

Auxiliary Selection

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1 Introduction

Modern English uses a periphrasis to express the perfect tense. This consists of a combination of an auxiliary verb and the past participle of the main verb. An instance of the verb *to have* functions as the one and only perfect tense auxiliary in modern English. No verb selects for a different auxiliary. Hence, there is no deviation from the pattern illustrated in (1).¹

- (1) a. Rachel has painted the shed.
b. Barry has worked very hard.
c. Our new piano has finally arrived.

When we look at another modern Germanic language, Dutch, we see that things are somewhat different. Here, too, the perfect tense is formed by a combination of past

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participle and auxiliary verb. However, the language has two, rather than one, perfect tense auxiliaries: not only *hebben*, the counterpart of *to have*, can function as such, but also *zijn*, the counterpart of *to be*. (We will use HAVE and BE, in small capitals, from here on when referring to the verbs in question whenever the particular form of them in an individual language is not relevant.) There is no free choice between these two. Rather, a main verb selects either HAVE or BE as its auxiliary in the perfect tense (although this statement will be qualified to some extent below). Transitive verbs always take HAVE, as in (2a). Intransitives, however, come in two flavors, one type selecting HAVE (as in (2b)) and the other type selecting BE (as in (2c)).

- (2) a. Ria heeft de schuur geverfd.
 Ria has the shed painted
 'Ria has painted the shed.'
- b. Karel heeft hard gewerkt.
 Karel has hard worked
 'Karel has worked hard.'
- c. Onze nieuwe piano is eindelijk gearriveerd.
 our new piano is finally arrived
 'Our new piano has finally arrived.'

Replacing HAVE by BE in either (2a) or (2b) leads to ungrammaticality. Replacing BE by HAVE in (2c) is equally impossible.

Dutch is not the only language that shows such an auxiliary split in the perfect tense. English, in fact, showed such a split in older stages as well.² A question that has occupied linguists for quite some time is whether it is possible to predict which verbs will belong to the HAVE-selecting class and which ones to the BE-selecting class in a language showing a split. This chapter aims to provide an overview of the various answers that have been given to this question. First, in sections 2 and 3, an overview of relevant data is given, taking into consideration mostly Romance and Germanic languages, both synchronically and diachronically. Next, in section 4, the question of what may determine the choice of perfect tense auxiliary is considered. Approaches that focus on the semantics of the verbs that take differing perfect tense auxiliaries are discussed in section 4.1. This is followed by a discussion of approaches that assume there is a distinction in the syntactic configuration in which the two classes of verbs occur (section 4.2). Finally, the question of whether we need both the semantic and the syntactic approach or whether one would suffice is considered in section 4.3.

2 Auxiliary selection cross-linguistically

The type of auxiliary split mentioned in section 1 is most familiar from a number of Germanic and Romance languages.

Within the Germanic family, the following languages currently show an auxiliary split in the perfect tense: Dutch (Kern 1912; Hoekstra 1986; 1999; De Rooij 1988; Ackema 1995; Lieber and Baayen 1997), German (Paul 1902; Zieglschmid 1929; Haider 1984; Haider and Rindler-Schjerve 1987; Keller and Sorace 2003; Sapp 2011), Danish

(Vikner and Sprouse 1988; Bjerre and Bjerre 2007), Norwegian (Vikner and Sprouse 1988), Icelandic (Vikner and Sprouse 1988), and Frisian (Hoekstra and Wolf 2004). Swedish is like English in not having an auxiliary split anymore (Holmes and Hinchliffe 2013, 300).

At least some of the languages that still show the split seem to be in the process of losing it, in that the use of *BE* is becoming more restricted. Some varieties of Norwegian, in particular, seem to have become virtually *BE*-less. Thus, Haugen (1976, 80) states that “The traditional use of ‘be’ with verbs of motion etc. is rare in Swedish and decreasing in Norwegian,” Strandskogen and Strandskogen (1986, 21) state that “In modern Norwegian *har* [*HAVE*] as the auxiliary is becoming more and more widespread in all contexts,” while Julien (2013) notes that “some dialects in the southeast of Norway only use the auxiliary *HAVE* in active eventive perfect constructions.”

The situation in modern Romance is similar. Again there are languages that show the split and languages that do not, while within the former group some languages are more restricted in their use of *BE* than others. Both (standard) Italian and French show a split that is similar to that seen in some Germanic languages, but the number of verbs taking *BE* is more restricted in French than it is in Italian (Aranovich 2007; Legendre 2007b). It may be that at least some varieties of French are in fact changing in the direction of a *HAVE*-only language. Sankoff and Thibault (1977) note that in Montréal French, *HAVE* is replacing *BE* with verbs that take the latter as auxiliary in the standard variety. They conclude that *BE* is only being kept alive by the normative pressure of the standard, which also significantly differs in this respect from spoken colloquial French (Sankoff and Thibault 1977, 107). Also, children acquire *HAVE* as perfect auxiliary before they acquire *BE* as such (Heinen and Kadow 1990, 65), although the time lag between the two is small. If a decrease in use of *BE* is indeed what is going on in French, it would not be the first Romance language to be losing the auxiliary split in its history. All of Old Spanish (Aranovich 2003), Old Catalan (Batlle 2002), and Old Portuguese (Culbertson 2004) showed such a split but subsequently lost it, now being *HAVE*-only languages.³ Modern Romanian shows a split, but of a somewhat different type than the one seen in other Romance, as well as Germanic, languages, as it depends on grammatical factors like the finite-non-finite distinction and is independent of verb class (Avram and Hill 2007; Ledgeway 2013; Dragomirescu 2013, 74).

While the auxiliary split has been discussed most extensively in connection with Germanic and Romance languages, discussion has not been limited to these. In Slavic, it appears there are *BE*-only languages (such as Serbo-Croatian and Polish), which is remarkable in light of the fact that those Germanic and Romance languages that have lost the split have all changed to *HAVE*-only languages (see above). It is, however, not clear that the perfect tense construction in Slavic can be directly compared with that in Germanic and Romance. An essential feature of the Germanic and Romance construction is that the participle that is used in the periphrastic perfect is systematically identical to the participle used in (non-perfect as well as perfect) passives. This should be taken into account when considering the factors that determine the split (a point to which we will return below). In Slavic, however, it is not the passive participle that occurs in the perfect periphrasis with *BE*, but a

distinctive participle designated as the *l*-participle, which differs from the passive participle and is usually described as being a type of active participle (see Migdalski 2006 and references cited there). Interestingly, in Macedonian contact with non-Slavic languages has led to a periphrastic perfect with HAVE and a passive participle being used (see Tomić 2006). Since the old BE plus *l*-participle perfect is also still in use, this has led, in a sense, to there being an auxiliary split in Macedonian. This cannot be compared to the split under discussion, however, since the use of the HAVE perfect is not restricted to particular verbs (see Migdalski 2006, 57). Rather, the distribution of the BE perfect versus the HAVE perfect seems to be geographically determined (see Tomić 2006 for discussion).

Nevertheless, it does appear that auxiliary splits that are rather more comparable to the one occurring in Germanic and Romance do occur in other languages, including entirely unrelated (non-Indo-European) ones. Examples of such languages are Basque (Ortiz de Urbina 1989; Arregi 2004) and Old Japanese (Washio 2004).

The older stages of the Germanic and Romance languages are also of considerable interest. This interest goes beyond the fact, important in itself, that a number of these languages used to show an auxiliary split but subsequently lost it, as mentioned above. The older stages are also interesting in themselves as they could show a distribution of auxiliaries that is no longer possible today, also in those languages that kept a split.⁴

Consider first older English (so a language that subsequently lost its auxiliary split). As is well known, in both Old English and Middle English BE could occur in the perfect of verbs that no longer allow this in Modern English. Examples are given in (3).

