

# Auxiliary Selection\*

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## Abstract

Few syntactic phenomena are relevant to as many areas of linguistic theory as auxiliary selection – the alternation between auxiliaries in periphrastic constructions. Standing at the intersection between syntax, lexical and clausal semantics and morphology, it has been the subject of intense research since the late 1970s and has played a role in several important theoretical developments and debates. Auxiliary selection also poses a number of empirical questions. Even within a single language, the correct description of the alternation can be controversial, and the extensive cross-linguistic variation has turned out to be rather difficult to characterize in a systematic way. In this article, I give a survey of how our understanding of auxiliary selection has developed, both on the empirical and the theoretical side. I also include a brief discussion of work on how patterns of selection arise and change over time.

## 1 Introduction

The German sentences in 1 demonstrate an alternation which has been the focus of extensive linguistic research:

- (1) a. Reinhold ist nach Hause gegangen.  
Reinhold IS to home gone  
'Reinhold has gone home.'
- b. Reinhold hat zu Hause gearbeitet.  
Reinhold HAS at home worked  
'Reinhold has worked at home.'

The semantic tense/aspect of the two examples is identical, and formally both involve a periphrastic construction built around a past participle. They differ only in which auxiliary forms the periphrasis, BE in 1a, HAVE in 1b.<sup>1</sup> This is the phenomenon known as **auxiliary selection**,

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<sup>1</sup>I write HAVE and BE in small caps to refer to the two main types of auxiliary cross-linguistically. Language-specific lexical items like English *have*, German *haben* and Italian *avere* will be given in italics. I use the following abbreviations for grammatical categories: ABS – absolutive, ACC – accusative, ANT – anterior, DAT – dative, ERG – ergative, FEM – feminine, LOC – locative, NEUT – neuter, PL – plural, PRES – present, SG – singular.

where what looks like a single periphrastic construction – usually a perfect or past – uses different auxiliary verbs depending on the semantics of the main verb, the aspectual properties of the predicate, the person and number of the subject or the tense of the clause.

Auxiliary selection is relevant for a broad range of empirical and theoretical domains, as it involves lexical semantics, argument structure and temporal-aspectual morpho-syntax. There is also an impressive range of variation, even within the languages and dialects of Europe, in terms of how the selection works and what it is sensitive to. In this article I will give a brief survey of both the empirical and the theoretical sides of research on auxiliary selection. Section 2 is a descriptive overview of the kinds of auxiliary splits that are attested in the languages of the world. Section 3 moves on to discuss the theoretical issues that are raised by the splits and the attempts to deal with them. Section 4 takes a short look at some of the special diachronic questions that come up, and Section 5 summarizes.

## **2 The observed patterns**

In this section, I will attempt to give a theory-neutral description of the range of auxiliary selection patterns found cross-linguistically, i.e. on what basis the choice between HAVE and BE can be made. The correct description of such complicated facts as these is sometimes as controversial as the correct explanation. One's choice of theory can prefigure one's choice of descriptions, so the thematic separation between this section and the following one on theoretical approaches will not always be completely clear. We will start out in Section 2.1 with languages which do not have an auxiliary split, i.e. those where all perfects use the same auxiliary. In Section 2.2 we will then look at split patterns that depend on syntactic and semantic properties of the main predicate, before moving on to ones that depend on higher, clause-level properties in Section 2.3.

### **2.1 Patterns without a split**

#### **2.1.1 Straight HAVE languages**

Languages of this type include English, Spanish, Swedish, Portuguese, some varieties of Catalan and a number of Italo-Romance dialects. Put simply, all perfects use auxiliary HAVE, independent of other properties of the clause. The examples in 2 are constructed such that they would show an alternation between HAVE and BE if translated into a language with one of the auxiliary splits we'll see below. In English, however, HAVE is required in all of them:

- (2) a. John has/\*is eaten pizza.
- b. John has/\*is worked for an hour.
- c. John has/\*is arrived.
- d. I have/\*am arrived.

#### **2.1.2 Straight BE languages**

In this second group, the pattern is again quite simple, but this time it is a form of BE which appears in all perfects. Languages which show this type of behavior include Scottish Gaelic (Adger 1996), Welsh (Roberts 2005), modern Terracinese (an Italo-Romance dialect discussed

by Tuttle 1986), several Slavic languages (e.g. see Pancheva 2003, on Bulgarian) and Shetland English (Melchers 1992). Data from the Dravidian language Tamil are representative:<sup>2</sup>

- (3) a. sandhya samosa-vai saapp-tu-iru-kk-aa  
 sandhya samosa-ACC eat-ANT-BE-PRES-3FEM  
 ‘Sandhya has eaten a samosa’  
 b. champa tuung-i-iru-kk-aa  
 champa sleep-ANT-BE-PRES-3FEM  
 ‘Champa has slept’  
 c. seetha va-nd-iru-kk-aa  
 seetha arrive-ANT-BE-PRES-3FEM  
 ‘Seetha has arrived’

Interestingly enough, many of the languages in this group do not actually have a lexical verb corresponding to HAVE. Possession is expressed by BE combined with oblique marking on the possessor. So in Tamil, the same *iru-* ‘be’ from the perfects above also appears in the possessive construction exemplified in 4:

- (4) ravi-kiṭṭe paṇam iru-kk-u  
 ravi-LOC money BE-PRES-3NEUT  
 ‘Ravi has money’

It is thus not surprising that *iru-* is the auxiliary in all perfects. Still, its use there is distinct from its use in possession constructions, in that it is not accompanied by the oblique marking on the subject.<sup>3</sup> For the rest of this article we will concentrate on languages that do exhibit an auxiliary split.

## 2.2 Splits based on predicate-level properties

This category includes the languages which have formed the basis for much of the discussion of auxiliary selection in the literature, namely Dutch, French, German and Italian and several other Romance and Germanic varieties. The factors involved are related, on the one hand, to the argument structural status of the main predicate and, on the other hand, to the aspectual structure or Aktionsart of the denoted eventuality. These are determined by the main lexical verb in combination with various VP (or vP) arguments and modifiers, hence I use the term ‘predicate-level properties’ to distinguish them from higher clause-level properties which are relevant for other kinds of splits discussed in Section 2.3. An important question about splits of this kind, which has been the subject of extensive inquiry, is how important the properties of the lexical verb are relative to the other elements of the predicate, and to what extent the two operate independent of one another. The current section is organized according to transitivity classes, as this will simplify the discussion.

### 2.2.1 Transitive predicates

We start with the transitives because they present the simplest picture. Over the next few sections we will see that languages disagree in how they treat verbs of the remaining classes, but with fully transitive perfects they all require HAVE:

<sup>2</sup>The effects of certain Sandhi rules have been undone to clarify the morphological make-up of the words.

<sup>3</sup>Hindi differs from Tamil in just this point. See Mahajan (1997) and the discussion in Section 3.5.

- (5) a. Jupp hat den Ball getroffen.  
Joseph HAS the ball kicked  
'Joseph has kicked the Ball' (German, from Grewendorf 1989)
- b. Giorgio ha mangiato le caramelle.  
Giorgio HAS eaten the candies  
'Giorgio ate the candies.' (Italian, from Perlmutter 1989)

This applies equally well to Dutch, French and all other languages with a split based solely on predicate-level properties.<sup>4</sup>

### 2.2.2 Reflexives

I phrased the generalization immediately above in terms of “fully transitive perfects” because there are some complications in what counts as transitive for the purposes of auxiliary selection. In particular, languages differ in how they treat reflexive clauses.<sup>5</sup> In German and Dutch they are treated like normal transitives for the purposes of auxiliary selection, as shown (for German) by the comparison of 6a with 6b:

- (6) a. Holger hat Gudrun verletzt.  
Holger HAS Gudrun hurt  
'Holger has hurt Gudrun.'
- b. Holger hat sich verletzt.  
Holger HAS himself hurt  
'Holger has hurt himself.'

Auxiliary selection in French and Italian, on the other hand, sharply distinguishes reflexives from other transitives. While the latter uniformly select HAVE, reflexives require BE, as shown by the following Italian examples (from Haider and Rindler-Schjerve 1987):

- (7) a. Giovanni lo ha lavato  
Giovanni him HAS washed  
'Giovanni has washed him.'
- b. Giovanni si è lavato.  
Giovanni self IS washed  
'Giovanni has washed himself.'

It has often been noted that the reflexive pronoun in French and Italian is clearly a clitic, while that in German and Dutch has a (somewhat) more independent status. Especially interesting in this connection is the fact that the auxiliary switches to HAVE in Italian when a reflexive clause is constructed with the non-clitic version of ‘herself/himself/itself’ *se stesso* in place of the clitic *si*, as in 8a (data from Perlmutter 1989):

- (8) a. Giorgio ha (\*è) ucciso sé stesso.  
Giorgio HAS (\*IS) killed himself  
'Giorgio killed himself.'

