

How as a declarative subordinator in English

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Abstract

This study proposes the existence of the minor declarative subordinator *how* introducing content clauses that function as internal Complements inside VP alongside the declarative subordinator par excellence *that*. Using Huddleston and Pullum's (2002) framework, the study suggests that this *how* is semantically and syntactically different from the usual adverb *how* functioning as an Adjunct in content clause structures. This makes clauses the subordinator *how* introduces genuinely declarative Complement clauses and not interrogative Complements or fused relative NPs as analysed in many grammars. Samples containing the item with a potential subordinator status are selected from corpora, and semantic and syntactic tests are applied to them. Semantically, the manner interpretations, if present at all, are weakened. The investigation shows that content clauses *how* introduces behave like factive Complements, definite and their content presupposed of its truth. If this subordinator has a semantic content, the study suggests it should only be *the fact*. Instances from corpora also reveal *how*-clauses to occur with verbs of saying, knowing, showing, perceiving, and also emotive factive verbs, which normally pick a declarative Complement.

Keywords: *subordinator, complementiser, declarative complement, content clause, factivity, presupposition*

1. Introduction

The main function of *how* provided by Huddleston and Pullum is introducing [+wh]-type Complement clauses (2002, p. 902, p. 972). The following sentence illustrates this use of *how*:

- (1) He asked me *how they treated us*.

However, it is on its use as a declarative subordinator that this study focuses on. Exploring the category of subordinators¹ in Huddleston and Pullum's (2002) framework, the study proves the existence of the minor declarative subordinator *how* alongside the declarative subordinator par excellence *that* and discussing properties of content clauses² they introduce. The following examples illustrate the item *how*³ as a marker of subordination:

- (2) a. She told me ***how*** *ghosts definitely do not exist*.
b. His father noticed ***how*** *he always drives very fast*.

Superficially, the *how*-clauses in (2) resemble the interrogative content *how*-clause in (1), where *how*, functioning as an Adjunct in the italicised subordinate clause, questions manner. I will prove that this is not the case.

Huddleston and Pullum recognise this minor subordinator in informal English, noting that ‘*how* can be used without any trace of its usual manner meaning...[and] is simply equivalent to *that*’ (2002, p. 954):

- (3) He thought of the time he had ridden to Gavin and told him **how** his cattle were being rustled.
(Huddleston & Pullum, 2002, p. 954)

However, (3) is ambiguous as a slight manner interpretation can be discerned.

Semantically, declarative content *how*-clauses do not have a manner interpretation; if present, it is weakened. Notice the semantic anomaly and ungrammaticality of the *how*-clauses in (2) when turned into main clause interrogatives:

- (4) a. #How do ghosts definitely not exist?
b. *How does he drive very fast?

Moreover, the subordinator *how* differs from other uses of *how* syntactically. All *how*-clauses regardless of the function of *how* are VP-Complements. There will be external resemblances if the *wh*-word *how* becomes a subordinator introducing declarative content clauses. Suffice to say that the subordinator *how* and the interrogative *wh*-word *how* differ in their functions within subordinate clauses. The subordinator *how* can only function as a marker of subordination, introducing content clauses functioning as Complements to a verb.

2. On *how*

The overview of the word *how* including its uses and the study of the item is presented in this section. The account comes from Huddleston and Pullum’s *The Cambridge Grammar of the English Language* (CaGEL), the framework on which my analysis will be based.

2.1 The general uses of the *wh*-word *how*

Huddleston and Pullum present three uses of *how*: exclamative, interrogative, and fused relative (2002, ch. 11-12):

- | | | | |
|-----|----|---|------------------|
| (5) | a. | It’s remarkable [clause how they treated us]! | [exclamative] |
| | b. | He asked me [clause how they treated us]. | [interrogative] |
| | c. | I don’t like [NP how they treated us]. | [fused relative] |

Having *how* introduce content clauses, (5) and (2) are superficially similar. *How* in the exclamative content clause is an adverb concerning degree, modifying a verb in the embedded clause; (5a) means “They treated us very well”. *How* in the interrogative content clause (5b) is an adverb questioning manner: “he wants to know the answer to the question ‘How did they treat us’”. The two *how*s function as Adjuncts in embedded clauses with different semantic types. The two *how*-clauses function as Complements, specifically an extraposed Subject and VP-internal Complement, respectively. Occurring in the same environment, subordinate exclamatives and interrogatives are distinguished by licensing and association (Huddleston & Pullum, 2002, p. 992): *remarkable* associates with the exclamative construction, whilst *ask* licenses interrogatives.

A fused relative (5c) is an NP equivalent to the non-fused *the way that they treated us*. Here, *like* licenses NPs. The fact that the antecedent *the way* and the non-overt relativised element are fused together is presented in *how*, which simultaneously functions as the Head of the whole NP and Adjunct in the relative clause (Huddleston & Pullum, 2002, pp. 1070-1078).

