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The particle *how**

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Words that function in the lower part of the clause can be reanalyzed as base generated in the higher part. In this paper, I examine how the manner and degree adverb *how* also functions as a conjunction and *yes/no* marker. The latter two uses, though not accepted by all native speakers, go back quite a long time. The paper contributes to the discussion about an inventory of features so important in Minimalism since the mid 1990s by arguing that the grammaticalization of *how* involves a loss of certain features but an increase in others.

1. Introduction

Generative grammar makes a distinction between words and phrases that occupy the specifier of the CP, such as *whether* or *with whom*, and those that occupy the C head, such as *that*. The former typically have moved to the specifier but the latter are base generated in C. Traditional grammar refers to both *whether* and *that* as conjunctions and I will as well, for simplicity.

In van Gelderen (2009), I show that the conjunction *whether* originates as a *wh*-pronoun that initially moves to the specifier of CP and is then reanalyzed in that position. That 2009 article briefly indicates that the same may be going on with *how*. In the present paper, I examine the history of the particle *how* in more detail, in particular the increasing use of *how* as a conjunction and *yes/no* marker. The title of the paper uses the term particle to include all uses of *how* but, in what follows, I'll be more precise as to which function I am actually discussing.

To most speakers of English, the uses of *how* as conjunction and as question marker seem quite recent and many do not accept sentences that include them. Thus, the cartoon in Figure 1 is funny because the *yes/no* answer is not acceptable to most speakers and neither is the use as conjunction in (1), although

* Some of the examples and analysis in Section 2 are taken from van Gelderen (2009). Glosses to the older stages of English are provided as needed, some have word-by-word translations and others, more modern, just translations. Thanks to Josef Bayer and an anonymous referee.

the former used can be found in historical corpora and the *OED* provides Old English examples of the latter.



Figure 1. Reanalysis of *how* from manner to degree adverb and to yes/no marker

- (1) But then they would go on to say *how* they couldn't wait for the new building to be completed. (COCA Fiction 2011)

The meaning of (1) makes it likely that *how* is a conjunction. More concretely, however, Bayer (p.c.) notes that the manner meaning of *how* in (1) is excluded because of the presence of a negative, as (2) shows, in which *how* has to be manner and cannot be extracted across a negative.

- (2) *How didn't you fix your bike *how*?

The outline of this paper is as follows. In Section 2, I examine the history of *how* from manner and degree adverb to conjunction and, in Section 3, I do the same for the development to *yes/no* marker. In Section 4, I look at the internal structure of *how* as a modifier to see what that tells us about its semantic make-up. Section 5 turns to *how* to account for these changes using minimalist features.

2. Complementizer *how*

The adverb *how* typically plays a role both as manner adverb to the verb and as the word typing the sentence as interrogative. Thus, it originates in a VP-internal position, as shown by the echo-question in (3a), and moves to the specifier of CP, as shown by the regular question in (3b).

- (3) a. The speed skaters won that race HOW?
b. How did the speed skaters win that race *how*?

As a moved manner adverb, it can also be used in the CP of an embedded CP, as in (4).

- (4) I wonder [how the speed skaters won that race **how**]?

Willis (2007) provides some data on *how*, e.g. in (5), and argues that it is now being used as a C head and no longer as a *wh*-element in a specifier position. The intended meaning is below it.

- (5) Dwyer told the players **how** he wanted to win
 'D. told the players that he wanted to win'
 (from the BNC as given by Willis 2007: 434)

I think *how* in (5) still has the sense of degree and modifies *wanted* – more on this use below. It is also still in a specifier position, as I show a little later in this section, unlike *that*.

Legate (2010), mentioning that the construction in (5) has largely escaped the attention of the linguistic literature, provides many naturally occurring examples from google searches, such as (6). She notes that these CPs have the distribution of DPs, an analysis, which I return to below.

- (6) Don't you start in on **how** I really ought to be in law enforcement.
 (Legate 2010: 122)

Some other examples of *how* as a conjunction are given in (7) to (10), from British and American corpora. The first sentence is (still) ambiguous between a manner adverb and a conjunction. Sentences (8) and (9) have the subject emphasizing the truth of the embedded clause. The degree meaning of *how* can also be reanalyzed as a positive polar, i.e. declarative, mood marker. Sentence (10) includes such a positive, polar *how*.