<sup>4</sup>As we will see in Section 2.3, there are languages where the split is additionally sensitive to other factors, e.g. person and number of the subject, and in some of these transitives can indeed involve BE.

<sup>5</sup>There are also some issues surrounding verbs that take an oblique object. See Grewendorf (1989, p. 9), Lieber and Baayen (1997) and Hoekstra (1999).

- b. Giorgio si è (\*ha) ucciso.  
 Giorgio self IS (\*HAS) killed  
 ‘Giorgio killed himself.’

Comparative work on these languages has thus frequently tied the differences in their patterns of auxiliary selection to the different syntactic status of their reflexive forms, as we will discuss in Section 3.5 below. There are, however, Italo-Romance varieties which allow HAVE with reflexive clitics (see e.g. the discussion of Paduan in Kayne 1993), so the connection between selection and clitic versus non-clitic status of the reflexive marker must be somewhat indirect.

### 2.2.3 Intransitive predicates

The greatest variation within and across languages is found in the intransitives, though certain clear patterns emerge. For example, languages with a predicate-level split agree in selecting HAVE with atelic predicates where the subject is agentive, like ‘work’, and selecting BE with telic predicates where the subject is a theme that undergoes a change of location or state, like ‘arrive’:

- (9) a. Hans hat gearbeitet. (German)  
 b. Gianni a lavorato. (Italian)  
 ‘John HAS worked.’
- (10) a. Hans ist angekommen. (German)  
 b. Gianni è arrivato. (Italian)  
 ‘John IS arrived.’

For the vast range between these two extremes – e.g. atelic verbs of motion or atelic, non-agentive statives – matters are more complicated. Selection with these predicates is potentially sensitive to several different factors, including at least agentivity, telicity and motion, and languages vary in terms of which factors are relevant and how they are ranked in importance.

For example, in French, German and Dutch, some notion of change or at least motion is required for the selection of BE; thus simple statives typically select HAVE. Italian statives, on the other hand, typically select BE (data from Legendre 2007b, see also Sorace 2000, 2004):<sup>6</sup>

- (11) a. Sie haben existiert. (German)  
 ‘They HAVE existed.’  
 b. Sono esistiti. (Italian)  
 ‘They ARE existed.’

Stative predicates can, however, also appear with HAVE in Italian. The variation is due, at least in part, to interaction with thematic issues. Thus the stative verb *mancare* ‘be missing’ receives a non-agentive interpretation with BE as in 12a, but an agentive (i.e. more intentional) interpretation with HAVE in 12b (Sorace 2004):

- (12) a. L'alunno è mancato all'appello.  
 the pupil IS missed at.the.call  
 ‘The pupil was absent from roll call.’ (non-agentive)

<sup>6</sup>The term ‘simple stative’ is meant to exclude verbs denoting the continuation of a pre-existing state like ‘stay’ or ‘remain’, which behave a bit differently.

- b. Il presidente ha mancato all'appuntamento.  
the president HAS missed at.the.appointment  
'The president missed the appointment.' (agentive)

A similar interaction between agentivity and auxiliary choice is found with certain verbs of motion (Sorace 2000):

- (13) a. Il pilota ha/?è atterrato sulla pista di emergenza.  
The pilot HAS/?IS landed on.the runway of emergency  
'The pilot landed on the emergency runway.'
- b. L'aereo è/?ha atterrato sulla pista di emergenza.  
the.plane IS/?HAS landed on.the runway of emergency  
'The plane landed on the emergency runway.'

Still, it is not correct that agentive predicates generally select HAVE in Italian. Change of location verbs like *cadere* 'fall' select BE whether used agentively or non-agentively (Sorace 2000):

- (14) a. Maria è caduta apposta per farci spaventare.  
Maria IS fallen on.purpose to make.us scare  
'Maria fell on purpose to scare us.'
- b. Il bicchiere è caduto dal tavolo.  
the glass IS fallen from.the table  
'The glass fell from the table.'

In Dutch, on the other hand, agentivity is apparently irrelevant for auxiliary selection, all that matters being aspectual notions related to telicity (van Hout 2004).<sup>7</sup> Motional process verbs select BE when the predicate is rendered telic by prepositional or adverbial elements, and they select HAVE when this is not the case. Crucially, this pattern holds whether the process is agentive as in 15 or non-agentive as in 16 (data from van Hout 2004):

- (15) a. Leika, de hond, heeft urenlang gerold (om haar energie kwijt te raken).  
Leika, the dog, HAS hours.long rolled (in.order her energy rid to get)  
'Leika the dog rolled for hours (to get rid of her energy).'
- b. Leika is in vijf minuten de berg afgerold.  
Leika IS in five minutes the mountain off.rolled  
'Leika rolled down the hill in five minutes.'
- (16) a. De knikker heeft minutenlang over tafel gerold.  
the marble HAS minutes.long over table rolled  
'The marble rolled around on the table for minutes.'
- b. De knikker is binnen een minuut de tafel afgerold.  
the marble IS within a minute the table off.rolled  
'The marble rolled off the table within one minute.'

The situation in German is again different. Telicity appears to be relevant with motion verbs which do not inherently imply displacement, like *tanzen* 'dance'. As in Dutch, the addition of a telic endpoint with such verbs triggers a change from HAVE to BE (Randall, van Hout, Weissenborn, and Baayen 2004):

<sup>7</sup>As we will see in Section 3.2, agentivity is relevant to another phenomenon which splits the intransitive verbs in Dutch – the availability of an impersonal passive.

- (17) a. John hat stundenlang auf dem Tisch getanzt. (German)  
 John HAS hours.long on the table danced  
 b. John heeft urenlang op de tafel gedanst. (Dutch)  
 John HAS hours.long on the table dance  
 ‘John has been dancing on the table for hours.’
- (18) a. John ist in zwei Sekunden ins Zimmer getanzt. (German)  
 John IS in two seconds into.the room danced  
 b. John is in twee seconden de kamer in gedanst. (Dutch)  
 John IS in two seconds the room in danced  
 ‘John danced into the room in two seconds.’

However, other kinds of examples make clear that what matters here is not telicity per se, but what Legendre (2007b) refers to as inherent displacement and Randall (2007) refers to as Locomotion. In German, unlike in Italian, Dutch and French, BE is generally selected with process verbs that imply motion from one place to another, even without a telic endpoint (sentences from Sorace 2000):<sup>8</sup>

- (19) a. Gli atleti svedesi hanno corso / ?sono corsi alle Olimpiadi. (Italian)  
 the athletes Swedish HAVE run / ?ARE run at.the Olympics  
 The Swedish athletes ran at the Olympic Games.’  
 b. Uschi \*hat / ist den ganzen Tag gerannt/ gelaufen/ geschwommen. (German)  
 Uschi \*HAS / IS the whole day run/ walked/ swam  
 ‘Uschi ran/walked/swam the whole day.’

The addition of an endpoint in sentences like 18a leads to selection of BE not because it renders the predicate telic, but because it implies displacement. Indeed, as Randall et al. (2004) note, German *tanzen* can appear with BE in the absence of telicity if there is some other indication of displacement, in contrast to Dutch *dansen*:

- (20) a. John ist stundenlang durch den Saal herumgetanzt. (German)  
 John IS hours.long through the hall around.danced  
 b. John heeft urenlang door de zaal rondgedanst. (Dutch)  
 John HAS hours.long through the room around.danced  
 ‘John has been dancing around the room for hours.’

These are just some of the points of variation which seem to be reasonably systematic. We can see now what is behind the controversy over the relative importance to auxiliary splits of the lexical verb on the one hand and the remaining predicate-level material on the other. We have seen that HAVE and BE can alternate with a single lexical verb in a single language, dependent on things like agentivity of the subject or the presence of a PP specifying a telic end-point. This suggests that the lexical verb is not the sole determinant of auxiliary selection. On the other hand, we have seen that such alternations are restricted to certain verb classes, with large numbers of other verbs (e.g. German *arbeiten ankommen*, Italian *lavorare, arrivare*) exempt from alternating. This raises the possibility that what is behind an alternation like that between 17b and 18b in Dutch is actually systematic polysemy in manner of motion verbs like *dansen* ‘dance’. There is an atelic version meaning something like ‘dance around’, which appears

<sup>8</sup>Keller and Sorace (2003) show that, at least for some speakers of German, there is variation between HAVE and BE in such contexts, but they still detect a statistically significant overall preference for BE.

with modifiers like *op de tafel* ‘on the table’ and always selects HAVE, and a telic version meaning something like ‘dance one’s way somewhere’, which appears with modifiers like *de kamer in* ‘into the room’ and always selects BE. Under such an analysis, auxiliary selection would depend solely on the properties of the lexical verb (see e.g. Levin and Rappaport Hovav 1995, Rappaport Hovav and Levin 1998, Levin and Rappaport Hovav 2005, Sorace 2000, for discussion of these alternatives). We will consider this question again from a more theoretical standpoint in Section 3.4.2.

