether* by Radford and Newson et al. from the complementizer class.

Following an alternative course that begins by taking into account the morphology of *whether*, the paper will then examine two research papers relevant to *whether* complement clauses. The first is Adger and Quer's (2001) paper proposing that certain embedded question clauses have an extra element in their structure that behaves as a determiner and the second paper is from Larson (1985) proposing that *or* scope is assigned syntactically by scope indicators. Combining the two proposals, this paper comes to a different conclusion concerning *whether* and introduces a new proposal concerning the syntactic structure and semantic interpretation of interrogative complement clauses.

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## 1. Introduction

Since the idea of a complementizer category was first proposed by Peter S. Rosenbaum in 1967, researchers have been debating which lexical items can fill this syntactic category. Following the Minimalist program created by Chomsky (1993), Andrew Radford (2004), in his latest book, *English Syntax, An Introduction*, has limited the complementizer category to three words: *that*, *for*, and *if*. However, in previous works by Radford (1981) and others (O'Grady, Dobrovosky, and Katamba 1998), *whether* was also included in the complementizer category. In his current approach, Radford (2004) treats *whether* as a wh-phrase instead of a complementizer and a similar position is taken by Newson et al. (2006) in the book *Basic English Syntax with Exercises*.

I will examine the evidence presented by both Radford and Newson et al. to their mutual conclusion that *whether* is indeed a wh-phrase and should be excluded from the complementizer class. I will also, in the course of examination, present evidence which demonstrates that *whether* functions differently than wh-phrases and therefore should not be placed in this category. Furthermore, in the inevitable comparison of *whether* with the generally accepted interrogative complementizer *if*, I will examine issues shared by these two interrogative items within embedded clauses, arguing that, while much of the evidence used to preclude *whether* from the complementizer category can be challenged, the conclusion by Radford and Newson et al. that *whether* is not a complementizer remains valid.

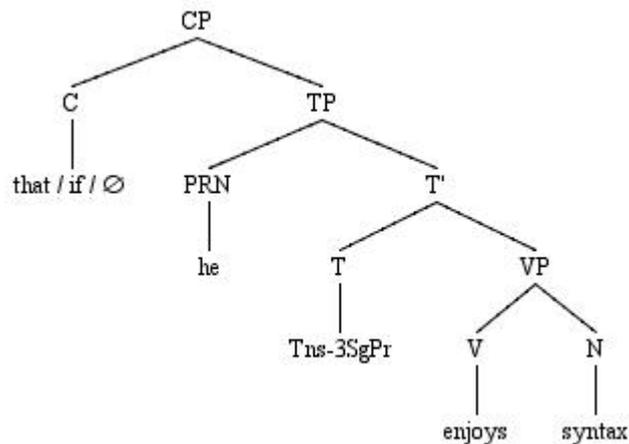
Following the theme that *whether* is neither a complementizer nor a wh-phrase, I will examine the morphology of *whether* and then review two research papers that are relevant to *whether* introduced clauses. The first paper from Adger and Quer (2001) investigates the syntax and semantics of selected and unselected embedded questions. The second paper by Larson (1985) surveys the scope of disjunction. By combining pertinent information from both papers I will present evidence that *whether* is actually a determiner that functions semantically as an interrogative scope indicator for disjunction.

## 2. The Complementizer Phrase: Background Information

In contemporary linguistics, all canonical (i.e. normal) clauses, whether they are main clauses or complement clauses are considered to be complementizer phrases or CPs. This means that clauses (which are themselves tense projections/phrases or TPs, sometimes also referred to as IP, or inflection projection/phrase), are always headed by a complementizer C.<sup>1</sup> The head C in finite complement clauses may be filled by an overt complementizer like *that* or *if*, or a covert null complementizer  $\emptyset$  (a null variant of *that*) as shown in the following examples.

- (1) a. She doesn't know [*that* he likes syntax]  
b. She doesn't know [*if* he likes syntax]  
c. She doesn't know [he likes syntax]

Each of the bracketed complement clauses in (1a-c) will have the structure (2) below:



(2)

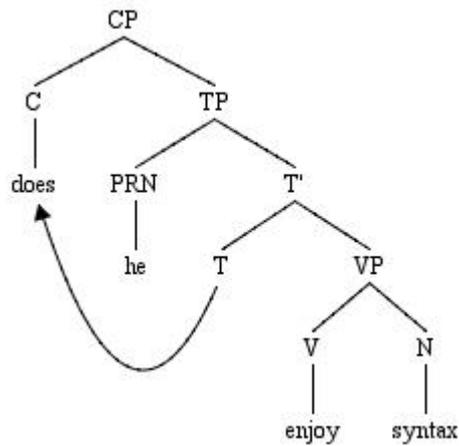
The structure in (2) shows the complementizer in the C position of the CP (*that*, *if* or null) is the head of the clause that follows. This fact is important because, syntactically, heads serve certain grammatical functions. One function of C is marking the force (i.e. declarative or interrogative) of a clause that it heads. Therefore, a clause headed by the declarative complementizer *that*, or its null variant would be declarative. However, if C

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<sup>1</sup> Except for exceptional case-marking (ECM) clauses, which are sometimes referred to as defective clauses, a point that has little bearing to this general discussion of the complementizer phrase.

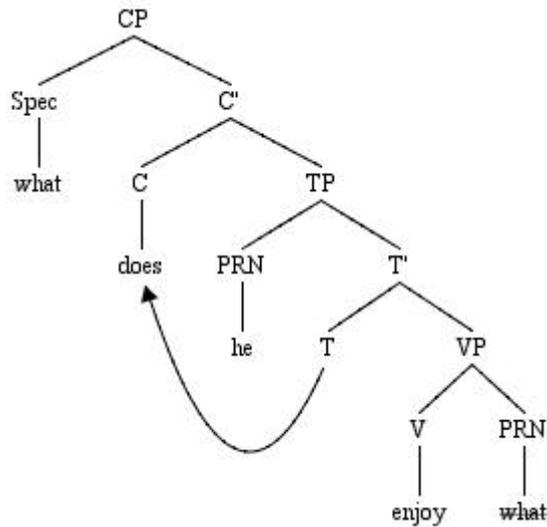
were filled by the interrogative complementizer *if*, the force of the clause would then be interrogative.