- (7) We saw **how**, in Chapter 2, a biological system of animals functions like any other mechanistic system. (BNC C9A 1337)
- (8) Susan assured me everything would be okay. Connie said **how** nobody could blame me. (COCA 2012 Fiction)
- (9) Your Dad once said **how** I had legs like Betty Grable. (BNC AC5 2999)
- (10) The men will wonder **how** there'll ever be enough lobsters around this island for seven more men to ... (COCA 2000 Fiction)

This emphatic positive also occurs in the earlier examples (11ab).

- (11) a. Now I would fain **know how** any thing can be present to us, which is neither perceivable by sense nor reflexion, nor capable of producing any idea in our minds, nor is at all extended, nor hath any form, nor exists in any place.
 (1710 Berkeley *Principles of Human Knowledge* 68)

- b. By this sense, or faculty of seeing, they are enabled to bring events which are yet future, as well as those otherwise out of sight, present to their minds; and thus they can behold them with their mental eye, as clearly as we behold objects at a distance. “This, you may say, is visionary indeed. And you may **wonder how** I can doubt of the truth of miracles, if I can believe in such a chimerical idea as this!”
(COHA, Ballou, Hosea 1820, A Series of Letters in Defence of Divine Revelation)

These sentences show that the original manner adverb *how*, after frequent *wh* movement to the specifier of CP, is now – at least in certain varieties of English – interpreted as base generated in this CP. As a conjunction, however, *how* has a very specific ‘flavor’ though due to its origins as a manner adverb.

As mentioned, many speakers of English are reluctant to accept (7) to (11). The *OED*, however, provides examples of “weakened meaning, introducing an indirect statement, after verbs of saying, perceiving, and the like” in (12) to (15). Some of these are ambiguous between manner adverb and conjunction, e.g. Old English (12), but they are less ambiguous in Middle English (13) and (14) and even less so in (15). The latter is an emphatic conjunction, no longer moving from the position of manner adverb. Note again that there is a positive emphasis, i.e. polarity, in these Middle English examples.

- (12) We gehirdon ... **hu** ge ofslogon ... Seon and Og.
‘We heard ... how you slew ... Sihon and Og’
(*OED*, c1000, Ælfric Joshua ii. 10)
- (13) Hym thought **how þt** the wynged god Mercurye Biforn
him thought how that the winged God Mercury before
hym stood.
him stood
‘It seemed to him that the winged god Mercury stood before him’
(*OED*, c1385 Chaucer *Knight’s Tale* 527)
- (14) A letter was brought ... certefiung him **how** he was elected to be a Cardinal.
(*OED*, 1548, Hall’s Vnion: Henry VIII f. lvii)
- (15) He... saide to the kyng, **How** his fadir hette Felip.
‘He said to the king that his father was called Felip’ (OED, 1565 K. Alis.)

The position that *how* moves to is a specifier; when *how* is used as conjunction, it could be either in the specifier or the head of the embedded CP. There is evidence that it is in the specifier position of the CP because of the (very infrequent) addition of (unstressed) *that* in (16) and the ungrammaticality of *wh*-extraction in (17).

- (16) Well, you were talking about **how that** that was politically correct.
(COCA NPR spoken 1996)

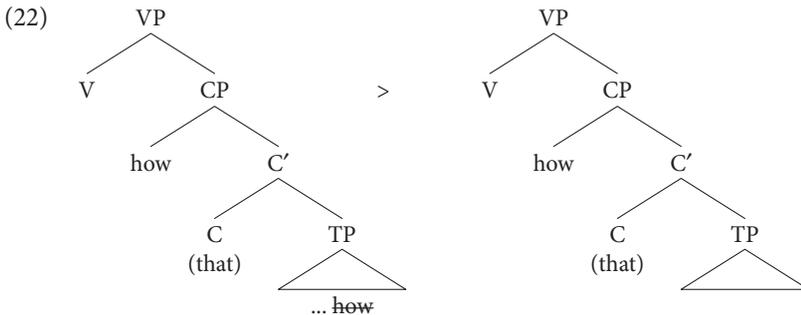
One of the pieces of evidence for this kind of CP for exclamative complements is that FACT and a topicalized element should compete and, according to Zanuttini & Portner (2003:63), they do. In van Gelderen (2004), the same is claimed, as indicated by grammaticality difference in (20) between complements of assertive and factive verbs.