- (3) a. Up resyn es a sowdane (Sir Perceval of Galles, early 14th c.)
 up risen is a sultan
 ‘A sultan has risen up’
 b. Whanne he escaped was (Chaucer, Canterbury Tales, late 14th c.)
 when he escaped was
 ‘When he had escaped’

HAVE was used as well with such verbs, but only in a minority of cases (Rydén and Brorström 1987). Therefore, one may think that English has changed from a language that consistently used BE with the relevant class of verbs to a language that consistently uses HAVE. This is not what the data really show, however. Already in the oldest sources of Old English, HAVE occurs next to BE with the verbs in question. Rydén and Brorström (1987, 18) remark that “Ever since the *be/have* paradigm came into existence, *have* has been a possible alternative with mutative verbs for expressing perfectivity” (see also Mustanoja 1960, 500–592 and Mitchell 1985, 302). (A mutative verb is a verb expressing a change of state or location. We will come back in section 4 to the possible relevance of mutativity in defining the potential BE-taking verbs.) The data thus seem to imply that in Old English and Middle English both HAVE and BE were available as perfect auxiliary for the relevant class of verbs. Perhaps this shows that we are dealing with a, rather long drawn out, intermediate stage in a change from “consistent use of BE with the verbs in question” to “consistent use of HAVE” as in modern English.

This idea becomes less likely, however, when we consider the history of a language that still has a stable auxiliary split in its modern version, namely Dutch. Remarkably, despite modern Dutch being of the “consistent use of BE with the verbs in question” type, Middle Dutch showed the same wavering between HAVE and BE with these verbs that older English showed. Examples are given in (4) and (5). These contain the same main verbs, namely ‘come’ and ‘fall’. In modern Dutch these take BE as perfect auxiliary (though see section 4.2 for an exception).

- (4) a. Wie van de doot wheder ghecomen heeft (*Spelen van sinne*, 1561)
 who from the death again come has
 ‘Who has returned from the dead’
 b. Als hi in die kercke was heeft hi gevallen op sijn knien voor onser Vrouwen.
 (Excellente Cronike, 1530)
 when he in the church was then has he fallen on his knees before our Lady
 ‘When he was in the church then he fell on his knees before our Lady.’
- (5) a. Waerbi bestu so tilec comen. (Ferguut, 13th c.)
 why are-you so early come
 ‘Why have you come so early?’
 b. Nu dat gi te voeten sijt gevallen mi. (*Leven van Lutgard*, 13th c.)
 now that you to feet are fallen me
 ‘Now that you have fallen to my feet.’

Verdam (1911, 241) lists a number of verbs that are BE-taking in modern Dutch but could optionally form their perfect with HAVE as well in Middle Dutch, namely *vallen* ‘fall’, *sterven* ‘die’, *omvallen* ‘topple’, *groeyen* ‘grow’, *sijn* ‘be’, *afnemen* ‘decline’, and *bliven* ‘stay’ (and see also Duinhoven 1997, 339 ff.). De Rooij (1988) provides evidence that in some Dutch dialects HAVE still occurs with some of the verbs in question, although it is disappearing, possibly under the influence of the standard. At least in the standard, examples like (4) are ungrammatical in current Dutch. Hence, we see that it is problematic to say that the variation between HAVE and BE in older English reflects a change towards a system with only HAVE as perfect auxiliary, since we see similar variation in older stages of a language that has not undergone such a change. The same appears to hold for at least ~~Old Middle~~ German (Magnusson 1939), Old Frisian (Kern 1912), and Old West Norse (Johannisson 1945). Johannisson (1958, 107) states in general that in older Germanic “the mutative verbs form their perfect with *sein* [BE] (in earlier times also with *haben* [HAVE], when the action is specially stressed).”

3 Some alternations in auxiliary selection

The existence of the auxiliary split in some languages of course gives rise to the question of why some verbs should choose a different auxiliary in the perfect than others (and why this is not the case in all languages). This has indeed been an extensively discussed issue for at least a century or so. Before we discuss various

factors that have been said to influence the choice of perfect auxiliary in languages with a split, we will first discuss a number of synchronic alternations in auxiliary choice that can occur within a single language. These are important for the question of what determines auxiliary choice, as they show it is not possible to simply make a list of verbs taking BE and another list of verbs taking HAVE in a language.

3.1 HAVE-verbs taking BE

Consider the Dutch verbs *fietsen* 'cycle' and *dansen* 'dance'. These verbs take HAVE in modern Dutch; they cannot take BE:

- (6) a. Marie heeft/*is gefietst.
 Mary has/is cycled
 'Mary has cycled.'
 b. Bart heeft/*is gedanst.
 Bart has/is danced
 'Bart has danced.'

When these verbs occur in a predicate that contains a directional PP, however, BE occurs in the perfect, whereas HAVE is no longer possible:

- (7) Dutch
 a. Marie is/*heeft naar Den Haag gefietst.
 Mary is/has to The Hague cycled
 'Mary has cycled to The Hague.'
 b. Bart is/*heeft de zaal uit gedanst.
 Bart is/has the room out danced
 'Bart has danced out of the room.'

It is indeed a directional PP that has this effect, not just any PP-modifier. Thus, at first sight examples like (8a)–(8b) might seem to show that the verb *springen* 'jump' simply varies between taking HAVE and BE as perfect auxiliary. But this is not so. As indicated by the translations, only in (8a), with BE, is the PP interpreted directionally (and it cannot be interpreted otherwise). In (8b), with HAVE, the PP is interpreted locationally (and it cannot be interpreted directionally). Note also that only the (8a) example has a variant in which the PP is postpositional, rather than prepositional, as in (8c) (and see also (7b)). (8b) does not have such a variant, as shown by (8d). Postpositional PPs are invariably directional in Dutch (see, e.g., Helmantel 2002 for discussion).

- (8) a. Piet is in de sloot gesprongen.
 Pete is in the ditch jumped
 'Pete jumped into the ditch.'
 b. Piet heeft in de sloot gesprongen.
 Pete has in the ditch jumped.
 'Pete has been jumping in the ditch.'

- c. Piet is de sloot in gesprongen.
 Pete is the ditch in jumped
 'Pete jumped into the ditch.'
- d. *Piet heeft de sloot in gesprongen.
 Pete has the ditch in jumped
 'Pete has been jumping in the ditch.'

Another difference is that the PP in (8a) cannot occur in extraposition (see (9a)), whereas the PP in (8b) can (see (9b)).

(9) Dutch

- a. *Piet is gesprongen in de sloot.
 Pete is jumped in the ditch
 'Pete jumped into the ditch.'
- b. Piet heeft gesprongen in de sloot.
 Pete has jumped in the ditch.
 'Pete has been jumping in the ditch.'

This indicates that the directional PP in (8a) functions as a secondary predicate, rather than a modifier such as the PP in (8b) (see Hoekstra and Mulder 1990; Neeleman 1994; Ackema 1995 for discussion). This should be relevant, of course, when considering what may account for auxiliary selection. A general conclusion that can be drawn on the basis of such data is that, whatever property underlies auxiliary selection (see section 4 for discussion), it is relevant whether the entire (possibly complex) predicate has this property, not just individual verbs.

Before we turn to the next alternation, it should be noted that in some cases the directional phrase in cases like (7) or (8a) can be implicit. The conditions under which this can happen seem to be rather idiosyncratic. For instance, an example like **Marie is gefietst* (cf. (6a)) does not improve much when it is meant to express that Mary cycled to a particular place:

(10) Dutch

- Q: Hoe is Marie hier gekomen?
 how is Mary here come
 'How did Mary come here?'
- A: ?*Nou, ze is gefietst.
 well she is cycled
 'Well, she cycled.'

The verb *springen* 'jump', on the other hand, allows this. Thus, (11b) occurs next to (11a).

(11) Dutch

- a. Joop heeft gesprongen.
 Joop has jumped
 'Joop has been jumping.'

- b. Joop is gesprongen.
 Joop is jumped
 'Joop jumped.'

