Observations about the form and meaning of the Perfect*

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Για τον Κεν, με αγαπη και ευγνωμοσυνη
За Кен, с лобов и благодарност

1. Goal

The goal of this paper is to establish how certain aspects of the meaning of the perfect are composed from the elements present in its morphosyntactic representation.

Not all languages have a present perfect that is structurally and interpretationally distinct from a simple past. We will only be looking at languages that make the distinction.[1] In languages that have a perfect, there is variation with respect to the range of meanings associated with it. There are certain meaning components that are always found with a perfect and there are others that vary depending, as we will show, on several factors.

2. Background

2.1. Common characterizations

There are a number of intriguing issues surrounding the perfect that have drawn considerable attention in the literature, among the most commonly discussed ones being the fact that the perfect shares properties with both temporal and aspectual forms, and that certain adverbials that one would expect to be possible with the perfect are actually disallowed. In this section, we will briefly present the central points concerning these common characterizations.

Similarly to the tenses, the perfect temporally locates an eventuality relative to some reference point. Thus, the perfect is often described as expressing anteriority. Consider, for example, sentence (1):

(1)   *Petros has visited Thailand.*

Sentence (1) asserts that there is an eventuality of Petros' visiting Thailand that occurred before the utterance time. This common and intuitive characterization brings the present perfect very close to the meaning of the simple past, and for this reason, the two have often been discussed in opposition to each other (McCoard 1978 and many others).

The literature on the distinction between the present perfect and the simple past usually revolves around the following points.

While both the present perfect and the simple past express temporal precedence or anteriority (which is why the perfect is often called a tense), it has often been pointed out that they do so in different ways. In Reichenbachian terms, for example (as in Hornstein 1990), it has been said that while the simple past expresses a temporal precedence between the Speech time and the Reference time (R__S), the perfect expresses a temporal precedence between the Event time and the Reference time (E___R)).[2]

Another much discussed difference between the present perfect and the simple past regards compatibility with different adverbial classes. There are two subcases of this. In some (though not all) languages, certain pastoriented adverbs like *yesterday* or *in 1959* cannot appear with the present perfect but can with the simple past (McCoard 1978, Klein 1992, Giorgi and Pianesi 1998 and many others). It is obviously surprising that pastoriented adverbs would not be compatible with a temporal configuration expressing anteriority (dubbed the "present perfect puzzle" by Klein [1992]) and this question has received a fair amount of attention. On the other hand, there are also adverbs (e.g., *since*) that are compatible with the (present) perfect but not with the simple past. McCoard (1978) contains an extensive list of adverbs that are compatible only with the perfect or only with the simple past, as well as of adverbs that are compatible with both.[3]

A third way of characterizing the perfect in opposition to the simple past has to do with aspect (which is the reason why the perfect is often called an aspect). The perfect is said to describe (or focus on) a state that follows from a prior eventuality (Parsons 1990, Vlach 1993, Giorgi&Pianesi 1998 and others).[4] On this view, (1) says that Petros is in the/a state that results from an eventuality of visiting Thailand. This has been taken to mean that sentences containing a perfect are stative sentences. On the other hand, sentences containing a simple past inherit the aspectual properties of the main predicate and can therefore be statives or non-statives (accomplishments, achievements or activities).

2.2.   Uses of the present perfect

In the literature, four major uses of the present perfect have been identified (see McCawley 1971, Comrie 1976, Binnick 1991 and others):

The *universal perfect* (U-perfect) conveys the meaning that the predicate holds throughout some interval stretching from a certain point in the past up to the present (e.g., McCoard 1978, Dowty 1979, Mittwoch 1988, Vlach 1993). It has been noted that the U-perfect can be formed only if the "underlying eventuality" (the eventuality referred to by the syntactic material occurring just below the perfect) is stative verb or adjective or a progressive. As we will show later, what is required is *unboundedness*, a notion related to but not identical with stativity. An eventuality is described as unbounded when it is ongoing at an interval (and is therefore not asserted to have reached an endpoint – achievement of the goal, in the case of telics; termination for atelics). An eventuality is described as bounded when it is contained in an interval (i.e., when it is asserted to have completed/terminated). The syntacticosemantic feature [unbounded] is realized by progressive or imperfective morphology; the feature [bounded] by the perfective.[5] (We will return to the issue of stativity and unboundedness in section 4).

(2)   a. *I have been sick since 1990.*
       b. <u>1990   NOW</u> (=utterance time)

On the U-perfect reading, (2a) is understood to mean that there is a sickness eventuality that holds throughout the named interval, that is, a period extending from 1990 up to now. The U-perfect has often been claimed to not be a core meaning of the perfect because many languages do not have a U-perfect (Jespersen 1924, Comrie 1976).