- (20) a. John believes that this book Mary read often. topicalization
 b. *John regrets that this book Mary read often.

The C in (19) can be filled up by a head *that*, as in (21). This CP is an island and accounts for the DP-feel of the clause. In these constructions, there is a particular positive polarity associated with the use of *how*, which derives from the inclusion of the FACT morpheme.

- (21) That kind of made me laugh knowing [how hard] **that** I work
 (COCA Magazine 2002)

Concluding this section, we can put the development of *how* from manner adverb to conjunction as in (22). It is very difficult to say, however, if the two uses of (22) have remained stable vis-à-vis each. Even if one could look at the conjunction *how* in historical corpora, most examples are ambiguous, a sign of stasis perhaps.



3. Interrogative *how*

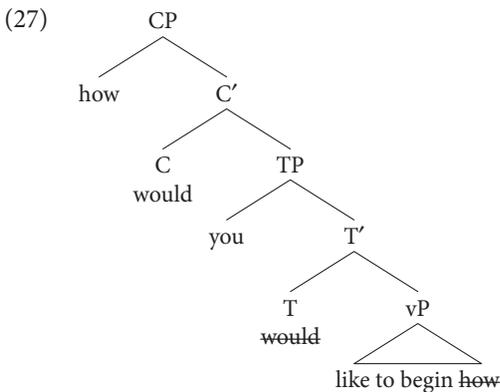
Turning to the interrogative use, this change is very much in progress. For many speakers, (23) is still a *wh*-question modifying the verb *go*, and, for some, it may modify the higher verb *like* to express the degree of liking.

- (23) **How** would you like to go to the park?

However, for a number of speakers, it can be a *yes/no* question with the same intonation. Current corpora show evidence of this use, as in (24) to (26). Note that most of these have a modal in the main clause that can be modifying the degree of willingness and not many have a negative so that we can't prove that *how* is base generated higher up (cf. (1) and (2)).

- (24) **How** would you mind clearing a blocking path for Brandon Jacobs, eh?
(<https://twitter.com/jimshearer/status/178244064238514177>)
- (25) “I don’t talk about religion or politics.” “Me neither,” he said. “But I don’t like that black senator from Illinois. **How** would you like having a liberal black man from Kenya as president someday?” (COCA 2012 Fiction)
- (26) That went on for, I du n no, five minutes or something, then I said, “Erm, d’ you think we could get started?” Paul said, “Starting would be a good thing to do. **How** would you like to begin?” I said, “Well, Paul, I’m new at this sort of thing. **How** would you like to begin?” He said, “Du n no. I’m new at this sort of thing, myself, y’know.” That went on for another five minutes. At no point did either of us say the words zombie or undead. Finally I said, “Come on, Paul, just bloody bite me already.” He went (COCA 2010 Fiction)

These questions bring about auxiliary-movement to C so the *how* is in specifier position of a relatively low C, as in (27).



I’ll now show the various stages by which the lower manner adverb *how* is reanalyzed, first as an epistemic adverb and then as *yes/no* marker. This differs from the development of the conjunction sketched in Section 2 in going through an intermediate stage.

As a manner adverb modifying a lexical verb, *how* has occurred from Old English, as in (28), to the present, as in (29). These are real *wh*-questions because they trigger verb/auxiliary movement to the second position, i.e. to C.

- (28) **Hu** sculon wit nu libban oððe on þys lande wesana, gif her
how should we now live or on this land dwell if here
wind cymð?
wind comes

‘How shall we live or dwell on this land now, if the wind comes?’

(OED, *Genesis* 805)

- (29) **How** will you fix the sink?

How is frequently used in exclamations all throughout the history of English. (30) is an exclamative (with a structure as in (19)) because the verb is not in second position as would be the case in a *wh*-question.

- (30) **Hu** þu biswikest monine mon!
 ‘How you betray many a man’
 (*Brut*, Caligula 1704)

How is often used emphatically, which the *OED* calls the ‘pregnant use’ (*OED* s.v. *how*). The Dictionary of Old English Corpus gives 793 instances of initial *hu*, many of which are emphatic, as in (31). The adverb adds degree modification to the modal.

