

Factivity and interrogative complement clauses^{*}

Hans Broekhuis and Rachel Nye

Abstract: The notion of factivity is normally defined in terms of the truth value of the propositions expressed by sentential complements. Factive verbs are thus identified on the basis of the behaviour of their declarative *that*-clause complements. Given that interrogative clauses do not express propositions and are therefore not assigned a truth value, they are not usually taken into consideration when delimiting the class of factive predicates. Yet it has long been observed that many factive verbs also permit interrogative complement clauses. Drawing on a recent proposal by Nye (2013), to the effect that selectional restrictions between matrix predicates and finite complement clauses should not be stated in terms of semantic types like proposition, question, etc., but rather in terms of two binary features, $[\pm\text{wh}]$ and $[\pm\text{factive}]$, this squib argues for the existence of $[+\text{wh}, +\text{factive}]$ interrogative complement clauses.

Nye (2013) proposes that finite complement clauses are selected on the basis of two binary features, $[\pm\text{wh}]$ and $[\pm\text{factive}]$, rather than on the basis of semantic types like proposition, question, etc., as has widely been accepted since Grimshaw's (1979) influential proposal. Whilst this claim is primarily motivated on the basis of the external distribution of the $[+\text{wh}, +\text{factive}]$ embedded exclamative and complementiser-*how* clauses illustrated in (1) and (2) respectively, Nye (2013) also postulates a distinction between $[-\text{wh}, +\text{factive}]$ and $[-\text{wh}, -\text{factive}]$ declarative complement clauses, and $[+\text{wh}, +\text{factive}]$ and $[+\text{wh}, -\text{factive}]$ interrogative complement clauses. It is this latter distinction which is the focus of this squib. We refer the reader to Nye (2013), and the references contained therein, for discussion of the other types of complement clause. Table 1 summarises the types of finite clausal complement which realise the four logical possibilities arising from the $[\pm\text{wh}, \pm\text{factive}]$ feature system.

- (1) a. Ik was vergeten wat een ontzettende aardige vrouw Marie is.
I was forgotten what a very nice woman Marie is
'I had forgotten what a very nice woman Marie is.'
- b. Ik was vergeten hoe ontzettend aardig Marie is.
I was forgotten hoe very nice Marie is.
'I had forgotten how very nice a woman Marie is.'
- (2) Ik herinner me goed hoe hij daar altijd stond te kletsen.
I remember me well how he there always stood to chat
'I remember well how he was always chatting there.'

Table 1: Finite complement clauses defined in terms of the features $[\pm\text{wh}]$ and $[\pm\text{factive}]$

	$[-\text{wh}]$	$[+\text{wh}]$
$[-\text{factive}]$	non-factive declarative	non-factive interrogative
$[+\text{factive}]$	factive declarative	factive interrogative exclamative complementiser- <i>how</i> clause

^{*} Hans Broekhuis: Meertens Institute, Amsterdam (hans.broekhuis@meertens.knaw.nl). Rachel Nye: GIST, Ghent University (rachel.nye@ugent.be). The work of the latter author was funded by the FWO [Grant 2009-Odyssseus-Haegeman-G091409].

That two kinds of declarative complement clause can be identified, distinguished from one another in terms of factivity, was established by Kiparsky & Kiparsky (1970). Although the idea that we need to posit two types of interrogative complement clause is also not novel, dating back at least to Groenendijk & Stokhof (1984), this is still not widely known or accepted (but see McCloskey (2006) for a more recent proposal to the same effect). There is less support still for the view that factivity is the property which distinguishes these interrogative complements (although see Munsat (1986) and Ginzburg & Sag (2000)). In this squib, we provide evidence for precisely this, thus lending additional support to the system put forward in Nye (2013).

