

WHY \**IF OR NOT* BUT ✓*WHETHER*  
*OR NOT*  
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*Abstract:* This squib provides an account of a contrast between *whether* and *if* in English, manifested in the contrast between the grammaticality of *I don't know whether or not Pat will arrive* and the ungrammaticality of *\*I don't know if or not Pat will arrive*. I argue that this contrast can be explained if we assume that *whether* can pied-pipe, but there is no pied-piping in *if*-questions. Strikingly, once the pied-piping parse for *whether* is eliminated, it behaves like *if*. Then I show that this contrast exists crosslinguistically: Polish alternative questions behave like *whether*-questions because pied-piping is possible, and Bengali alternative questions behave like *if*-questions because pied-piping is not possible.

*Keywords:* alternative questions, pied-piping, agreement, Polish, Bengali

### 1 The Puzzle

In this squib, I argue that several contrasts between the behavior of *whether* and the behavior of *if* as introducers of embedded alternative questions can be explained if we assume that *whether* can pied-pipe, but there is no pied-piping in *if*-questions. Strikingly, once the pied-piping parse for *whether* is eliminated, it behaves like *if*.

Consider first the well-known fact that *or not* can immediately follow *whether* (3), but not *if* (4) (observed by Kayne (1991), among others).

- (1) I don't know **whether** Pat will arrive this weekend or not.  
 ✓Yes/No (Y/N) reading: I don't know which of the following is true: (a) Pat will arrive this weekend, or (b) Pat won't arrive this weekend.
- (2) I don't know **if** Pat will arrive this weekend or not.  
 (✓Y/N)
- (3) I don't know **whether** or not Pat will arrive this weekend.  
 (✓Y/N)
- (4) \*I don't know **if** or not Pat will arrive this weekend.  
 (\*Y/N)

*Whether* and *if* contrast in another, less well-known manner that will be significant here. Both (5) and (6) have the Alt(ernative) reading indicated below.<sup>1</sup> When the disjoined PP *on Saturday or on Sunday*

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<sup>1</sup> Examples (5) and (6) permit a Y/N reading, but that is not relevant to the current discussion. In section 2.3, I will briefly discuss this Y/N reading of (5) and (6).

immediately follows *whether*, this Alt reading remains (7).<sup>2</sup> But when the disjoined PP immediately follows *if*, the Alt reading is lost (8).

- (5) I don't know **whether** Pat will arrive on Saturday or on Sunday.  
 ✓Alt(ernative) reading: I don't know which of the following is true: (a) Pat will arrive on Saturday, or (b) Pat will arrive on Sunday.
- (6) I don't know **if** Pat will arrive on Saturday or on Sunday.  
 (✓Alt)
- (7) I don't know **whether** on Saturday or on Sunday Pat will arrive.  
 (✓Alt)
- (8) I don't know **if** on Saturday or on Sunday Pat will arrive.  
 (\*Alt)

The facts in (1)–(8) can be given a unified explanation. First, suppose that in (1)–(4) *or not* is a Disjunction Phrase (DisjP), disjoining the covert positive polarity (*POS*) and the negative polarity (*NEG*) *not* (9a). This DisjP supplies the polarity value to the rest of the clause. In (5)–(8), *on Saturday or on Sunday* is a DisjP coordinating two PPs (9b).

- (9) a. [<sub>DisjP</sub> (*POS*) or not]  
 b. [<sub>DisjP</sub> [on Saturday] or [on Sunday]]

There is a direct connection between the DisjP and the relevant reading. In the Y/N reading in (1)–(4), what is in question is the choice between the two alternatives *Pat will arrive this weekend* and *Pat won't arrive this weekend*. These alternatives differ only in their polarity value. Notice that the DisjP *or not* provides the polarity values they differ in. Therefore, I say the alternatives presented in the DisjP (*POS*) *or not* are *put under question* in the Y/N reading. As I will show in section 2.3, when the sentence does not contain *or not*, there is another

<sup>2</sup> Of the 8 native speakers I interviewed, 6 shared this judgment and agreed that (8) is worse than (7); the other 2 found (7) so awkward that “it just sounds bad,” and reported (8) to be ungrammatical as well. Crucially, no one who accepted (7) also accepted (8). As I will argue later, the contrast between (3) and (4) and the contrast between (7) and (8) follow from *whether*'s ability to pied-pipe its sister. For those who rejected (7) and (8) yet agreed with the contrast between (3) and (4), *whether* can pied-pipe certain elements (e.g., the polar DisjP *or not*) but not others (e.g., the temporal DisjP *on Saturday or on Sunday*). This is not surprising, as *wh*-phrases cannot pied-pipe every type of element in English anyway. For example, a *wh*-object can pied-pipe a preposition but not a verb.