As with the examples containing an overt directional phrase in (8), it is not the case that the verb just optionally alternates between HAVE and BE in this case, since, as indicated by the translations, (11a) and (11b) differ in meaning. The (a) example expresses that Joop has been engaging in a jumping activity, whereas the (b) example has a directional reading, expressing that Joop jumped down from a height (the BE-variant appears, for example, in news reports of suicides).⁵

The same alternation is attested in German, and it seems to a wider extent than in Dutch in the sense that it is easier to get the BE-variant without the directional predicate being present overtly. Because of this some authors have argued that in essence there is free variation between BE and HAVE as perfect auxiliary with verbs of motion in German (see Seibert 1993), but Keller and Sorace (2003, 70) remark that "These verbs select *sein* more definitely if the predicate has a telic reading" (see section 4 on the role of telicity). This would make it more parallel to the Dutch examples.

3.2 BE-verbs taking HAVE

3.2.1 Reflexives

In Germanic, verbs that usually take BE take HAVE instead in contexts where they occur with a reflexive in object position.⁶ Consider pairs as in (12)–(13).

- (12) a. De suiker is/*heeft opgelost.
 the sugar is/has dissolved
 'The sugar has dissolved.'
 b. De suiker heeft/*is zich opgelost.
 the sugar has REFL dissolved
 'The sugar has dissolved.'
- (13) a. De situatie is/*heeft gewijzigd.
 the situation is/has changed
 'The situation has changed.'
 b. De situatie heeft/*is zich gewijzigd.
 the situation has/is REFL changed
 'The situation has changed.'

Verbs like *oplossen* 'dissolve' and *wijzigen* 'change' partake in the causative–inchoative alternation in Dutch. Ackema (1995) argues that, while the (a) examples in (12) and (13) are the perfects of the inchoative alternant, the (b) examples are the perfect of an inherently reflexive version of the causative alternant (see also Everaert 1996). It is important to note, however, that the (a) and (b) examples have no appreciable difference in meaning. In particular, the subject in the reflexive variant is not any more causative (let alone agentive) than in the non-reflexive variant in these

cases. For instance, ‘the situation’ is not seen as the cause for the change in itself in (13b), any more than it is in (13a).

Another instance where a BE-taking verb switches to HAVE in the presence of a reflexive in object position occurs when a fake reflexive is needed in object position to act as subject of a secondary predicate. Secondary predicates like resultatives can only predicate over a phrase in object position, not over one in subject position (see Williams 1980; Neeleman 1994; Den Dikken 1995; *inter alia*). It is possible to have a resultative phrase predicate over a phrase in subject position indirectly, however, by adding a fake reflexive in object position (see (14a)). In such cases, the perfect is often formed with HAVE, even if the verb takes BE in isolation ((14b) vs. (14c)).

(14) Dutch

- a. Piet valt *(zich) een buil.
 Pete falls REFL a bump
 ‘Piet falls so hard he will get a bump.’
- b. Piet is/*heeft gevallen.
 Pete is/has fallen
 ‘Pete fell.’
- c. Piet heeft/*is zich een buil gevallen.
 Pete has/is REFL a bump fallen
 ‘Piet fell so hard he got a bump.’

There are some exceptions to this – that is, there are cases where a BE-taking verb still takes BE when there is a fake reflexive object:

(15) Dutch

- a. Piet is/*heeft geschrokken.
 Pete is/has startled
 ‘Pete got a fright.’
- b. Piet is/??heeft zich rot geschrokken.
 Pete is/has REFL rotten startled
 ‘Pete got a big fright.’

Again, then, we see that in these cases the property that leads to BE-selection or HAVE-selection (whatever it may turn out to be) is not a property of individual verbs but of entire predicates.

3.2.2 *Irrealis*

Another context in which verbs that usually take BE sometimes switch to HAVE is in irrealis mood. This has been observed, for instance, in connection with the data from older Germanic mentioned in section 2. Magnusson (1939) argues that all cases in which a Middle Low German verb unexpectedly (from a modern viewpoint) takes HAVE are counterfactuals. Kern (1912) makes a similar observation about Middle Dutch, although he notes that there are exceptions (see, e.g., (4b) above, which reports an actual event).⁷ Even in modern Dutch, examples like (16c), while perhaps having somewhat jocular overtones, are attested (next to (16a)–(16b)):

- (16) a. Hij is/*heeft weggefiets. (cf. section 3.1)
 he is/has away-cycled
 'He cycled away.'
 b. Was dan ook weggefiets man!
 was then too away-cycled man
 'You should have cycled away, man!'
 c. Had dan ook weggefiets man!
 had then too away-cycled man
 'You should have cycled away, man!'
 (<http://www.detwintiger.nl/amour/romantisch-maar-dan-net-niet-helemaal/>, accessed January 29, 2014)

Modern studies into the greater preference for counterfactuals to select HAVE in the perfect in (older) Germanic include Shannon (1995), Lipson (1999), and McFadden and Alexiadou (2006).

The same observation has been made for Romance languages (Cennamo 2002; Ledgeway 2003; Stolova 2006).⁸ An example illustrating the effect in Old Spanish is the following (from Stolova 2006, 315). While the verb *entrar* 'enter' is one of the BE-taking verbs in Old Spanish, it appears with HAVE in the subjunctive clause in (17).

- (17) Si ladrones que furtan de dia & de noche ouiessen entrado [...]
 if thieves that steal of day and of night had.SBJV entered
 'If thieves who steal by day and night had got in'

3.3 Wavering verbs

Finally, there can be verbs that can take either BE or HAVE without the choice correlating with a clear difference in meaning or syntactic context. An example is the verb *vergeten* 'forget' in Dutch (see (18a)); another is the verb *appartenere* 'belong' in Italian (see (18b)).

- (18) a. Ik had/was vergeten om eerst op de kaart te kijken.
 I had/was forgotten to first on the map to look
 'I forgot to look at the map first.'
 b. Il castello è/ha appartenuto ai miei antenati.
 the castle is/has belonged to my ancestors
 'The castle belonged to my ancestors.'

With the Dutch verb *vergeten* 'forget' there seems to be a tendency such that the BE-variant is slowly ousting the HAVE-variant (see, e.g., Coppen 2012), but both variants are possible and do not appear to have a detectable difference in meaning. That this is in fact the case for many speakers is evidenced by the fact that the question of which variant is supposed to be the "right" one comes up regularly on language advice forums and the like.

More generally, Sorace (2000; 2004) presents evidence that not all verbs in a language with an auxiliary split have an equally strong preference for one or the other auxiliary. Some verbs categorically select HAVE, some categorically select BE,

but with a number of verbs both possibilities can occur, to varying extents. The following Auxiliary Selection Hierarchy, from Sorace (2000, 863), shows which verbs are more likely to take which auxiliary:

- (19) Type of verb:
- | | |
|--------------------------------------|--------------------------------|
| Change of location | selects BE (least variation) |
| Change of state | |
| Continuation of a pre-existing state | |
| Existence of state | |
| Uncontrolled process | |
| Controlled process (motional) | |
| Controlled process (non-motional) | selects HAVE (least variation) |

Verbs of the type at the top of the list are most likely to take BE, whereas verbs of the type at the bottom of the list are least likely to do so. Importantly, verbs in the middle can show variation in this respect and are more sensitive to properties of the predicate. Thus, in Italian an example like (20a) is preferred to (20b), while at the same time (21a) is preferred to (21b). So we see that the agentivity of the subject influences the preferred choice of auxiliary with the verb 'land'.

- (20) a. L'aereo è atterrato.
the plane is landed
'The plane has landed.'
- b. L'aereo ha atterrato.
the plane has landed
'The plane has landed.'
- (21) a. Il pilota ha atterrato.
the pilot has landed
'The pilot has landed.'
- b. Il pilota è atterrato.
the pilot is landed
'The pilot has landed.'

Similarly, (22a) is better than (22b), while (23a) is better than (23b), so with the verb 'blossom' we see that BE is best when the predicate suggests a change of state while HAVE is best when the predicate suggests an ongoing process over time.

- (22) Italian
- a. La pianta è fiorita all'improvviso.
the plant is suddenly blossomed
'The plant has suddenly blossomed.'
- b. La pianta ha fiorito all'improvviso.
the plant has suddenly blossomed
'The plant has suddenly blossomed.'