- (31) **Hu** ne meaht þu gesion þæt ælc wurt & ælc wudu
 how not might thou see that every herb and every tree
 wile weaxan on þæm lande ...
 will grow on that land ...
 ‘How can’t you see that every herb and tree will grow (best) in that land ...’
 (DOE, Boethius, 91.13)

There are later examples, many of which are emphatic *how* adverbs modifying a modal and I therefore label these adverbs as epistemic. For instance, the question in (32) is not ‘in which manner it is a foul deed’ but ‘can it really be a foul deed’ and, in (33), the question is not about the act of boldness but about the modal. Similarly emphatic are (34) to (39).

- (32) And **hue** is hit uoul dede zepþe hit is kendelich?
 And how is it a foul deed since it is natural?
 (*OED*, 1340 *Ayenbite*, Morris 47)
- (33) **Howe** durst any be so bald to blemysche..þe hand-werke of þat hize gode?
 ‘How did anyone dare to be so bold to blemish the work of that high God?’
 (*OED*, a1400–50, Alexander 4345)
- (34) If thou be to ly at the Altar, **how** wantst thou a Priest to say thy soule Masse?
 (*OED*, 1606 Birnie Blame of Kirk-buriall)
- (35) **How** saidst thou, She is my sister?
 (*OED*, 1611, *King James Bible*, Genesis 26.9)
- (36) **How** could you think of tying yourself to such a family?
 (*OED*, 1715 Defoe *Family Instructor*)
- (37) **How** you talk, Huck Finn. Why, you’d **HAVE** to come when he rubbed it,
 whether you wanted to or not. (1885, Twain, *Huckleberry Finn*, chap 3)
- (38) **How** could you suppose me ignorant? (1816, Austen, *Emma*, chap 6)

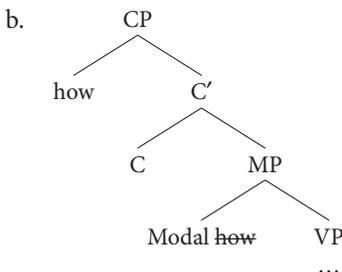
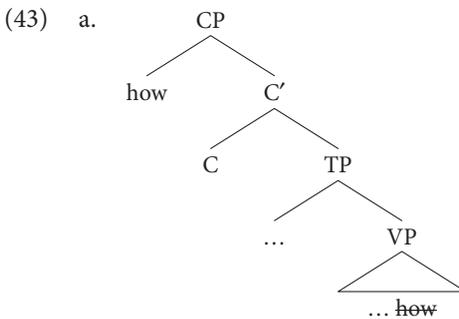
- (39) When a man has great studies and is writing a great work, he must of course give up seeing much of the world. **How** can he go about making acquaintances? (Eliot, *Middlemarch*, chap 4)

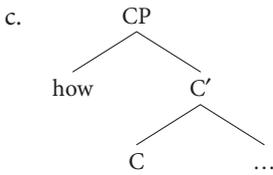
It is hard to find a purely *yes/no* marking interrogative use, as in the intended meaning in the cartoon in Section 1, in earlier stages. Around 1830 in the *Corpus of Historical American English*, sentences such as (40) and (41) appear but they are not really different from the older uses in that the modal seems necessary. In instances where there is a negative, as in (42), *how* could be left out and is definitely no longer moving from its position as a manner adverb.

- (40) “Well,” said the stranger, “you must find time to go away. You’re too noisy. **How would** you like to go before the mayor?” “No, I’d rather not. Stop – now I think of it, I’ve asked him before; but perhaps if you’d speak a good word, he’d give me the first vacancy.” (COHA, 1838 Charcoal Sketches, Joseph Neal)
- (41) “... **How would** you like to go with us?” “Lord, Massa, you joking. Go wid you? ...” (COHA, 1836 *The Partisan Leader*, Nathaniel Tucker)
- (42) if it is wicked ever, **how** isn’t it wicked now? (COHA, 1877, *Lill’s Travels*, Sophie Farman)

As for the position that the interrogative *how* occupies in (42) and other such sentences, it is a specifier because it triggers auxiliary-movement to the C.

The development from adverb to interrogative appears in tree form in (43). Note that positing the last stage may be premature.