Furthermore, there is dialectal variation in what material can be pied-piped by other *wh*-phrases. For example, the structure in (i), also known as “massive pied-piping” in relative clauses, is reported to be ungrammatical by Heck (2009:78) but judged to be fine by Ross (1986:121).

(i) \*a man [<sub>DP</sub> a deck chair of whom]<sub>i</sub> you spilled coffee on t<sub>i</sub>

way to generate the Y/N reading. For the moment, I set it aside and focus on sentences containing *or not*.

Likewise, in the Alt reading in (5)–(8), what is put under question is the choice between the two alternatives *Pat will arrive on Saturday* and *Pat will arrive on Sunday*. These alternatives differ only in their PP, which is supplied by the temporal DisjP *on Saturday or on Sunday*. Therefore, I say that in this reading, it is the alternatives presented in the DisjP *on Saturday or on Sunday* that are put under question.

The puzzle can then be described as a correlation between the position of the DisjP and the relevant readings. This unified puzzle can be summarized as follows:

(10) *Unified puzzle*

- a. The alternatives presented in a DisjP can be put under question when that DisjP immediately follows *whether*.
- b. The alternatives presented in a DisjP cannot be put under question when that DisjP immediately follows *if*.

## 2 The Solution

First, I assume the following structure for *whether*- and *if*-questions, following Larson (1985) and Han and Romero (2004). In a *whether*-question, *whether* originates as the sister of the DisjP (assuming it is Spec,DisjP, following Kayne (1994), among others) and subsequently moves to Spec,CP.<sup>3</sup>

- (11) a. I don't know [<sub>CP</sub> *whether*<sub>i</sub> [<sub>C'</sub> C<sup>0</sup> [<sub>TP</sub> *Pat will arrive this weekend* [<sub>DisjP</sub> *t<sub>i</sub>* [<sub>Disj'</sub> (POS) or not]]]]].
- b. I don't know [<sub>CP</sub> *whether*<sub>i</sub> [<sub>C'</sub> C<sup>0</sup> [<sub>TP</sub> [<sub>T'</sub> *Pat will arrive*] [<sub>DisjP</sub> *t<sub>i</sub>* [<sub>Disj'</sub> on Saturday or on Sunday]]]]].

In an *if*-question, there is a covert counterpart of *whether* with the same derivational history—that is, it originates in Spec,DisjP and moves to Spec,CP. In addition, *if* is C<sup>0</sup>. Let us refer to this covert counterpart of *whether* as *Op(erator)*.

- (12) a. I don't know [<sub>CP</sub> *Op<sub>i</sub>* [<sub>C'</sub> *if* [<sub>TP</sub> *Pat will arrive this weekend* [<sub>DisjP</sub> *t<sub>i</sub>* [<sub>Disj'</sub> (POS) or not]]]]].
- b. I don't know [<sub>CP</sub> *Op<sub>i</sub>* [<sub>C'</sub> *if* [<sub>TP</sub> *Pat will arrive* [<sub>DisjP</sub> *t<sub>i</sub>* [<sub>Disj'</sub> on Saturday or on Sunday]]]]].

This structure can derive the meaning with existing theories of question semantics. For example, assume that the DisjP denotes a choice-functional trace applying to a set, and the landing site of *whether*/*Op* existentially quantifies over this trace: 'I don't know [ $\lambda p$ :  $\exists f$ .  $p$ =*Pat will arrive f*{(on Saturday, on Sunday)}]}' for (12b). The question opera-

<sup>3</sup> As a reviewer points out, Larson (1985) actually claims that *whether*/*Op* originates as the sister of *or* and subsequently moves to Spec,CP, stopping in the edge of DisjP. Han and Romero (2004) simplify Larson's proposal and assume that *whether* is base-generated adjacent to DisjP. I adopt Han and Romero's assumption.

tor can be an identity function in the sense of Hamblin (1973) and Karttunen (1977).

