Counterfactuals and BE in the History of English

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1. Introduction

In older forms of English, both HAVE and BE were used as perfect auxiliaries, but the latter has been lost over the past several centuries In Old English and early Middle English (henceforth OE and ME respectively), the choice between the two auxiliaries was determined by the properties of main predicate, much as in modern German, Dutch and Italian.[1] So in 1a we see BE with the non-agentive, change-of-state verb *fall*, whereas in 1b we see HAVE with the agentive activity verb *fight*:[2]

(1) a. as ha þreo **weren** ifolen onslepe…
when they three were fallen asleep…
'When the three of them had fallen asleep…'
(CMANCRIW-2,II.273.3999)
b. …huanne hi **heþ** wel yuoʒte
…when he has wel fought
'…when he has fought well'
(CMAYENBI,252.2314)

In the course of the ME period, HAVE began to encroach on territory previously held by BE. According to Rydén and Brorström (1987); Kytö (1997), this occurred especially in iterative and durational contexts, in the perfect infinitive and modal constructions. In Early Modern English (henceforth EModE), BE was increasingly restricted to the most common intransitives *come* and *go*, before disappearing entirely in the 18th and 19th centuries.

This development raises a number of questions, both historical and theoretical. First, why did HAVE start spreading at the expense of BE in the first place? Second, why was the change conditioned by the factors mentioned by Rydén and Brorström (1987) and Kytö (1997)? Third, why did the change take on the order of 800 years to go to completion? Fourth, what implications does the change have for general theories of auxiliary selection?

In this paper we'll try to answer the first question by focusing on one the earliest clearly identifiable advance of HAVE onto BE territory – its first appearance with the verb *come*, which for a number of reasons is an ideal verb to focus on. First, *come* is by far the most common intransitive verb, so we get large enough numbers for statistical analysis. Second, clauses containing the past participle of *come* with a form of BE are unambiguous perfects: they cannot be passives, and they did not continue into modern English with a stative reading like *he is gone*. Third, and perhaps most importantly, *come* selected BE categorically in the early stages of English, so the first examples we find with HAVE are clear evidence for innovation. We will present evidence from a corpus study showing that the first spread of HAVE was

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[2]The data for this paper come from the *York-Toronto-Helsinki Parsed Corpus of Old English Prose* (Taylor, Warner, Pintzuk and Beths, 2003), the *Penn-Helsinki Parsed Corpus of Middle English*, 2nd edition (Kroch and Taylor, 1999) and the *Penn-Helsinki Parsed Corpus of Early Modern English* (Kroch, Santorini and Delfs, 2005) The fourth line of each example gives the sentence ID as it appears in the corpus file.

due to a ban on auxiliary BE in certain types of counterfactual perfects, and will propose an account for that ban in terms of Iatridou's (2000) Exclusion theory of counterfactuals.

2. The data

Table 1 shows the incidence of *come* with the two auxiliaries throughout the time covered by the three corpora.[3] There are a few things to note here. BE is **obligatory** with *come* throughout OE and

	OE	**M1**	**M2**	**M3**	**M4**	**E1**	**E2**	**E3**
BE	93	70	11	100	77	140	193	74
HAVE	0	1	0	16	12	24	35	31
Total	93	71	11	116	89	164	228	105
%HAVE	0%	1%	0%	14%	13%	15%	15%	30%

Table 1: Auxiliary selection with *come*

nearly so in the first half of ME. In the third ME period (1350-1420), HAVE suddenly appears in roughly 15% of the examples, but then stays remarkably steady at this rate well into EModE. In the third and final period of the EModE corpus (1640-1710), HAVE becomes more common, but still has only a 30% share. This suggests an answer to the third question above. We are not actually dealing with a monolithic change, a gradual rise in the frequency of HAVE that took 800 years to complete. Rather, we seem to have a series of discrete changes, each increasing the frequency of HAVE by a small amount. Specifically, something happened around 1350 that first made HAVE possible, after which things were stable for a few hundred years. Then something else happened around 1650 causing a jump in the use of HAVE. For the period after 1710 we do not yet have reliable data, so we cannot say whether the subsequent development was a single gradual rise in the frequency of HAVE or a series of further discrete changes. Partly for this reason, we will concentrate here on the first change.