Sections 2 and 3 have provided a basic description of how *how* can be used as a conjunction and *yes-no* marker. *How* is also used to modify the degree and manner of higher modals in an epistemic use and these uses are the ones reanalyzed as *yes/no* markers. I have so far only considered *how* on its own but *how* is both an independent adverb and modifier to another adverb or adjective. Is this relevant to the development? I'll look at that next because it may inform us about the semantic features of *how*.

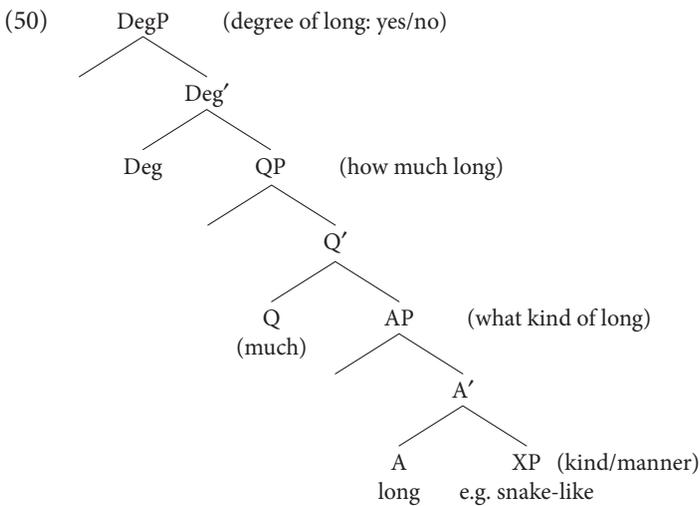
4. *How* as part of an Adjective Phrase

We have seen *how* as a manner adverb functioning on its own in sentences such as (2) but it is also possible for *how* to be part of a larger phrase, as in (44) to (49), taken from the OED and MED, where *how* modifies another adverb or adjective. Some of these phrases refer to kind/manner ((44) and (45)), many to quantity ((46) to (49)), and some have an additional degree meaning ((44) to (48)).

- (44) **Hu god** is ece God!
'How good is eternal God!' (OED, *Paris Ps.* 72[i]. 1)
- (45) **Hou long** þe here hongep him opan!
'How long the hair hangs on him!' (MED, *Sir Orfeo* 506)
- (46) **Hu lange** for-bere ic eow?
'How long shall endure I you?' (OED, *West Saxon Gospels: Matt.* 17.17)
- (47) Ða axode Petrus, **Hu ofte** sceal ic for3ifæn?
'Then asked Peter: how often shall I forgive?'
(OED, c1175 *Bod.Hom.* 343, 32/28)
- (48) **Hou michel** þyn werkes ben heried, Lord!
'How much shall your works be praised, Lord!'
(MED, c1350 *MPPsalter* 103.24)
- (49) Ðanne told þei hire ti3tly ... at **how miche** meschef here men were forrest.
'Then they told her quickly in how much sorrow her men were at first'
(OED, a1375 *William of Palerne* 1362)

Some are ambiguous between kind and quantity ((48) and (49)), enabling a reanalysis.

Bolinger (1972), Corver (2000), Wood (2002), and Vangsnes (2008) all contribute to the structure of the Adjective/Adverb Phrase in different ways. Bolinger (1972:61; 90) focuses on identifying modifiers like *such* in *such a person*, that can also be used as intensifying, as in *such a blunder*. Bolinger sees the latter use as originating from the former and I follow that. Corver, Wood, and Vangsnes develop some of these ideas into a tree for degree and kind modification. My own tree representing the various types of modifiers that may occur appears as (50) where Bolinger's identifying function is given as the lowest position and his intensifying use as the higher Degree head. In addition to degree and kind/manner, quantity can also be represented as Q.



To see these various, ambiguous uses in a question, Figure 2 shows that *how much* is at least three-way ambiguous: it can imply quantity or degree in 'how much of the grass' and degree of liking to cut as well as quantity in 'how much money'. The joke is about the last two meanings but all three are present.



Figure 2. Structural Ambiguity of *how much*

Diachronically, one expects an adverb to be introduced with the most meaning as sister to A(djjective) in (52) and then gradually lose semantic content and be reanalyzed in a higher position. The change from adverb to conjunction and *yes/no* marker involves a different selection of the possibilities in (52): when the adverb has reached the degree stage, it can function independently as conjunction and *yes/no* marker. Which semantic features are lost will now be discussed.