All instances of *how* in (5), which function as Adjuncts, contain a manner interpretation. Containing a manner component, these uses belong to dependency constructions (Huddleston & Pullum, 2002, pp. 1079-1081), which have a crucial property in arguing for the existence of declarative Complement *how*-clauses. They obligatorily contain an anaphoric syntactic gap, which creates a dependency property in the relation between *how* and the gap:

- | | | | |
|-----|----|--|------------------|
| (6) | a. | It’s remarkable [how _i [they treated us__ _i]! | [exclamative] |
| | b. | He asked me [how _i [they treated us__ _i]. | [interrogative] |
| | c. | I don’t like [how _i [they treated us__ _i]. | [fused relative] |

As if *how* undergoes ‘movement’, the gap (__) marks its usual position.

Although the *wh*-word *how* introducing the content clauses in (6) creates superficial resemblances to the constructions I focus on, it should be clear that they involve manner interpretations as they obligatorily have a syntactic gap.

2.2 The study of the subordinator *how*

How as a declarative subordinator is a little-discussed topic. Lakoff (1968, p. 25ff.), Haegeman (1985, pp. 15-17), Huddleston and Pullum (2002, p. 954), and Rocchi (2010, pp. 46-48) discuss this issue briefly. Only two scholars study it comprehensively: Legate (2010) and Nye (2011).

Using different frameworks, scholars refer to the same phenomena with different terminologies. For consistency’s sake, all terminologies are based on *CaGEL*: complementisers are referred to as subordinators; determiner phrases (DPs) as noun phrases (NPs); Objects as internal Complements⁴; Adverbial clauses as Adjuncts. Following my proposal, I will use the term declarative

content *how*-clause (DCHC) to refer to clauses introduced by the subordinator *how* which function as VP-internal Complements.

2.2.1 Legate (2010)

Legate's (2010) concept of the declarative use of *how* supports the existence of the subordinator *how* and DCHCs. She provides an example of a declarative content clause introduced by *how* (7a), which expresses a proposition and lacks a manner interpretation; it is equivalent to that introduced by *that* (7b):

- (7) a. They told me **how** the tooth fairy doesn't really exist.
 b. They told me that the tooth fairy doesn't really exist.
 (Legate, 2010, p. 121)

Nevertheless, she argues that *how* cannot simply be used interchangeably with *that*, and *how* thus cannot be labeled a subordinator. DCHCs differ from other types of content clauses introduced by subordinators, namely declarative content *that*-clauses and interrogative content *if*-/whether-clauses in that they resemble fused relatives, behaving like NPs (2010, p. 122).

To support her claim, Legate uses 3 arguments related to DCHCs' syntactic distribution and semantic properties. First, unlike *that*-clauses, DCHCs pattern NPs, functioning as Complements of propositions:

- (8) a. They told me about **how** the tooth fairy doesn't really exist.
 b. They told me about the existence of the tooth fairy.
 b. *They told me about that the tooth fairy doesn't really exist.
 (Legate, 2010, p. 122)

Second is the ability to coordinate with NPs:

- (9) Trai never paid attention to [DCHC **how** the long-distance firms have nearly identical tariffs], or [NP the fact that the settlement rate with international carriers remains unchanged].
 (Legate, 2010, p. 123)

Thirdly, similar to NPs rather than clauses introduced by subordinators, DCHCs occur 'under the empty case-marking preposition *of*' (10a) but not in a non case-assigned position (10d):

- (10) a. They approved of **how** Pat apologized contritely for being late.
 b. They approved of Pat's contrite apology.
 c. *They approved of that Pat apologized contritely for being late.
 d. *It was conceded **how** the tooth fairy doesn't exist.

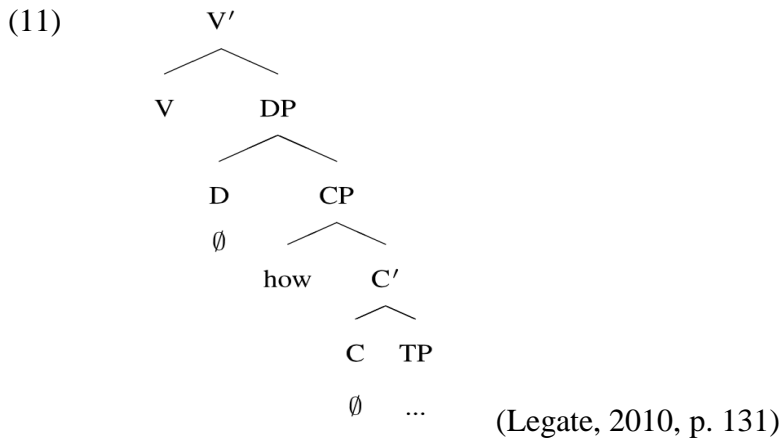
e. *It was conceded the tooth fairy's non-existence.

f. It was conceded that the tooth fairy doesn't exist.

(Legate, 2010, pp. 123-124)

As a result, she not only treats DCHCs as NPs but also rejects the subordinator *how* altogether.

Based on the 3 properties, Legate posits a syntactic structure of DCHCs⁵. DCHCs are treated as NPs with zero determinative:



In addition, Legate's semantic analysis of DCHCs shows that their content is presupposed, whilst that of *that*-clauses is not. Definite NPs, she argues, 'show existence presuppositions' (2010, p. 126). This underlines the definite NP-like behaviour of DCHCs:

(12) a. # They told me **how** the tooth fairy doesn't really exist, but I don't believe it.

b. They told me that the tooth fairy doesn't really exist, but I don't believe it.