Main clauses, as stated before, are also CPs. A declarative main clause will be headed by a declarative null complementizer  $\emptyset$ . Interrogative main clauses, on the other hand, will have an inverted auxiliary in C; so that a clause like “does he enjoy syntax?” will have the structure:



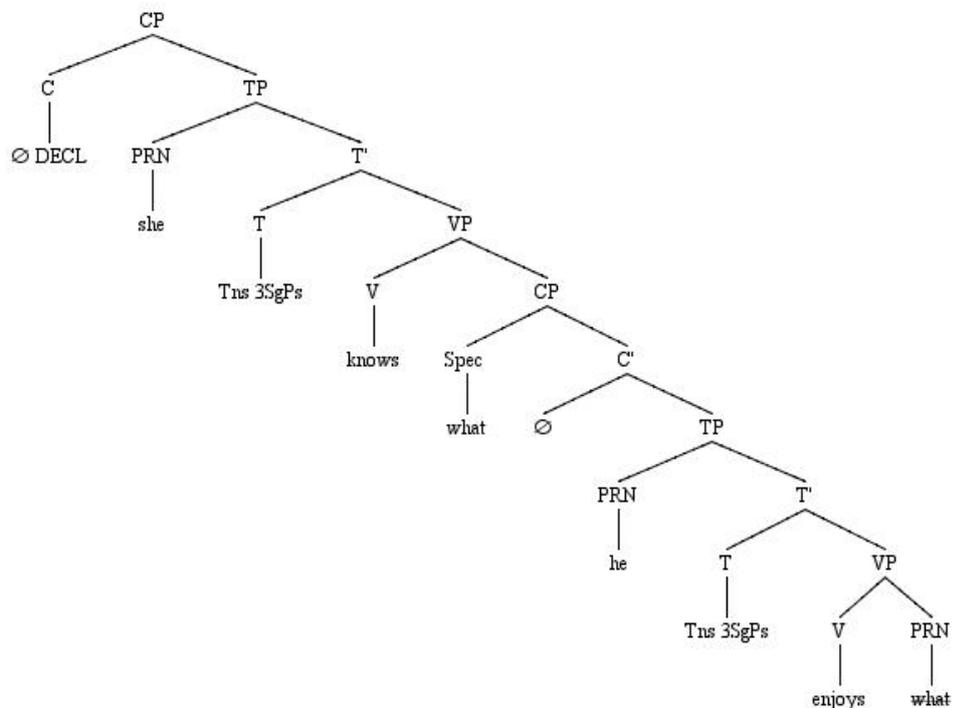
(3)

This structure is typical for a simple yes/no question in English. Consider, though, if the speaker does not know what subject the person actually enjoys? Then the speaker might ask a question such as “what does he enjoy?” The problem with this clause is determining where the *wh*-phrase *what* should be placed in the structure since the inverted auxiliary *does* is already in C. Obviously, *what* is moved into some position before the inverted auxiliary. Since certain constituents, satisfying the grammatical function of a specifier, are positioned before heads, it makes sense that *what* is moved into the specifier position of the CP, referred to as Spec CP. The structure will then be as follows in (4):



(4)

If a wh-phrase introduces a complement clause, the wh-phrase will also be positioned in Spec CP but there will be (generally) no auxiliary inversion. The C position will be null because wh-phrases and complementizers are mutually exclusive categories, i.e. they never appear together in the CP in contemporary English. The structure for a clause like “she knows what he enjoys” will be:



(5)

In (5), there are two Cs in the structure. The first C head is a null complementizer and heads the main clause. Since a null complementizer is declarative,

the main clause is also interpreted as declarative. The other C heads the complement clause and is also null. However, this clause cannot be interpreted as declarative because it is introduced by a wh-phrase. Wh-phrases are interrogative by their very nature and so the clause it introduces must be interpreted as interrogative. This presents a problem because, as stated earlier, head C determines the force of a clause, not Spec CP. This problem is solved by understanding the concept of Spec-head agreement. Spec-head agreement allows the sharing of features and functions between specifiers and their heads.<sup>2</sup> In example (5), *what* shares its interrogative feature with C, (in this case, a null complementizer) which then determines the force of the complement clause.

I have now presented the generally accepted positions within the CP for complementizers and wh-phrases. Remembering that the head position of the complement clause serves certain grammatical functions such as marking the force of the clause, the difference between complementizers in head C and wh-phrases in Spec CP becomes clearer. While wh-phrases in Spec CP can share features and functions with their heads in C, wh-phrases themselves do not determine grammatical properties of clauses.

The basic issue this paper first examines is that *whether* appears to be a wh-phrase and does not satisfy all the grammatical functions of a complementizer and so should occupy the Spec CP position and not the C position in the CP. To further understand the difference between the two categories, I will now examine the complementizer class.

### 3. The Complementizer Class

Radford (2004) states that complementizers serve three grammatical functions: to mark the clause they introduce as an embedded clause, to indicate whether the clause it introduces is finite or non-finite, and to mark the force of the clause it introduces as declarative, irrealis, or interrogative (p. 44-45). Radford then analyses and presents reasons on why three words, *that*, *for*, and *if* should be considered complementizers. He

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<sup>2</sup> Spec-head agreement is further supported by the research of Cheng (1997) who postulates that every clause must be typed. Because English has no interrogative typing particle, complement clauses are therefore typed as interrogative by the fronting of a wh-word to Spec CP and then by C through Spec-head agreement.

accomplishes this task by analyzing different examples of clauses headed by *would* be complementizers and demonstrating how, for instance, *if* and *that* are only used to introduce finite clauses while *for* is used to introduce non-finite clauses. His examples are:

- (6) I think *that* you may be right
- (7) I doubt *if* you can help me
- (8) I am anxious *for* you to receive the best treatment possible
- (9) \*I think *that* you to be right
- (10) \*I doubt *if* you to help me
- (11) \*I'm anxious *for* you should receive the best treatment possible

Radford continues to give many more examples for *that* and *for*, including, but not limited to, comparisons between *that* as a complementizer and *that* as a determiner as well as comparisons between *for* a complementizer and *for* as a preposition. However, although *if* is included as a complementizer by Radford, his reasons for accepting *if* as such is based only upon its restriction for introducing finite tense and on how *whether* differs from *if* as a complementizer (and to a smaller extent, from *that* and *for*) under analysis.

More interestingly, Radford hedges his acceptance of *if* into the complementizer category with the introductory statement that *if* “*might function as a complementizer*” and with his concluding statement that “*it seems more appropriate to categorize if as an interrogative complementizer...*” (p. 47-48) [Emphasis mine].

One immediate problem with the exclusion of *whether* (and possibly the hedged acceptance of *if*) is that *whether* can be interchanged in certain clauses with *if* without an apparent change in meaning to that clause as demonstrated in the following sentences:

- (12) John wondered *whether* Mary would arrive on Friday.
- (13) John wondered *if* Mary would arrive on Friday.

It is a logical assumption that if one lexical item can replace another in the syntax without a change in the syntactic structure and semantic sense, then that item

should occupy the same syntactic category and have the same function as the item that it replaced. This information is important because it will be demonstrated later in this paper that *if* (possibly because of interchangeability with *whether*) does not always function in a similar manner as the declarative and irrealis complementizers, but shares some properties with *whether* and interrogative wh-phrases, a situation at which Radford seems to be hinting.

#### 4. *Whether* as a Wh-Phrase

I will now examine the argument by Radford and Newson et al. that *whether* is a wh-phrase. I will very briefly discuss the historical use of *whether* and its use in Modern English. I will then examine *whether* in relation to wh-phrases in two syntactic situations: wh-movement and sluicing.