The reading where the alternatives presented in a DisjP are put under question arises in the following way: (a) base-generate *whether/Op* as the sister of the DisjP, and (b) move *whether/Op* to Spec,CP. If either step fails to take place, the alternatives in the DisjP cannot be put under question and the relevant reading will be lost.

## 2.1 Why DisjP Cannot Be Put under Question When Immediately Following If

The alternatives in the DisjP that immediately follows *if* cannot be put under question because *Op* fails to move to Spec,CP from the position it would have to move from.

When the DisjP follows *if*, I assume that the DisjP occupies a derived  $\bar{A}$ -position as a result of what I will assume to be topicalization.<sup>4</sup>

### (13) a. Derivation for (4)

\*I don't know [<sub>CP</sub> Op<sub>i</sub> if [<sub>TopP</sub> [<sub>DisjP</sub> t<sub>i</sub> [<sub>Disj'</sub> (POS) or not]]<sub>j</sub> Top<sup>0</sup> [<sub>TP</sub> Pat will arrive this weekend t<sub>j</sub>]]].

### b. Derivation for (8)

\*I don't know [<sub>CP</sub> Op<sub>i</sub> if [<sub>TopP</sub> [<sub>DisjP</sub> t<sub>i</sub> [<sub>Disj'</sub> on Saturday or on Sunday]]<sub>j</sub> Top<sup>0</sup> [<sub>TP</sub> Pat will arrive t<sub>j</sub>]]].

The structures in (13) are excluded because a topicalized phrase may not contain a *wh*-trace.

(14) \*[<sub>CP</sub> wh<sub>i</sub> C<sup>0</sup> [<sub>TopP</sub> [. . . t<sub>i</sub> . . .]<sub>j</sub> Top<sup>0</sup> . . . t<sub>j</sub>]]

The examples in (15) show that this ban is true for English in general.<sup>5</sup>

(15) a. \*I wonder whom<sub>j</sub> [to t<sub>j</sub>]<sub>i</sub> you talked t<sub>i</sub>.

b. \*I wonder [what day]<sub>j</sub> Pat thinks that [on t<sub>j</sub>]<sub>i</sub> you left t<sub>i</sub>.

c. \*I wonder [whose book]<sub>j</sub> Kim claims that [about t<sub>j</sub>]<sub>i</sub> you talked t<sub>i</sub>.

This restriction may form a part of a broader generalization that bans an  $\bar{A}$ -moved element that contains another  $\bar{A}$ -trace (e.g., Lasnik and Saito 1992, Takahashi 1994, Müller 1998, 2010, Corver 2014, Bošković 2018), but for the purposes of this squib, the restriction alone suffices. Because the topicalized DisjP cannot contain the *wh*-trace of *Op* in (13a–b), the alternatives in the DisjP cannot be put under question.

<sup>4</sup> While the disjoined PP can be topicalized (13b), it may be difficult to imagine topicalizing a polar disjunction (13a), which may be the reason why (13a) is judged ungrammatical. In any case, this point of view does not conflict with the goal of this section, which is to rule out (13a–b).

<sup>5</sup> Lasnik and Saito (1992) claim that a topicalized DP containing a type e trace is not completely unacceptable. This does not weaken the claim made here because the topicalized DisjP examined in this squib is not nominal. In addition, *whether* and *Op* are likely not type e.

## 2.2 *Why DisjP Can Be Put under Question When Immediately Following Whether*

We may wonder why the alternatives in the DisjP that immediately follows *whether* can be put under question, as the same empirical generalization that rules out extraction of Op from the topicalized DisjP should rule out extraction of *whether* from the topicalized DisjP as well.

I argue that this is because *whether*, being a *wh*-phrase, can pied-pipe. Consequently, there is another way to parse (3) and (7), where the DisjP following *whether* is pied-piped by *whether* rather than topicalized.

### (16) a. *Derivation for (3)*

I don't know [<sub>CP</sub> [<sub>DisjP</sub> *whether* [<sub>Disj'</sub> (POS) or not]]<sub>i</sub> C<sup>0</sup> [<sub>TP</sub> Pat will arrive this weekend *t<sub>i</sub>*]].

### b. *Derivation for (7)*

I don't know [<sub>CP</sub> [<sub>DisjP</sub> *whether* [<sub>Disj'</sub> on Saturday or on Sunday]]<sub>i</sub> C<sup>0</sup> [<sub>TP</sub> Pat will arrive *t<sub>i</sub>*]].