## 2.3 Splits based on clause-level properties

The splits I will discuss in this section have received far less attention in the literature than those above. I have chosen the term ‘clause-level properties’ to cover splits based on the person and number of the subject, based on tense and mood, and based on clause-level or view-point (as opposed to lexical or predicate-level) aspect. They may not form a very natural class, but my intention is simply to stress that they do not belong with the discussion in the previous section of properties at the level the main (verbal) predicate.

### 2.3.1 Person and number splits

One type of split that is especially common among the dialects of Italy is based on the person and number of the subject.<sup>9</sup> The most common person/number split that has been reported shows HAVE in the 3rd person next to BE in the 1st and 2nd (Tuttle 1986, p. 269f.). This is demonstrated by the data in 21 from a peripheral Neapolitan dialect reported by Ledgeway (2000):

- (21) a. *so’ visto a      Ciro/arrevato.*  
           AM seen ACC *Ciro/arrived*  
           ‘I have seen *Ciro*/I have arrived.’  
       b. *ha   visto a      Ciro/arrevato.*  
           HAS seen ACC *Ciro/arrived*  
           ‘He has seen *Ciro*/He has arrived.’

As Tuttle (1986) and Legendre (2007a) stress, however, several other kinds of splits are attested, e.g. with BE only in the first person (Girona Catalan), with BE in the 2nd singular and HAVE everywhere else (Introdacqua), or with HAVE in the 3rd person, BE in the 2nd and variation between the two in the 1st (Castro dei Volsci). There is even attestation of the reverse of the pattern in 21 above. In Aliano, e.g., we find BE in the 3rd singular and HAVE elsewhere (Manzini and Savoia 2006, Legendre 2007a).<sup>10</sup> As will be discussed in Section 3.6 below, this kind of cross-linguistic variation has important consequences for the theoretical treatment of auxiliary selection splits.

<sup>9</sup>I regard person/number of the subject as a clause-level property because it is not inherently determined by the verbal predicate – unlike, say, agentivity of the subject.

<sup>10</sup>This particular split in Aliano is limited to unaccusative verbs. Such interactions between person/number and predicate-level properties in determining auxiliary splits are not especially uncommon and can yield rather complicated patterns.



### 2.3.2 Tense and modality splits

Splits according to tense are also well-attested in the dialects of Italy. In the Procidano dialect, for example, we find HAVE in the present perfect, but BE in the pluperfect (Ledgeway 2000):

- (22) a. jé nun hó sturiéto, ma...  
I not HAVE studied, but...  
'I haven't studied, but...'  
b. a primma lenza nen lu fovo canisciuto  
at first look not him AM recognized  
'At first I had not recognized him.'

Tuttle (1986, p. 268f.) notes similar patterns in other Italo-Romance dialects, often interacting with sensitivity to person and number.

The modality of the clause can also play a role. Thus HAVE was heavily favored over BE in irrealis clauses in older forms of Neapolitan and several older Germanic languages (see e.g. Ledgeway 2003, Johannisson 1958). Consider the Middle Dutch sentences in 23 from Shannon (1995):

- (23) a. haddi hem oec niet ontlopen, si haddent...  
HAD he them also not escaped, they had...  
'Had he also not escape from them, they would have...'  
b. veel luden sijn ghevallen ...die niet ghevallen soudén hebben dan...  
many people ARE fallen ...who not fallen would HAVE but  
'Many people have fallen ... who would not have fallen, but...'

Both *ontlopen* 'escape' and *vallen* 'fall' normally select BE in Middle Dutch, but in these counterfactual examples we find them with HAVE. In at least some instances, however, this kind of pattern may not actually have anything to do with mood directly, but may rather be a reflex of a clausal aspect split, as will be discussed with reference to Middle English in the next section. What looks like the opposite pattern has been reported by Avram and Hill (2007) for Romanian. In that language, HAVE is the normal auxiliary for perfects, except in irrealis clauses, where a form of BE is used instead:

- (24) a. Maria a căzut pe scară.  
Maria HAS fallen on stairs  
'Maria has fallen down the stairs.'  
b. Maria a râs toată seara.  
Maria HAS laughed all evening  
'Maria laughed the whole evening.'
- (25) a. Ar fi plecat.  
would-3SG be left  
'S/he would have left.'  
b. O fi plecat.  
may-3SG be left  
'S/he may have left.'

### 2.3.3 Clausal aspect splits

This final class of split has received especially scant attention in the recent literature, probably because it is particularly difficult to distinguish from some of the other types. The dimension of the split here is neither tense in the sense of present versus past, nor lexical aspect in the sense of Aktionsart, but rather clause-level aspect. In particular, in some languages the auxiliary used depends in part on which kind of perfect is being expressed.

The perfect is a notoriously complicated category to describe and define, and a great deal of work has been devoted to exploring its semantics and morphosyntax in the languages of the world (for some recent discussion, see the contributions in Alexiadou, Rathert, and von Stechow 2003). Typically, four distinct interpretations are identified for the perfect (see e.g. McCawley 1971, Iatridou, Anagnostopoulou, and Pancheva 2003), but I will concentrate on two of them here. The **Experiential Perfect**, describes an eventuality which occurred previous to some reference time (which is equivalent to the speech time in a present perfect), often an experience that the subject has had.<sup>11</sup> The **Perfect of Result**, on the other hand, describes a state holding at the reference time, which is the result of the underlying eventuality described by the VP.

- (26) a. I have been sick before. [Experiential Perfect]  
b. I have lost my cellphone. (Could you help me find it?) [Perfect of Result]

In Modern English, the morphosyntactic expression of the four interpretations is identical, i.e. the periphrasis with HAVE plus a past participle can have all four readings. Cross-linguistically, however, there is a great deal of variation in which readings are available for a given construction. What is relevant for our purposes is that, in some languages, the choice of perfect auxiliaries seems to depend on which reading is intended. In Icelandic, for example, Yamaguchi and Pétursson (2003) argue that *hafa* ‘have’ can form experiential perfects, while *vera* ‘be’ can only form perfects of result. Thus 27a is about Peter having gone at some time in the past, but says nothing about his present state, while 27b implies that he is still gone:

- (27) a. Pétur hefur farið.  
Peter HAS gone.  
b. Pétur er farið  
Peter IS gone.

Note that what is at stake here is not just telicity. The BE perfect is indeed essentially restricted to telics, since atelic eventualities typically don’t yield result states, but telicity does not conversely guarantee BE. Both examples in 28 are telic, but alongside BE with a resultative interpretation in 28a we find HAVE with a non-resultative, experiential interpretation in 28b, just as Yamaguchi and Pétursson (2003)’s analysis predicts.<sup>12</sup>

- (28) a. Laufin eru flotin burt.  
leaves are floated away  
‘The leaves have floated away (and are still away).’

<sup>11</sup>The discussion here is radically simplified. See e.g. Klein (1992), Iatridou et al. (2003) for proper definitions of concepts like reference time and explications of the four types of perfect interpretation.

<sup>12</sup>A reviewer points out that the data reproduced here only involve manner-of-motion verbs. The pattern is not, however, restricted to this class. Yamaguchi and Pétursson (2003) also give examples with change-of-state verbs like *spretta* ‘grow’ and anticausatives like *brotna* ‘break’.

- b. Laufin hafa flotin burt.  
 leaves have floated away  
 ‘The leaves have floated away (at some point in the past).’

A very similar pattern seems to hold in (at least some forms of) Norwegian (Øystein Nilsen, Øystein Vangsnes, p.c.).

The experiential/resultative distinction also seems to best characterize the split in perfect auxiliaries with intransitives in late Middle and Early Modern English. It has long been known that HAVE was favored in modal and irrealis contexts, infinitive perfects and clauses with iterative or durative semantics (see e.g. Fridén 1948, Rydén and Brorström 1987, Kytö 1997). McFadden and Alexiadou (2006) argue that this makes sense if BE was restricted to perfects of result, since all of these contexts can be understood as forcing or signaling a preference for an experiential perfect interpretation. Particularly revealing are examples like 29:

- (29) For ye han entred into myn hous by violence  
 ‘For you have entered into my house by force’

This sentence is uttered by a man accusing thieves **after** they have left his house. The result state no longer holds, thus this cannot be a perfect of result, but only an experiential perfect. Just as in modern Icelandic, the auxiliary is thus HAVE.

## 2.4 Interim summary

The patterns of auxiliary selection attested cross-linguistically thus include consistent selection of either HAVE or BE as well as alternation between the two on the basis of a range of factors. In addition the thematic and aspectual properties of the main predicate familiar from languages like German, Italian and French, potentially relevant factors include the person and number of the subject and the tense, mood and aspect of the clause. In the preceding overview, I have only been able to give an outline of the existing variation, but hope to have conveyed at least some idea of how it is structured.

