Why *if or not but ✓whether or not

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The Puzzle

{*[If/✓whether] or not

(1) I don’t know whether Pat will arrive this weekend or not. ✓
Yes/No (Y/N) Reading: I don’t know which is true: Pat will arrive this weekend, or he won’t arrive this weekend.

(2) I don’t know if Pat will arrive this weekend or not. ✓
(3) I don’t know whether or not Pat will arrive this weekend. ✓
(4) I don’t know if or not Pat will arrive this weekend. (*)

Novel observation: {*[If/✓whether] on Saturday or on Sunday

(5) I don’t know whether Pat will arrive on Saturday or on Sunday. ✓
✓Alt(ernative) Reading: I don’t know which is true: Pat will arrive on Saturday, or he won’t arrive on Saturday. ✓
(6) I don’t know if Pat will arrive on Saturday or on Sunday. ✓
(7) I don’t know whether on Saturday or on Sunday Pat will arrive. ✓
(8) I don’t know if on Saturday or on Sunday Pat will arrive. (*)

Solution: whether can pied-pipe its sister (disjunction phrase), but there is no pied-piping in if-questions

The Disjunctive Structure

Structures for or not and on Saturday or on Sunday:

(a) [DisjP (POS) or not] b. [DisjP [on Saturday] or [on Sunday]]

Structures for whether- and if-questions (Larson (1985)):
• Whether originates as the sister of the DisjP, and moves to Spec, CP:
• In an if-question, there is a covert counterpart of whether (Op) with the same derivational history as whether. If is C0:

(10) I don’t know [CP [whether / Op] [c: {C0 / if} [TP Pat will arrive this weekend [DisjP ti [Disj' (POS) or not]]]].

(11) I don’t know [CP [whether / Op] [c: {C0 / if} [TP Pat will arrive [DisjP ti [Disj’ on Saturday or on Sunday]]]]].

The Analysis

Two steps to create the Y/N or Alt reading:
• Base-generate whether/Op as the sister of (polar or temporal) DisjP
• Move whether/Op to Spec, CP
• (4) and (8) fail at the movement step, while (3) and (7) are successful

Why (4) and (8) fail
• Since there’s no pied-piping in if-questions, the only parse involves topicalization of DisjP:

(11) *I don’t know [cr Op: if [TopP [DisjP ti [Disj’ on Saturday or on Sunday]]] Top0 [TP Pat will arrive tj]].

Derivation for *Alt in (8)
• Example (11) violates the ban on movement out of moved elements:

(12) *Who, do you think that [to ti], John gave a book ti? (Corver 2004:23a)

Why (3) and (7) are successful
• Another parse is available where whether pied-pipes the DisjP:

(13) … [CP [DisjP whether [Disj’ on Sat or on Sun]] C0 [TP Pat will arrive ti]].

Derivation for ✓ Alt in (7)

Three arguments that whether pied-pipes

1. Sluicing, assuming that the remnant of sluicing is Spec, CP:
(a) I know that Pat will arrive sometime on the weekend. I’m just not sure whether on Saturday or on Sunday she will arrive.

2. Whether + DisjP occur overtly in Spec, CP in 19th century English:
(a) Whether or not did you prepare a lease, pursuant and conformable to such instructions? (van Heuthuysen and Hughes 1861:148)
(b) And if yea, for what purpose, and when and by whom and whether or not was such counterpart, left with the said complainant?

3. Prediction: if we can block the pied-piping parse of a whether-question, it will behave like an if-question
(a) I wonder to, according to Kim, whom you talked.
• Whether-questions behaves like if-questions with interpolation

(17) a. *I don’t know whether, according to Kim, or not Pat will arrive this weekend.

b. I don’t know whether, according to Kim, on Saturday or on Sunday Pat will arrive.