Let us begin by considering the characteristics of the first perfects of *come* with HAVE. A full 11 of the 16 are past counterfactuals, formally either pluperfects like 2a or with past/subjunctive modals above a non-finite perfect like 2b and 2c:

(2) a. And if þow **hadest** come betyme, he hade yhade þe maistre
and if you had come timely he had had the master
'And if you had come in time, he would have prevailed.'
(CMBRUT3,227.4105)

b. . . . she **shulde** nouȝt **haue** comen in his sight bi his wille
'. . . she would not have come into sight by his will.'
(CMBRUT3,115.3486)

c. . . . syþ þei **myton** liȝtly **haue** come to blysse
'since they might easily have come to bliss'
(CMWYCSER,303.1386)

It would seem that counterfactuality has something to do with the appearance of HAVE in these sentences, but in order to really test this, we need to consider things the other way around. I.e. given a counterfactual context, what is the distribution of HAVE and BE? The answer to this is quite striking, and is given in Table 2, which compares the frequency of the two auxiliaries in counterfactual and modal environments with their overall frequency.[4] Note that clauses with all intransitive verbs are included, not just those with *come*.

What we find is that BE is **extremely** rare with counterfactual pluperfects and **never** appears with modals. The fact that the latter pattern is categorical is quite remarkable for ME, a language which is

[3]The period labels from the ME and EModE corpora correspond to the following dates: M1 1150-1250; M2 1250-1350; M3 1350-1420; M4 1420-1500; E1 1500-1569; E2 1570-1639; E3 1640-1710.

[4]We separate the clauses with modals from those with simple past counterfactuals because they are identified on the basis of different formal criteria. For convenience, we will refer to them as modal and counterfactual perfects respectively, but it should be kept in mind that both have counterfactual interpretations.

	BE	HAVE	%BE
Counterfactuals	3	174	1.7%
Modals	0	130	0
All intransitives	549	1255	30.4%

Table 2: ME perfect auxiliary selection by modality

known for showing variation, in particular in phenomena related to changes in progress. It has long been known that modals and counterfactuals favored HAVE in early English (see e.g. Rydén and Brorström, 1987; Kytö, 1997; Lipson, 1999). However, it seems to have gone unnoticed until now that the effect was so strong particularly at the stage when HAVE first started appearing with verbs like *come* and thus is could potentially have been the catalyst for the eventual loss of BE.

At this point it is appropriate to ask why it was only in this period that *come* started taking HAVE in counterfactual contexts and not sooner. This we can actually answer quite clearly. It turns out that perfects with a modal above the auxiliary or with counterfactual meaning were extremely rare in early Middle English, as shown in Table 3.[5] With *come* specifically, the first perfects with modals don't

	M1	M2	M3	M4
Modals	3/296	7/145	54/796	66/565
	(1%)	(4.8%)	(6.8%)	(11.7%)
Counterfactuals	5/296	7/145	85/796	79/565
	(1.7%)	(4.8%)	(10.7%)	(14.0%)

Table 3: Modal and counterfactual perfects with all intransitives

show up until M3, as shown in Table 4.[6] So the reason why we don't find examples like *would have*

	M1	M2	M3	M4
Modals	0/71	0/11	5/116	1/89
	(0%)	(0%)	(4.3%)	(1.1%)
Counterfactuals	2/71	0/11	6/116	9/89
	(2.8%)	(0%)	(5.2%)	(10.1%)

Table 4: Modal and counterfactual perfects with *come*

come before around 1350 is that perfects under modals were just vanishingly rare.[7] In other words, the innovation did not consist in *would have come* replacing earlier *would be come*, but in modals above perfects becoming possible at all. Of course, this is just part of a larger development in the history of English. As is well known, the auxiliary system has undergone extensive grammaticalization over the last several centuries, and the full complexity that is now possible – *Hoyzer must have been being bribed* – is quite recent (see Warner, 1993, among many others).