Current research on this empirical side of the auxiliary selection phenomenon is concentrated on identifying more precisely which factors are relevant in which languages (see e.g. Sorace 2000, Legendre 2007b and the works in Aranovich 2007). An increasingly important role in this is being played by lesser-known languages and historical or non-standard varieties and dialects (see e.g. Pavlenko 1997, Manzini and Savoia 1998, Ledgeway 2000, Arregi 2004, McFadden and Alexiadou 2006, Legendre 2007a, Avram and Hill 2007, Cennamo and Sorace 2007). As already hinted at above, these frequently show behavior that differs in surprising and interesting ways from the more familiar standard languages.

## 3 Theoretical issues

The proper analysis of the data from auxiliary selection raises questions pertaining to several theoretical issues, including some of the most important controversies of the past few decades. In this section we turn to the discussion of those issues and the attempts that have been made to deal with them. The central question that all such work faces is how to connect a collection of primarily semantic factors – inner and outer aspect, mood, thematic properties and person and number of the subject – to the morpho-syntactic phenomenon of auxiliary selection. In the

process, a whole array of categories and possible distinctions on the one side must be reduced to a binary opposition on the other. Modern theoretical work on this question and auxiliary selection in general essentially begins with the Unaccusative Hypothesis (henceforth UH). The main theoretical issues surrounding the phenomenon can be understood relative to the UH, and most subsequent theories are at least in part responses to it, thus it will serve as an excellent starting point for our discussion.

### 3.1 The Unaccusative Hypothesis

The central premise of the UH, formulated in Perlmutter (1978, 1989), is that intransitive verbs fall into two classes, based on the status of their single argument.<sup>13</sup> With unergative verbs (e.g. *work*), the argument is just like the subject of transitives. With unaccusative verbs (e.g. *arrive*), however, the argument is more like a transitive object in important respects, though it may look like a subject on the surface. The motivation for this idea comes from the behavior of intransitive verbs on a series of syntactic tests which distinguish transitive subjects from objects. For example, Italian has a clitic *ne* ‘of them’, which can be related to a transitive object, as in 30a, but not a transitive subject, as in 30b (data from Perlmutter (1989)):

- (30) a. Giorgio *ne* ha comprato due.  
           Giorgio of.them has bought two  
           ‘Giorgio has bought two of them.’  
       b. \*Due *ne* hanno comprato macchine come questa.  
           two of.them have bought cars like this  
           intended: ‘Two of them have bought cars like this one.’

This *ne* is also possible with the subjects of intransitives like *arrivare* ‘arrive’, as in 31a, suggesting that they are like objects. But it is not possible with the subjects of other intransitives like *telefonare* ‘telephone’, hence the assumption that these are more like transitive subjects:

- (31) a. *Ne* sono arrivate due.  
           of.them ARE arrived two  
           ‘Two of them have arrived.’  
       b. \*? *Ne* hanno telefonato due.  
           of.them HAVE telephoned two  
           intended: ‘Two of them have telephoned.’

Crucially, in languages like Italian and Dutch, the distribution of auxiliaries in the perfect seems to follow the same split in the intransitives to which these other tests are sensitive. Note that we have BE with the unaccusative *arrivare*, but HAVE with the unergative *telefonare*. Perlmutter thus proposed that the syntactic representation distinguishes verbs like *arrivare* from those like *telefonare* in terms of the underlying grammatical roles borne by their subjects. He then proposed rules of auxiliary selection that make reference to those underlying roles.

The original UH of Perlmutter (1978) involved four claims which can be understood as the basis for subsequent theoretical discussion of auxiliary selection. They will thus also serve as

<sup>13</sup>I do not propose to give anything like a full treatment of unaccusativity here. The primary focus of this article is auxiliary selection, and to the extent that unaccusativity has played an important role in theoretical discussions of auxiliary selection, it will also play an important role here. Some phenomena and works of research which are of crucial significance to treatments of unaccusativity in general will receive only brief mention here because, in my view, they have little bearing on auxiliary selection.

the basis for our survey of that theoretical work in the following sections. First, intransitive verbs divide up into two classes. As we will see in Section 3.2, a lot of work has been devoted to whether there really is a single, clear split and where it lies. Second, the determination of which verb belongs in which category correlates in some way with the semantics. Section 3.3 will look at the work which has investigated how strong this correlation is, and how it should be modeled. Third, the difference between the two classes of verbs is represented syntactically, in terms of whether the sole argument is an underlying subject or object. In Section 3.4, we will look at whether the distinction really should be represented syntactically, and if so how. Fourth, the split between unaccusative and unergative verbs is somehow responsible for the difference in their auxiliary selection. We will examine in Section 3.5 work which has attempted to explain why we should get BE with unaccusatives and HAVE with unergatives.<sup>14</sup>

### 3.2 Is there really a single split?

As noted already in Section 2.2.3, even among languages which show an auxiliary split with intransitives based on predicate-level properties, there is variation in which verbs should take BE and which HAVE. In addition to this, we find within individual languages mismatches between the different phenomena which are supposed to diagnose unaccusativity. E.g., Perlmutter (1978) identified the availability of an impersonal passive as a diagnostic of unergativity in Dutch. So the fact that 32a is good suggests that *werken* ‘work’ is unergative, while the badness of 32b suggests that *vallen* ‘fall’ is unaccusative (data from Zaenen 1988):

- (32) a. Er werd (door de Jongens) gewerkt. (unergative)  
           there became (through the boys) worked  
           roughly ‘There was working (by the boys).’  
       b. \*Er werd (door de Jongens) gevallen. (unaccusative)  
           there became (through the boys) fallen  
           roughly ‘There was falling (by the boys).’

Here, auxiliary selection agrees with the impersonal passive, since *werken* takes HAVE while *vallen* takes BE. However, with other verbs, like *stinken* ‘stink’, the tests disagree:

- (33) a. De badkamer heeft gestonken. (unergative?)  
           the bathroom has stunk  
           ‘The bathroom stank.’  
       b. \*Er werd (door de badkamer) gestonken. (unaccusative?)  
           there became (through the bathroom) stunk  
           intended roughly ‘There was stinking (by the bathroom).’

As a result of facts like these, some researchers have questioned whether there really is anything like a single big split characterizing the intransitive verbs. Van Valin (1990), for example, rejects the sort of unified, syntactically encoded split implied by the UH. He argues that the splits we observe involve syntactic phenomena being sensitive to semantic properties which define the actual verb classes. Crucially, different syntactic phenomena can be sensitive

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<sup>14</sup>Note the four theoretical questions we will be considering are in principle independent of each other. Many authors and their works will be discussed more than once in the discussion to follow, and the fact that two authors agree on the answer to one of the questions does not imply that they will agree on anything else.

to different semantic factors, so rather than a single split into two big classes of intransitives, there may be several splits in any given language.

Zaenen (1993) comes to a similar conclusion after examining more closely the mismatch between impersonal passive formation and auxiliary selection in Dutch. She shows that the two diagnostics indeed split up the intransitive verbs differently, but unlike Van Valin she does not decide that the UH as such should be abandoned. Rather, she argues that auxiliary selection still reflects an unaccusativity style split, because it aligns with other diagnostics which clearly distinguish transitive subjects from objects. Specifically, attributive past participles of transitive verbs can only modify their objects, not their subjects (e.g. *de geslagen jongen* ‘the hit boy’ can only mean that the boy was hit, not that he did the hitting). Crucially, they work with the same intransitive verbs that select BE (*de gevallen jongen* ‘the fallen boy’), but not with those that select HAVE (*\*de gewerkte man* ‘the worked man’). It was simply a mistake to think that the formation of impersonal passives was also sensitive to the distinction between underlying subject and object (see also Grimshaw 1987, for related discussion).