Recall that in order to put the alternatives in the DisjP under question, all we need is to move *whether* to Spec,CP. We do not care if *whether* pied-pipes other material. The structure in (16) satisfies this requirement because the final position for *whether* is Spec,CP. Thus, the alternatives in the DisjP that is pied-piped by *whether* can be put under question.

Two pieces of evidence support the claim that *whether* can pied-pipe the DisjP. The first comes from sluicing. Assuming that sluicing deletes TP or C', the only element that can survive sluicing is Spec,CP. Material pied-piped by the *wh*-phrase survives sluicing, as in (17).

### (17) a. Pat talked to someone, but I don't know to whom ~~Pat talked.~~

### b. Pat left on some day, but I don't know on which day ~~Pat left.~~

Strikingly, *whether* plus a DisjP may remain after sluicing, indicating that the DisjP must have been pied-piped by *whether*.<sup>6</sup>

### (18) I know that Pat will arrive sometime on the weekend. I'm just not sure whether on Saturday or on Sunday.

<sup>6</sup> All 6 speakers I consulted accepted (18), which is striking because *whether* on its own resists sluicing.

(i) \*I know that Pat will arrive on either Saturday or Sunday, I just don't know whether.

The acceptability of (18) suggests that *whether*-sluicing is actually possible, but only when *whether* pied-pipes. I leave it to future research to determine why this is the case.

The second piece of evidence for *whether*'s ability to pied-pipe comes from variants of English that allow overt *whether* and auxiliary inversion to cooccur—in other words, variants where, in a matrix clause, *whether* may appear to the left of the auxiliary in C<sup>0</sup> (e.g., *Whether will Pat arrive?*). Assuming that the constituent immediately to the left of C<sup>0</sup> occupies Spec,CP, then if *whether* and the DisjP can appear together before C<sup>0</sup>, this can be taken as evidence that *whether* and the DisjP are one constituent, and *whether* pied-pipes the DisjP.

Such sentences are attested in legal documents from the 19th ((19)–(20)) and 20th (21) centuries. Even more strikingly, *whether* and the pied-piped DisjP together can be coordinated with other *wh*-elements that occupy Spec,CP, including material pied-piped by other *wh*-phrases like *for what purpose* and *by whom* (19b). The coordination fact again suggests that DisjP, like other pied-piped material, occupies Spec,CP.

- (19) a. Whether or not did you prepare a lease, pursuant and conformable to such instructions?
- b. And if yea, for what purpose, and when and by whom and whether or not was such counterpart, left with the said complainant?<sup>7</sup>
- (20) a. Whether or not did such action come on to be tried?
- b. Whether or not were the judge desirous to find a special verdict; . . .<sup>8</sup>
- (21) I will ask you whether or not did the defendant make any voluntary statement to you after he was placed under arrest?<sup>9</sup>

Also, suppose that *whether* is a *wh*-word, as it shares *wh*-morphology with other *wh*-words (e.g., Emonds 1976). Since *wh*-words can pied-pipe in general in English, *whether*—being a *wh*-word—should also be able to pied-pipe.

If (3) and (7) have the relevant readings because the DisjP is pied-piped by *whether* rather than topicalized, then this analysis makes a prediction. If we prevent the structure from being parsed as involving pied-piping, then *whether*-sentences without pied-piping should behave like *if*-sentences, and the relevant reading should disappear.

One way to rule out the pied-piping parse is by interpolating an adverb or a parenthetical between *whether* and DisjP, adapting a test first developed by Rudin (1988) for Bulgarian. For instance, regular *wh*-sentences with pied-piping become ungrammatical once the *wh*-word and the pied-piped material are separated by interpolation.

<sup>7</sup> (19a–b) come from <https://books.google.com/books?id=v2VjAAAAcAAJ>.

<sup>8</sup> (20a–b) come from <https://books.google.com/books?id=-rQDAAAAQAAJ>.

<sup>9</sup> <https://law.justia.com/cases/texas/court-of-criminal-appeals/1962/34019-3.html>.

- (22) \*I wonder to, {according to Kim/actually/fortunately},  
whom you talked.

Interpolation between *whether* and the DisjP makes the *whether*-sentences *if*-like, as the relevant readings are no longer available.