(Legate, 2010, p. 126)

In (12a), the content of DCHCs is presupposed; it is unlikely for the speaker to express doubt about its truth.

I will show in Section 4 that some of the arguments presented are questionable and that it is less robust to rely on superficial resemblances and conclude that DCHCs are NPs. The fact that DCHCs and *that*-clauses differ distributionally is not sufficient to reject DCHCs as declarative content clauses and *how* in DCHCs as a subordinator.

2.2.2 Nye (2011)

Nye's (2011) cross-linguistic data on the use of the word *how* supports my hypothesis that DCHCs behave like declarative Complement clauses. Nye explores the use of Dutch *hoe*-clauses, equivalent to DCHCs. This reveals distributional similarities between DCHCs and *that*-clauses. Firstly, DCHCs and *that*-clauses occur postverbally (13-14), whilst NPs (15) in the middle:

- (13) Ik zal nooit vergeten [DCHC **hoe** hij me toen niet geholpen heft].
 I will never forget **how** he me then not helped has
 'I'll never forget **how** he didn't help me then.'
- (14) Ik zal nooit vergeten [_{that-clause} dat hij me toen niet geholpen heft].
 I will never forget that he me then not helped has
 'I'll never forget that he didn't help me then.'
- (15) Ik zal [_{NP} het feit dat hij me toen niet geholpen heeft] nooit vergeten.
 I will the fact that he me then not helped has never forget
 'I'll never forget the fact that he didn't help me then.'
 (Nye, 2011, p. 12)

Secondly, when verbs are in a construction with PP and Complement, clausal Complements follow PPs (16-17), whilst Object NPs precede PPs (18). An instance violating this appears infelicitous:

- (16) ?Ik vertelde aan Marie [DCHC **hoe** hij me nooit geholpen had].
 I told to Marie **how** he me never helped had
 'I told Marie **how** he had never helped me.'
- (17) Ik vertelde aan Marie [_{that-clause} dat hij me nooit geholpen had].
 I told to Marie that he me never helped had
 'I told Marie that he had never helped me.'
- (18) Ik vertelde [_{NP} dat verhaal] aan Marie.
 I told that story to Marie
 'I told that story to Marie.'
 (Nye, 2011, pp. 12-13)

These tests reveal the cross-linguistic behaviour: DCHCs are prone to behave like declarative Complement clauses on the distributional grounds.

Two contrasting views regarding DCHCs are found. While some scholars accept the existence of DCHCs, their analyses of the status of *how* and the *how*-

clauses, which I call DCHCs, are different. Exploring just the distribution is a simplistic approach as the distributional similarities between DCHCs and *that*-clauses or NPs alone are not sufficient to draw any conclusions. In Section 4, I will provide reasons for positing the declarative subordinator *how* and present a detailed analysis based on DCHCs' unique semantic-syntactic behaviours, which may provide more insight into the subordinator *how* and DCHCs.

3. Aims, scope and methods

Focusing on *how* as a declarative subordinator, the study investigates the distribution of content clauses it introduces and their semantic and syntactic properties in relation to *that*-clauses to confirm the equivalence of *how* and *that*. The matrix verbs/predicates⁶ will also be investigated to see the correlation between verbs and the *how*-clauses.

Samples are obtained from English corpora, mainly from ICE-GB, which is grammatically annotated by using Quirk et al.'s (1985) framework. Other corpora include COCA and GloWbE. Semantic analyses and syntactic tests are applied to instances obtained to prove my hypothesis on *how* as a declarative subordinator. I will also compare ICE-GB's analysis on the status of *how* with the recent framework of Huddleston and Pullum (2002) and contrast the two frameworks with what I propose in this study.

Difficulties lie in the fact that it is not easy to draw a clear-cut distinction between interrogative, declarative, and other uses of *how* from its strong association with interrogative-Adjunct uses. To ensure the data selected manually and examples constructed yield a propositional interpretation and has no manner interpretation, they should meet 3 criteria: 1) including manner Adjuncts in a typical Adjunct position to avoid a syntactic gap, which leads to non-subordinator uses of *how*, as in (19):

(19) His father noticed **how** he always drives *very fast*.

2) Stative verbs like *exist*, normally incompatible with manner Adjuncts, are used, as in (20):

(20) She told me **how** ghosts definitely do not *exist*.

Otherwise, 3) pre-empted Adjuncts involving a *by*-phrase are added in a typical Adjunction position, as in (21):

(21) She told me **how** people often judge others *by their appearance*.

Inevitably, I depend on intuition and context to select instances that do not meet the criteria but yield a propositional interpretation. The propositional interpretation of the *how*-clauses in all examples is confirmed by native informants.

4. Arguments for the declarative subordinator *how* and its content clauses

The arguments presented in this section support the existence of the subordinator *how* and content clauses they introduce, which function as VP-internal Complements. I will demonstrate that DCHCs are semantically comparable to content clauses introduced by the declarative subordinator *that*. Syntactically, DCHCs behave like *that*-clauses, but differ in some respects. My analysis is presented in two discussion sections. The first section will focus on the semantics of DCHCs, whereas the second section on their syntax.