All of this provides us with the beginnings of an explanation. In the first half of ME, counterfactual modals first started appearing in perfect clauses, as part of the general expansion of the auxiliary system. At this time, counterfactuals (almost) categorically required that the auxiliary on the perfect below be HAVE. This requirement was strong enough even to override the otherwise categorical selection of BE by verbs like *come*, yielding their first appearances with HAVE. Of course, we still have to explain why

[5]Our investigation of OE on this point is currently in progress. There are no perfects of *come* with modals in the corpus, and we have not yet found such examples with any other intransitive verbs. We cannot yet report on perfects with non-modal counterfactuals in OE.

[6]This lag is most likely due to the very small number of texts from the period and the very low occurrence of *come* in the few texts that we have.

[7]Modals were far more common outside the perfect. Counting clauses of all types, the rate of occurrence of modals for the four periods of ME was M1 10.0%; M2 12.5%; M3 11.5%; M4 11.7%. The differences between these numbers and the corresponding numbers for perfect clauses in Table 3 are statistically signifi cant for the fi rst three periods (M1: χ^2 26.37, p<.001, M2: χ^2 7.73, $p < .01$, M3: χ^2 17.04, $p < .001$), but not the fourth, by which time the modal perfect was fully established.

counterfactuals should favor HAVE in the first place, and this is the question we will turn to in the next three sections.

3. Some cross-linguistic notes

Before we get down to theoretical details, some brief discussion of the counterfactual effect in other languages is in order. None of the familiar modern languages with perfect auxiliary selection shows such an effect, but it would be a mistake to think that it is just a quirk of ME. There is increasing evidence that this sort of interaction – while perhaps not the norm – is not uncommon. E.g., Shannon (1995) discusses similar effects of modality on auxiliary selection in Middle Dutch and Middle Low German. For Middle Dutch, following Kern (1912), he notes

> "a strong, though by no means absolute tendency for mutative verbs, which of course are otherwise normally conjugated with BE in the perfect, to take HAVE in irrealis contexts" [p. 138]

Note especially example 3b, where the verb 'fall' appears with BE in the realis matrix clause, but HAVE in the counterfactual (modal) embedded clause:

(3) 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 souden hebben** dan…
many people are fallen …who not fallen would have but
'Many people have fallen …who would not have fallen, but…'

A similar pattern is reported by Ledgeway (2003) for 14th and 15th century Neapolitan. At that time, BE was the rule with unaccusatives and certain types of reflexives, but was frequently replaced by HAVE in modal contexts. Like English, Neapolitan ended up completely losing BE as a perfect auxiliary (unlike standard Italian), and Ledgeway argues that the modal effect was the first step on the way to that change. Note, on the other hand, that Dutch did not ultimately lose BE, but rather lost the counterfactual effect. So it seems that such an effect **can** combine with other changes to lead to the loss of BE, but need not necessarily do so. This is consistent with the pattern shown in Table 1, where the appearance of HAVE in counterfactuals correlates with just one of the two discrete jumps in the frequency of HAVE with *come*. Note also that all three languages which have so far been discovered to have a counterfactual effect on auxiliary selection date from approximately the same period in the middle of the second millennium CE. In Section 4we will propose a possible explanation for this in terms of the historical development of the periphrastic perfect in the Germanic and Romance languages.