More recently, as data on auxiliary splits from a wider array of varieties has entered the discussion, some scholars have argued that a more nuanced descriptive framework than a simple two-way split is needed in order to accommodate the attested variation. The best known among these is the Auxiliary Selection Hierarchy (ASH) proposed in a series of works by Antonella Sorace and colleagues (e.g. Sorace 2000, Keller and Sorace 2003, Sorace 2004, Cennamo and Sorace 2007). The idea is that verbal predicates fall into a series of semantic classes, which can be arranged according to the hierarchy in Table 1. The higher a verb is on the hierarchy,

CHANGE OF LOCATION	<b>BE</b>
CHANGE OF STATE	
CONTINUATION OF A PRE-EXISTING STATE	
EXISTENCE OF A STATE	
UNCONTROLLED PROCESS	
CONTROLLED PROCESS (MOTIONAL)	
CONTROLLED PROCESS (NON-MOTIONAL)	<b>HAVE</b>

Table 1: Sorace’s Auxiliary Selection Hierarchy

the more strongly it prefers auxiliary BE; the lower it is, the more strongly it prefers HAVE, both within and across languages. Verbs at either end show the most consistent selection cross-linguistically and inspire the clearest judgments on the part of native speakers. Verbs towards the middle show variation and indeterminacy, with languages differing in where on the hierarchy they draw the line between BE and HAVE. For example, in French, the cut-off point seems to be around the CHANGE OF STATE class, whereas in Italian it is around EXISTENCE OF STATE. Under this view, auxiliary selection doesn’t depend on a monolithic split like that in the UH, rather there are a number of intermediate cut-off points to which it could potentially be sensitive. As regards mismatches like that in 33, the verbs involved tend to be from classes toward the middle of the hierarchy, for which inconsistent behavior is expected, even within a single language. Dutch *stinken* ‘stink’ e.g. is an UNCONTROLLED PROCESS verb.

### 3.3 What is the semantic basis of the split?

The UH is a syntactic hypothesis. Since it was first proposed, it has been clear that some sort of correlation obtains between the semantics of a verb and its classification as unaccusative

or unergative (Perlmutter 1978), but the correlation turns out to be difficult to characterize precisely. Rosen (1984) and others identified a series of cases where apparent semantic patterns in intransitive classification are contradicted, both within and across languages. Perhaps most famously, she noted that standard diagnostics classify the verb meaning ‘die’ as unaccusative in Italian, but unergative in Choctaw, whereas the classification is reversed in the two languages for verbs meaning ‘sweat’. Due to these and other arguments, Rosen (1984), Perlmutter (1989) and others came to the conclusion that unaccusativity and auxiliary selection could not be reliably predicted on the basis of the semantics.

However, initial difficulties in identifying the connection between auxiliary selection and the semantics do not imply that no connection exists. A body of work since the late 1980s has attempted to overcome the difficulties pointed out by Rosen (1984) and others by taking a more nuanced approach to lexical semantics. Van Valin (1990) in particular argues that the earlier work only showed that certain specific, overly simplistic semantic accounts of split intransitivity were incorrect, not that a semantic approach is in principle unworkable. He proposes instead, within the framework of Role and Reference Grammar, a more articulated theory of lexical semantics and shows how this can capture the distribution of auxiliaries and other standard unaccusativity diagnostics in a number of languages. A crucial point of his analysis, as noted above, is that the various diagnostics in different languages are not taken to all be sensitive to the same semantic distinction. Cross-linguistic mismatches are, thus, not evidence against a semantic basis for unaccusativity but only against a single, cross-linguistically valid form of split intransitivity.

A number of further theories have proposed a semantic basis for auxiliary selection and other unaccusativity-related behavior, typically also adopting two ideas crucial to Van Valin’s account. First, what is relevant are not coarse categories like the traditional semantic roles agent and patient, but more fine-grained (and potentially more well-defined) semantic features and structures. Second, languages vary in exactly which features are relevant for the choice between HAVE and BE.<sup>15</sup>

As discussed above, Zaenen (1993) argues that two proposed unaccusativity diagnostics in Dutch actually split the intransitives in two different ways. The basis for each split is, however, semantic. She proposes that the behavior of verbs like *stinken* ‘stink’ falls out correctly if the selection of auxiliary BE is tied to telicity, while impersonal passive formation depends on controllability. Because *stinken* is atelic, it selects HAVE (much like *werken* ‘work’), but since it is non-controllable, it does not allow the impersonal passive (much like *vallen* ‘fall’).

Shannon (1995) proposes a theory that ties auxiliary selection to the semantics, in terms of a ‘mutative intransitive’ prototype. The prototypical mutative intransitive is an intransitive clause with a non-agentive subject which undergoes a change of state or location. The closer a clause comes to this prototype, the more likely it is to select BE. Languages can differ in where they place the cut-off point, but possible variation is constrained in that we do not expect a language with the reverse split. That is we should not find – in a single language – HAVE with clauses that closely approximate the mutative intransitive prototype and BE with those further away. Sorace (2000)’s ASH discussed above makes similar predictions about possible cross-linguistic variation. For further proposals on the semantic determination of auxiliary selection, see also Lieber and Baayen (1997) and Randall (2007), as well as the discussion of Levin and Rappaport Hovav (1995) and Dowty (1991) below.

<sup>15</sup>While the works discussed here agree in proposing a semantic basis for unaccusativity, note that many of them disagree on whether unaccusativity should additionally be represented in the syntax, and if so how. We will turn to this issue in Section 3.4 immediately following.

### 3.4 How should the split be represented?

The question to be examined in this section actually breaks down into two parts. On a higher level, there is the issue of where the split underlying auxiliary selection should be represented in the grammar. Once we settle on an answer to this, there is then the lower level question of what the representation should look like in detail.

#### 3.4.1 Syntactic, semantic, both or neither?

There are two obvious candidates for the level at which intransitivity splits operate, the syntax and the semantics, but there are additional possibilities as well which go beyond these simple alternatives. For one thing, there is nothing in principle to exclude the possibility that auxiliary selection rules operate at a morphological level. For another, it is important to separate the question of where the splits are represented from that of how they are determined. We can imagine, for example, that a split follows semantic lines, but is syntactically represented. Proposals of all of these kinds exist in the literature and will be discussed in this section.

A purely syntactic approach is exemplified by the UH in the form adopted by Rosen (1984) and Perlmutter (1989). We have already seen that these authors questioned the reliability of semantic factors in predicting membership in the unaccusative and unergative classes, but it will be useful at this point to consider some of the arguments in favor of a syntactic representation of the split. The most obvious one is the generalization discussed in Section 2.2.1 above, that normal transitives always select HAVE, independent of their semantics. If this generalization is correct, then even the most semantic account of auxiliary selection would still require a syntactic statement to exclude the transitives from consideration for BE.

An additional argument comes from the behavior of reflexives. In many languages, reflexive morphosyntax – i.e. the presence of a reflexive pronoun or clitic, like German *sich* or Italian *si* – does not always correspond to reflexive semantics. It can also be used to form anticausatives, impersonals and middles, all of which are semantically intransitive. One might expect different kinds of reflexives to select different auxiliaries in accordance with their semantics in these languages, but in fact they do not. As noted above, German clauses with an accusative reflexive pronoun always select HAVE in the perfect, whether semantically reflexive (34a) or inchoative (35a) – even though inchoative verbs which appear without reflexive morphosyntax select BE (36a). On the other hand, Italian clauses with a reflexive clitic always select BE (Italian data from Perlmutter 1989):

- (34) Normal reflexives
- a. Sepp hat sich verletzt.  
Sepp HAS himself hurt  
'Sepp hurt himself.'
  - b. Giorgio si è (\*ha) ucciso.  
Giorgio self IS (\*HAS) killed  
'Giorgio killed himself.'
- (35) Inchoative reflexives
- a. Die Tür hat sich geöffnet.  
the door HAS itself opened  
'The door opened.'



- b. La tazza si è rotta.  
the cup self IS broken  
'The cup has broken.'
- (36) Non-reflexive inchoatives
- a. Der Schnee ist geschmolzen.  
the snow IS melted  
'The snow melted.'
  - b. Due navi nemiche sono affondate.  
two ships enemy ARE sunk  
'Two enemy ships have sunk.'

What determines auxiliary selection here is the reflexive category as defined morpho-syntactically – i.e. in terms of the presence of reflexive pronouns or clitics – not as defined semantically in terms of the number of logical arguments.<sup>16</sup> Thus, at least in these languages, the syntax must be playing a role in the selection of auxiliaries.

Precisely the opposite view – that auxiliary selection depends only on properties of the semantic representation – has been defended by a number of researchers as well. Van Valin (1990) argues e.g. that an appropriately sophisticated semantics can accommodate all attested intransitivity splits, whereas the syntax cannot. Lieber and Baayen (1997) attempt to weaken the case for a syntactic approach by calling into question the generalization that transitives always select HAVE. They point out that the apparently transitive verbs *volgen* 'follow', *naderen* 'approach' and *passeren* 'pass' actually select BE in Dutch, proposing a semantic account which unifies them with the intransitives which select BE (but see Hoekstra 1999, for discussion of empirical and theoretical problems with Lieber and Baayen's approach).

The aforementioned approaches notwithstanding, the question of whether auxiliary selection depends on syntax or on semantics is not all or nothing. Even if the splits do turn out to have an identifiable semantic basis, auxiliary selection may still be determined in syntactic terms. There is a third option, going back to Perlmutter (1978), according to which the intransitivity split itself is a syntactic matter, but the membership of a particular predicate in a given class is a question of semantics. In the frequently quoted formulation of Levin and Rappaport Hovav (1995), "unaccusativity is syntactically represented but semantically determined".