- (23) Italian
- a. La pianta ha fiorito per tutta l'estate.
the plant has blossomed for whole the summer
'The plant blossomed throughout the summer.'
 - b. La pianta è fiorita per tutta l'estate.
the plant is blossomed for whole the summer
'The plant blossomed throughout the summer.'

Where in the Auxiliary Selection Hierarchy the 'middle' is, and how variable verbs are in this area, can differ from language to language. We already saw, for example, that whereas both the modern Romance languages French and Italian still have an auxiliary split, use of BE is more restricted in French than it is in Italian.

The hierarchy in (19) is supported by numerous experimental studies in a variety of languages (see Sorace 2011; 2015 for a recent review). We see its effects also in the diachronic development of those languages that have lost the split (or are in the process of losing it, as is possibly the case in varieties of French and Norwegian; see section 2): the loss of the use of BE starts with those verbs that are closest to the HAVE-taking verbs on the hierarchy in (19). The verbs at the top will be the last to be affected by this loss.

Of course, it should be kept in mind that the possibility that there is a diachronic change going on does not affect the point that the synchronic grammatical situation should somehow be accounted for. (In this respect, it is interesting to note as well that the history of some Germanic languages, like Dutch and German, seems to be characterized by a development towards a more pronounced *dispreference* for a HAVE-alternant with some BE-taking verbs; see the discussion in section 2, and the observation that in cases like (18a) the HAVE-variant is beginning to be dispreferred.) Let us now consider this synchronic question in some more detail. In the following sections we will discuss the various factors that have been said to influence the choice of auxiliary selection. In evaluating such factors, the data about auxiliary alternations mentioned in this section should be kept in mind.

4 What determines auxiliary selection?

4.1 A split based on semantics

Considering the Auxiliary Selection Hierarchy in (19) again, we see that the various verb types are defined in terms of the semantics they express, with verbs expressing a change (of location or state) most likely to select BE, and verbs expressing an ongoing process least likely to do so. This is not a coincidence: while (19) introduces more fine-grained distinctions as well as an element of gradience, the observation that the difference between BE-taking verbs and HAVE-taking verbs may be characterized by the terminative aspect of the former versus durative aspect of the latter has a long lineage in the linguistic literature.

Thus, with respect to German, Paul (1902, 182) states that "Wurde die Bewegung nach ihrem Verlaufe vorgestellt, so war *haben* am Platze; wurde das Eintreten oder der Abschluss der Bewegung vorgestellt, *sein*," which can be translated as 'if the movement is presented as a process, then HAVE would be appropriate; if the start

or ending of the movement were presented, then BE'; see also Behaghel (1924, 272–282). For (older and contemporary) Dutch, Den Hertog (1896, 152, 192) and Kern (1912, 117 ff.) speak of “mutative” verbs taking BE. Johannisson (1945; 1958) discusses older Germanic data of the kind mentioned in section 2, and argues that while mutative verbs usually took BE, they could occur with HAVE in cases where the action-aspect of their meaning was stressed (rather than the transition-to-or-from-action aspect). See also Fridén (1948; 1957) and Rydén and Brorström (1987) for similar remarks in their discussion of older English.

There are various modern incarnations of this semantic generalization. Van Valin (1990) argues that two semantic parameters underlie the auxiliary split, namely the lexical aspect of the verb and agentivity. Lexical aspect is to be understood in Vendler's (1957) sense (as *Aktionsart*). Regarding the auxiliary split in Italian, Van Valin concludes that of the four types of verb classes that Vendler distinguishes (activities, states, accomplishments, and achievements), it is the activity verbs that select HAVE, whereas the others take BE. He expresses this as the following generalization (where LS stands for the lexical semantic structure of the verb):

(24) Select *essere* [BE] if the LS of the verb contains a state predicate.

Verbs that express an activity do not contain a state predicate in their lexical semantics. Verbs expressing a state, obviously, do. Verbs that express an accomplishment or achievement (in Vendler's sense) also do, since, while these two types differ in other aspects, they both express a transition to a state. The latter two types of verb thus correspond to the mutative verbs of the earlier literature mentioned above. A difference is the status of state verbs, which fall on the BE-side of the equation for Van Valin, but are clearly not mutative. In the previous section we saw that on Sorace's Auxiliary Selection Hierarchy, state verbs take an intermediate position between activity-type verbs and mutative-type verbs, so that we can expect the greatest variability, both cross-linguistically and with respect to speakers' judgments, in their behavior. Intermediate verbs along the hierarchy are also the most sensitive to properties of the predicate.

It should be noted that, if this account is to hold in general, then in light of the type of examples in (7) and (8a) *Aktionsart* must be determined at the level of VP rather than being a lexically listed property of individual verbs. (That this is indeed necessary is argued for by Verkuyl 1989; 1993, among others, on grounds unrelated to the auxiliary switch shown in (6)–(8)). This point is stressed in the account of auxiliary selection of Lieber and Baayen (1997), which is otherwise not dissimilar to Van Valin's. In particular, Lieber and Baayen propose that the following holds:

(25) BE-taking verbs are [+IEPS], where [IEPS] = Inferable Eventual Position or State

Lieber and Baayen explicitly discuss how the Vendler classification of verbs would translate in terms of this feature, noting that states would not have this feature, activities would have an underspecified IEPS feature, while both accomplishments and achievements would be [+IEPS]. Finally, they assume that [–IEPS] is the default value for this feature and that if IEPS would remain underspecified otherwise, this default value must be filled in. The result is that accomplishment and achievement

verbs should always take BE. Activity verbs will usually take HAVE because of the default rule just mentioned, but will take BE when accompanied by another element that turns the whole predicate into a [+IEPS] one, as in (8a), for example.

An interesting case that Lieber and Baayen adduce to show how the definition of IEPS in (25) may be superior to earlier semantic classifications of BE-taking verbs is that of the verb *blijven* ‘stay’ in Dutch. This takes BE:

- (26) Marie is/*heeft thuis gebleven.
 Mary is/has home stayed
 ‘Mary stayed at home.’

Clearly this verb is not mutative; it is the core verb to express that something stays the same. But, Lieber and Baayen argue, it will head a [+IEPS] predicate as it is possible to infer the eventual position or state of the subject, namely as the same position or state that it was in to begin with.

4.2 A split based on syntax

There is evidence, independent of auxiliary splits, that intransitive verbs can come into two classes in a language (Perlmutter 1978; Burzio 1986, among many others). With one class, the so-called unergatives, the subject behaves as a bona fide subject (an “underived” subject); that is, it behaves in the same way as the subjects of transitive verbs behave in the language. With the other class, the so-called unaccusatives, the subject in some respects behaves in the same way as objects of transitives instead (it is a “derived” subject). This can express itself in various ways in different languages. It can be illustrated with two phenomena from languages that also show an auxiliary split, Italian and Dutch.

In Italian, it is possible to realize the noun in a partitive NP as a clitic *ne*, which cliticizes to the verb. However, with transitive verbs, this is only possible if the partitive NP is the object of the verb, not if it is the subject (examples from Haegeman 1994, 324–325):

- (27) a. Giacomo ha insultato due studenti.
 Giacomo has insulted two students
 ‘Giacomo has insulted two students.’
 a’. Giacomo ne ha insultato due.
 Giacomo of-them has insulted two
 ‘Giacomo has insulted two of them.’
 b. L’hanno comprato tre ragazze
 it have bought three girls
 ‘Three girls have bought it.’
 b’. *Ne l’hanno comprato tre.
 of-them it have bought three
 ‘Three of them bought it.’

We may therefore expect *ne*-cliticization to be impossible with intransitives, as their sole argument is a subject on the surface. For many verbs (the unergatives) this holds true:

- (28) Italian
- a. Telefonano molti studenti.
telephone many students
'Many students are calling.'
 - b. *Ne telefonano molti.
of-them telephone many
'Many of them are calling.'

However, as pointed out by Belletti and Rizzi (1981), there is a class of intransitives (the unaccusatives) that do allow *ne*-cliticization out of their subject, as in (29). Given the data from transitives, as in (27), this shows this constituent must have been an object at some stage in the derivation of the sentence.