- (23) \*I don't know whether, {according to Kim/actually/fortunately}, or not Pat will arrive this weekend.  
(24) I don't know whether, {according to Kim/actually/fortunately}, on Saturday or on Sunday Pat will arrive. (\*Alt)

The interpolation test shows that pied-piping is the reason why the alternatives in the DisjP that follows *whether* can be put under question. Once we rule out the pied-piping parse by interpolation, the relevant readings also disappear.

If *whether*-sentences allow the relevant readings because of a parse in which *whether* pied-pipes DisjP, we may wonder whether Op can pied-pipe DisjP as well. Even if it can, the *if*-sentences (13a–b) cannot be analyzed as cases of Op pied-piping because of the incorrect word order. If Op can pied-pipe DisjP, the word order in (25) should be possible, but it is also ungrammatical.

- (25) a. \*I don't know [<sub>DisjP</sub> Op [<sub>Disj'</sub> (POS) or not]]<sub>i</sub> if Pat will arrive this weekend <sub>t<sub>i</sub></sub>.  
b. \*I don't know [<sub>DisjP</sub> Op [<sub>Disj'</sub> on Saturday or on Sunday]]<sub>i</sub> if Pat will arrive <sub>t<sub>i</sub></sub>.

There are two possible reasons why (25a–b) are ungrammatical. First, they violate the Doubly Filled Comp Filter, which prohibits overt occurrence of both the head (*if*) and its specifier (DisjP). Second, it is possible that phonologically null elements cannot pied-pipe overt material, so Op cannot pied-pipe the DisjP, unlike *whether*. I do not commit to a particular reason here, noting only that (25a–b) can be ruled out by one of them.

Because the pied-piping parse is unavailable for *if*-sentences, the *if*-counterpart of (18) is predicted to be ungrammatical, which is the case.

- (26) \*I know that Pat will arrive sometime on the weekend. I'm just not sure if on Saturday or on Sunday.

### 2.3 An Additional Reading of (5)–(8)

In addition to the Alt reading, (5)–(8) have a Y/N reading, that is, 'I don't know which of the following is true: (a) Pat will arrive on a weekend day (either Saturday or Sunday), or (b) Pat won't arrive on either of those days'.

So far, the discussion has only concerned the presence or absence of the Alt reading of (5)–(8). Why is the Y/N reading always available for them?

Following Hamblin (1973), Karttunen (1977), and Biezma (2009), I assume that there are two types of questions, with different

question operators:  $Q_{Alt}$  and  $Q_{yes/no}$ .  $Q_{Alt}$  is an identity function that scopes over the set denoted by an overt disjunction:  $\llbracket Q_{Alt} \rrbracket = \lambda p. \lambda q. p = q$ .<sup>10</sup> It is present in (1)–(4) and in the Alt-reading parse of (5)–(8).

$Q_{yes/no}$  takes a simple proposition and induces a partition of the set of possible worlds into disjunctive polar sets:  $\llbracket Q_{yes/no} \rrbracket = \lambda p. \lambda q. [q = p \vee q = \neg p]$ . The additional Y/N reading in (5)–(8) results from the presence of  $Q_{yes/no}$ , which simply converts any proposition into a Y/N question. (7)–(8) involve topicalization of the temporal DisjP inside this simple proposition, which should not affect its semantic composition with  $Q_{yes/no}$  and thus does not affect the Y/N reading.

### 3 Crosslinguistic Analyses: Polish and Bengali

In this section, I show that Polish has ‘whether’ but not ‘if’, and Bengali has ‘if’ but not ‘whether’, so together they complete the paradigm found in English. In addition, they offer something that English *whether* does not have: they have multiple lexical items for ‘or’. In particular, Polish ‘or’ is identical in form to the initial coordinator (‘either’, ‘whether’, ‘neither’) it is local to. Taking this morphological identity to indicate an agreement relation between them, I offer an analysis of how pied-piping occurs in Polish, which in turn can be applied to English as well.

#### 3.1 Polish Has ‘Whether’

Example (27) shows the neutral word order for an embedded alternative question in Polish.<sup>11</sup> I will argue that the first *czy* should be analyzed as ‘whether’. Note that it is identical in form to the disjunction coordinator, glossed as ‘or1’ (in contrast to ‘or2’, to be discussed in section 3.3). In section 3.3, I will discuss why (27) lacks the Y/N reading.