4.1 The semantic arguments for the declarative subordinator *how* and DCHCs

Perhaps, the most striking aspect is how the *wh*-word *how* introduces declarative content clauses instead of *that* with very little differences. A note from one native informant captures this:

These words are totally interchangeable for some [sentences],
and for others, with the change in words, the meaning changes
completely. You aren't really aware of the use of the word [*how*]
in sentences.

Here, I make semantic arguments for the subordinator *how* and DCHCs, discussing the semantics of the Complement clauses and their presuppositional behaviour.

4.1.1 The semantics of the content clauses

Unlike the *wh*-word *how* having 3 general uses presented in Section 2.1, the subordinator *how* lacks a manner interpretation, or if presents, it is attenuated. My first argument lies in the fact that although all types of clauses *how* introduces are similar in their being VP-internal Complements (arguments of matrix predicates), only DCHCs are declarative content clauses, and *how* has no manner interpretation and no function as a clause element:

- | | | |
|---------|---|------------------|
| (22) a. | It's remarkable [<i>how</i> _{<i>i</i>} [they treated us__ _{<i>i</i>}]]! | [exclamative] |
| b. | He asked me [<i>how</i> _{<i>i</i>} [they treated us__ _{<i>i</i>}]]. | [interrogative] |
| c. | I don't like [<i>how</i> _{<i>i</i>} [they treated us__ _{<i>i</i>}]]. | [fused relative] |
| d. | He told me [how they treated him fairly]. | [DCHC] |

Two pieces of evidence are used to support my arguments of *how* lacking a manner interpretation and having no function as a clause element. The first support is that all clauses introduced by the *wh*-word *how* inevitably have a gap presented, whilst clauses introduced by the subordinator *how* do not have. The function of *how* in (22a–c) as clause elements is indicated by gaps associated with the functional positions (Huddleston & Pullum, 2002, pp. 1082–1088). The gaps represent Adjuncts in the content clauses and are linked anaphorically to *how*. The subordinator *how* in (22d), however, has no usual semantic content and cannot be associated with the Adjunct function. DCHCs, like *that*-clauses, are declaratives and are semantically complete without a gap in information. Lacking such gap, the inclusion of the manner Adjunct *fairly* in (22d) is possible. On the other hand, an interrogative *how*-clause, which *how* is associated with the Adjunct function, cannot have a manner Adjunct (Lakoff, 1968, p. 69; López-Couso and Méndez-Naya, 1996, p. 347):

(23) *He asked me **how** they treated us *with respect*.

Another support is the omission of *how* whilst still conveying a complete meaning because *how* is only a marker of subordination without a usual semantic content:

(24) He told me (that/**how**) they treated him fairly.

Apart from having *how*, DCHCs show no structural difference from main clause declaratives.

DCHCs might occur without Adjuncts. The manner interpretations, if present, are attenuated. Naturally occurring examples can be obtained from ICE-GB:

(25) It's funny isn't it **how** I'm so tall and you're so short. (ICE-GB S1A-042 #343)

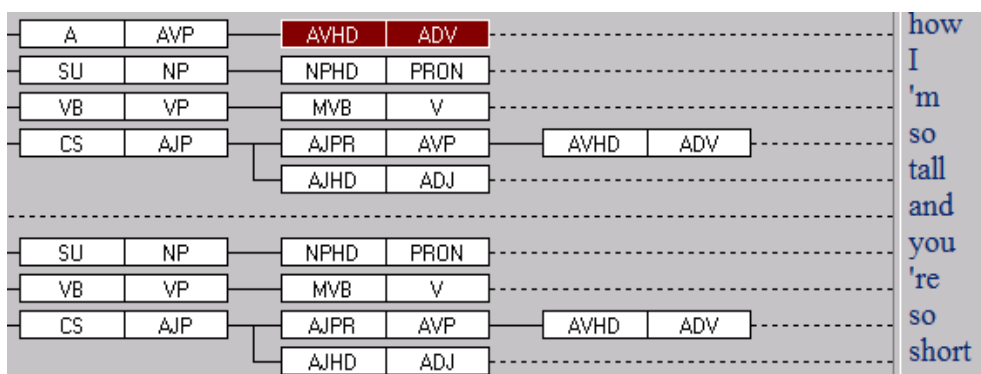


Figure 1: ICE-GB's tree structure of (25) showing that the subordinator *how* is analysed as an Adjunct⁷ in the content clause.

It is impossible to interpret *how* (25) with a manner component because the DCHC is complete without a gap. Whilst *CaGEL* is aware of this, the parsed corpus ICE-GB still analyses *how* as an adverb functioning as an Adjunct, as indicated in Figure 1, which falsely presents the function and status of the subordinator *how*.