The *experiential perfect* asserts that the subject has a certain experience. Unlike the U-perfect, the experiential perfect can be formed from an underlying eventuality of any Aktionsart.

(3)   a. *I have read "Principia Mathematica" five times.*
       b. *I have been sick since 1990.*
       c. 1990 ___ NOW (=utterance time)

(3a) asserts that I have the experience of reading "Principia Mathematica" five times. On the other hand, (3b) is ambiguous. On the experiential reading, it says that within the interval that extends from 1990 till now there is some (at least one) interval in which I was sick. On this reading, (3b) can be continued by *I was sick for three months in the fall of 1993*. This reading is indicated in (3c). However, the string also has the U-perfect reading, as in (2a-b).

The *perfect of result* is said to be possible only with telic predicates and only for as long as the effect of the underlying eventuality holds.

(4)   *I have lost my glasses.*

Sentence (4) can be a resultative perfect only if said while the glasses are still lost. As soon as the glasses are found, (4) can only be uttered as an experiential perfect.

Finally, the *perfect of recent past* is used to report an eventuality that just happened.

(5)   *He has just graduated from college.*

Sometimes, the term *existential perfect* is used as a cover term for the last three uses (McCawley 1971, Mittwoch 1988), but the prototypical existential perfect is often taken to be the experiential (McCawley 1971). We will have a few things to say about the perfect of recent past and nothing about the perfect of result, whose status as an independent category is unclear to us.[6] The paper will focus mostly on the universal/experiential distinction and its crosslinguistic parameterization.

3. The universal/existential ambiguity debate

The distinction between universal (U-) and existential (E-) perfect has been the subject of much discussion in the literature. In fact, the very nature of the distinction has been a matter of considerable debate. One view holds that we are not dealing with a true semantic ambiguity but with a pragmatic one, the U-perfect being just the limiting case of the E-perfect (Bauer 1970, Inoue 1978, McCoard 1978, Heny 1982, Klein 1992, 1994). Another view holds that the U/E distinction is a genuine semantic ambiguity (Dowty 1979, Richards 1982, Mittwoch 1988, Abusch and Rooth 1990, Vlach 1993).

Pragmatic accounts of the U/E distinction in the perfect (e.g., Klein 1992, 1994) attribute the U-reading to a vagueness with respect to the actual duration of the underlying stative predicate. They argue that the semantic contribution of the perfect is to assert that the underlying eventuality precedes reference time, without specifying its exact temporal location or duration. Whether or not, in the case of states, the eventuality continues to hold *at* and possibly *after* reference time is left unspecified; it is sufficient that some time span, during which the eventuality holds, precedes the reference time.

What about the view that the U/E distinction is part of the semantics? As pointed out by Dowty (1979), when the adverb in an ambiguous sentence like *Mary has lived in Boston for 3 years* is preposed, only the U-reading survives. This shows that the U-perfect is not just a special case of

the E-perfect, as pragmatic accounts would have it.[7] Indeed, if the U-perfect were a subcase of the E-perfect, then the former would entail the latter and we would never find a case where only the U-reading is available. Other arguments come from Mittwoch (1988). She observes that, on the E-reading, in a sentence like *Sam has been in Boston since Tuesday*, Tuesday is not included in the set of possible intervals at which the state of Sam's being in Boston holds. On the U-reading, however, Tuesday is asserted to be part of the interval throughout which Sam is in Boston. Clearly, then, it cannot be the case that the U-reading is a subcase of the E-reading.

Another argument for a semantic treatment of the U/E distinction comes from the temporal interpretation of clauses embedded under present perfect predicates. This issue is discussed by Brugger (1997), who points out that in English, the existential present perfect behaves like the simple past in terms of the range of interpretations it allows to embedded past tense clauses. Matrix past tenses can license a purely morphological past (i.e., a past that is not interpreted as such) in their embedded clause; this is what happens under the simultaneous reading of a sentence like *John claimed that Mary was sick*. The E-perfect allows the same simultaneous interpretation (in addition to the shifted reading); for example, in *Since Christmas, John has claimed on several occasions that Mary was sick*, the two eventualities of John's claiming and Mary's being sick can be contemporaneous. The exact explanations for these sequence-of-tense facts need not concern us here; what is important for our purposes is that the U-perfect does not license the simultaneous interpretation of an embedded past tense. A sentence like *Since Christmas, John has been claiming that Mary was sick* or a sentence like *John has always claimed that Mary was sick* only has the interpretation that Mary's sickness is prior to John's claiming. The explanation, given by Brugger, is that in the U-perfect the underlying eventuality continues at the utterance time and thus semantically, the U-perfect behaves like a present tense.[8] This would be another argument in favor of viewing the distinction between the U-perfect and the E-perfect a semantic one.