- (27) Nie wiem      czy      Jan przyjedzie      w sobotę  
       not know.1SG whether Jan arrive.PERF.3SG in Saturday  
       czy w niedzielę.  
       or1 in Sunday  
       Literal meaning: ‘I don’t know whether Jan will arrive on Saturday or on Sunday.’  
       ✓Alt reading: I don’t know which of the following is true:  
       (a) Jan will arrive on Saturday, or (b) Jan will arrive on Sunday.  
       \*Y/N reading: Which of the following is true: (a) Jan will arrive on a weekend day, or (b) Jan won’t arrive on a weekend day?

In parallel to (7), when the temporal DisjP immediately follows *czy* ‘whether’, the Alt reading remains.

<sup>10</sup> For clarity, I have not included the complete details of the denotations.

<sup>11</sup> I am grateful to Barbara Citko, Barbara Tomaszewicz, and Bartosz Wiland for the Polish judgments in this section.



- (28) Nie wiem czy w sobotę czy w niedzielę  
 not know.1SG whether in Saturday or1 in Sunday  
 Jan przyjedzie.  
 Jan arrive.PERF.3SG  
 Literal meaning: ‘I don’t know whether on Saturday or on  
 Sunday Jan will arrive.’ (✓Alt)

If *czy* is analyzed as the Polish counterpart to *whether*, and if *czy* can pied-pipe the DisjP, (28) is explained: *czy* pied-pipes the DisjP, generating the Alt reading.

The argument from sluicing in English applies to Polish, as *czy w sobotę czy w niedzielę* ‘whether on Saturday or on Sunday’ can survive sluicing. Furthermore, Wiland (2017) observes that *czy* ‘whether’ has *wh*-morphology. Since Polish *wh*-phrases can pied-pipe in general, *czy* should also be able to pied-pipe.

### 3.2 Bengali Does Not Have ‘Whether’

Example (29) shows the neutral word order for a matrix alternative question in Bengali.<sup>12</sup> Notice that it has only the Alt reading, and *na* is glossed as ‘or1’ (parallel to Polish (28)). See footnote 16 for an analysis of Bengali’s two ‘or’s and why (29) lacks the Y/N reading.

- (29) rubai ki sonibar na robibar rôwna hoeche?  
 Rubai PRT Saturday or1 Sunday depart happen.PRES  
 Literal meaning: ‘Did Rubai depart on Saturday or on  
 Sunday?’  
 ✓Alt reading: Which of the following is true: (a) Rubai left  
 on Saturday, or (b) Rubai left on Sunday?  
 \*Y/N reading: Which of the following is true: (a) Rubai  
 left on a weekend day, or (b) Rubai didn’t leave on a week-  
 end day?

When the temporal DisjP precedes *ki*, the sentence becomes ungrammatical.

- (30) \*sonibar na robibar ki rubai rôwna hoeche?  
 Saturday or1 Sunday PRT Rubai depart happen.PRES

*Ki* behaves almost exactly like what Bhatt and Dayal (2020) call “polar *kya*,” in Hindi-Urdu. Following Bhatt and Dayal, I analyze *ki* as a particle in ForceP and consider the DisjP to have moved (scrambled, to be precise) in front of *ki* in (30).<sup>13</sup> In addition, following Larson’s (1985) analysis for English, I assume that Bengali has a null question operator equivalent to English Op (originating as the sister of DisjP

<sup>12</sup> I am grateful to Neil Banerjee for providing the Bengali judgments in this section.

<sup>13</sup> Bengali allows many different elements to appear before *ki*, but not idiomatic objects, which resist movement in general. This suggests that elements in front of *ki* get there through movement. Also, elements before *ki* are presupposed and backgrounded. These are identical to the patterns in Hindi-Urdu, as Bhatt and Dayal (2020) discuss. For reasons of space, I do not include the actual examples here.

and moving to Spec,CP). Crucially, as a null element, it cannot pied-pipe the DisjP, which is overt. Then the movement of the DisjP traps this null operator and causes ungrammaticality.<sup>14</sup>

### 3.3 Two ‘Or’s in Polish, Bengali, and English

Polish and Bengali have two ‘or’s, which prompted the gloss ‘or1’ on *czy* in (27) and *na* in (29). As I will show, English has two ‘or’s as well. My analysis of the multiple ‘or’s provides an account of how pied-piping occurs in English and Polish.