The subordinator status of *how* is underlined in another example, which the Adjunct position is pre-empted by a PP, making it impossible to associate *how* with the Adjunct function:

- (26) His idea of **how** Germanic power in Britian began *from the munity of mercenary forces* is plausible. (ICE-GB W1A-003 #109)

How in (26) is again analysed as an Adjunct in ICE-GB, making the sentence have two Adjuncts representing the same semantic content:

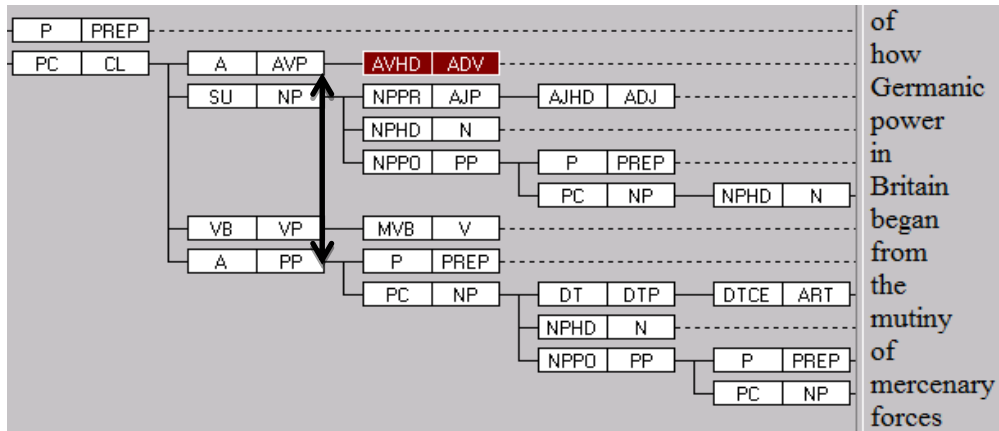


Figure 2: ICE-GB's tree structure of (26) showing that the content clause contains two manner/means Adjuncts (*how* and the PP *from the munity of mercenary forces*).

This *how* can only be a declarative subordinator without its usual semantic content.

4.1.2 The presuppositional behaviour of the content clauses

Another argument for the existence of the subordinator *how* comes from the fact that *how* contains the semantic content equivalent to *the fact*, which makes DCHCs comparable to factive declarative *that*-clause Complements regardless of the classes of matrix verbs.

My argument is supported by DCHCs' presuppositional behaviour. When A presupposes B, the assertion B is presented as a background and taken for granted of its truth (Huddleston & Pullum, 2002, pp. 1005-1008). Verbs are among presupposition triggers (Saeed, 2009, pp. 107-108). Verbs can

be classified into two semantic classes: those that presuppose the truth of their content clause Complements (factive verbs) and those that assert but not presuppose the truth (non-factive verbs) (Melvold, 1991, pp. 98-99). A list of verbs taking a *that*-clause Complement categorised based on their presuppositional behaviour is shown in (27):

- (27) a. Factive verbs
 admit confess find out forget know
 point out regret remember
 b. Non-factive verbs
 announce assume believe claim conclude
 conjecture hope inform insist prove
 say show tell

Consider the presuppositional behavior:

- (28) a. John *knows* that he offended Mary.
 b. John *claims* that he offended Mary.
 c. John offended Mary.

Only the sentence with the factive *know* presupposes (28c), whilst there is no such presupposition with the non-factive *claim*. In (28a), the assertion *John offended Mary* in the factive *that*-clause Complement is the assumed background and taken for granted. The speaker believes in the relation between a particular person and an event in the clausal Complement presupposed to have occurred. By contrast, in (28b), *claim* represents the Subject's belief and assertion about the truth of the proposition in the Complement clause. The speaker does not commit to and may assert or deny it. In the former case, as the Complement clause is presupposed, it is infelicitous to deny or assert its truth:

- (29) a. # John *knows* that he offended Mary, but in fact he didn't.
 b. John *claims* that he offended Mary, but in fact he didn't.
 (Melvold, 1991, p. 99)

Huddleston and Pullum state that 'the distinctions between...factive and non-factive are not marked as such in the form of the content clause' (2002, p.1009). In other words, it is a verb, not a clausal Complement itself or an element in a clausal Complement, which determines factivity and thus presupposes the truth of the content clause Complement that follows. However, using the relation between factive Complements and presuppositional nature, I investigate the behaviour of DCHCs. I argue that the presuppositional behaviour is a unique character of DCHCs that should be encoded in their semantics. Consider (30):

- (30) a. She *regrets* that she cheated on him (COCA 2008),
 # ...but I don't know whether she really did.
 b. She *regrets* **how** she cheated on him,
 # ...but I don't know whether she really did.
 c. She *told* me that she cheated on him purposely,
 ...but I don't know whether she really did.
 d. She *told* me **how** she cheated on him purposely,
 # ...but I don't know whether she really did.

With the factive *regret*, the truth of the content of both the *that*-clause and the DCHC is presupposed. The speaker cannot express doubt or deny its truth. With the non-factive *tell*, only the content of the DCHC is presupposed. The proposition expressed is not left open. Therefore, expressing doubt is still unlikely.

I further investigate the presuppositional property of DCHCs by testing (30d) based on the nature of presupposition. 'Negating the presupposing sentence', Saeed notes, 'does not affect the presupposition' (2009, p. 104):

- (31) She *didn't tell* me **how** she cheated on him purposely,
 # ...and she would have told me if she had done.