4. Towards an explanation

Three central points emerge from the discussion thus far which must inform the search for a convincing explanation of the counterfactuality effect. First, the effect is categorical with modals and nearly so with other counterfactuals. The significance of this in a language so full of variation as ME cannot be stressed enough. This points toward a solution in terms of sharply-defined syntactic or semantic categories. Second, counterfactuality is of a different type than the other (primarily lexical) factors involved in auxiliary selection. In structural/scopal terms, things like argument structure, agentivity and lexical aspect are encoded fairly low, presumably within the VP/νP region, while counterfactuality is presumably encoded in the IP or even CP region. Furthermore, counterfactuality overrides these other factors. Thus its effect would seem to be operating independently, on a different level than normal selection. Third, languages like German, Italian and Modern Dutch show no sign of the effect. So whatever we propose must be parameterizable, and should ultimately be relatable to other ways in which (Middle) English perfects differ from perfects in these other languages.

With these points in mind, we would like to suggest an analysis in terms of Iatridou's (2000) Exclusion theory of counterfactuals. Iatridou shows that counterfactuality is marked by the same morphology used to encode past tense in languages like English and Greek. Thus for example in sentence 4a, the past form *had* encodes counterfactuality, not a temporal past interpretation. That is, the *if* clause is about having (or not having) a car now, not about having a car in the past.

(4) a. If she had a car, we could drive to Vegas.
b. If she had had a car, we would have driven to Vegas.

If we want to talk about having a car in the past, we need a second layer of past morphology, which yields what is formally a pluperfect as in 4b.

In order to account for these data, Iatridou proposes that "past" morphology is not directly tied to past semantics. Rather, it spells out what she calls an Exclusion feature (ExclF), and this ExclF has the more abstract semantics given in 5. It encodes an exclusion relationship between some aspect *x* of the topic and the same aspect *x* of the utterance. This *x* can vary over times and possible worlds, yielding the two instantiations of 5 in 6:

(5) T(*x*) excludes C(*x*)
(6) a. The topic time excludes the utterance time.
b. The topic worlds exclude the utterance world.

If *x* is times, we get the past tense interpretation in 6a. That is, the time interval(s) that are being talked about in the utterance do not include the time at which the utterance is made. Iatridou argues that this results in a past because a future interpretation is unavailable for independent reasons. On the other hand, if *x* is possible worlds, we get the counterfactual interpretation in 6b. In other words, the world in which the utterance is made is not included in the set of possible worlds being talked about.

Let us consider then how ExclF will relate to the auxiliaries that show up in perfect clauses. In a past conditional like 4b, the higher ExclF is of course contributed by the past morphology on the auxiliary, so the question is what contributes the lower one. I.e. which part of a periphrastic perfect contributes the anteriority portion of its interpretation? Presumably it is the auxiliary HAVE, not by the participle, since English participles in the absence of the perfect auxiliary do not retain such semantics, e.g. in the passive (Iatridou, Anagnostopoulou and Pancheva, 2003).

On the other hand, it is far less clear that auxiliary BE in ME would have contributed such a feature. The historical source of the the perfect with BE is of course a resultative participle predicated of the subject, under a copula. The anteriority in such a construction is not contributed explicitly by an ExclF feature, but comes by implication from what it means to have a resultative state. I.e. it comes from the meaning of the participle, not from the auxiliary. Of course, a BE + participle constellation can subsequently grammaticalize and become something other than the sum of its parts. In the familiar modern European languages like German and French such structures are clearly no longer simple resultative constructions, but have come to have true perfect or even simple past semantics. German examples like 7a and the first conjunct of 7b, e.g., cannot be interpreted as describing result states:

(7) a. Er ist zehn Jahre im Ausland geblieben.
He is ten years in.the outland stayed
'He stayed abroad for ten years.'
b. Er ist gegangen und dann gleich wieder zurückgekommen.
he is gone and then immediately again back.come
'He left and then came right back.'