##### 4.1 *Whether* as a Wh-Phrase: Historical Use of *Whether*

The first argument presented by Radford for *whether* to be considered a wh-phrase and not complementizer is that since it begins with wh- and functions interrogatively, it should be included in the category of wh-phrases such as *where* or *when* (p. 48).<sup>3</sup>

It is true that, historically, *whether* once functioned as a question word in English, as shown by the following examples:

- (14) *Whether ys* it easier to saye to the sicke of the palsey, thy synnes ar  
forgeven the: or to saye, aryse, take uppe thy beed and walke?

1526, William Tyndale, trans. Bible, Mark II

- (15) *Whether* hadst thou rather be a Faulconbridge, and like thy brother to enioy  
thy land,or the reputed sonne of Cordelion, Lord of thy presence, and no  
land beside?

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<sup>3</sup> Radford actually refers to *where* and *when* as wh-adverbs. Some linguists assert that *where* and *when* are actually PPs, that words such as *who* and *what* are NPs or DPs, and that they all can function like adverbs in embedded questions. For simplicity, this paper will refer to such wh-words as wh-phrases.

1623, William Shakespeare, *The Life and Death of King John*, Act 1, Scene 1

(16) *Whether* dost thou profess thyself a knave or a fool?

1623, William Shakespeare, *All's Well That Ends Well*, Act 4, Scene 5

(17) *Whether* is it better, I ask, to be a slave in a fool's paradise at Marseilles—fevered with delusive bliss one hour—suffocating with the bitterest tears of remorse and shame the next—or to be a village schoolmistress, free and honest, in a breezy mountain nook in the healthy heart of England?

1847, Charlotte Brontë, *Jane Eyre*

Wh-phrases such as *where* and *when* can also be used to introduce matrix questions in English and so the case seems to be in favor of *whether* being a wh-phrase. However, the basic problem with accepting *whether* as a wh-phrase is that *whether* is no longer accepted to introduce matrix questions in Modern English. If questions beginning with *whether* are no longer considered by English speakers to be grammatical, then it is already questionable to include *whether* with other wh-phrases.

#### 4.2 *Whether* as a Wh-Phrase: Wh-Movement

Nevertheless, *whether*, like wh-phrases such as *where* and *when* can be found to introduce embedded question complement clauses.

(18) He wondered *whether/where/when* she would go

Both Radford and Mark Newson et al. (2006) in *Basic Syntax with Exercises*, place wh-phrases in the specifier position of the CP (spec CP) whereas complementizers occupy head C. As Newson et al. state, wh-phrases “are all moved to spec CP from some position inside the IP and therefore they are always associated with a ‘gap’ in the clause, filled...by a trace” (p. 259). This action where the wh-phrase is moved from the clause

into the CP is called wh-movement. In example (19), the trace left by the movement of *where* is marked by *t*.

(19) He wondered [CP where<sub>i</sub> [IP she would go t<sub>i</sub>]]

One significant difference with *whether* from other wh-phrases under this analysis is that, as Newson et al. continue, “whether is not linked to any position inside the IP from which it has moved” (p. 259). In other words, while wh-phrases have some association within its clause, *whether* does not have any such clausal association. While Radford remains silent on the matter in his book, Newson et al. attempt to explain this anomaly by suggesting that wh-phrases usually indicate what the focus of the question is. So, as in example (19), the focus of the wh-phrase would be the subject going to “some place”, hence the use of the wh-phrase *where*. They argue that *whether*, on the other hand, marks yes/no questions, and that these questions focus on the truth of the clause rather than any particular piece of information within it. *Whether*, according to them, is simply indicating the question status of the clause (p. 259). Again, this is a situation where *whether* is not functioning like other wh-phrases.

#### 4.3 *Whether* as a Wh-Phrase: Sluicing

*Whether* also seems to be functioning differently than wh-phrases in a syntactic situation known as sluicing. Sluicing is a type of ellipsis that occurs with wh-phrases where a clause introduced by the wh-phrase is elided, in most cases with only the wh-phrase remaining. Consider the following examples:

- (20) a. Mary was willing to tell me *why* she called but not *when*.  
b. ?\*Mary was willing to tell me *why* she called but not *whether*  
c. \*Mary was willing to tell me *why* she called but not *if*.

In (20a), the clause “she called” that could follow the wh-phrase *when*, is elided without consequence to the structure or meaning of the sentence; it remains grammatical.

However, in (20b), the sentence without “she called” following *whether* seems, at best, an odd construction while (20c), with only *if* remaining, is ungrammatical. If *whether* is

a wh-phrase, then it should allow for the clause it introduces to be elided as other wh-phrases do and yet the evidence presented above suggests that this is not the case.

The fact that *whether* has no associate within the clause, and therefore does not undergo wh-movement typical of wh-phrases, combined with the fact that it cannot be used to introduce matrix questions and is incompatible with sluicing, suggests that *whether* is indeed different from other wh-phrases and should not be included in this category. The fact though, that *whether* marks yes/no questions and indicates the question status of the clause will have implications for the examination of *whether* as a determiner that functions as a scope indicator.

## 5. *Whether* as a Complementizer

If *whether* is not a wh-phrase, then it raises the possibility that it could be a complementizer. In the sections that follow, I will explore the idea of *whether* as a complementizer by examining the evidence given by Radford and Newson et al. that concludes *whether* is different from the currently accepted complementizers *that*, *for* and *if* and should not be included in the category. Concurrently, evidence will be presented that calls into question many of their conclusions.

### 5.1 *Whether* as a Complementizer: Complement to a Preposition

One of the first issues that Radford raises with the idea of *whether* as a complementizer is that in comparison with other complementizers such as *if*, wh-phrases can be used to introduce a clause which serves as the complement of a preposition, while complementizers cannot (p 48). He then gives the following examples:

- (21) I am not certain about [*whether/when/where* he'll go]
- (22) \*I'm concerned over [*if* taxes are going to be increased]
- (23) \*I'm puzzled at [*that* he should have resigned]
- (24) \*I'm not very keen on [*for* you to go there]

However, an informal search of the internet reveals contemporary usage of *if* as a complement to a preposition, which seems to be at odds with the assertion made by Radford.

- (25) I'm concerned *over if* their 3 and 4 star ratings are truly that.<sup>4</sup>
- (26) [I] even overheard staff panicking with concern *over if* they had enough food for the evening!<sup>5</sup>
- (27) No worry about if you'll get more patients, no concern *over if* there's enough cash-flow, and no hassle of trying to market your practice to overcome those other concerns.<sup>6</sup>

These sentences all sound grammatical, at least to my ears, although I concede they would sound better if *whether* were exchanged for *if*. This observation of *if* being utilized where *whether* would be more suitable could be due to a strong analogy between the usage of each word, as several webpages on the internet are dedicated specifically to this problem.<sup>7</sup> It also remains possible that the use of *if* in place of *whether* could be a dialect difference or divergence in progress within English. Either way, the fact remains that the accepted complementizer *if* can be a complement to a preposition. The fact that *whether* can be also should not be reason enough to preclude it from the complementizer class.