- (29) Italian
- a. Arrivano molti studenti.
arrive many students
'There arrive many students.'
 - b. Ne arrivano molti.
of-them arrive many
'Many of them arrive.'

An indication of the existence of a class of unaccusative verbs in Dutch is the following. Considering transitive verbs, we see that their past participle can be used as an attributive modifier of a noun that expresses their object argument, but not of a noun that expresses their subject argument:

- (30) a. De pianist speelde een late sonate van Beethoven.
the pianist played a late sonata of Beethoven
'The pianist played a late Beethoven sonata.'
- b. De gespeelde sonate was de Hammerklavier.
the played sonata was the Hammerklavier
'The sonata that was played was the Hammerklavier.'
- c. *De gespeelde pianist was Pollini.
the played pianist was Pollini
'The pianist who played was Pollini.'

Hence, if the subject of an intransitive is an underived subject, it should not be possible to have the past participle of the verb modify a noun expressing the argument in question. Indeed, with many intransitives this is impossible:

- (31) Dutch
- | | | | | |
|-----|----------|------------|----------|-------|
| *de | gelopen/ | gefietste/ | gewerkte | vrouw |
| the | walked/ | cycled/ | worked | woman |

But with a number of intransitives this is possible, as in (28), indicating that their subject behaves on a par with the object of a transitive, not on a par with the subject of a transitive.

- (32) Dutch
 de gestorven / gevallen / gearriveerde vrouw
 the died / fallen / arrived woman

So in a number of languages evidence can be found that shows that the class of intransitive verbs is not homogeneous, but must be divided into a class that takes a subject argument (the unergatives) and a class that takes an underlying object argument that is promoted to surface subject (the unaccusatives).⁹ We have already seen, of course, that the class of intransitive verbs can also be non-homogeneous where it concerns the choice of perfect tense auxiliary. Perhaps these two cases of non-homogeneity among intransitives are manifestations of a single difference. Indeed, various authors have argued that the BE-taking class of intransitives is nothing other than the class of unaccusatives, and the HAVE-taking class is nothing other than the class of unergatives (see, e.g., Perlmutter 1978; 1989; Burzio 1986; Vikner and Sprouse 1988). Note that, just as with the semantic notions discussed in section 4.1, if unaccusativity is what is relevant for auxiliary choice, it must be a property of the entire predicate rather than of individual verbs. A verb like Dutch *fietsen* 'cycle' must usually have an underived subject, given that it takes HAVE ((6a)), but when combined with a secondary predicate like a directional PP the subject of this combination must be a derived subject, as here we see BE ((7a)). There are various analyses of why this should be so: perhaps the secondary predicate is the predicate of a Small Clause which is merged in object position and whose subject is raised to the subject position of the main clause (see Hoekstra 1984; Hoekstra and Mulder 1990), or perhaps the verb and secondary predicate can fuse their argument structures and form a complex predicate that can predicate over an element in object position which then moves to subject position (see Neeleman 1994; Ackema 1995).

Whichever analysis is correct, the relevant observation is that there is indeed a correlation between BE-selection and other indications of the subject being a derived one rather than an underived one. Consider in this respect the switches in auxiliary selection in Dutch discussed in section 3 again. These go hand in hand with a switch in behavior on the test for unaccusativity mentioned above. As already shown in (31), the past participle of *fietsen* 'cycle' cannot be used as a prenominal modifier. But the combination of the past participle of *fietsen* and a directional PP, a combination that as discussed takes BE, *can* be used as such:

- (33) a. Marie heeft/*is gefietst.
 Mary has/is cycled
 'Mary has cycled.'
 a'. *de gefietste vrouw
 the cycled woman
 b. Marie is/*heeft naar Den Haag gefietst.
 Mary is/has to The Hague cycled
 'Mary has cycled to The Hague.'
 b' de naar Den Haag gefietste vrouw
 the to The Hague cycled woman

Conversely, the past participle of the BE-taking verb *oplossen* ‘dissolve’ can occur as a prenominal modifier, showing it is an unaccusative. But when combined with a reflexive, leading to a switch to HAVE in the perfect (see section 3.2.1), it can no longer do so:

- (34) Dutch
- a. De suiker is/*heeft opgelost.
the sugar is/has dissolved
‘The sugar has dissolved.’
 - a’. de opgeloste suiker
the dissolved sugar
 - b. De suiker heeft/*is zich opgelost.
the sugar has/is REFL dissolved
 - b’. *de zich opgeloste suiker
the REFL dissolved sugar

Similarly, the Italian verb *correre* ‘run’, which takes HAVE, does not allow *ne*-cliticization out of its subject, indicating it is an unergative. But when a directional PP is added, this combination takes BE and does allow *ne*-cliticization out of the surface subject, indicating we are dealing with an unaccusative structure, containing a derived subject. The examples in (35)–(36), adapted from Calabrese and Maling (2009), illustrate this.

- (35) Italian
- a. Luisa ha corso nel parco per un’ ora.
Luisa has run in-the park for an hour.
‘Luisa ran in the park for/*in an hour.’
 - b. Luisa è corsa a casa in un’ ora.
Luisa is run to home in an hour.
‘Luisa ran home in/for an hour.’
- (36) Italian
- a. *Ne hanno corso nel parco due.
of-them have run in-the park two
‘Two of them ran in the park.’
 - b. Ne sono corsi a casa due.
of-them are run to home two.
‘Two of them ran home.’

An interesting question in this respect is whether Sorace’s Auxiliary Selection Hierarchy (see (19)) applies not only to auxiliary selection, but also to (other) morpho-syntactic markers of unaccusativity. Effects of the hierarchy have in fact been found in syntactic diagnostics of the unaccusative–unergative distinction in a variety of languages (see, among others, Sorace and Shomura 2001 on quantifier floating in Japanese; Sorace 1995 on *ne*-cliticization in Italian, and Legendre and Sorace 2003 on various partial diagnostics in French). These data reinforce the connection between split intransitivity and auxiliary selection, but also point to the need to explain how a multi-dimensional lexical–semantic level maps onto a binary syntactic level and how some verbs allow only one type of syntactic projection whereas

other verbs are compatible with different projections to variable degrees, depending on the interplay of the lexical semantics of the verb and the aspectual composition of the predicate (see Sorace 2011; 2015 for discussion).

It should be noted, however, that the correlation between BE-selection and other unaccusativity diagnostics in a language is certainly not undisputed.^{10,11} Lonzi (1986) points out that *ne*-cliticization in Italian does occur with verbs that select HAVE as perfect auxiliary, as in (37a). Interestingly, though, Lonzi also shows that this is not possible in the perfect tense of these verbs with HAVE itself, as (37b) illustrates. In the light of Sorace's observations about gradiency effects in auxiliary selection (see section 3.3 and above), what this might show is that the verbs themselves might be "non-core" unergatives and could possibly sometimes behave as unaccusatives (see also Keller and Sorace 2003 for discussion).

- (37) a. Non ne trilla forte nessuna (di sveglie).
 not of-them trills loudly none of alarm clocks
 'None of the alarm clocks rang loudly'.
 b. *Non ne ha trillato forte nessuna (di sveglie).
 not of-them has trilled loudly none of alarm clocks

Similarly, auxiliary selection does not show an exact fit with another construction that has been said to be an unaccusativity diagnostic, namely impersonal passivization. In contrast to English, some languages allow their intransitives to be passivized, resulting in a sentence without a (non-dummy) subject, as in Dutch (38). (We gloss the auxiliary that appears in the non-perfect passive simply as AUX; see footnotes 10 and 13 for discussion.)

- (38) Er wordt in dit land veel gefietst (door de bevolking).
 there AUX in this country much cycled by the population
 'People cycle a lot in this country.'