The notion of factivity is normally defined in terms of the truth value of the propositions expressed by sentential complements. A typical example of such a definition is found in David Crystal's *A dictionary of linguistics and phonetics*: the notion factivity is "used in the classification of verbs, referring to a verb which takes a complement clause, and where the speaker presupposes the truth of the proposition expressed in that clause". The application of this definition is illustrated in the examples in (3), where $S_1 \Rightarrow S_2$ stands for "by uttering sentence S_1 the speaker implies that the proposition expressed by S_2 is true"; see Kiparsky & Kiparsky (1970) for more discussion.

- (3) a. Jan denkt dat Els morgen vertrekt. \nRightarrow Els vertrekt morgen. [non-factive]
 Jan thinks that Els tomorrow leaves Els leaves tomorrow
 'Jan thinks that Els is leaving tomorrow.' \nRightarrow 'Els is leaving tomorrow.'
- b. Jan betreurt dat Els morgen vertrekt. \Rightarrow Els vertrekt morgen. [factive]
 Jan regrets that Els tomorrow leaves Els leaves tomorrow
 'Jan regrets that Els is leaving tomorrow.' \Rightarrow 'Els is leaving tomorrow.'

Definitions of this sort exclude from consideration interrogative complement clauses. Interrogative clauses differ from declaratives in that they do not express full propositions: they "are characterized by indeterminacy in the value of the variable represented by the *wh*-phrase" (Grimshaw, 1979: 284, drawing on Bresnan, 1972, for the concept of 'indeterminacy'). Thus on the definition of factivity given above, nothing can be concluded about the factive or non-factive status of a predicate on the basis of its interrogative complement clause.

It is nevertheless worth exploring how interrogative complement clauses behave under factive verbs like *vergeten* 'to forget' and *weten* 'to know'. First, consider the examples in (4). As expected, the declarative *that*-clause in (4a) patterns just as in (3b). By uttering sentence (4b), however, the speaker does not presuppose the truth of the proposition expressed by the sentence at the right-hand side of the arrow. This is not surprising, of course, given that the speaker's reference to Jan as a source of information about the truth of the proposition only makes sense when the speaker does not know the answer to the embedded question himself; cf. Grice's (1975) Cooperative Principle. This sentence pair may be taken to suggest that interrogative complement clauses are not factive, even under factive verbs.

- (4) a. Jan weet dat Els morgen vertrekt. \Rightarrow Els vertrekt morgen.
 Jan knows that Els tomorrow leaves Els leaves tomorrow
 'Jan knows that Els is leaving tomorrow.' \Rightarrow 'Els is leaving tomorrow.'
- b. Jan weet of Els morgen vertrekt. \nRightarrow Els vertrekt morgen.
 Jan knows whether Els tomorrow leaves Els leaves tomorrow
 'Jan knows whether Els is leaving tomorrow.' \nRightarrow 'Els is leaving tomorrow.'

Note, however, that (4b) involves a yes/no question. Things seem to be different with embedded *wh*-questions. Consider the contrast between the examples in (5). Whilst by uttering the sentence in (5a) the speaker does not entail that the proposition “Els is leaving” is true, the speaker does entail this by uttering the sentence in (5b). The examples in (6) show that this difference between *vragen* ‘ask’ and *weten* ‘know’ not only holds for cases where the *wh*-phrase is an adjunct of the embedded clause, but also when it is an argument.

- (5) a. Jan vroeg wanneer Els vertrekt. \nRightarrow Els vertrekt.
 Jan asked when Els leaves Els leaves
 ‘Jan asked when Els is leaving.’ \nRightarrow ‘Els is leaving.’
 b. Jan weet wanneer Els vertrekt. \Rightarrow Els vertrekt.
 Jan knows when Els leaves Els leaves
 ‘Jan knows when Els is leaving.’ \Rightarrow ‘Els is leaving.’
- (6) a. Jan vroeg wie er vertrekt. \nRightarrow Er vertrekt iemand.
 Jan asked who there leaves there leaves someone
 ‘Jan asked who is leaving.’ \nRightarrow ‘Someone is leaving.’
 b. Jan weet wie er vertrekt. \Rightarrow Er vertrekt iemand.
 Jan knows who there leaves there leaves someone
 ‘Jan knows who is leaving.’ \Rightarrow ‘Someone is leaving.’