## 5.2 *Whether* as Complementizer: Coordination

Another issue, according to Radford, with accepting *whether* as a complementizer instead of a wh-phrase is that, unlike *if*, *whether* can be coordinated with the adverb *not* (p. 48). He provides the following examples:

- (28) I don't know *whether or not* he'll show up.
- (29) \*I don't know *if or not* he will show up.

One problem with comparing *if* clauses to *whether* clauses is that, reviewing the information from Newson et al., *whether* marks yes/no questions (p.259). *If*, on the other hand, generally does not imply a single alternative but represents one option out of

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<sup>4</sup> <http://forums.appleinsider.com/showthread.php?t=45307>

<sup>5</sup> <http://www.guardian.co.uk/leeds/2010/oct/04/slideshow-leeds-world-curry-festival>

<sup>6</sup> <http://fiddlermedical.com/blog/physician-marketing-for-dummies/>

<sup>7</sup> *Grammar Girl: If Versus Whether* <http://grammar.quickanddirtytips.com/if-versus-whether.aspx> and *GMAT Grammar: Whether vs. If* <http://gmat-grammar.blogspot.com/2006/07/whether-vs-if.html> are good examples.

a potential infinite set of possibilities<sup>8</sup>. Semantically then, the coordination of the *or not* phrase with *if* would not be acceptable. However *if or not* examples can be found in contemporary English usage, probably due, once again, to a strong analogy from *whether* to *if* in certain clauses.

(30) After accepting the delivery of the foreign national the immigration inspector will examine *if or not* the immigration control officer has properly conducted the investigation of violations.<sup>9</sup>

(31) That way you can find out *if or not* that forum is right for you.<sup>10</sup>

(32) If all addresses and phone numbers are listed as the same, it will take time to contact these references to verify *if or not* they work in the same office that you do.<sup>11</sup>

(33) Your mind won't guide you wide of the mark once you are attempting to decide *if or not* your ex-boyfriend still has emotions for you.<sup>12</sup>

It has been pointed out to me that while the evidence of *if or not* constructions does exist, the use of *if or not*, while being acceptable to my American ears, may not be acceptable to speakers of British English. Therefore, the use of *if or not* constructions may also be a dialect difference or divergence in progress. However, even if speakers find the *if or not* construction ungrammatical, coordination with the adverb *not* is not acceptable with *wh*-phrases either.

(34) \*I don't know *when/where* or not he'll show up

This fact suggests that coordination with the adverb *not* is unique to *whether*, by virtue of some special property attached to it and will also have implications for examination of *whether* as a determiner that functions as a scope indicator.

Newson et al. takes coordination further to demonstrate that *whether* should be classified as a *wh*-phrase and not a complementizer. They argue that *whether* can be

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<sup>8</sup> If this argument is correct, then examples 7 and 8, while retaining the same syntactic structure, could be interpreted as having different semantic meanings. While the *whether* version retains its yes/no interpretation, *John wondered if Mary would arrive on Friday* could be interpreted to mean that *John wondered if Mary would arrive on Friday, or Saturday, or next week*, and so on.

<sup>9</sup> [http://www.nipponvisa.com/DeportationOrderSystem/deportation\\_order\\_system.php](http://www.nipponvisa.com/DeportationOrderSystem/deportation_order_system.php)

<sup>10</sup> <http://www.wikihow.com/Avoid-Being-Banned-from-a-Windows-or-Linux-Forum>

<sup>11</sup> <http://www.cesswi.org/ci-info/top5.asp>

<sup>12</sup> <http://www.selfgrowth.com/articles/signs-he-still-loves-you-help-for-women>

coordinated with wh-phrases but *if* cannot (p. 258-259). They provide the following two examples:

(35) I'm not sure *whether* or even *when* I should applaud

(36) \*I don't know *if* and *when* to stand up

The idea underlying the argument of Newson et al. is that coordination is known to readily allow the joining of words or phrases that are of the same syntactic category. Sentence (35) is acceptable while sentence (36) is clearly ungrammatical. But the constituents in (36) can also be reversed and the coordinator *or* used in place of *and* to form the following sentence:

(37) I don't know *when* or even *if* to stand up.

The sentence now seems grammatical and therefore seems to demonstrate the coordination of a wh-phrase and the complementizer *if*. One reason why this may be is that both *if* and *whether* are interrogative, a quality shared with wh-phrases and so their coordination with wh-phrases may be due to semantic compatibility. It could also be that the coordination test is not always reliable for determining that the coordinated constituents are of the same syntactic category. Consider these two examples:

(38) He reads *during the day* and *at night*.

(39) He works *weekdays* and on *Sunday*.

In (38), the coordination is between PPs – *during the day* and *at night*. Because these two phrases are of the same syntactic category, they normally should be, and in this case are, capable of being coordinated. In (39), coordination is between an NP *weekdays* and a PP *on Sunday* and yet the sentence is also grammatical. The conclusion to be drawn from these two examples along the coordination of *whether/if* with wh-phrases is that coordination is not a reliable indicator for a shared syntactic category and should not be implemented to exclude *whether* from the complementizer class.

### 5.3 *Whether* as a Complementizer: Infinitive Clauses

Radford and Newson et al. both observe that whereas typical wh-phrases and *whether* can introduce both finite and infinitive clauses, the complementizer *if* is restricted to introducing finite clauses (Radford, 2004, p. 48),(Newson et al. 2006, p. 258).

(40) I wonder *when/where/whether/if* I should go.

(41) I wonder *when/where/whether/\*if* to go.

A search of a contemporary corpus yields no infinite clauses introduced by *if*, leading to the conclusion that this is one interchangeability that *if* does not share with *whether*. It is clear, however, that *whether*, as noted in (40) does share this ability to introduce non-finite clauses with other wh-phrases. While compelling, the evidence already presented demonstrates that *whether* does not function entirely like other wh-phrases and should not be included in this category. Nonetheless, the issue of *whether*'s ability to introduce both finite and infinite clauses is problematic to any argument in favor of *whether* as a complementizer since this class, as noted earlier, introduces either finite or non-finite tense in a clause. I have encountered no viable solution in any research that would allow for a complementizer to introduce both finite and non-finite tense and conclude that *whether*, because of this core issue, cannot be a complementizer.<sup>13</sup>

### 6. The Morphology of *Whether*

If *whether* is not a complementizer because it can introduce both finite and non-finite clauses and it is not a wh-phrase because it does not undergo wh-movement and cannot introduce a matrix yes/no question, then what exactly is *whether*? In the search for an answer, it is necessary first to examine the morphology of the word *whether*. Many linguists have noted (Bresnan 1970, Larson 1985, Adger & Quer, 2001) that *whether* is morphologically formed by combining *either* with a wh-morpheme. Larson

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<sup>13</sup> Nakajima (1996) presents a solution to whether finite and nonfinite clauses. His proposal is based on Split CP hypothesis (the theory that the CP is split into a number of different projections) and the distribution of PRO being dependent on the head C. Without going further into the details, Nakajima maintains that *whether* is a complementizer and has the head C and therefore the *whether* clause can be in the infinitival form whose subject is PRO. This argument is contradictory to current theory which proposes that a lexically filled C governs the subject PRO.

quotes the work of Jespersen (1909-49) who writes that the original meaning of *whether* was “which of either A or B”, citing the following (as cited in Larson, 1985, p. 225):

(42) *Whether* of them twaine did the will of his father?