Not all intransitives can undergo such passivization, however. It has been argued that it is the unaccusatives that do not allow this (cf. Perlmutter 1978), possibly because they are passives in disguise already, having a derived subject. Tellingly, the class of intransitive verbs that resist passivization correlates with the class of verbs that allow their past participle as a prenominal modifier, which, as we have seen, correlates in turn with the class of BE-taking verbs:

- (39) Dutch
 a. *Er wordt hier regelmatig te laat gearriveerd (door de mensen).
 there AUX here regularly too late arrived by the people
 'People regularly arrive too late here.'
 b. *Er werd veel gestorven in de oorlog.
 there AUX.PST much died in the war.
 'A lot of people died in the war.'

Nonetheless, exceptions to this correlation can be found, as there are HAVE-taking verbs that also resist passivization (see Perlmutter 1978; Levin 1986; Zaenen 1993). The verb *staan* 'stand' is an example:

(40) Dutch

- a. Petra heeft/*is op het podium gestaan.
 Petra has/is on the podium stood
 'Petra stood on the podium.'
- b. *Er werd door veel mensen op een podium gestaan.
 there AUX by many people on a podium stood
 'Many people stood on a podium.'

Note, however, that this type of exception does not undermine the logic of the argument that it is unaccusatives that select *BE* and unergatives that select *HAVE*. If all unaccusatives resist passivization, and if it is the unaccusatives that select *BE*, then no *BE*-taking verb should allow passivization. This does not predict anything about the *HAVE*-taking verbs, though, because it does not rule out the possibility that not all unergatives should allow passivization either. This would even be rather unexpected, in light of the fact that not all transitives allow (personal) passivization either (see, e.g., Postal 1986 on this). Hence, a true counterexample to the proposal would only be a *BE*-taking verb that does allow passivization. In this light, it is interesting to note that Zaenen (1988, 321) states that "I know of no clearcut exceptions in the other direction, namely of verbs that take only *zijn* [*BE*] as an auxiliary and allow for an impersonal passive. Levin (1986) gives a few examples but we will see later that they are only acceptable with a special interpretation." Primus (2010) and Van Schaik-Rădulescu (2011) do find a number of German and Dutch examples of this type in corpora. The following (from Van Schaik-Rădulescu 2011, 71) is an example containing the verb *vallen* 'fall':

(41) Dutch

- Rond km 38 zat ik iets meer achterin het
 around km 38 sat I somewhat more back-in the
 peloton toen er vlak voor
 pack when there just in-front-of
 Mijn neus gevallen werd.
 my nose fallen AUX.PST
 'At about the 38 kilometre mark, I was a bit more at the back of the pack
 when there
 was a fall right in front of me.'

Whether or not such examples pose a problem for the generalization that *BE*-taking verbs disallow impersonal passivization depends on whether or not the verbs in question, next to occasionally occurring in an impersonal passive, also occasionally can select *HAVE*. If they can, what the data show is not that the unaccusativity hypothesis about auxiliary selection is wrong, but that verbs that are usually realized as unaccusatives can sometimes be realized as unergatives (just as verbs that are usually realized as unergatives can sometimes be realized as unaccusatives; see, e.g., Mendikoetxea 2006). In the cycle sport context of (41), for example, it is also possible to find examples like (42):

(42) Dutch

Een fietshelm tweedehands kopen is sowieso af te raden, je hebt immers
a cycle-helmet second-hand buy is anyway off to advise you have after-all
nooit de zekerheid dat de helm nog niet heeft gevallen.

never the certainty that the helmet yet not has fallen

'It is a bad idea anyway to buy a second-hand cycle helmet, since you never
know for sure whether or not it has been involved in a fall already.'

(<http://www.grinta.be/upload/attach-image/jouwfietjsjaar-1.pdf>,
accessed February 25, 2014)

Recall that in general verbs that are in the middle area of the Auxiliary Selection Hierarchy in (19) are more susceptible to allowing both HAVE and BE in a language with an auxiliary split as well as showing more variable behavior where it concerns unaccusative diagnostics in the language. This may indicate that non-core verbs are susceptible to multiple projections (as unaccusative and as unergative) whereas core verbs are not, while at the same time it could be maintained that within an unaccusative context we get BE and within an unergative context HAVE. Only if we would see a perfect tense with HAVE that *simultaneously* satisfies an unaccusative diagnostic would we have a counterexample to the hypothesis, but this is not what we seem to encounter; the data in (37) are telling in this respect.

Before turning to the issue of whether we do in fact need the unaccusativity hypothesis in an account of auxiliary selection in addition to the semantic generalizations that have been put forward, we should mention that in a number of Italian dialects auxiliary selection is determined, or codetermined, by a factor that does not depend on the verb's syntactic status as unaccusative or unergative (or transitive) nor on its aspectual or other semantic classification. This factor is the person specification of the subject agreement on the verb. D'Alessandro and Roberts (2010) discuss Eastern Abruzzese (in particular the Arielli dialect), a variety in which a verb selects BE in the first and second person but HAVE in the third person, regardless of which verb class it belongs to. An anonymous reviewer mentions (referring to work by Manzini and Savoia 2005 and Torcolacci ~~in preparation~~) that there are also varieties which choose for the selection of BE in the first person singular, while second and third person singular select HAVE, as well as varieties with the opposite pattern to that shown by Eastern Abruzzese, so with BE in the third person and HAVE in the first and second person.¹² There are also cases in which a person split interacts with unaccusativity. Ledgeway (2012) points out that a person split in auxiliary selection is also found in some northern Catalan dialects. For more discussion and analysis of the phenomenon we refer to the references mentioned above, as well as Cocchi (1995) and Steddy and van Urk (2013).

4.3 Is there a role for both semantics and syntax?

As discussed above, the observation that the two verb classes that are involved in the auxiliary split differ on semantic grounds has a long and distinguished tradition, and while there is still a lot of discussion about the precise semantic characterization of these classes, and of how categoric the generalizations in question are, it would appear to be undeniable that there is some semantic underpinning to these classes.

One might wonder, therefore, why the essentially syntactic notion of unaccusativity is invoked in some accounts, especially given that there might possibly be some “leaks” in the correlation between unaccusativity diagnostics and BE-selection, as discussed in section 4.2. Indeed, a number of researchers have explicitly stated that a semantic approach suffices and there should be no role for a syntactic notion of unaccusativity (see, e.g., Van Valin 1990; Shannon 1995; Lieber and Baayen 1997).

Nevertheless, arguments to invoke unaccusativity in addition to semantic factors can be given as well, both on conceptual and on empirical grounds. A conceptual issue that is sometimes put forward is that semantic approaches focus on the correct semantic characterization of the relevant verb classes, but do not provide an analysis of what it is about the semantics of BE and HAVE that makes one semantic class of verbs go together with the first and another semantic class of verbs with the second. Hoekstra (1999, 82) describes the issue as follows (in a critique of Lieber and Baayen 1997, but the point has general relevance):

What their analysis offers is at best a feature that picks out a class of verbs that combines with *zijn* [i.e., [BE]] [...] It does not, however, provide a mechanism through which auxiliary selection is affected. In L&B’s approach, the statement that [+IEPS] verbs go with *zijn* is, but for fact, similar to the statement that they would go with *hebben* [i.e., [HAVE]]. In other words, L&B’s analysis in no way *explains* the selection of auxiliaries. It is even unclear what exactly “selection of *zijn*” would be. One of the major concerns of the approach to auxiliary selection in Hoekstra (1984) and more recent approaches, such as Kayne’s (1993), is precisely to find a grammatical mechanism to account for the distribution of auxiliaries. The starting point of that endeavour is the observation that the verb *zijn* is similar to unaccusatives in a way in which the verb *hebben* is similar to transitives and unergatives.

As the latter point of the quote makes clear, syntactic analyses do try to go further than giving a (syntactic) generalization, and attempt to account for the distribution of BE and HAVE by considering what can be established about the syntactic properties of these verbs themselves on independent grounds. Highly relevant to this endeavor is the observation that the past participle that is used in perfects is systematically identical to the passive participle throughout Germanic and Romance. Passives are the prototypical case of a construction with a derived subject. Significantly, they systematically choose BE as their perfect auxiliary (see below). Given this systematic identity of passive and perfect participle, it is desirable to treat these in a unified fashion.