As DCHCs are presupposed, expressing what contradicts DCHCs is unlikely. This observation reveals that when DCHCs occur with non-factive predicates, their content remains presupposed. More examples showing that a DCHC is presupposed regardless of whether it is a Complement of a factive or non-factive verb are presented in (32); the factive verbs *realise* (32a) and *found out* (32b) along with the non-factive *announce* (32c) and *inform* (32d) are used⁸, and the two tests which have been used in (30) and (31) are applied:

- (32) a. i. She *realised* that she was liked by those who paid attention to her (COCA 2007),
 # ...but I don't know whether she was actually liked.
 ii. She *realised* **how** she was liked by those who paid attention to her,
 # ... but I don't know whether she was actually liked.
 iii. She *didn't realise* **how** she was liked by those who paid attention to her,
 # ...and she would have realised if she had actually been liked.
 b. i. He *found out* that Godinez didn't actually have a driver's license (COCA 2013),
 # ...but I don't know whether Godinez really didn't.
 ii. He *found out* **how** Godinez didn't actually have a driver's license,
 # ...but I don't know whether Godinez really didn't.

- iii. He *didn't find out* **how** Godinez didn't actually have a driver's license,
...and he would have found out if Godinez hadn't really had.
 - c. i. The oil company BP *announced* that it's temporarily halting production (COCA 2006),
...but I don't know whether it really does.
 - ii. The oil company BP *announced* **how** it's temporarily halting production,
...but I don't know whether it really does.
 - iii. The oil company BP *didn't announce* **how** it's temporarily halting production,
...and it would have announced if it has halted.
 - d. i. They *informed* me that they believed that the machine had been damaged by the user (Glowbe IE),
...but I don't know whether they really did.
 - ii. They *informed* me **how** they believed that the machine had been damaged by the user,
...but I don't know whether they really did.
 - iii. They *didn't inform* me **how** they believed that the machine had been damaged by the user,
...and they would have informed if they had really believed.

Therefore, I argue that DCHCs have a semantic property of factive Complements comparable to factive *that*-clauses, namely the presuppositional nature, even when they are embedded with non-factive verbs. This makes *how* comparable to the subordinator *that* with the semantic property of being factive encoded.

From DCHCs' presuppositional nature, I have proposed that the subordinator *how* contains a semantic content of *the fact*, which makes the clausal Complements factive regardless of the semantic classes of matrix verbs. As presented in Section 2.2, it has been argued that DCHCs are definite NPs (fused relatives) based on this presuppositional nature (Legate, 2010, pp. 126-130). This is invalid because DCHCs are semantically complete without any gap and thus cannot be fused relative NPs. Moreover, some approaches reveal presupposition failures of definite NPs (see Saeed, 2009, pp. 105-106). For simplicity's sake, I argue that presupposition is DCHCs' intrinsic semantic property in being factive Complements. The definite NP-like behaviour must be that DCHCs are introduced by *how*, which contains an element of the meaning of the definite NP *the fact*. As *the fact* can be inserted in factive Complements (Huddleston & Pullum, 2002, p. 1010), *how* can be replaced by *the fact that* even when DCHCs are Complements of non-factive verbs:

- (33) She didn't tell me *the fact that* she cheated on him purposely.

For the reasons mentioned, DCHCs should not be grouped with definite NPs merely based on their superficial resemblances.

4.2 The syntactic arguments for the declarative subordinator *how* and DCHCs

Like Lakoff (1968: 25ff.), I analyse *how* as a declarative subordinator introducing the content clauses I call DCHCs, which function as VP-internal Complements. I will demonstrate that DCHCs are declaratives, comparable to *that*-clauses.

4.2.1 Licensing

Claiming that DCHCs are equivalent to *that*-clauses, I use licensing to distinguish DCHCs from embedded interrogatives. Huddleston and Pullum mention the class of verbs that licenses only interrogatives: the verbs of asking: *ask*, *inquire*, *wonder*, etc. (2002, p. 978). As declaratives, DCHCs cannot occur with these verbs:

- (34) a. He *asked* what she and her father were reading. (COCA 1916)
 b. *He *asked how* she and her father were reading books quietly.

As a verb licensing interrogatives cannot occur with clauses introduced by the subordinator *how*, the ungrammaticality of (34b) confirms DCHCs as declaratives.

4.2.2 Problems of categorising DCHCs based on their distribution

That DCHCs differ distributionally from *that*-clauses and that *how* is not interchangeable with *that* are not valid arguments in rejecting DCHCs. I have shown that *how* is semantically comparable to the declarative subordinator *that*. However, distributionally, DCHCs differ from *that*-clauses but appear similar to NPs: being Complements of prepositions; coordinating with NPs; being subcategorised in positions not assigned case (Legate, 2010, pp. 122-124). This leads some scholars to argue against my claim, rejecting the existence of DCHCs and treating them as NPs. This is based on false premises.

The syntactic arguments for the NP status of DCHCs presented Section 2.2 are problematic. I will illustrate these and, at the same time, provide the distribution of DCHCs. Firstly, I find the claim that DCHCs function as Complements of a preposition because they are NPs rather traditional. In *CaGEL*, prepositions select a wide range of Complements (Huddleston & Pullum, 2002, pp. 598-600):

- (35) a. They knew [about *how I thought*]. [open interrogative]
 b. They are discussing [about *whether she is wrong*]. [closed interrogative]
 c. They are talking [about *traveling to London*]. [gerund-participial]
 d. She was [about *in her early twenties*] when she met him. [PP]

There is no reason why DCHCs should be grouped with NPs. DCHCs, as factive Complements, contain an element of the meaning of *the fact* in the subordinator *how*. DCHCs, thus, serve as a device for accommodating declarative content clauses into a position that would normally require NPs (after prepositional verbs or idiomatic and fossilised expressions with prepositions):