(*Matthew 21:31*)

(43) *Whether* is greater, the gold or the temple?

(*Matthew 21:17*)

Morphologically and historically, *whether* then is tied to *either* and, like the use of *either*, is connected to the “disjunction of a proposition and its negation” (Larson, 1985, p.226).

#### 7. *Whether* as a Determiner

In contemporary linguistics, *either* is considered to be syntactically functioning as a determiner and so by association with *either*, *whether* might also be considered a determiner. The strongest evidence for such a proposal comes from the research of Adger and Quer (2001). In their research they observe that “predicates that require clausal complements subcategorize for different types of clausal complements” (p. 108). In other words, a predicate such as *maintain* will take a declarative complement headed by *that* / $\emptyset$  while a predicate such as *inquire* will take an interrogative complement introduced by *whether/if*. But they also note that a predicate such as *tell* only takes a true proposition as its complement, arguing that while *that*/ $\emptyset$  and *whether* clauses are acceptable complements, *if* clauses are not so, since, they argue, *if* clauses cannot introduce a true proposition (p.109). They give this example:

(44) #The bartender told me if I was drunk<sup>14</sup>

Adger and Quer then observe that the oddness of an *if* clause with a predicate that subcategorizes like *tell* disappears in matrix yes/no questions and matrix negation:

(45) Did Julie admit/hear/say if the bartender was happy? (yes/no)

(46) Julie didn't admit/hear/say if the bartender was happy. (neg)

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<sup>14</sup> The use of the symbol # in this example is a notation employed by Adger and Quer to indicate that the sentence is not considered ungrammatical, but that there exists a peculiarity in its construction.

They label these *if* clauses that appear with these types of predicates as unselected embedded questions (UEQs). UEQ's, they continue, are semantically sensitive; meaning they “behave as though they are sensitive to some semantic property of their syntactic environment” and being so, fall into a class of elements that includes negative polarity items (NPIs) and free choice items (FCIs) (p. 111). An NPI is a lexical item or unit, such as *ever*, which requires the licensing context of negation for its presence. Consider the following examples:

(47) *He didn't ever want to leave*

(48) \**He ever wanted to leave*

(49) \**He ever didn't want to leave*

In example (47), the NPI *ever* is licensed by simple negation (the particle *not* which has been cliticized to the past tense auxiliary verb *do*) while in (48), there is no such licenser, making the sentence ungrammatical. Although a negative element is present in (49), it appears further down in the clause and therefore cannot license *ever*.<sup>15</sup>

Adger and Quer state that NPI licensers license UEQs, meaning that a UEQ must be “in a particular syntactic relation to a negative element”, noting that yes/no questions and negation are “prototypical NPI licensers cross linguistically” (p.111-112). In short, a UEQ can appear with matrix yes/no questions and matrix negation (as in examples (45) and (46)), because these contexts, as NPI licensers, will then license the UEQ.

An FCI, on the other hand, is a lexical item or unit, such as *any*, that allows, according to Vendler (1967), a “freedom of choice” in its meaning (p.83).<sup>16</sup>

(50) *Any vegetable can be served with the meal.*

In the above example (50), *any* is understood as meaning that “no matter which vegetable is chosen, that vegetable can be served with the meal”. Note that (50) is a

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<sup>15</sup> More specifically, the NPI licenser does not c-command *ever*.

<sup>16</sup> *Any*, in certain usage, can also be a NPI and therefore require an NPI licenser.

(i) He didn't want *any* potatoes

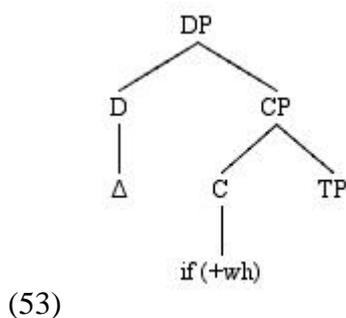
(ii) \*He did want *any* potatoes

modalized sentence, (it contains a modal verb, in this case *can*), which is a typical environment for a free choice reading.

Adger and Quer note that UEQs and FCIs and have similar distributional properties. For example, a UEQ can also distribute like FCI *any* in certain sentences that contain a modal verb.

- (51) a. *Any* first year student could answer that question.  
 b. \**Any* first year student answered that question.
- (52) a. The evidence could demonstrate *if* he was guilty.  
 b.\*The evidence demonstrated *if* he was guilty.

Adger and Quer then explain that either all *if* clauses are semantically sensitive by some feature on C or that the *if* clause is embedded under a semantically sensitive functional head – a determiner – that is polarity sensitive and licensed by NPI and FCI environments. They point out that if all *if* clauses were semantically sensitive, then an unlicensed selected embedded sentence such as *I asked if he left* would be ungrammatical, which, of course it is not. Therefore, their focus is on a semantically sensitive head that can appear in both the NPI and FCI licensing environments. They propose the following structure for UEQs (p. 121):



Investigating the true nature of their proposed determiner Δ, they come to the conclusion that it is most likely a counterpart of *either*. The reason for this conclusion is that like UEQs, *either* can be licensed in both NPI and FCI environments.

- (54) *Either* result could frighten him  
 (55) ?\**Either* result frightened him  
 (56) I didn't announce *either* result

(57) ?\*I announced *either* result

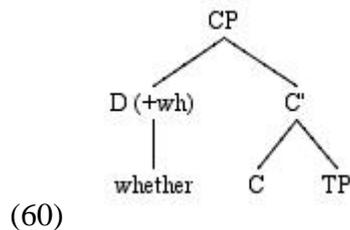
Additionally, the determiner *either* “entails that its restriction set has a cardinality of two” (p. 119). This is important because the semantics of yes/no questions and *whether* clauses can be analyzed as a disjunction of just two propositions. Thus, whereas the semantics of the determiner *either* quantifies over a set of individuals, *whether* and  $\Delta$ , also functioning as determiners, would quantify over a set of propositions. More critical to the analysis is the semantics of *if* clauses based on Hamblin’s (1973) analysis in which he argues that they denote “an exhaustive set of mutually exclusive answers” (as cited in Adger and Quer, 2001, p 121). This is contrary to the proposition presented earlier that *if* represents one option out of a potential infinite set of possibilities (see footnote 8). Since the analysis allows *if* clauses to be semantically interpreted similarly with *whether* clauses the argument that unselected *if* clauses are introduced by a covert counterpart of *either* is further supported.

Conversely, Adger and Quer suggest that *whether* clauses are different from UEQs in that they are not polarity sensitive. The motivation for this argument is that unlike true UEQs, *whether* clauses can topicalize (58c) and can appear as subject clauses (59c).

- (58) a. No one admits *if* there is life on Mars.  
b. #*If* there is life on Mars, no one admits  
c. *Whether* there is life on Mars, no one admits.
- (59) a. *That* there was life on Mars wasn’t disputed by the NSA.  
b. #*If* there was life on Mars wasn’t disputed by the NSA.  
c. *Whether* there was life on Mars wasn’t disputed by the NSA.