Thus also on the basis of the behaviour of its *wh*-question complements, *weten* ‘to know’ could be considered factive, in the slightly more restricted sense that the truth of the proposition expressed by the non-*wh* part of the complement clause is presupposed by the speaker. Note that whilst the factivity of *weten* was already established on the basis of its declarative complement, this also gives us a means to establish the factivity of predicates which select only for interrogative complements. Whilst the verb *vragen* ‘ask’ is clearly non-factive on the definition of factivity given above, there are other predicates which appear to permit only interrogative complements, and which rather display factive behaviour. A case in point may be the verb *beschrijven* ‘to describe’ in (7) below.¹ The pattern is exactly the same as with the *wh*-question complements to *weten* in (5b) and (6b) above. Therefore just as we can divide verbs which take declarative complements into two classes: factive (e.g. *betreuren* ‘to regret’) and non-factive (e.g. *denken* ‘to think’), similarly we can also identify both a factive and a non-factive class amongst verbs which select only for interrogative complements, with *beschrijven* (‘to describe’) a member of the former class, *vragen* (‘to ask’) a member of the latter class.

- (7) a. Jan beschrijft wanneer Els vertrekt. \Rightarrow Els vertrekt.
 Jan describes when Els leaves Els leaves
 ‘Jan describes when Els is leaving.’ \Rightarrow ‘Els is leaving.’
 b. Jan beschrijft wie er vertrekt. \Rightarrow Er vertrekt iemand.
 Jan describes who there leaves there leaves someone
 ‘Jan describes who is leaving.’ \Rightarrow ‘someone is leaving.’

¹ The data are somewhat unclear given that a Google search on the string [*beschreef dat hij*] performed on April 18, 2013, resulted in 160 hits. The Dutch author of this paper feels uncomfortable with many of the structures that were found and often prefers the sequence [*beschreef hoe hij*], which is indeed much more frequent (and many cases of which in fact seems to instantiate the complementiser-*how* construction exemplified in (2)). For the moment we simply follow the judgments of the Dutch author, while admitting that this may result in an oversimplified/highly idealized view on the actual use of *beschrijven* by other speakers. Similar remarks may be in order for the English verb *describe*.

Adopting the binary features $[\pm wh]$ and $[\pm factive]$ proposed by Nye (2013) enables us to account for the fact that the factive predicates *betreuren* ‘to regret’, *beschrijven* ‘to describe’ and *weten* ‘know’ all impose different selectional restrictions on their complements (cf. Table 2): the first accepts declaratives only, the second interrogatives only, the third both declaratives and interrogatives. This can be explained by saying that whereas *betreuren* stipulates that it requires a $[-wh, +factive]$ complement clause, and *beschrijven* that it requires a $[+wh, +factive]$ complement clause, *weten* is underspecified for the feature $[\pm wh]$ and thus simply selects a $[+factive]$ complement clause. Providing a similar account in a non-*ad hoc* fashion seems harder when we adopt Grimshaw’s (1979) claim that verbs select for semantic types like proposition, interrogative or exclamative.

Table 2: Verbal types on the basis of complement clause selection

	$[-wh]$	$[+wh]$
$[-factive]$	<i>denken</i> ‘to think’	<i>vragen</i> ‘to ask’
$[+factive]$	<i>betreuren</i> ‘to regret’ <i>weten</i> ‘to know’	<i>beschrijven</i> ‘to describe’ <i>weten</i> ‘to know’

We turn now to consider some supporting evidence for the factivity of certain interrogative-embedding predicates. A semantic property normally claimed to characterize factive verbs is that negating or questioning the clause they head does not affect the entailment (cf. Kiparsky & Kiparsky 1970: 150-1), that is, the examples in (8) have the same entailment as example (4a).