5. Minimalism and features

Etymologically, *how* originates as an instrumental form of the Indo-European *wh*-pronoun *kwo, so its interrogative manner features are old. Manner/kind can be quantified and measured and that's how the other meanings of *how* come about. The *yes/no* meaning is related to degree, namely absolute degree on either the high or low side of the comparison. I will express these changes using a minimalist framework, first for the conjunction and then for the *yes/no* marker.

If the CP is an embedded CP, as in (3) with *how*, the C needs an uninterpretable feature to function as C to its clause (u-Q or u-T) but it will also need a feature that values something the higher verb selects. Lohnstein (2005) and Roussou (2010) have written about this dual role of the conjunction. Roussou (2010:582) puts the function of the conjunction as having the “dual capacity of being selected by a matrix predicate and of selecting a clause”. In a model that uses features, such as Chomsky (1995), the valued interrogative features on C would be selected by the higher verb. Each lexical item also has other semantic features which I have shown for [manner] in (51).

- (51) I wonder [how C [the skaters won ~~how~~]].
 [u-C] [i-wh] [u=Q: wh]
 [manner/
 quantity/degree]

Language acquisition in a minimalist framework involves the bundling and selection of features (see Bayer & Brandner 2008) and the change to the use in (8) and (9) comes when *how* is taken out of the lexicon by a speaker with a (slightly) reanalyzed feature bundle, e.g. [degree] rather than [wh]. Now the situation is as in (52), repeated from (9).

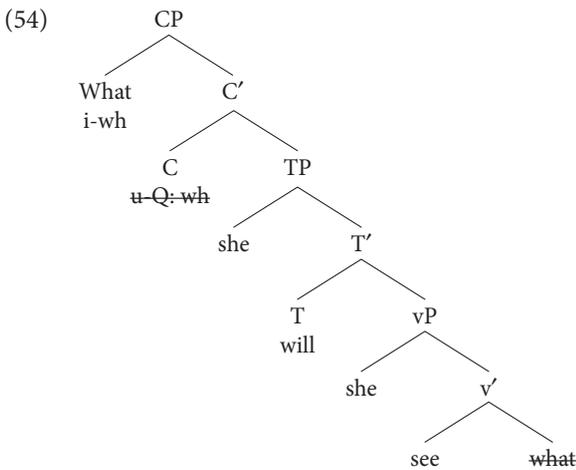
- (52) He said [how C [I had legs ~~how~~ like Betty Grable].
 [u-C] [i-degree] [uQ: degree]

So the change is not to a neutral conjunction, as is clear from the meaning of (8) and (9), but to one emphasizing the degree of something in the complement. The effect of the subsequent reanalysis to a positive polar meaning does not seem to

have become frequent yet. That stage is represented as (53) without movement of *how*. A next stage could be for *how* to lose this flavor and to be reanalyzed with uninterpretable features as a C.

- (53) The men wonder [how C [there will be enough lobsters].
 [u-C] [i-pos] [uQ:yes]

Turning to interrogative sentences, these have a C with an uninterpretable Q-feature, [u-Q] in (54); the *wh*-word moves to the specifier of the CP to value the Q with its interpretable *wh*-features. In (54), the auxiliary *will* also moves to C, resulting in (55).



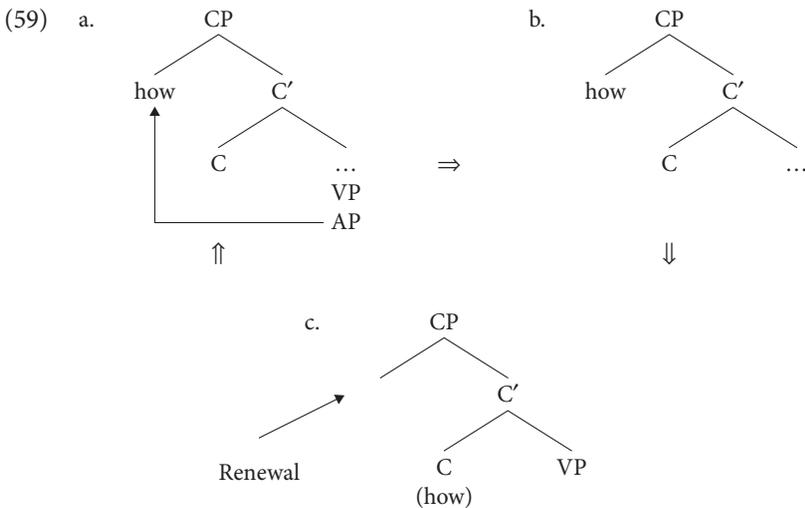
- (55) What will she see?