In both (58b) and (59b), the topicalized *if* clause and the *if* subject clause seem to be, at best, an odd construction. The reason for this oddness, as Adger and Quer point out, is that UEQs, having semantic sensitivity and therefore propositionally headed by a determiner that is polarity sensitive, are generally not expected to be licensed by a licenser that occurs lower in the structure.

Unlike the *if* clause structure in (53), Adger and Quer propose that *whether* is composed of the determiner *either* and +wh and give the following structure for *whether* clauses (p. 120):



They further suggest, by the nature of their proposed structure, that when the D combines with +wh, the D loses its polarity, which accounts for the *whether* clause's wider distribution. This loss of polarity is unlike the  $\Delta$  in the *if* clause construction (53) where +wh is attached to *if*, with  $\Delta$  retaining its semantic sensitivity.

One question that arises out of the two syntactic structures of *if* clauses (53) and *whether* clauses (60) is why the determiner is outside the CP in *if* clauses and inside the CP, in the Spec of CP, in the *whether* clauses. The answer, as far as I can deduce, is that Adger and Quer argue that extraction is not permitted out of UEQs (headed by the DP  $\Delta$ ) in the same way that extraction from a DP headed by *any* is ungrammatical as they behave like strong islands.

(61) \**Who* didn't you believe *any* rumor that John killed *t*?

(62) \**What* did no one admit *if* John had stolen *t*?

(63) ?*What* did no one ask *if* John had stolen *t*?

They note that in (63) the effect of extraction is milder since, they imply, there is no DP heading the *if* clause in the selected embedded clause (SEQ). However, the same problem of extraction occurs in *whether* phrases whose determiner is in Spec CP and head is  $C^0$ .

(64) \**What* did no one admit *whether* John had stolen?

(65) \**What* did no one ask *whether* John had stolen?

This evidence suggests that there is something present in interrogative CPs that inhibits the movement of wh-phrases. While the DP  $\Delta$  may indeed be acting as a head

that prevents extraction from a UEQ, the determiner could also be in the CP, with either the interrogative aspect of the CP interfering semantically with the movement of the *wh*-phrase or, more plausibly, the determiner in Spec CP blocking the movement of the *wh*-phrase through the CP.

The central claim of the research by Adger and Quer is that there is an extra element in the syntactic structures of sentences that contain embedded questions that behaves as a determiner syntactically and semantically. More importantly, they claim that *whether* can also be considered a determiner by its composition from *either* and +*wh*.

In continuing with the theme of *either* and its intimate relationship to *whether*, I will now turn the attention toward research that presents another semantic function for *whether* in embedded question clauses.

#### 8. *Whether* as an Interrogative Scope Indicator for Disjunction

Richard K. Larson (1985), in his research paper *On the Syntax of Disjunction Scope*, deals also with the relationship of *either* and *whether*. He notes how the syntactic behavior of *whether* and *either* might be related to the semantics of disjunction. Once again, without going far into the data, Larson proposes that “*or* scope is assigned syntactically through the movement of ‘scope indicators’ including *either*, *whether* and a phonologically null indicator  $\emptyset$ .” He begins first by looking at *either*, discussing the scope implications of *either* to disjunctive *or* in relation to where *either* appears within a clause, the details of which are not pertinent to my focus of *whether*.

One part that is pertinent is that the semantics of *whether*, according to Larson, “involves the disjunction of a proposition and its negation” a fact that he says is realized somewhat in the syntax where *whether* and *whether or not* constructions have the same semantic meaning.

(66) I know *whether* John reads fiction

(67) I know *whether or not* John reads fiction

These two examples further reinforce the idea that *whether or not* constructions are unique to *whether* and are related to the syntactic realization of its semantics.

What is also important is the conclusion in his findings that *whether*, functioning as a scope indicator, has wide scope marking ability so that indirect question clauses that also contain an instance of an *or* embedded clause can have two different readings with (68a) representing a narrow scope reading of a covert *or* and (68b) a wide scope reading of the overt *or*.

- (68) I know *whether* Bill should ask John to resign *or* retire.
- a. What is known by me is either Bill should ask John to resign or retire or Bill should not ask John to resign or retire.
  - b. I know that Bill should ask John to resign or else I know that Bill should ask John to retire.

The major implication of the wide scope reading is another proposal by Larson that *whether*, as a scope indicator, must undergo syntactic movement like other wh-phrases to obtain this reading. This means that in order to have the wide scope reading (68b) the *whether* trace which is originally adjoined to the first VP in the *or* disjunction moves itself cyclically through one CP into the first CP of the embedded clause.

- (69) I know [CP *whether*<sub>1</sub>[Bill should ask [CP *t*<sub>1</sub> [TP John to [[*e*]<sub>1</sub> resign or retire]]]]]

The problem with such an assumption is that if *whether* were functioning like a wh-phrase, then *whether* should be capable of remaining in-situ and thus produce a grammatical sentence.

- (70) I know Bill should retire *when*?
- (71) I know *when* Bill should retire *t*.
- (72) I know Bill should resign or retire
- (73) \*I know Bill should *whether* resign or retire.
- (74) I know *whether* Bill should *t* resign or retire.
- (75) I know Bill should *either* resign or retire.

What the above examples demonstrate is that it is not *whether* per se that undergoes movement, but its declarative form *either*. This is rather interesting as I can think of no other movement in English where the lexical item moved to the CP then composes with

another morpheme to form another lexical item. However, the movement of *either* and its composition with +wh does correspond well with the argument for the *whether* clause structure presented earlier by Adger and Quer. This correspondence suggests, at least to me, that while *whether* does not undergo movement, *either*, as a scope indicator inside the clause for *or* disjunction, very plausibly does.

If we accept that *either* can undergo movement into CP to compose *whether*, then *if* clauses that are also scope ambiguous could be understood to have a covert scope indicator that is a counterpart of *whether*. Larson makes such a claim in proposing that in *if* clauses such as (76), where the ambiguity is the same as a *whether* clause like (68), can be accounted for by movement of a null scope indicator  $\emptyset$  and represented as (76b).

- (76) a. I don't know if Bill should ask John to resign or retire  
 b. I don't know [CP  $\emptyset_1$  if [Bill should ask [CP  $t_1$  [TP John to [[e]<sub>1</sub> resign or retire]]]]]

The extra assumptions made by Larson is that, while the semantics of examples (68) and (76) are similar, he places *whether* in Spec CP, which again is what Adger and Quer decide, and *if* is +wh, which encodes the interrogative status of the complement, reflecting back to the *if* clause structure also from Adger and Quer where the wh+ is also attached to *if*. The difference is that instead of a null element for a semantic scope indicator in C, the determiner is in DP and is polarity sensitive for semantic sensitivity of the clause. What Larson demonstrates is that *or* takes scope and therefore there is a semantic reason for scope indication for the syntactic constructions of embedded *whether* clauses that always contain either overt or covert *or* disjunction. Simply put, *whether* is an interrogative scope indicator for disjunction. The movement of *either*, itself a known determiner, to compose *whether* in the CP, further supports the notion of *whether* as a determiner.