A great deal of research has been devoted to the question of how this division of labor actually works. The basic idea common to most approaches is that there is a mechanism mediating between the semantics and the syntax, linking semantic arguments to syntactic positions or grammatical functions. Zaenen (1993), e.g., argues for an intermediate level of 'intrinsic argument classification', which categorizes arguments on the basis of information related to semantic roles. Both auxiliary selection and the mapping to surface grammatical roles are sensitive to this intermediate level rather than the semantics. Similarly, Levin and Rappaport Hovav (1995) propose a set of four linking rules which determine, on a semantic basis, whether an argument will be projected as internal or external, i.e. as an underlying subject or object. For example, the "immediate cause" of an eventuality will link externally, while an "entity

<sup>16</sup>The precedence of (morpho-)syntax over semantics in these data is rendered especially clear by Legendre and Sorace (2003)'s OT analysis of the Romance facts. They posit a series of constraints relating the possible linking patterns to various semantic properties of the predicate like telicity, control and stativity, with different rankings yielding the different patterns attested in French, Italian and other languages. In addition, however, they posit a constraint against linking morpho-syntactic reflexives as unergatives. This crucially outranks all the semantic constraints, ensuring that reflexives will always select BE, no matter what their semantics.

undergoing the directed change described by [the] verb” will be linked internally. Legendre (2007b) argues, within Optimality Theory, that auxiliary selection must be framed in terms of two sets of constraints. One governs the relationship between certain lexical semantic features of a predicate and where its arguments will be realized. The other governs the actual choice of auxiliary on the basis of this argument structure. As is usual within OT, variation is captured by the different possible rankings of both sets of constraints.

An insightful discussion of the how intransitive splits should be represented is found in Dowty (1991). The article is primarily concerned with how the arguments are mapped to grammatical relations in the syntax, which Dowty argues is based on the semantic entailments that hold of each of the arguments due to the meaning of the predicate. The relevant entailments fall into two categories: so-called proto-agent entailments include “volitional involvement in the event or state” and “causing an event or change of state in another participant”, while proto-patient entailments are e.g. “undergoes change of state” and “incremental theme”. For any two-place predicate, the argument with more proto-agent properties will be realized as the subject, while that with more proto-patient properties will be realized as the object. This procedure can be extended to the one-place verbs to derive an unaccusativity-style split. If the argument has more proto-agent properties than proto-patient properties, it will be realized as an underlying subject, i.e. an unergative structure, otherwise it will be realized as an underlying object, i.e. an unaccusative structure. As Dowty notes, however, it is not obviously necessary to posit such a syntactic distinction between verb classes. Alternatively, the syntactic phenomena diagnostic of unaccusativity – like auxiliary selection – could be directly sensitive to the semantic proto-agent and proto-patient properties of the sole argument.

Dowty doesn’t come down definitively in favor of either of these possibilities, but he does give some discussion of how the decision should be made which applies to the syntactic versus semantic representation of split intransitivity in general. Essentially, it comes down to whether the assumption of a syntactic distinction yields an overall simplification in accounting for the morpho-syntactic phenomena relative to a purely semantic account. He ultimately concludes that “[h]ow persuasive such syntactic arguments are is, unfortunately, a question that will almost certainly depend on one’s grammatical theory” [p. 612]. E.g., a purely semantic account like that proposed by Van Valin (1990) makes sense within the context of a theory like Role and Reference Grammar which eschews multiple syntactic levels or strata in favor of a more complicated semantic representation. On the other hand, within theories like Relational Grammar and Principles and Parameters, multiple layers of syntactic representation are assumed independently, so making use of them to represent splits in the behavior of intransitives adds no additional complexity and potentially allows simplification on the semantic side.

The final possibility to be considered is that the features to which an auxiliary split makes reference are neither semantic nor syntactic, but morphological. This is what is proposed by Arregi (2004) to account for certain facts about Basque. Both transitive and unergative verbs show overt ergative agreement in the language, while unaccusatives do not. The fact that HAVE appears with the former and BE with the latter could potentially be tied either to the syntactic presence of an external argument, or to the morphological presence of ergative agreement. In most cases, the predictions of the two accounts are indistinguishable, but there are a few contexts where morphological agreement disagrees with syntactic argument structure. For example, dative agreement is not allowed to co-occur with non-3rd person absolutive agreement. In Ondarroan Basque, potentially offending examples are repaired by having the non-3rd person argument trigger ergative agreement instead of absolutive, as in 37:

- (37) Su- $\emptyset$  ni-ri es d-o-sta-su gusta-ten.  
 you-ABS me-DAT not 3SG.ABS-HAVE-1SG.DAT-**2SG.ERG** like-IMP  
 ‘I don’t like you.’

Interestingly enough, the auxiliary here is HAVE, tracking the agreement facts, not the argument structure facts. Thus, while auxiliary selection in Basque generally reflects syntactic argument structure, the actual rules for determining auxiliary insertion must be stated in morphological terms.

Bentley and Eythórsson (2003) argue that auxiliary selection is a morphological phenomenon, not just in one particular language, but across the Romance and Germanic languages that exhibit it. For them, HAVE and BE are allomorphs of a morpheme which combines with the participle to form the perfect. They present evidence from clitic climbing in Italian and from the development of the Romance analytic perfect from its Latin sources to support the idea that the auxiliaries are morphological exponents of tense and aspect and don’t have independent syntactic verbal status. Interestingly, Bentley and Eythórsson propose that the rule responsible for the allomorphy is sensitive to the semantic properties of the lexical verb, not to any aspect of syntactic structure.

### 3.4.2 Details of representation

We now come to the question of how the intransitivity split should be represented in detail. The majority of work which assumes that the representation should be syntactic adopts some version of the UH, i.e. the classes of intransitives are distinguished in terms of the underlying subject or object status of their sole argument. The original formalization of this by Perlmutter was in terms of Relational Grammar, where subject and object are theoretical primitives. Burzio, Burzio’s 1981, 1986 reformulation in GB terms has, however, come to be at least as influential. In this version, unaccusatives and unergatives are distinguished configurationally: an unergative verb is one whose sole argument starts out at D-structure in the position characteristic of transitive subjects – initially, daughter of S, sister of VP – while an unaccusative verb is one whose argument is a D-structure complement of V. In subsequent works in the same tradition, the underlying position standardly assumed for unergative subjects has come to be Spec-VP and then Spec-vP or Spec-VoiceP, but the basic premise of Burzio’s analysis has largely been maintained. Unergatives and unaccusatives are distinguished syntactically in terms of the initial position occupied by the sole argument of the verb.

There are, however, alternative views which have been proposed and which differ in non-trivial ways from the standard representation. Hoekstra (1999, and earlier work) e.g. proposes that what defines unaccusatives is not that their subject starts out as an object, but rather that it does **not** start out as an external argument. Where this difference is immediately relevant is with verbs whose auxiliary selection varies according to whether the verb takes a complement PP expressing an endpoint or path:

- (38) a. ...dat Jan gewandeld heeft/\*is  
 ...that John walked HAS/\*IS  
 ‘...that John has walked’  
 b. ...dat Jan naar Groningen gewandeld is  
 ...that John to Groningen walked IS  
 ‘...that John has walked to Groningen’

Manner of motion verbs like *wandelen* ‘walk’ are normally unergative, in that their subjects are normally external arguments. In sentences like 38b, however, the subject originates as the subject of a small clause built around *naar Groningen* ‘to Groningen’, and subsequently moves from there into the clausal subject position. The subject thus does not start out in an object position, but the structure is unaccusative nonetheless.

An alternative approach which has been pursued by several scholars recently (e.g. van Hout 2004, Borer 2003, 2005) is to represent intransitivity splits not in terms of the initial structural positions of arguments, but in terms of their interactions with the rest of the structure. Verb phrases themselves are relatively unstructured and do not distinguish different classes of intransitives. What is relevant instead is a series of functional projections above the VP related to aspect and Case, which the arguments may engage in checking relationships with and/or move to. In van Hout’s terms e.g., an unaccusative structure involves both AgrS and AgrO projections, and the sole argument must raise through both of them. An unergative structure, on the other hand, has only an AgrS projection. Since AgrO is required for the licensing of telicity in her system, this explains why telic one-argument verbs are unaccusative and select auxiliary BE, at least in Dutch.