- (8) a. Jan weet niet dat Els morgen vertrekt. \Rightarrow Els vertrekt morgen.
 Jan knows not that Els tomorrow leaves Els leaves tomorrow
 ‘Jan doesn’t know that Els is leaving tomorrow.’ \Rightarrow ‘Els is leaving tomorrow.’
 b. Weet Jan dat Els morgen vertrekt? \Rightarrow Els vertrekt morgen.
 knows Jan that Els tomorrow leaves Els leaves tomorrow
 ‘Does Jan know that Els is leaving tomorrow?’ \Rightarrow ‘Els is leaving tomorrow.’

The examples in (9) show that the (b)-examples in (5) and (6) likewise pass this litmus test for factivity; by uttering the sentences at the left-hand side of the arrow the speaker entails that the propositions expressed by the sentences at the right-hand side of the arrows are true. On the basis of this semantic test then, there seem to be good grounds for extending the notion of factivity to take into account the behaviour of *wh*-question complements.

- (9) a. Jan weet niet wanneer Els vertrekt. \Rightarrow Els vertrekt.
 Jan knows not when Els leaves Els leaves
 ‘Jan doesn’t know when Els is leaving.’ \Rightarrow ‘Els is leaving.’
 a’. Weet Jan wanneer Els vertrekt? \Rightarrow Els vertrekt.
 knows Jan when Els leaves Els leaves
 ‘Does Jan know when Els is leaving?’ \Rightarrow ‘Els is leaving.’
 b. Jan weet niet wie er vertrekt. \Rightarrow Er vertrekt iemand.
 Jan knows not who there leaves there leaves someone
 ‘Jan doesn’t know who is leaving.’ \Rightarrow ‘Someone is leaving.’
 b’. Weet Jan wie er vertrekt? \Rightarrow Er vertrekt iemand.
 knows Jan who there leaves there leaves someone
 ‘Does Jan know who is leaving?’ \Rightarrow ‘Someone is leaving.’

With respect to certain of the syntactic tests for factivity that are normally assumed, the results are somewhat equivocal. Like the factive declarative clause in (10a), the factive interrogative clauses in (10b&c) can readily be introduced by the anticipatory pronoun *het* 'it'. See Kiparsky & Kiparsky (1970: 165) for an extensive discussion of this test.

- (10) a. Jan weet *het* dat Els morgen vertrekt.
 Jan knows it that Els tomorrow leaves
 'Jan knows it that Els is leaving tomorrow.'
 b. Jan weet *het* wanneer Els vertrekt.
 Jan knows it when Els leaves
 'Jan knows it when Els is leaving.'
 c. Jan weet *het* wie er vertrekt.
 Jan knows it who there leaves
 'Jan knows it who is leaving.'

However, it seems that placement of a factive complement in the middle field of the matrix clause gives rise to a less felicitous result when the complement clause is interrogative than when it is declarative; whereas (11a) is just stylistically marked, the examples in (11b&c) seem degraded. We refer the reader to Barbiers (2000) for a brief discussion of this test.

- (11) a. ^(?)dat Jan [dat Els morgen vertrekt] nog niet weet.
 that Jan that Els tomorrow leaves not yet knows
 'that Jan does not know yet that Els is leaving tomorrow.'
 b. ^{??}dat Jan [wanneer Els vertrekt] nog niet weet.
 that Jan when Els leaves not yet knows
 'that Jan does not know yet when Els will be leaving.'
 c. ^{??}dat Jan [wie er vertrekt] nog niet weet.
 that Jan who there leaves not yet knows
 'that Jan does not know yet who is leaving.'

Although the syntactic behaviour of factive interrogative constructions clearly needs more investigation, the discussion above strongly suggests that just as we can identify factive and non-factive declarative clauses, two types of interrogative clause can similarly be distinguished on the grounds of factivity. We therefore must revise the traditional definition of factivity as follows (where italics are used to indicate the change in Crystal's original definition): the notion factivity is used in the classification of verbs, referring to a verb which takes a complement clause, and where the speaker presupposes the truth of *some non-null proposition* expressed by that clause.