## 9. Further Implications: Beyond *Whether*

The two sections above tie together a larger idea that syntactic overt and covert determiners functioning semantically as scope indicators might be necessary for the interrogative interpretation of embedded questions in English. In both research papers

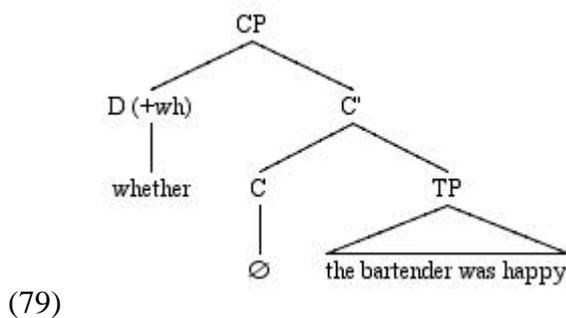
covered there is a morphological, syntactic and semantic connection between *either* and *whether*. It has been observed that embedded *whether* and *if* clauses can be treated essentially as yes/no questions so that their disjunction creates a semantic reading that implies the presence of *or*. Since *or* takes scope it should follow that scope markers will appear in embedded clauses.

It could be that there is a feature in an interrogative CP that requires a scope indicator for disjunction (SID). The research suggests that *either*, *whether* and a null  $\emptyset$  counterpart of *whether* are scope indicators in English. I do not believe it is so far a leap to hypothesize then that there is one more scope indicator that is a polarity sensitive element like  $\Delta$  that also accommodates UEQ *if* clauses. Since UEQs take a polarity sensitive determiner  $\Delta$ , due to semantic sensitivity, it can be reasoned that SEQs take a null determiner  $\emptyset$  due to semantic insensitivity. Consider the following two sentences each with an embedded clause:

(77) Julie admitted [*that* the bartender was happy].

(78) Julie admitted [*whether* the bartender was happy].

The embedded clause in the first sentence is introduced by the complementizer *that*. Since *that* is declarative, the sentence (77) is interpreted as “Julie admitted that it was the case that the bartender was happy”. However, in (78) the embedded clause is introduced by *whether*, which has been shown to be a SID (scope indicator for disjunction). The sentence then could have two alternative interpretations: Either “Julie admitted that it is the case that the bartender was happy” or “Julie admitted that it is the case that the bartender was NOT happy”. This particular *whether* clause can therefore be described as containing a suppressed disjunctive alternative *or not*. The bracketed *whether* clause will have the structure:

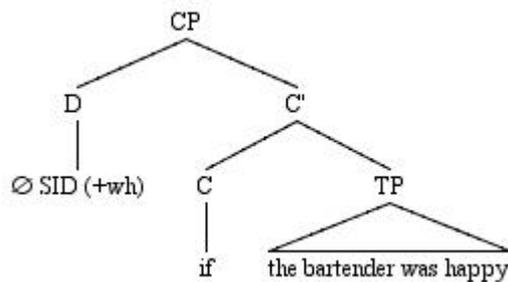


Now consider a selected embedded question like the bracketed clause headed by *if* in the following example:

(80) Julie wondered [*if* the bartender was happy].

Accepting, as Adger and Quer have, Hamblin's (1973) analysis that allows *if* clauses to be semantically interpreted similarly to *whether* clauses, and Larson's argument that *if* clauses can have the same ambiguity as *whether* clauses, then it follows that *if* clauses also have a suppressed disjunctive alternative *or not* and therefore also require an SID.

So, in example (80), the verb *wonder* selects for an interrogative complement clause. Since the *if* clause is selected by the predicate, it does not behave as though it is semantically sensitive. Normally, an *if* clause such as the bracketed one in (80) would simply be a complementizer clause with *if* in C, but since I propose that there is a feature in interrogative CP that requires a SID for interrogative interpretation of embedded questions, a null SID is placed in the specifier position.



(81)

I had argued earlier that a filled Spec CP was the more plausible reason for UEQs behaving as if they were strong islands. So for the structure, I have placed the determiner functioning SID element inside the CP instead of as the head the CP as Adger and Quer had contended. I have also adopted the approach of Cheng (1997) in placing (+wh) on the Spec CP and not with *if*. Cheng argues that *if* is not inherently interrogative and that *if* embedded clauses could be headed by an empty operator as Larson has suggested. Since Larson argues that the empty operator is a null variant of *whether*, an accepted interrogative item, Cheng reasons that the empty operator is providing the interrogative reading for *if* clauses through Spec-head agreement.

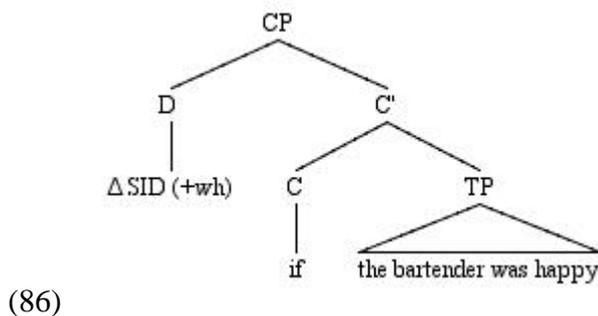
The idea that an SID element is present in *if* embedded clauses is further supported in noting that the overt scope indicator for disjunction *either* is sometimes used when two *if* clauses are coordinated by *or* in a situation where the use of *whether* would seem more appropriate, as in the following examples:

- (82) The judge is instructed to take the fairness oath and decide *either if* no witness testifies, *or if* both parties produce witnesses and the testimony is at odds.<sup>17</sup>
- (83) Any details at all about *either if* there were two shooters *or* the one shooter - *if* there was just one?<sup>18</sup>
- (84) Congress's intent to supersede state law may be implicit *either if* the federal regulation is so pervasive that there is no room for the state to supplement it, *or if* the congressional act covers a field in which the federal interest is so dominant that state enforcement of laws on the same subject is precluded.<sup>19</sup>

With regards, to unselected embedded questions the structure of the *if* clause would be similar to (81) except for the fact that since the clause behaves as if it is sensitive to some semantic property of its syntactic environment, the SID will be a polarity sensitive variant of a null SID.

- (85) Julie didn't admit [*if* the bartender was happy].

The sentence (85) with the bracketed UEQ will have the structure:



<sup>17</sup> <http://corpus.byu.edu/coca/x4.asp?t=4000701&ID=303495496>

<sup>18</sup> <http://corpus.byu.edu/coca/x4.asp?t=244932&ID=621978913>

<sup>19</sup> <http://corpus.byu.edu/coca/x4.asp?t=4008996&ID=332606163>

Of course, not all embedded questions are to be interpreted as yes/no, such as those introduced by a *wh*-phrase. In these cases where the obvious position of a determiner like a SID is Spec CP, the requirement of interrogative CP for a SID would be blocked by the presence of the *wh*-phrase in the Spec position. As Whelpton (personal communication, April, 20, 2012) points out, *wh*-phrases are not disjunctive “rather they behave like definites”:

(87) John asked *what* I saw.