Following Rappaport Hovav and Levin (1998) and Sorace (2000), theories of this kind are termed “constructional” (or “neo-constructional”), because they treat intransitivity splits as sensitive to the combined properties of the entire clause. This is in contrast to “projectionist” theories, according to which properties of the lexical verb determine the behavior of the rest of the clause with respect to split intransitivity. Where the difference between these two classes of theories really becomes apparent is in their treatment of the kinds of alternations we saw in Section 2.2.3. Projectionist theories hold that the relevant properties of the clause are projected from the lexical verb. In order to handle the variable behavior found with certain verbs with respect to auxiliary selection and other split intransitive phenomena, they must assume some form of polysemy, i.e. more than one meaning for the same verb. This is fine for exceptional cases of ambiguity, but becomes problematic when it comes to productive alternations. Levin and Rappaport Hovav (1995), adopting a strong projectionist stance, propose to deal with this by positing special lexical rules to map lexical entries from one verb class to another. For example, manner of motion verbs are taken to be underlyingly unergative activity verbs, but there is a lexical rule that shifts them to unaccusative change of location verbs under the right circumstances. This derives alternations like 16 above, repeated here as 39:

- (39) a. De knikker heeft minutenlang over tafel gerold.  
           the marble HAS minutes.long over table rolled  
           ‘The marble rolled around on the table for minutes.’  
       b. De knikker is binnen een minuut de tafel afgerold.  
           the marble IS within a minute the table off.rolled  
           ‘The marble rolled off the table within one minute.’

The projectionist view thus takes the position that the behavior of specific lexical verbs is in general rigid, and alternations like that in 39 are exceptional. Constructional approaches, in contrast, arose largely in response to evidence that these alternations are in fact quite common. Since the lexical entries for verbs are assumed to be relatively unstructured and underspecified for the factors relevant to intransitivity splits, the prediction is that they should, by default, be able to appear in several different kinds of structure. In other words, alternations are predicted to be the norm, and data like 39 fall out with no additional assumptions. The challenge that constructional approaches do face is to constrain the logically possible alternations to match

the actually attested ones. It is not the case that all verbs can appear in all imaginable frames – e.g. German *ankommen* ‘arrive’ never shows up in a context that would lead to selection of HAVE – and the theory must somehow derive this.

### 3.5 How do we explain the choice of auxiliaries?

The UH and related theories syntactically distinguish two classes of predicates for the purposes of auxiliary selection, but they do not motivate the particular matching of classes with auxiliaries that is actually found. That is, they do not explain why we get HAVE with transitives and unergatives and BE with unaccusatives rather than the other way around.

Hoekstra (1984) and Haider and Rindler-Schjerve (1987) propose solutions to this problem which differ in their technical details but are rather similar in spirit. They argue that the alternation between HAVE and BE is the result of a difference in their thematic properties – the former is transitive, while the latter is intransitive. They suggest that past participial morphology blocks the assignment of the verb’s external  $\theta$ -role, since the same participle is used in the passive as in the perfect. They then propose that auxiliary HAVE, though it assigns no  $\theta$ -role of its own, can pass on the otherwise blocked external role of the participle. It is thus required in the formation of perfects with verbs that would assign such a role. Since unaccusatives have no external  $\theta$ -role which would be suppressed by the participial morphology, they can form their perfect with auxiliary BE, which is argued to be the more basic, unmarked member of the pair.

Haider and Rindler-Schjerve (1987) extend this analysis to account for the different behavior of reflexives in Romance and Germanic with respect to auxiliary selection which we noted in 2.2.2 above. In the Romance languages, the reflexive cliticizes to the auxiliary, which in turn merges its argument structure with that of the participle. In this tight syntactic configuration, the reflexive can saturate the verb’s external  $\theta$ -role without the need for deblocking, and thus the marked auxiliary HAVE is unnecessary and BE appears instead. In Germanic, on the other hand, the reflexive does not cliticize. The only means for it to saturate the external  $\theta$ -role of the participle is through the mediation of auxiliary HAVE.

Vikner and Sprouse (1988) propose that there is a single auxiliary category, which is lexicalized as BE when it shows up between two co-indexed NPs, expressing the intuition that “BE signals identity” [p. 6].<sup>17</sup> Given the UH, this condition plausibly applies to unaccusative predicates and passives, where the surface subject is co-indexed with its own trace in the object position, as well as to copular constructions. HAVE appears essentially as the default auxiliary when the conditions for BE are not met. Like Haider and Rindler-Schjerve, Vikner and Sprouse also propose a way to account for the differential behavior of reflexives in Romance and Germanic in terms of the clitic versus non-clitic status of the reflexive element.

A different idea going back to Benveniste (1966) and Freeze (1992) takes its starting point from the fact – discussed in relation to Tamil in Section 2.1.2 above – that many languages lack a verb corresponding to HAVE, expressing possession instead with BE plus a preposition or other oblique marker on the possessor. A number of researchers have proposed that HAVE – in both its main verb and auxiliary uses – arises from the same structure when the preposition incorporates into BE. The variation in auxiliaries is then not so much stipulated selection of distinct lexical items, but variation in whether or not this incorporation applies – ideally as a result of independently motivated syntactic principles. In a very influential paper, Kayne (1993) adopts such an approach, proposing that incorporation must occur under certain circumstances

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<sup>17</sup>To be more precise, they propose that BE is a member of an A-chain, governing a co-indexed A-bound NP.

in order to allow subject movement out of the prepositional structure.

Mahajan (1997) proposes a different version of the preposition-incorporation analysis of HAVE. He notes that in many languages which lack HAVE, we find ergative case-marking in just those contexts where auxiliary-selection languages would use HAVE – i.e. with transitive and unergative perfects. Thus he proposes that ergative case is an alternate realization of the P when it fails to incorporate into BE. The Hindi sentence in 40a with ergative marking on the subject is then derived from more or less the same structure as the French sentence in 40b with incorporation yielding HAVE.

- (40) a. Raam-ne vah kitaabe parhii he  
Raam-ERG those books read be  
'Ram has read those books.'  
b. Jean a cuit les tomates.  
Jean has cooked the tomatoes  
'Jean has cooked the tomatoes.'

### 3.6 What about the splits that don't fit in with the UH?

The UH, as normally understood, doesn't provide a means to think about splits in auxiliary selection according to clause-level properties like tense, mood, aspect, person and number. Theories that attempt to deal with varieties displaying such splits thus deserve some separate discussion.

Kayne (1993), for example, attempts to handle both splits based on argument structure and those based on person and number. Recall that, for him, the difference between HAVE and BE reduces to whether or not a preposition incorporates into BE. One circumstance under which incorporation will fail is if the structure simply lacks the P in the first place. He proposes that this is possible in unaccusatives, but not in unergatives or transitives, hence the familiar auxiliary split based on predicate-level properties. Alternatively, incorporation can be made unnecessary even if the P is present, if the subject can escape the prepositional structure in some other way. Simplifying greatly, this possibility is related to participial agreement with the subject, and thus can be sensitive to the subject's person and number. This, Kayne claims, leads to the attested person- and number-based splits. His theory covers an impressive array of data but depends on a series of non-trivial theoretical assumptions, some of which seem to lack independent motivation. See (Cocchi 1994, Ledgeway 2000) for related approaches which attempt to overcome these shortcomings.

A rather different tack is taken by Legendre (2007a). Her point of departure is the bewildering array of person/number splits in Italo-Romance varieties. She argues that a standard parameter-based analysis cannot model the pattern of attested splits – in particular the instances noted above where one dialect shows precisely the reverse pattern of another. Instead, she proposes an OT analysis, where the choice of auxiliaries is subject to a series of constraints that relate particular auxiliary choices with person and number features, e.g. \*E/+SPK, "a verb with a +speaker subject does not take auxiliary BE". This system provides the power to accommodate auxiliary selection reversals, but if all of the logically possible rankings of these constraints were allowed, just about any pattern of auxiliary selection could be modeled, including several which do not seem to occur. Legendre prevents this by constraining the possible rankings in terms of markedness. The resulting typology of predicted selection patterns is a reasonably good fit with what is actually attested in Italo-Romance varieties.

## 4 Diachronic questions

Work on auxiliary selection from a diachronic perspective has concentrated primarily on two broad issues. The first is how perfect systems with auxiliary splits were created in the first place. The second is how such splits have subsequently been lost in the recorded histories of certain languages.

### 4.1 The creation of auxiliary splits

It is generally agreed that the periphrastic perfect with HAVE in both the Germanic and the Romance languages developed out of something like the Latin example in 41 (from Vincent 1982):

- (41) in ea provincia pecunias magnas collocatas habent  
in that province capital great invested have-3PL  
'They have a lot of capital invested in that province.' (Cicero)

Here, HAVE still has its possessive main verb meaning, and the participle is a resultative modifier on the object. However, it is only a short jump in contexts like this to a perfect interpretation, along the lines of 'They have invested a lot of capital...'. If someone currently 'has capital invested', this is generally because they 'have invested the capital' at some point in the past.

Now, constructions like 41 are only possible with transitives, so we have here the germ of an auxiliary split. How BE came to fill the gap with (a sub-class of) the intransitives is, however, somewhat less clear. A periphrasis with BE and the past participle was used in Latin to express the perfect of passives and deponent verbs, as in 42:<sup>18</sup>

- (42) a. amatus est  
loved IS  
'He has been loved.'  
b. mortuus est  
died IS  
'He has died.'