With this in mind, consider what happens to a transitive verb when its past participle is combined with one of the auxiliaries. Past participle plus BE gives a passive, so a structure in which there is suppression of the verb’s external argument and a derived subject. But the same past participle plus HAVE gives an active perfect, so a structure in which there is an underived subject. This combination of facts implies that HAVE has some transitivity property that BE lacks, a property that allows it to somehow restore the past participle’s capacity to assign its external argument to subject position. There are various proposals as to what this property of HAVE is that is lacking in BE, in terms of thematic structure and/or Case-assigning capabilities; for different approaches see Hoekstra (1984; 1986), Haider (1984), Vikner and

Sprouse (1988), Kayne (1993), Den Dikken (1994), Ackema (1995), Broekhuis and Van Dijk (1995), Ackema and Marelj (2012), among others. While differing substantially in details, these approaches have in common that they attempt to find independent evidence for this different syntactic behavior of HAVE and BE in perfects and passives by considering other syntactic uses of these verbs, such as possessive HAVE, causative HAVE, light verb HAVE, copular BE, and existential BE. The indications are that in such other contexts, too, BE is an unaccusative/raising verb, while HAVE acts like a transitivizing counterpart of BE.

Apart from the conceptual issue, passives also provide a first empirical reason to assume that having a derived subject (so unaccusativity) is a necessary ingredient in accounting for BE-selection, beyond semantics. This is because, as noted, passives systematically select BE as their perfect auxiliary in languages with an auxiliary split, and, crucially, they do so regardless of their semantics. Those passives that are clearly not mutative (or are an activity, or are [-IEPS], etc.), must select BE in the perfect just as well as those passives that do satisfy relevant semantic criteria.¹³ Some examples from Dutch are given in (43) (passives of transitives) and (44) (impersonal passives of unergatives).

- (43) a. De verdachte werd urenlang ondervraagd.
 the suspect AUX.PST hours-long questioned
 'The suspect was being questioned for hours.'
- a'. De verdachte is/*heeft urenlang ondervraagd.
 the suspect is/has hours-long questioned
 'The suspect has been questioned for hours.'
- (44) a. Er werd dagenlang gefeest in de stad.
 there AUX.PST days-long partied in the city
 'People were partying for days in town.'
- a'. Er is/*heeft dagenlang gefeest in de stad.
 there is/has days-long partied in the city
 'People partied in town for days.'
- b. Nog jarenlang werd er naar een oplossing gezocht.
 yet years-long AUX.PST there to a solution sought
 'For years people were still searching for a solution.'
- b'. Nog jarenlang is/*heeft er naar een oplossing gezocht.
 yet years-long is/has there to a solution sought
 'People still sought a solution for years.'

Whereas the passive data serve as an empirical argument for the idea that having a derived subject must go together with BE-selection regardless of semantics, there is another class of verbs that provides empirical evidence for the other side of the syntactic generalization, namely that having an underived subject must go together with HAVE-selection regardless of semantics. These are the transitives. Transitives systematically select HAVE, whether or not they occur in a mutative/telic/and so on predicate (see also footnote 11). There are some striking instances of this, one of which we have already encountered in (12)–(13): there are verbs that can occur either with or without a reflexive in object position without this leading to a noticeable difference in meaning. These verbs select BE when intransitive but HAVE in the

transitive construction with the reflexive object. Another construction involving a fake reflexive which shows the same thing is illustrated by the examples in (45) (cf. Ackema 1999, 119; the examples involve the Dutch equivalent of the English 'his way' construction; see Jackendoff 1992).

- (45) a. Sara vocht zich de zaal uit.
 Sara fought REFL the room out
 'Sara fought her way out of the room.'
- b. Daan praatte zich de regering in.
 Daan talked REFL the government in
 'Daan talked his way into the government.'

Verbs like *vechten* 'fight' and *praten* 'talk' are intransitive activity verbs and it is therefore not surprising that they take HAVE. As in the case discussed in section 3.1, it is possible to combine these verbs with a PP indicating an end point or end result. Note that the PPs used for this in (45) are postpositional, a sure sign in Dutch that the PP is directional rather than locational (cf. Lieber and Baayen 1997, 809, who note that such postpositional PPs only occur in predicates that satisfy their '+ Inferable Eventual Position or State' criterion for BE-selection). However, in contrast to the cases mentioned in section 3.1, with these verbs a fake reflexive must be added in object position when they occur with a directional PP. This makes the construction transitive. Crucially, while clearly having the same mutative and telic semantics as the complex predicates in (7) (and also being +IEPS and containing a state predicate in their conceptual semantics), the transitive predicates in (45) do not switch to BE-selection in the perfect; they categorically must select HAVE:

- (46) a. Sara heeft/*is zich de zaal uit gevochten.
 Sara has/is REFL the room out fought
 'Sara has fought her way out of the room.'
- b. Daan heeft/*is zich de regering in gepraat.
 Daan has/is REFL the government in talked
 'Daan has talked his way into the government.'

Some idioms, too, show that HAVE must be selected in syntactically transitive constructions regardless of their aspectual or other semantics. In particular, Everaert (1996) shows that idiomatic verb-object combinations, which are formally transitive, must take HAVE even when the predicate's semantics is equivalent to those of an intransitive verb that takes BE. Some of Everaert's examples are the following (the impossibility of adding the modifier *de hele dag* 'the whole day long' shows that all these predicates are equally telic):

- (47) Dutch
- a. Ze is/*heeft (*de hele dag) vertrokken.
 she is/has the whole day left
 'She has left.'
- b. Ze heeft/*is (*de hele dag) haar biezen gepakt.
 she has/is the whole day her bags packed
 'She has left.'

(48) Dutch

- a. Hij is/*heeft (*de hele dag) gestorven.
 he is/has the whole day died
 'He has died.'
- b. Hij heeft/*is (*de hele dag) de geest gegeven.
 he has/is the whole day the ghost given
 'He has died.'

Note, once more, that it would be problematic to assume that it is a lexical property of the verbs *pakken* 'pack' (in (47b)) and *geven* 'give' (in (48b)) that they must always select HAVE, given the evidence cited before that auxiliary selection must be determined at the predicate level.

Finally, there are certain transitivity affixes that can be attached to intransitives, or to adjectives or nouns, which also have a telicizing effect on the predicate. An example from Dutch is the prefix *be-* (see Hoekstra, Lansu, and Westerduin 1987; Hoekstra 1999; Van Kemenade and Los 2003, and others).

- (49) a. De maan schijnt door de bomen.
 the moon shines through the trees
 'The moon is shining through the trees.'
- b. De maan beschijnt de bomen.
 the moon BE-shines the trees
 'The moon illuminates the trees.'
- (50) a. De luier is vuil.
 the nappy is dirty
 'The nappy is dirty.'
- b. De baby bevuilde de luier.
 the baby BE-dirty-PST the nappy
 'The baby soiled the nappy.'

While having the type of semantics that correlates with BE-selection in intransitives, the transitive *be-*prefixed verbs must take HAVE:

(51) Dutch

- a. De maan heeft/*is de bomen beschenen.
 the moon has/is the trees BE-shone
 'The moon illuminated the trees.'
- b. De baby heeft/*is de luier bevuild.
 the baby has/is the nappy soiled
 'The baby has soiled the nappy.'

All in all, there are strong indications that clauses with an underived subject must take HAVE in the perfect, while clauses with a derived subject can take BE. At the same time, it is clear that when considering simple intransitives, there are semantic parameters that influence the choice of perfect auxiliary. These statements can be reconciled if a link can be made between relevant semantic aspects and appearing in a syntactic context with or without an underlying subject argument. There are

many different approaches to how such a link should be established (for discussion see, e.g., Levin and Rappaport Hovav 1995; Reinhart 2002; Bentley and Eythórsson 2003; Borer 2005; Everaert, Marelj, and Siloni 2012). Whichever approach is chosen, a desideratum is that the semantics–syntax links are not so deterministic that they cannot account for the language-internal and cross-linguistic variation and gradiency effects as found by Sorace and others (see section 3.3), and for the diachronic development of languages that gradually lost, or are losing, the auxiliary split (see section 2). One possibility that has been suggested in this respect is that there are a number of principles that establish correspondences between semantic aspects of the predicate and syntactic projection of an external argument, and that these principles may be in conflict with each other (cf. Legendre 2007a; 2007b; Bentley 2014). As mentioned before, experimental evidence also points to the need for a model of the syntax–lexicon interface that combines the categorical invariance and the gradient variance of auxiliary selection (Sorace 2015). Cross-linguistic variation might then be accounted for by a different hierarchical ordering of the relevant constraints, as in Optimality Theory, while language-internal gradiency effects could be accounted for if a stochastic version of OT (Boersma 1998; Boersma and Hayes 2001) is adopted. But whichever approach is adopted, a desideratum of an explanatory account of the phenomenon is that it considers the semantic and syntactic aspects of it in tandem rather than in isolation.