- a. Provide information on THE OBJECT *x* such that I saw *x*.

In relation to the determiner semantics of quantification exhibited by *whether*/ $\emptyset$  SID/ $\Delta$  SID, the semantics of interrogative pronouns (*who/what/when/where*), Whelpton states, “also interact with determiner semantics in terms of definiteness and specificity”. This fact leads me to suspect that the entire category of specifiers of an interrogative CP may need to be redefined as interrogative clausal determiners.

By far, the biggest implication of the idea of an interrogative CP requiring a SID would be if it were carried over, as it naturally seems it should be, to matrix yes/no questions. There already exists the theory of a Null Question Operator that Radford (2004) suggests is a null counterpart to *whether*, but of course Radford assumes that *whether* is a *wh*-phrase. But what if that counterpart is instead a SID? In simple yes/no questions such as “Is it raining?” where Radford hypothesizes a null *wh*-phrase counterpart of *whether* before the inverted auxiliary, it seems that a null counterpart of a SID *whether* would be more functional as it could indicate the suppressed disjunctive alternative *or not*. From a historical perspective, this seems to be the case, as it is quite obvious from Shakespearean examples that *whether* is a scope indicator for disjunction further down in the clause. Returning to example (16), the question has an interpretation: “Do you perceive yourself to be a knave *or* do you perceive yourself to be a fool?”

(16) *Whether* doth thou perceive thyself a knave or a fool?

On a final note, the idea that questions require a scope indicator (or a *wh*-phrase) could even account for the reason that certain constructions containing *or not* can affect grammaticality judgments as in an UEQ *if* clause from before.

(44) #The bartender told me *if* I was drunk

As stated in footnote 14, Adger and Quer note that this sentence is odd but is not ungrammatical. They note that when *or not* is added to the sentence it becomes more acceptable. They offer no explanation for this anomaly but I suggest here that if the determiner  $\Delta$  is a covert scope indicator for disjunction, then the presence of overt *or* disjunction may make the determiner  $\Delta$  semantically somewhat less covert, nudging a speaker's grammaticality judgment toward acceptance.

## 10. Conclusion

I began this paper by first examining *whether* as a wh-phrase and then as a complementizer. Through comparison to and analysis of other wh-phrases, I presented evidence that *whether* functions differently than wh-phrases and should not be included in that category. Furthermore, I demonstrated that although some similarities exist between *whether* and the accepted complementizer *if*, *whether* can introduce both finite and nonfinite clauses. Since one grammatical function of complementizers is to indicate whether the clause it introduces is finite or nonfinite, I accepted the conclusion from Radford (2004) and Newson et al.(2006) that *whether* cannot be classified as a complementizer.

Although *whether* could no longer be considered a wh-phrase or a complementizer, its association morphologically to the determiner *either*, led to the exploration of *whether* as a determiner. Adger and Quer (2001) analyzed unselected embedded *if* clauses and *whether* clauses and proposed that they have an extra element in their structure that behaved as a determiner, syntactically and semantically. Additionally, because *whether* clauses are analyzed as a disjunction of just two propositions, *whether* is argued to be quantifying over a set of propositions in the same way that *either* quantifies over a set of individuals. For these reasons, Adger and Quer concluded *whether* is a determiner through its composition of *either* and +wh, and by its quantifying semantics similar to *either*.

Continuing with the interaction between *whether* and disjunction, Larson (1985) noted that *either* functions as a scope indicator and, because of morphological association, *whether* should also. He also demonstrated that *or* takes scope in embedded

clauses. Consequently, since *whether* clauses are analyzed as a disjunction of just two propositions and therefore always contain either overt or covert *or* disjunction, it was argued that there is a semantic reason for scope indication within the syntactic constructions of embedded *whether* clauses. For these reasons, Larson concluded that *whether* is a scope indicator for disjunction.

By adopting the approach in Adger and Quer from Hamblin's (1973) analysis that the semantics of embedded question clauses introduced by *if* are disjunctive, like *whether* clauses, and combining this with Larson's findings that *if* clauses, as well as *whether* clauses, can have ambiguity in their reading and therefore also require a scope indicator for disjunction, I proposed that all embedded question clauses, as well as matrix questions, require a scope indicator for disjunction (SID). I further suggested that three SIDs – *whether*, a *null*  $\emptyset$  counterpart of *whether*, or a semantically sensitive *null*  $\Delta$  counterpart – would fill the Spec position within the CP as determiners. This SID requirement would be blocked by the presence of a wh-phrase in Spec CP. Finally, the determiner semantics exhibited by SIDs, and by wh-phrases noted by Whelpton (pc), suggests a reexamination of the status of items in the Spec CP position of interrogative embedded questions.

Taking everything into account, the conclusion is that *whether*, once considered to be a complementizer in earlier linguistic works, then relegated to the wh-phrase category in contemporary works, is actually a determiner that functions semantically as scope indicator for disjunction. Additionally, *whether*, along with a *null*  $\emptyset$  counterpart, and a semantically sensitive *null*  $\Delta$  counterpart, could be required in interrogative embedded clauses due to a proposed SID feature in interrogative CPs.

## 10. References

- Adger, D., Quer, J. (2001). "The syntax and semantics of unselected embedded questions". *Language*, 77, 107-133.
- Bresnan, J. (1970). "On complementizers: Toward a syntactic theory of complement clauses". *Foundation of Language*, 6, 297-391.
- Cheng, L. (1997). "On the topology of wh-questions". In L. Horn. (Ed.), *Outstanding dissertations in linguistics*. New York, NY: Garland Publishing Inc.
- Chomsky, N. (1993). "A minimalist program for linguistic theory". In Hale, Kenneth L. and S. Jay Keyser, eds. *The view from Building 20: Essays in linguistics in honor of Sylvain Bromberger*. Cambridge, MA: MIT Press. 1-52.
- Hamblin, C.L. 1973. "Questions in Montague English". *Foundations of Language* 10,41-53.
- Larson, R. K. (1985). "On the syntax of disjunction scope". *Natural Language and Linguistic Theory*, 3, 217-264.
- Nakajima, H. (1996). "Complementizer selection". *Linguistic Review* 13,143-64.
- Newson, M., Hordós, M., Pap, D., Szécsényi, K., Tóth, G., Vincze, V. (2006). *Basic English syntax with exercises*. Budapest: Bölcsész Konzorcium
- O'Grady, W., Dobrovosky, M., Katamba, F. (1998). *Contemporary linguistics: A introduction*. Essex: Addison Wesley Longman Limited.
- Radford, A. (1981). *Transformational syntax: A students guide to Chomsky's extended standard theory*. Cambridge: Cambridge University Press.
- Radford, A. (2004). *English syntax: An introduction*. Cambridge: Cambridge University Press.
- Vendler, Z. (1967). *Linguistics in philosophy*. Ithaca: Cornell University Press.