Especially since many deponents had unaccusative-type meanings, it is thought that these served as models for the later more general use of the BE periphrasis in Romance (see Vincent 1982, Tuttle 1986). Cennamo (to appear) argues that the subsequent rigidification of the pattern with BE in unaccusatives and HAVE in transitives and unergatives had to do with the breakdown of the morphological voice and case systems in Late Latin.

These historical quirks of the Latin perfect cannot, however, explain the parallel development in the Germanic languages. A simpler scenario for these is that the constructions arose from a predicative resultative use of the participle, where BE appears in its role as the copula, along the lines of the constructed example 43:

- (43) Hank IS arrived  
roughly: 'Hank is in the state of having arrived'

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<sup>18</sup>Deponents are verbs with synchronically passive form but active meaning.

Indeed, this is essentially the semantic interpretation that McFadden and Alexiadou (2006) claim for the BE perfect in Early English. At any rate, it is clear that the historically attested perfects have already undergone some amount of grammaticalization relative to their presumed sources, where HAVE and BE still had their main verb functions. This includes, in particular, the generalization of the perfect – usually with HAVE – to unergatives and other predicates which would never have appeared in the original resultative constructions. For discussion see Paul (1902), Traugott (1972), Mustanoja (1960, I 499-509), Vincent (1982), Mitchell (1985, I 280ff.), Tuttle (1986), Carey (1996), Elsness (1997).

## 4.2 The loss of auxiliary splits

Once created, auxiliary selection splits do not always remain stable. A number of languages have undergone extensive changes in this area in their recorded histories, up to and including the total loss of one of the auxiliaries.

The loss of BE as a perfect auxiliary in English is the best known change of this kind, and perhaps also the most studied (see Zimmermann 1972, Rydén and Brorström 1987, Kytö 1997, McFadden and Alexiadou 2006, among many others). Already in OE there was considerable auxiliary alternation with many verbs, but in the 14th century, HAVE begins to appear even with verbs like *come* which had previously only selected BE:

- (44) ... she shulde nouȝt haue comen in his sight bi his wille  
 ‘... she would not HAVE come into sight by his will.’  
 (CMBRUT3,115.3483)

For the next several centuries, such verbs show variation in their auxiliary selection, with HAVE becoming gradually more frequent. This variation can be characterized in terms of several factors which favored the use of HAVE over BE, including modal and irrealis contexts (as in 44), past and infinitive perfects and clauses with iterative or durative semantics (see Fridén 1948, Johannisson 1958, as well as the works cited above). By the end of the Early Modern English period (ca. 1710), BE comes to be largely restricted to the extremely common *come* and *go*, and by the end of the 19th century it disappears entirely.

The most popular explanation offered for this change is that the BE perfect was eliminated due to pressure to avoid ambiguity with other uses of auxiliary BE, especially the passive (Traugott 1972, Zimmermann 1972, Rydén and Brorström 1987, among others). Another idea, proposed by Smith (2007), is that the BE perfect was not able to survive in English because of its low frequency – not just relative to the HAVE perfect, but relative to other tenses as well.

McFadden and Alexiadou (2006) propose instead an analysis based on the idea (discussed in Section 2.3.3 above) that the auxiliary split in late Middle English and Early Modern English was sensitive to the distinction between experiential perfects and the perfect of result. They argue that the contexts noted above where HAVE was favored are exactly those where a perfect of result interpretation is either impossible or highly marked, and show that the BE perfect never actually occurred in these contexts – not even in Old and early Middle English. Initially (pre-OE), HAVE was restricted to transitive resultatives and BE was restricted to intransitive resultatives where the result state was predicated of the subject. All other kinds of perfect interpretation were rendered by the simple past. Subsequently, the periphrasis with HAVE developed an experiential perfect meaning, which started showing up first in transitives, and then, during the 14th century, spread to intransitives as well. BE was still restricted to its original intransitive resultative contexts, so HAVE was actually spreading here at the expense of



the simple past. Only in the course of Late Modern English did HAVE actually start to replace BE in the intransitive resultatives, where it had held on essentially unchanged until this point. Why this last change happened remains somewhat mysterious, but it is at least clear how the HAVE perfect expanded leading up to it.<sup>19</sup>

In Romance varieties that have lost or heavily reduced use of BE in the perfect, an interesting recurring pattern is that the spread of HAVE is sensitive to semantic verb class in a way that essentially follows Sorace's ASH as discussed above. That is, HAVE spreads first through the so-called 'peripheral' verb classes in the middle of the hierarchy, only replacing BE in the core unaccusative verb classes at the very end. For example, before the 13th century Old Spanish used BE with all intransitives except for those denoting a controlled process (Aranovich 2003). Over the next several centuries, however, HAVE spread first to stative verbs, then to verbs of appearance, and finally to the change of location and change of state verbs – essentially moving up the hierarchy. As in English, the most common change of location verbs were the ones which held out the longest, to the end of the 17th century. The modern varieties of French have also been interpreted as representing stages in this development. In standard French, BE has been limited to change of location and change of state verbs, while Montréal French has gone further, increasingly restricting BE to the most common of these verbs, *aller* 'go', *venir* 'come' and *arriver* 'arrive' (Sankoff and Thibault 1980).

The opposite change – whereby HAVE is lost in favor of BE – is less common and less well-understood, but is found e.g. in Shetland English and in certain Italo-Romance dialects. How the change came about in the Shetlands is particularly obscure due to the spotty record of attestation, but given the linguistic history of the Islands, some role for Scandinavian is generally assumed (Melchers 1992, Pavlenko 1997). Rather more is known about the development of general BE in Italo-Romance dialects. Tuttle (1986) documents in great detail both the diachronic and synchronic distribution of HAVE and BE in Italo-Romance, and argues that both HAVE and BE dialects are products of a single intermediate development. A rather complex interaction of different construction types relating to the demise of the old Latin deponent verbs led to a situation where a large class of verbs in early Romance allowed either HAVE or BE. From this point of departure, the dialects diverged, some generalizing HAVE, others generalizing BE, and still others developing the kind of stable split found in standard Italian (see also Cennamo to appear).

## 5 Summary

We have seen that auxiliary selection encompasses a wide array of alternations in periphrastic tenses sensitive to factors ranging from transitivity, thematic notions and Aktionsart to mood and subject person and number. The relatively simple accounts that were originally developed to handle the alternations in Dutch, Italian, French and German have proven inadequate in the face of the range of selection patterns that have been found in additional Germanic and Romance varieties and beyond. In place of these accounts have been put forth frameworks like Sorace's Auxiliary Selection Hierarchy or Legendre's OT-based factorial typology which have the expectation of (appropriately constrained) cross-linguistic variation in selection patterns built in. Along the way, work on auxiliary selection has consistently influenced and been

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<sup>19</sup>Since perfects with HAVE became vastly more frequent than those with BE, something like Smith (2007)'s account could be applied here. However, as we have seen, Icelandic and Norwegian have retained BE in the restricted resultative role alongside more general HAVE without any apparent difficulty.

informed by work on argument structure, lexical semantics, verbal aspect, and the syntax-semantics interface.

In Section 2.4, I discussed some of the empirical questions related to auxiliary selection being pursued in current research. On the theoretical side, a number of the issues which I have treated in this article stand out as particularly urgent or promising objects for study in the present and near future. The most obvious is the ongoing debate between projectionist and constructional approaches. As I hinted at in Section 3.4.2 and has been discussed by Sorace (2000, 2004), Levin and Rappaport Hovav (2005) and others, each side has its strengths and its weaknesses, and progress can perhaps best be made by appropriating the insights of one to deal with the problems of the other (e.g. using projectionist-style semantic properties of the lexical verb to constrain verbal alternations in an otherwise constructional system). Another question is how to construct a unified theoretical account that can handle auxiliary splits along multiple dimensions. Older work – especially in the unaccusativity tradition – frequently neglected person/number based splits, and the resulting theories are still hard-pressed to accommodate them. This is changing as more extensive data on the full range of attested patterns become available.

A final puzzle is how best the increasingly well-understood cross-linguistic variation in auxiliary selection can be explained rather than just accommodated. Sorace's ASH e.g. provides a descriptive framework for splits based on semantic verb class, and makes predictions about what sorts of splits should be possible, but it provides no way to understand why a given language shows the pattern that it does. E.g., why does Italian select BE with stative verbs while French and German generally do not? Is this tied to some independent property of the language that distinguishes it from the others? Some recent work (e.g. McFadden and Alexiadou 2006) has argued that, at least in some cases, the particular auxiliary split found in a language can be explained in terms of the properties of the perfect in that language. As our understanding of the complex of morphology, semantics and syntax that makes up perfect improves, a more general understanding of auxiliary selection along these lines may become available.

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