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SEE ALSO: Copular sentences; Grammatical and light verbs; Past participle agreement; Temporal reference.

Notes

1. The examples in (1) and (2) are active present perfects. The active pluperfect uses the same auxiliary in its past tense form. Perfects of passives, and their relevance to the issue of auxiliary selection, are discussed below.
2. Some varieties of Canadian English allow *BE* in combination with the past participle of a number of verbs (Hinnell 2012, Yerastov 2012, Bethany Lochbihler personal communication), as in (i), for example.

(i) I am almost done my slides.

This may not be a perfect tense, however. It possibly involves *with*-deletion in the counterpart to (i) in (ii). (Hinnell 2012 reports a suggestion along such lines in a message by Arnold Zwicky on the email list-serve of the American Dialect Society in 2004).

(ii) I am almost done with my slides.

If so, the participle is adjectival rather than verbal and BE functions as copula in (i). Hinnell (2012) argues against an analysis in terms of *with*-deletion on the basis that the construction in (i) shows semantic restrictions that the construction in (ii) does not show. This does not necessarily mean that no *with*-deletion is involved, however, as these restrictions could be viewed as restrictions on the deletion process (e.g., ‘only delete in resultative readings’). There are examples of the construction that are not likely to involve a perfect tense with BE instead of HAVE. Consider (iii) (from Hinnell 2012, 2), for instance. It seems fairly clear that the counterpart of this in other varieties of modern English is *Are you done with your tea?*, not *Have you done your tea?*.

(iii) Are you done your tea?

3. Note that the lexeme used to function as HAVE can, but need not, be the form etymologically derived from Latin *habere*. In modern Portuguese, *ter* is used rather than *haver* (see, e.g., Luria 1930, 474, as cited in Benaim 2012, 160).
4. The description of older English and Dutch below is based on Ackema (1999, 124 ff.). See also Shannon (1990) for a diachronic overview of auxiliary selection.
5. Next to the meaning ‘jump’, the verb *springen* can also mean ‘burst’. In this reading, it obligatorily takes BE:
 - (i) De waterleiding is/*heeft gesprongen.
 the waterpipe is/has burst
 ‘The waterpipe burst.’
6. This can be contrasted with what happens in Romance in cases where a reflexive clitic, rather than an object, is present (indeed, reflexive clitics typically appear in contexts of detransitivization in Romance). This usually goes together with BE-selection, although there is some dialectal variation in this respect (see Cordin 1997, 94–95 and references cited there). Cordin also remarks (with regards to Italian) that the use of HAVE with reflexive verbs was more widespread in the past.
7. Kern (1912) does in fact try to argue that the irrealis was really the only environment in which HAVE could occur with the relevant class of verbs in Middle Dutch. In order to reach this conclusion, however, he must dismiss a number of attested instances of HAVE with such verbs as mistakes on the part of the writer. Furthermore, he diminishes the number of such instances by assuming that some verbs that have the relevant property that (in non-counterfactual contexts) leads to BE-selection (see section 4) did not have this property in Middle Dutch. Kern identifies the relevant property as a verb being mutative, and assumes that the meaning of some verbs changed from a non-mutative to a mutative one in the course of time (a similar line of argument is taken in Duinhoven 1997). However, apart from the decline of the use of HAVE with these verbs (which was not obligatory to begin with), there does not appear to be convincing evidence for this supposed change in mutativity of the relevant verbs. Consider, for instance, (4b) again: it is hard to imagine that the Dutch in the Middle Ages, in contrast to their present-day descendants, considered falling on one’s knees a non-mutative event. (Moreover, they should have done this only sometimes, since the example in (5b), which predates (4b), does have BE.)
8. An anonymous reviewer points out that the phenomenon of HAVE-selection in the counterfactual seems to be highly productive nowadays in some dialects spoken in the south of Italy (see Manzini and Savoia 2005).
9. For the general argument here it does not matter how this promotion is analyzed; most P&P/Minimalist work would see it as an instance of Λ' -movement, while in a theory like LFG a lexical rule would be responsible.

10. Of course, the most obvious example of languages in which unaccusativity does not correlate with BE-selection are those languages that lack the auxiliary split altogether, but in which some evidence can be found for an unaccusative–unergative distinction among intransitives, such as modern English. One might argue, however, that if HAVE is the only perfect auxiliary in a language, unaccusatives have no choice but to form their perfect tense with it. Ackema (1995; 1999) argues that the loss of BE as perfect auxiliary in English, and its turning into a non-perfect passive auxiliary, followed the loss of the dedicated non-perfect passive auxiliary *weorthan*, which we still see in languages like German and Dutch (and which still have the perfect auxiliary split). The correlation between an auxiliary split in the perfect and there being a dedicated (i.e., distinct from BE) non-perfect passive auxiliary is not entirely without exceptions, however. French, in particular, poses a problem, as it still shows an auxiliary split despite *être* also being used as non-perfect passive auxiliary. For the idea to go through, then, it would have to be assumed that French is in a transition from a language with perfect BE to a language with non-perfect BE and currently shows the two grammars side by side (along the lines of what Kroch 1989 proposes is happening during language change in general).
11. Lieber and Baayen (1997) argue that the correlation between BE-selection and unaccusativity also breaks down because of the existence of transitive verbs that take BE in Dutch. The verbs in question are arguably bivalent unaccusatives (verbs taking two internal arguments), however. Both Hoekstra (1999, 73–76) and Ackema (1999, 120–122) show that these verbs behave as unaccusatives where it concerns diagnostics like the use of their past participle as a prenominal modifier, *pace* claims to the contrary by Lieber and Baayen (1997, 830).
12. The reviewer also mentions that the BE–HAVE split typical of (southern) Italian dialects is attested in the present perfect, and not in the pluperfect (and counterfactual; see section 3.2.2).
13. One way to avoid the conclusion that the categoric BE-selection of perfect passives shows there must be a role for unaccusativity might be to say that it is the (non-perfect) passive auxiliary (*worden* in Dutch, *werden* in German, *bliva* in Swedish and Norwegian, etc.) that selects for BE in the perfect. Note that in German, for example, this verb actually shows up in the perfect of the passive as well, leading to forms containing both auxiliaries *sein* and *werden*, such as (i):

- (i) Er ist geschlagen worden.
 he is beaten AUX.PPLE
 'He has been beaten.'

(On the other hand, in modern standard Dutch *worden* does not occur in the perfect passive – *hij is geslagen* (**geworden*) – and the form with only BE is in fact also the original one in Old High German, forms combining *sein* and *werden* appearing in Middle High German; see Zieglschmid 1929, 49–53 and Van der Wal 1986, 93). The relevant verb (*worden/worden*) does appear in mutative/inchoative constructions, where it means 'become'. However, examples like (43a), (44a), and (44b) clearly show that in passives this verb does not have inchoative force. To rule out unaccusativity as a factor for BE-selection in passives, then, it would have to be assumed that it is a lexical property of the verb *worden/werden* that it selects BE, triggered by the fact that in some *other* contexts than passives it does satisfy the relevant semantic criteria. But we have already seen that it is problematic to assume that auxiliary selection is registered as a lexical property of individual verbs, rather than being linked to properties of entire predicate phrases, given examples such as those mentioned in sections 3.1 and 3.2.1.

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