An advantage of adopting the binary features [$\pm wh$] and [$\pm factive$] is that they perhaps enable us to account for the fact that verbs like *betwijfelen* 'doubt' in (12) can be combined with an embedded *yes/no*-question, but not with an embedded *wh*-question, if we claim that the interrogative complement clause to *betwijfelen* is [$-factive$]. Providing a similar account is clearly not possible under Grimshaw's (1979) proposal, where *yes/no*- and *wh*-questions are considered to be of the same semantic type 'question'. It must be noted however that the current proposal still leaves open the question of why the embedded *wh*-question in (12) cannot be interpreted with a non-factive reading.

- (12) Jan betwijfelt of/*wanneer Marie vertrekt
 Jan doubts whether/when Marie leaves
 'Jan doubts whether Marie is leaving.'

For completeness' sake, it must be noted that a less fortunate aspect of the binary feature approach is that it does not account for the fact, already illustrated in (4) above, that factive verbs like *weten* can also take *yes/no*-questions: *Jan weet (niet) of Marie morgen komt* 'Jan knows/does not know whether Marie is coming tomorrow'. This may be related to the fact that the revised definition of factivity below example (11) does not apply to *yes/no*-questions given that they are simply not able to express non-null presuppositions, or it may fall out from the distinction Adger & Quer (2001) make between selected and unselected embedded questions. We leave this issue for future research.

In this squib we have provided evidence for the view (i) that there are two types of interrogative complement clause with different syntactic and semantic behaviour (ii) that these are distinguished in terms of the property of factivity, parallel to the widely accepted distinction made between declarative complement clauses on the same grounds. In doing so, we have lent further support to Nye's (2013) binary feature approach to the selection of complement clauses, which postulates just such a distinction, and have shown that it allows classes of matrix predicates to be characterised on the basis of the selectional requirements they place on their finite clausal complements. We have also seen, however, that the selection of *yes/no*-questions does not fall out fully naturally from this approach, with the consequence that some fine-tuning may yet be called for.

Bibliography

- Adger, David, & Josep Quer (2001). The syntax and semantics of unselected embedded questions.' *Language* 77:1, 107-133.
- Barbiers, Sjef (2000). The right periphery in SOV languages: English and Dutch. In: Peter Svenonius (red.), *The derivation of VO and OV*. Amsterdam/Philadelphia, John Benjamins, 45-67.
- Bresnan, Joan (1972). *Theory of Complementation in English Syntax*. Doctoral dissertation, MIT, Cambridge, Massachusetts.
- Crystal, David (1991). *A dictionary of Linguistics and phonetics (third edition)*: Blackwell Publisher.
- Ginzburg, Jonathan, & Ivan Sag (2000). *Interrogative investigations*. Stanford: CSLI publications.
- Grice, H.P. (1975). Logic and conversation. In: P. Cole and J. Morgan (red.), *Speech acts: Syntax and Semantics* 3. New York, Academic Press, 41-58.
- Grimshaw, Jane (1979). Complement selection and the lexicon. *Linguistic Inquiry* 10, 279-326.
- Groenendijk, Jeroen & Martin Stokhof (1984). *Studies on the semantics of questions and the pragmatics of answers*. Doctoral dissertation, University of Amsterdam.
- Kiparsky, Paul, & Carol Kiparsky (1970). Fact. In: Bierwisch. Manfred and Karl Erich Heidolph (red.), *Progress in linguistics*. The Hague/Paris, Mouton, 143-173.
- McCloskey, Jim (2006) Questions and questioning in a local English. In: Raffaella Zanuttini, Héctor Campos, Elena Herburger & Paul H. Portner (red.), *Crosslinguistic Research in Syntax and Semantics: Negation, Tense and Clausal Architecture*. Georgetown, Georgetown University Press, 87-126.
- Munsat, Stanley (1986). *Wh*-complementizers. *Linguistics and Philosophy* 9, 191-217.
- Nye, Rachel (2013). Rethinking the distribution of English finite clausal complements: evidence from complementiser-*how* clauses. Ms., Ghent University.