However, there is some evidence that the BE perfect in ME had not yet reached this stage. For one thing, as I mentioned in the Introduction, it has been noted by other researchers that iterative and durational contexts were among those that disfavored the use of auxiliary BE in the early stages. This is precisely what we expect if BE can only be used to yield resultatives. Furthermore, we have noted in our ME corpus a marked difference in the frequency of the pluperfect with HAVE and BE. Whereas only 48% of perfects with HAVE (N=897) show a past tense form of the auxiliary, a full 65% of those with BE (N=524)

do.[8] We have not investigated these data in enough detail to say with confidence what is going on here, but the difference can be explained if the HAVE and BE perfects differ in whether or not there is an ExclF present. In instances where the anteriority of the eventuality must be made explicit, the simple BE perfect will not suffice and must be augmented with additional past morphology contributing an ExclF. With the HAVE perfect this is not necessary, since HAVE itself can contribute such a feature.

Crucially, if this is correct for the relevant period of ME, then the counterfactuality effect will be explained. The BE + participle structure contains no ExclF. The resultativity of the participle is sufficient to supply an implication of anteriority in certain contexts, but the construction is simply not appropriate in instances where a real ExclF is required. This is of course exactly the situation in a past counterfactual. Consider again the relevant clause of ex. 2a, repeated as 8a:

(8) a. And if þow **hadest** come betyme…
b. * And if þow **wast** come betyme…

One exclusion feature is supplied by the past tense morphology, the other by HAVE itself, and all is well. On the other hand, the constructed example 8b with BE instead only has the one exclusion feature supplied by the past morphology, and thus cannot have the proper past counterfactual semantics. Such a construction is of course possible where the ExclF is simply interpreted as past on top of a BE perfect, as in example 1a above and 9 below:

(9) And whan nyght was comyn, þe lordes & ladies wente to bedde
(CMBRUT3,3.53)

Note that in principle, the ExclF of the past form of BE should also be interpretable as a counterfactual instead of a past if our analysis is correct. This would yield the counterfactual of a BE perfect rather than the past of a BE perfect. Given our claims about the BE perfect, this should mean something along the lines of "if you were (now) in the state of having come", which is not the same thing as the true past counterfactual "if you had come." Of course, utterances with such a semantics would only be appropriate under fairly marked circumstances, so we do not expect them to be very common. However, we have found one example in the corpus that seems to meet the description. Indeed, it is one of the 3 counterexamples listed in Table 2. The interpretation of the sentence is a bit dicey, but the presence of the adverb *now* supports the idea that we are looking at the present counterfactual of a resultative state rather than a past counterfactual:

(10) and this is to singnefie the certeynte of profecie, whos bifalling of tyme to comynge is so certeyn, as if it **were passid** now
(CMPURVEY,I,55.2214)

What about the examples with modals? As we've noted, the modal examples that occur all seem to have past counterfactual meanings as well. I.e. only find forms like (the predecessors of) *would, should, might* above the perfect. Perfects with *will, shall, may, can, must* are rare to non-existent in our ME corpus, and the few that we've found are with transitives and thus uninformative for auxiliary selection. The sentences with the modals thus represent the same situation as that just discussed. They are past counterfactuals which require two instances of ExclF.

(11) a. …she shulde nouȝt **haue** comen in his sight…
b. * …she shulde nouȝt **be** comen in his sight…

Again, the past morphology on the modal in a sentence like 2b repeated here as 11a supplies one exclusion feature, and the non-finite form of HAVE below it supplies the other. Substituting BE as in the constructed example 11b leaves us short an exclusion feature, and is thus out.