- (36) a. With this commercial photograph, it gives us a very good *idea of how* two out of three temples at Paestum are actually laid out in relation to the rest of the city. (ICE-GB S2A-024 #091)
 b. This is evident in the stress *laid on how* both ‘Work in Progress’ and *A la recherche du temps perdu* respond to crisis by refining the terms within which writing is legitimated. (ICE-GB W2A-004 #047)

Secondly, the claim that DCHCs are NPs from the ability to coordinate with NPs contradicts the property of coordination. Although coordinates are required to be syntactically similar, function rather than category is the important factor (Huddleston & Pullum, 2002, p. 1323). Coordinates of the same category may result in ungrammaticality if they serve different functions:

- (37) a. She told me [_{NP} the current weather condition] and [_{DCHC} **how** it’s going to be cold tonight].
 b. She told me [_{NP} the current weather condition] and [_{that-clause} that it’s going to be cold tonight].
 c. *She told me [_{NP} the current weather condition] and [_{NP} this morning].

All bracketed constituents function as Complements to *tell* except *this morning* in (37c) as an Adjunct of time. As DCHCs can coordinate with NPs, and so do other content clauses, this argument is invalid.

Thirdly, the argument that DCHCs are like NPs and are different from clauses subordinators introduce because they occur under the empty case-marking position (10a) and not in non case-assigned positions (10d) is not strong. Counterexamples, in which the subordinator *whether* introduces a clause following *of* (38a) and DCHCs occurs in sentence-final caseless positions as extraposed Subject (38b), can be found:

- (38) a. As a director, it's really made me aware of *whether people are happy*.
(COCA 2007)
- b. It was odd **how** *she'd never said a word to him and yet still managed to drag him through a minefield of unexpected emotions*. (COCA 2012)

Grouping DCHCs with NPs based on superficial resemblances means ignoring DCHCs and the subordinator *how* altogether.

The claims that DCHCs are different from *that*-clauses because of their distributional differences and that *how* is not equivalent to the subordinator *that* and thus should not be labeled as a declarative subordinator are simplistic as any conclusions cannot be drawn solely from the distributional grounds. My claim can be supported by the syntactic distributions of clauses introduced by the two subordinators of the same category, *if* and *whether*. The distributional differences of *if*- and *whether*-clauses are not sufficient to reject either *if* or *whether* as an interrogative subordinator and the content clauses they introduce as interrogatives. Typically, *if* and *whether* 'are interchangeable' (Huddleston & Pullum, 2002, p. 973). However, there are constructions where *if* is excluded:

- (39) a. Exhaustive conditional construction
I'm going to see her [*whether/*if* you like it or not].
- b. Infinitive interrogative clause
She can't make up her mind [*whether/*if* to accept].
- c. Subject position
[*Whether/*if* this was the right decision] remains unclear.
- d. Preposed Complement
[*Whether/*if* it will work] we shall soon find out.
- e. With *or not*
I don't know [*Whether/*if* or not she'll accept].
- e. As Complement to *be*
The question you have to decide is [*Whether/*if* guilt has been established beyond reasonable doubt].
(Huddleston & Pullum, 2002, pp. 793-794)

The distributional differences are greater than those of DCHCs and *that*-clauses. Therefore, a more appropriate and consistent analysis of *how* and DCHCs is needed. As the distributional differences between DCHCs and *that*-clauses are not sufficient to reject DCHCs, what I have proposed is that *how* is comparable and should be considered as a declarative subordinator alongside *that*.

The evidence showing the equivalence of *how* and *that*, where *how* in a DCHC functioning as a Complement of the matrix predicate *amazing* is resumed as *that*, can be obtained:

- (40) It's amazing **how** by doing this diet *that* it's the little things like reading the word "indulgence" put a smile on my face. (GloWbE HK)

Having the subordinator *how* introducing Complement clauses, DCHCs behave like *that*-clauses in being declaratives. Nevertheless, distributionally, DCHCs differ from *that*-clauses in that they can be Complements of prepositions; the subordinator *how* contains the element of the NP *the fact*. DCHCs, thus, serve as a device for accommodating declarative content clauses into a typical NP position. Moreover, like *that*-clauses, it is possible to find DCHCs in caseless positions.

4.2.3 More on *how* = *that*

Whilst *how* can take a role of a declarative subordinator, DCHCs are 'by no means straightforwardly equivalent' to *that*-clauses (Warner, 1982, p. 181). Warner's late Middle English corpus study reveals the factor governing the use of '*how* = *that*': the content of the Complement clauses. With verbs of saying (*tell*, *say*, etc.), *how* is preferred when the Complement clauses involve summarising statement or conveying interpretation⁹ (1982, p. 180). The following ICE-GB example supports this:

- (41) Heidi was *saying* to me yesterday **how** the secretary of her ex-boss who was the president of part of MBC rang her to tell Heidi that he had died recently. (S1A-010 #248)

In contrast with *that*-clauses, which contain what López-Couso and Méndez-Naya called 'a verbatim rendering' (1996, p. 349), DCHCs contain the gist summarised for communicative purposes.