Let's consider the changes in features for interrogative *how*, the same way we did for conjunction *how*. The change in the function of *how* from modifier of the main verb in (56) to modifier of the mood in (57) to *yes/no* marker in (58), goes as follows in terms of features.

- (56) How C [the skaters win **how**]?
 [i-wh] [u-Q:wh]
 [manner] did
- (57) How C [you ~~would~~ **how** like to do this]?
 [i-degree] [uQ:degree]
 would
- (58) How C [you ~~would~~ like to go]?
 [i-polar] [uQ:y/n]
 would

Note that, as mentioned, the change in (58) is a possibility but may never spread widely.

Structurally, the changes in (51) to (53) and those in (56) to (58) can be represented in terms of cycles. The start of a typical CP Cycle (see van Gelderen 2009; Parra Guinaldo 2013) involves an element that has two functions, namely to contribute to the argument and event structure in the VP and also to contribute to the mood of the sentence, in this case the interrogative mood, as in (59a). The second and third stages are where that element is reanalyzed as specifier of the CP and then as head, as in (59bc) respectively.



In (59c), once the element is in the head, a renewal may take place, depending on how crucial the function is. One explanation for these changes is that Economy Principles such as Late Merge and Head Preference (see van Gelderen 2004) ‘bias’ learners and speakers towards analyzing elements as higher and as heads. The Head Preference Principle says that the language learner/user prefers heads over full phrases (i.e. specifiers) and the Late Merge Principle claims that learners analyze an element as base generated in a high position rather than as base generated low with multiple movements to higher positions. In recent years, it has been claimed that multiple movements are no less economical than single merge and more emphasis has been placed on features. I have therefore discussed these changes not in terms of structural principles but in terms of features.

Interestingly, the two changes described above have not reached the head C stage. This has to do with the nature of the features: the features connected with *how* are interpretable and quite specific. Once features are reanalyzed as uninterpretable, they are also heads. Although the focus of this paper has been

a description of the changes, we could speculate here why the reanalysis from specifier to head has not happened. Chomsky (2013, 2015) argues that specifiers are a problem because it puts a maximal projection XP next to another maximal projection YP. In principle, therefore, structures such as (27) and (59ab) are to be avoided, i.e. where *how* is XP and the C' is YP, because the labeling mechanism wouldn't know how to label the resulting CP. Chomsky makes an exception for *wh*-movement because the interrogative feature is shared (2013: 45). This may explain why the specifier is stable in interrogatives.

A last question, already hinted at above, involves the reason why features change the way they do. Van Gelderen (2011) suggests Feature Economy. As children add lexical items to their lexicons, they do this in terms of bundling features and have feature hierarchies since e.g. degree implies polarity. Once they have connected a word to a set of features, they can also use this word with fewer features. Reanalysis or reuse of already available vocabulary happens frequently in child language, as in (60), where *is* is analyzed as an invariant question marker, somewhat like *how* is.

- (60) a. Is I can do that?
 b. Is Ben did go? (from Akmajian & Heny 1975: 17)

Working with features, one of the challenges is to know what the inventory is and if all need to be expressed. Chomsky (1965: 142) says that “semantic features ..., are presumably drawn from a universal ‘alphabet’” but that “little is known about this today”. The situation is not a lot better almost 50 years later. Typological work has worried about the inventory and necessity of certain features as well, e.g. Bybee (1985) and Bisang (2013).

6. Conclusion

This paper has chronicled two (potential) changes in the adverb *how*, namely from manner adverb to conjunction and to interrogative marker, in Sections 2 and 3 respectively. Because *wh*-elements perform two functions, namely in the VP and in the CP, a reanalysis is possible from adverb to specifier of the CP.

I have also considered the internal complexity of *how*, incorporating kind/manner, quantity, and degree in Section 4. This richness of features is then explored in Section 5 to provide a minimalist model that emphasizes the role of these features in the lexicon. In that same section, I provide a reason, based on Chomsky's (2013) labelling mechanism, why *how* remains a specifier and is not reanalyzed as head.

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