Recall the absence of a Y/N reading for the Polish example (27). For this reading to surface, the disjunction coordinator in (27) must be replaced by *albo*, glossed as ‘or2’ in (31).

- (31) Nie wiem czy Jan przyjedzie w sobotę  
not know.1SG whether Jan arrive.PERF.3SG in Saturday  
**albo** w niedzielę.  
or2 in Sunday (\*Alt; ✓Y/N)

When ‘or1’ surfaces, only the Alt reading is possible (27); when ‘or2’ surfaces, only the Y/N reading is possible (31). I argue that the complementary distribution of the two ‘or’s indicates that they occupy different syntactic structures.

Note the identical form of *czy* ‘whether’ and *czy* ‘or’. Notice also that the Polish word for ‘either’ (the [–wh] counterpart to ‘whether’) is identical in form to *albo* ‘or2’ (‘neither’ and ‘nor’ are identical too; see footnote 17).<sup>15</sup>

- (32) **Albo** Jan przyjedzie w sobotę **albo** przyjedzie w  
either Jan will.arrive on Saturday or2 will.arrive on  
niedzielę.  
Sunday  
‘Either Jan will arrive on Saturday or he will arrive on  
Sunday.’

I propose that the appearance of the coordinator ‘or’ depends on the initial coordinator it has been local to. ‘Or’ appears as *czy* ‘or1’ if and only if it has been local to *czy* ‘whether’, and as *albo* ‘or2’ if and only

<sup>14</sup> Bhatt and Dayal (2017) observe patterns nearly identical to Bengali’s in Hindi-Urdu, a major difference being that Hindi-Urdu has just one ‘or’. My analysis also applies to Hindi-Urdu, whose null question operator cannot pied-pipe. However, for reasons of space I do not present that extension of the analysis here.

<sup>15</sup> Example (32) is a counterexample to an alternative analysis claiming that *czy* ‘or1’ coordinates only clauses and *albo* ‘or2’ coordinates only phrases that are smaller than clauses. Likewise, Bengali *ba* ‘or2’ can also coordinate clauses, suggesting that this alternative analysis is incorrect for Bengali as well.

(i) rubai sonibare rōwna hoeche, **ba** raj robibare  
Rubai on.Saturday depart happen.PRES or2 Raj on.Sunday  
poucheche.  
arrive.PRF.AUX  
‘Rubai left on Saturday, or Raj arrived on Sunday.’

if it has been local to *albo* 'either'.<sup>16</sup> This means that in (27), *czy* 'whether' must have been the sister of the temporal DisjP formed by *czy* 'or1', so it has the Alt reading.<sup>17</sup> (31) lacks the Alt reading because 'whether' cannot have originated as the sister of the temporal DisjP.

Furthermore, I propose that the morphological identity between 'whether' and 'or' is the reflex of an agreement relation between them. When 'whether' originates as the sister of a DisjP, it agrees with 'or' and copies its morphological feature to 'or' under agreement.

In the same way that 'whether' agrees with 'or', 'either' agrees with the 'or' it is local to and copies its morphological features to 'or' under agreement. The surface form of 'or' can thus be taken to indicate the original site of 'either'/'whether'. 'Or' surfaces as *czy* under locality to 'whether' and as *albo* under locality to 'either'.

This sharing of morphological features exists in English as well. There are two morphologically related 'or's in English: 'or' surfaces as *nor* when it has been local to *neither*; 'or' surfaces as *or* when it has not been local to *neither*. *Neither* has been analyzed as the [+neg] counterpart of *either* (e.g., Hendriks 2004, Den Dikken 2006). Den Dikken argues that similar to *whether*, *neither* originates as the sister of a DisjP and may move up later, triggering auxiliary inversion. Then the negative morphology on *nor* can be taken as a reflex of agreement between *neither* and *nor* when *neither* is local to *nor*.

If we generalize beyond *neither* and claim that English *whether* also agrees with *or* (despite no overt shared morphology), we can explain how pied-piping occurs in English and Polish. As I have argued, 'whether'/'neither'/'either' agrees with 'or'. For example, when Polish *czy* 'whether' agrees with 'or', it spreads its [+wh] feature to 'or', which then projects the [+wh] feature to the entire DisjP. As the

<sup>16</sup> The same analysis applies to Bengali. Recall the absence of the Y/N reading in (29). For the Y/N reading to be available, *na* 'or1' must be replaced by *ba* 'or2'.