A final piece of evidence in favor of this analysis comes from the cross-linguistic facts discussed in Section 3. Recall that the languages in which something like the counterfactuality effect has been noted are all from a period about 600-700 years ago, whereas the related modern languages show no trace of it. A reasonable interpretation of this, assuming that it is not an accident, is that the counterfactuality effect

[8] The difference is highly statistically signifi cant by chi-square test: $\chi^2 = 29.6$, $p < .001$.

is a product of a certain stage of the grammaticalization of the BE perfect which the modern languages have all passed.[9] In fact, this is essentially what we have been claiming. The counterfactual effect results because the ME BE perfect remains at least fairly close to its resultative origins and does not contain a proper ExclF feature. The other languages of central and western Europe whose BE perfects have the same historical source would be expected to go through a similar stage. In the modern languages, however, the BE perfect has clearly developed further into a true perfect or even simple past containing an instance of ExclF, and thus it is again expected that they have no problem with using auxiliary *be* in past counterfactuals, as in the German example in 12 (modeled on 8a):

(12) Wenn du pünktlich gekommen **wärest**...
if you timely come were
'If you had come on time...'

Of course, a number of empirical and theoretical questions are raised by the findings reported here and our analysis of them. Many of these concern the development of English before and after the period that we have focused on here, and are the subject of our ongoing research with the corpora. For instance, how were past counterfactuals of verbs like *come* expressed in Old English? What happened in the course of EME as non-counterfactual modals began to appear above perfects? Cross-linguistic concerns arise as well. If our analysis of the difference between ME, Middle Dutch and Old Neapolitan on the one hand and the modern languages on the other hand is correct, then we should also find evidence for the counterfactuality effect in earlier stages of German and French. On a theoretical level, we need to formulate a more precise semantics for the ME perfects with BE and HAVE that is in line with the way the two were used, and which captures the differences with the modern languages correctly. A non-trivial issue that comes up in the semantics is how to reconcile the Exclusion analysis of something like *If she had had a car...* with current theories of the perfect which favor an Extended Now semantics – something that has more to do with inclusion than exclusion.

5. Problems for other theories of auxiliary selection

A final word is in order on existing theories of auxiliary selection, and how they compare with ours in dealing with the data discussed here. In fact, most of them were formed without the ME facts in mind, and they simply are not built to deal with them. The well-known accounts of the perfect auxiliaries are phrased primarily in terms of argument structure relations, lexical semantics and (low) aspect, matters that we do not expect to be affected by counterfactuality.

One popular idea, proposed by Burzio (1986) and many others, is that auxiliary selection in languages like Italian, German and Dutch depends on the underlying position of the subject. BE is selected by unaccusatives, whose subject is an underlying internal argument, while HAVE is selected by unergatives and transitives, whose subject is an external argument. However, while auxiliary selection and unaccusativity are clearly related in some way, the connection is notoriously difficult to capture properly in a cross-linguistically satisfactory way, and the ME counterfactual effect presents a new problem. Because mood has nothing to do with lexical argument structure, under the unaccusativity theory it should have no effect on auxiliary selection. That is, putting *come* under a counterfactual won't turn it into an unergative.

Another influential proposal comes from Kayne (1993). He proposed that HAVE is actually just BE plus an incorporated preposition. The details of his analysis are more than we could go into here, but the relevant part boils down to the claim that the P head that introduces the participial structure is not required to appear with unaccusatives in the relevant languages. There is thus no incorporation, and we get BE. Seen in this way, the theory is an elaboration of the unaccusativity story – an attempted explanation for **why** auxiliary selection should be sensitive to the underlying position of the subject. Again, nothing in the theory would lead us to expect that the presence of a counterfactual modal would

[9] It is not really problematic that we are dealing with two Germanic languages and one Romance. While the periphrastic perfect is not a common inheritance of these languages of central and western Europe, it is well known that the constructions have developed largely in parallel in them, presumably due at least in part to contact.

force the appearance of HAVE, i.e. the insertion and incorporation of a P head into the auxiliary, so the ME facts are again mysterious.