Moreover, based on its interrogative origin, *how* is not interchangeable with *that*; *how* can only introduce the Complements of verbs that subcategorise both declarative and interrogative Complements: verbs of saying (41), knowing (42a), showing (42b), and perceiving (42c):

- (42) a. Not many people *realise* **how** many of these beautiful Georgian buildings were in fact jerry-built, eighteenth-century style. (ICE-GB W2F-004 #175)
 b. This example clearly *shows* **how** the choosing and presentation of artefacts can totally not only misrepresent people, but also carries message of power and opportunities for exploitation. (ICE-GB W2A-003 #047)
 c. People get so overwhelmed that they don't *see* **how** many options exist for them to change their circumstances. (COCA 2005)

This leads to disagreement. Whilst *CaGEL* treats *how* as a subordinator, the corpus ICE-GB and Warner still treat it as ‘an indirect interrogative’ based on subcategorisation mentioned (Quirk et al., 1982, p. 185). What I have presented shows that treating *how* as an interrogative word with the Adjunct function is invalid. Also, my investigation reveals that DCHCs can be Complements of emotive factives, which usually take *that*-clauses not interrogative Complements:

- (43) a. I *love* **how** my Master’s Degree has prepared me for my inability to find a job anywhere. (Robin Shanea from pinterest.com)
 b. He *regrets* **how** many people enter the market for profit, not passion. (COCA 2010)

These instances confirm the equivalence of *how* and *that* and show that judging *how* based on subcategorisation alone is not enough. I assume at the time of the scholars’ writing, these examples have not yet been attested¹⁰ or are of sceptical grammaticality. This use of *how* nowadays is stylistically marked as ‘informal’ (Huddleston & Pullum, 2002, p. 954). This explains why DCHCs are commonly used with verbs of saying in conversations.

Apart from two factors in choosing *how* over *that*: 1) with the expressions containing prepositions having *how* as an accommodating device; 2) with verbs of saying having the gist summarised in Complement clauses, I find no evidence of other factors. To find out requires the presence of large fully-parsed corpora; otherwise, a manual investigation has to be conducted. Also, the evidence of the second factor can only support but not confirm previous findings; a frequency analysis of *how*- and *that*-clauses, which would be far beyond the scope of my qualitative study, would be required for such confirmation.

5. Conclusion

In this study, I argue for the declarative subordinator *how* alongside *that*. Content clauses they introduce, which I called DCHCs, behave like VP-internal Complements

Semantically, the subordinator *how* lacks its usual manner content. Being only a marker of subordination, *how* has no function as a clause element. The evidence used to confirm my semantic argument includes the lack of any gaps associated with manner in DCHCs and the omission of *how* from DCHCs whilst still conveying a complete meaning. DCHCs are declarative and not interrogative Complements. Being factive Complements containing an element of the meaning *the fact*, DCHCs have their content presupposed and express definiteness. They remain factive Complements, even with non-factive verbs. This should be encoded in their semantics.

Despite distributional differences, DCHCs are comparable to *that*-clauses. I have presented several arguments to support why grouping DCHCs with

interrogative Complements or treating DCHCs as being equivalent to NPs is invalid. DCHCs normally occur with verbs of saying, knowing, showing, and perceiving. DCHCs can also occur with emotive factive verbs, which normally require only declarative *that*-clauses. The declarative subordinator *how* is preferred to *that* when declarative content clauses contain the gist summarised for communicative purposes and is obligatory when declarative content clauses follow expressions with a preposition.

One indicator of *how* as a subordinator introducing declarative content clauses is when an Adjunct position is pre-empted. Still, from my corpus investigation, DCHCs are analysed as interrogative Complements in some frameworks, the subordinator *how* treated as an adverb. This reflects that there is almost no space for this marginal subordinator in grammars.

Notes

1. These subordinators are also known as complementisers: *if*^{interrogative}, *for*, *whether*, and *that*.

2. ‘Content clauses’ are finite subordinate clauses which function as Complements and are syntactically similar to main clauses. The term is used to distinguish them from other subordinate clauses: relative and comparative clauses (Huddleston & Pullum, 2002, pp. 1014-1022).

3. The subordinator *how* is bolded throughout to distinguish from other uses.

4. Internal Complement is a functional label of a subordinate clause that is traditionally analysed as the direct object (O^d) of a verb.

5. Legate’s structure contains Generative Grammar’s labels. *CaGEL*’s NPs are DPs; CPs are phrases which have a subordinator/complementiser as their Head.

6. Semantic predicates include verbs and adjectives. Focusing on the *how*-clauses as VP-internal Complements, only verbs are concerned. Typically, the semantic predicates correspond to the syntactic Predicator (verb); the arguments to Complements. I will use “predicate” and “argument” whenever I deal with semantics, whilst “Complement” (first alphabet capitalised for functional labels) when referring to syntactic functions.

7. Quirk et al.’s (1985) adverbial (A)

8. I purposely selected only the verbs that subcategorise both declarative and interrogative Complements (see Section 4.2.3).

9. Warner’s late ME corpus study shows the favour of DCHCs with *telle*, *teche*, or *seie* in reporting the ‘gist’ of the Vulgate. Their Subjects of the sentences are *Matheu*, *þe story of*, *þis Gospel*, *þe parable*, etc. (1982, pp. 182-183).

10. No evidence can be found in ICE-GB, which was compiled between 1990-1993.

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