- (i) *rubai ki sonibar ba robibar rôwna hoeche?*  
 Rubai PRT Saturday or2 Sunday depart happen.PRES (✓Y/N; \*Alt)  
 'Which of the following is true: (a) Rubai left on a weekend day, or  
 (b) Rubai didn't leave on a weekend day?'

'Or' appears as *na* 'or1' if and only if it has been local to the null question operator; otherwise, it appears as *ba*.

In parallel to (8), scrambling of the temporal DisjP coordinated by *ba* 'or2' in (i) does not affect the Y/N reading because scrambling within the simple proposition that composes with *Q<sub>yes/no</sub>* does not affect the composed meaning.

- (ii) *sonibar ba robibar ki rubai rôwna hoeche?*  
 Saturday or2 Sunday PRT Rubai depart happen.PRES (✓Y/N)  
 'Which of the following is true: (a) Rubai left on a weekend day, or  
 (b) Rubai didn't leave on a weekend day?'

<sup>17</sup> As a reviewer suggests, the reason why (27) lacks the Y/N reading may be that the structure involving *whether*'s movement is the wrong type to combine with *Q<sub>yes/no</sub>*. In support of this idea, *czy* 'or1' is limited to questions. For example, *czy* 'or1' may not be used in 'neither . . . nor . . .' constructions, which use *ani . . . ani . . .* instead. The same applies to Bengali, whose *na* 'or1' is limited to questions and cannot be used in 'neither . . . nor . . .' constructions.

interrogative C probes for the [+wh] feature, the entire DisjP and its specifier ‘whether’ are both eligible goals and equidistant to the C probe because of the [+wh] feature on them (Pesetsky and Torrego 2001). If C agrees with the DisjP, the entire DisjP moves to Spec,CP, creating pied-piping effects. If C agrees with ‘whether’ alone, ‘whether’ moves by itself.

By pooling ‘neither’ and ‘whether’, this analysis makes a prediction: *neither* should also be able to pied-pipe. As the entire DisjP inherits the [+neg] feature through agreement between *neither* and *nor*, the entire DisjP and *neither* are equidistant to the probe for [+neg]. This prediction is borne out.

- (33) There will be terrible weather all this weekend, therefore  
 ...  
 a. *No pied-piping*  
 ... [neither]<sub>i</sub> will Pat arrive t<sub>i</sub> on Saturday nor on Sunday.  
 b. *Pied-piping*  
 ... [neither on Saturday nor on Sunday]<sub>i</sub> will Pat arrive t<sub>i</sub>.

In (33b), *neither* and the DisjP appear to the left of C<sup>0</sup>, an indication that they occupy Spec,CP, and the DisjP is pied-piped by *neither*.

#### 4 Conclusion

In addition to the observation that polar DisjP cannot immediately follow *if*, this squib made the novel observation that temporal DisjP cannot immediately follow *if* either to derive the relevant Alt reading. This puzzle can be subsumed under the generalization that topicalized phrases may not contain a *wh*-trace. *Whether*-questions are different because they have another parse in which *whether* pied-pipes the DisjP, putting its alternatives under question. Then the squib showed that Polish has ‘whether’, which has the ability to pied-pipe, whereas Bengali does not, and that English *neither* can pied-pipe as well.<sup>18</sup>

<sup>18</sup> Guerzoni and Sharvit (2014) observe that the negative polarity item (NPI) *ever* is acceptable when following *whether or not*, but not when appearing between *whether* and *or not*.

- (i) a. \*Mary wondered whether her student had ever read *Syntactic Structures* or not.  
 b. Mary wondered whether or not her student had ever read *Syntactic Structures*.  
 (Guerzoni and Sharvit 2004:202)

According to the proposal in this squib, *or not* is stranded in its base position in (ia) and pied-piped in (ib). Assume also that *or not* disjoins the positive and negative polarities and is base-generated somewhere between v and T. Suppose that an NPI is licensed when c-commanded by a negative element, and that *or not* is such a negative element by virtue of inheriting the negative feature of its disjunct. Then the ungrammaticality of (ia) is puzzling because *or not* in its base position should c-command and thus license the NPI. This issue can be resolved if we adopt Ladusaw’s (1980) Left-Right Order Restriction on NPI-licensing: that is, an NPI must be preceded by its licenser. In (ia), the NPI precedes negation.

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