Sorace (2000) proposes that auxiliary selection is sensitive to a hierarchy of verb classes. Verbs tend more or less strongly to select HAVE or BE depending on where they fall on the hierarchy. The verbs at one end, non-motional controlled process verbs (e.g. *work*), most strongly select HAVE, while those at the other end, change of location verbs (e.g. *arrive*), most strongly select BE. Languages can then vary in where on the hierarchy they draw the line between selecting HAVE and selecting BE. This approach provides a means to capture cross-linguistic variation and change, something that had been somewhat problematic for unaccusativity-based theories. Still, while the hierarchy may provide a basis for the description of certain types of variation, it has basically the same problem with the counterfactuality effect as the other theories. Since the hierarchy is based on the semantics of the main predicate, there is no reason to expect modality to affect auxiliary selection. I.e. putting a modal above *come* won't convert it from a CHANGE OF LOCATION to, say, an EXISTENCE OF STATE verb, which might be expected to select HAVE.

A traditional explanation for the loss of BE as a perfect auxiliary in English is that it resulted from pressure to avoid ambiguity with the passive (see e.g. Zimmermann, 1973; Rydén and Brorström, 1987). A clause with BE + past participle was potentially ambiguous between a perfect and a passive, but HAVE + past participle was unambiguously a perfect. Thus – so the reasoning goes – people increasingly used HAVE with verbs that would have taken BE in order to avoid confusion. Consider, however, that only transitives regularly form passives, while only intransitives could take BE as a perfect auxiliary. Thus the only way that ambiguity of this kind could arise was with verbs that had both transitive and intransitive uses which were not distinguished morphologically. These were extremely rare in ME. Consider that in our reading of the ME corpus, we found only 9 clauses to be ambiguous in this way, compared to 549 clear intransitives with auxiliary BE (1.6%). Furthermore, the ambiguity-avoidance theory is again completely unhelpful for the specific pattern with counterfactuals. Counterfactual clauses should be no more prone to ambiguity than non-counterfactual ones, so there's no reason why they should so completely favor HAVE.

The only theory of which we are aware that specifically addresses the irrealis effect is that in Shannon (1995). He proposes that BE is most strongly selected by clauses that approximate what he calls a mutative intransitive prototype, which is defined in terms of a cluster of semantic properties.[10] Like in the theories already mentioned, properties of the eventuality like telicity and agentivity are relevant here, but Shannon claims that higher level properties of the utterance go into defining the prototype as well. In particular, the mutative transitive prototype is a positive assertion about a mutative, non-agentive eventuality. Things like irrealis mood and negation move a clause away from the mutative prototype by canceling the assertion that the change has taken place, thus they can disfavor selection of BE in certain languages. While Shannon's theory manages decent cross-linguistic coverage, it fails to offer an explanation for the differences among languages. That is, it can accommodate languages of the ME type with a counterfactuality effect and those of the Italian type without one, but it gives no explanation for why ME went the one way and Italian the other. Even on a descriptive level the ME data discussed here may be a bit problematic for Shannon's theory. As we've seen, counterfactuality on its own was enough to rule out BE without consideration of any of telicity, agentivity or anything else. Putting counterfactuality on the same level as these other properties in the definition of a single prototype fails to reflect this asymmetry. Saying that the prototype was hyper-sensitive to counterfactuality in ME would just be a restatement of the facts.[11]

Now, it must be noted that what we have proposed here is not intended to replace these other theories of auxiliary selection. We have not presented an account of the general distribution of BE and HAVE for ME let alone cross-linguistically. We have simply offered an explanation for the effect of counterfactuality on auxiliary selection. As pointed out at the beginning of Section 4, the counterfactuality effect seems to be something that operates independent from and on top of the general patterns of auxiliary selection in the language. A complete account of the alternation between BE and HAVE in a language like ME will

[10] 'Mutative' is a term used in older literature on auxiliary selection to describe verbs whose meanings imply a change of place or a change of state.

[11] To be fair to Shannon, it must be noted that he was concerned primarily with data from Middle Dutch and Middle High German, and in those languages the counterfactuality effect was apparently not categorical.

thus require a combination of our account of the counterfactuality effect with something like one of the theories discussed in this section.

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