Other arguments have been proposed in favor of a semantic treatment of the U/E distinction.[9] If the arguments made here are correct, they constitute additional evidence for the semantic view.

The points we would like to contribute to the U/E-perfect debate are these (not in order of significance):

1.　The U-reading asserts that the underlying eventuality holds throughout the interval specified by the adverbial *and* at its endpoints. In case of the present perfect, this means that the utterance time is included by assertion.

2.　The U-reading is never available to a perfect unless the latter is modified by certain adverbials. We will discuss what contribution the adverbials make.

3.   The E__R interval does not have a distinguished status in the perfect.
4.   The crosslinguistic distribution of the U-reading is not quirky, as is often assumed, but can be predicted by the morphosyntactic features that enter into the composition of the perfect participle.
5.   Anteriority is not part of the meaning of the perfect (participle).

From these points, it is clear that we are in the so-called semantic camp, that is, we do not believe the difference between the U- and the E-perfect is one of pragmatics; instead, we believe it is one of meaning, determined by the morphosyntactic content of the sentence. We will explicate each point in turn, with an emphasis on 2-5.

3.1.   Point 1: Inclusion of the utterance time by assertion

In the U-reading of a sentence like (2a), the meaning is conveyed that the speaker is still sick at the moment of utterance[10]. Is this an implicature or an assertion of (2a)?

For the pragmatic accounts of the U/E distinction, clearly it is not a matter of assertion.[11] But even semantic accounts of the U/E distinction do not always take the position (at least explicitly) that in the U-reading, the reference time is included in the underlying eventuality by assertion. Mittwoch (1988) argues that the reading that the eventuality holds at the utterance time is not part of the main assertion of the U-reading of the present perfect but an implication stemming from the fact that the underlying predicate is a state and, although the interval denoted by the adverbial has ended, the interval at which the eventuality holds need not have ended.[12] Abusch and Rooth (1990) similarly take the interval denoted by the adverbial to extend "up-to-now" without discussing whether the underlying eventuality is asserted to hold at the utterance time or not.

Our position is that the U-perfect asserts that the underlying eventuality holds throughout the interval specified by the adverbial *and* at its endpoints. Let us take as example the present perfect in (2a) on the U-perfect interpretation. There is an interval that we will call the *perfect time span*, which starts with 1990.[13] The *left boundary* (LB) of the perfect time span is specified by the argument of the adverbial. The *right boundary* (RB) is set by tense. This means that in the present perfect, RB is at (i.e., includes) the utterance time. In the past perfect, RB precedes the utterance time; in the future perfect, RB follows the utterance time.[14] Recall that for a U-perfect like (2a), 1990, or a final subinterval of 1990, is included in the sickness eventuality by assertion, as shown by Mittwoch (1988). In other words, at LB, the predicate holds by assertion. We propose that the same holds for RB. That is, in the U-perfect reading of the present perfect, the underlying eventuality holds at the utterance time by assertion. This can be seen in the

following sentences, which contain claims that the eventuality does not hold at the utterance time and are therefore contradictions:

(6)   a. *She has been sick at least/ever since 1990 but she is fine now.*
       b. *She has always lived here but she doesn't anymore.*

Effectively, in the U-perfect, the underlying eventuality holds throughout the entire perfect time span and since RB is part of the perfect time span, the eventuality holds at RB as well. On the U-perfect reading of the present perfect, the underlying eventuality holds at the utterance time, since RB is the utterance time. This fact results from a combination of the perfect and the meaning of the present tense. On the U-perfect reading of the past perfect (or pluperfect), the underlying eventuality is again asserted to hold at RB of the perfect time span, but now RB is in the past with respect to the utterance time, owing to the past tense component of the pluperfect. The same consideration applies for the future perfect: in this case, RB is in the future with respect to utterance time. Consider the following discourse:

(7)   a. *Mary visited Peter last week.*
       b. *A strange bug had bitten him a week before*
       c. *and he had been very sick since then.*
       d. *Mary will visit Peter again in two weeks.*
       e. *At that point, he will have been sick for a month.*

According to (7a-c), Peter got a bug-bite two weeks before the utterance time; his ensuing sickness started at the time of the bug-bite and continued up to and including the time of Mary's visit, which happened a week before the utterance time. Whether it continued beyond that is not indicated in (7c). What is relevant is that at the time specified by the past tense (when Mary's visit took place), the eventuality is asserted to have held. This is similar to the eventuality's being asserted to hold at the utterance time in the U-reading of the present perfect. The same holds for the future perfect, as is illustrated in (7d-e). At the time when Mary's visit will take place (i.e., two weeks after the utterance time), the eventuality will still hold. Thus, the eventuality of Peter's being sick will have held throughout a period of one month starting two weeks before the utterance time (LB) and extending up to and including two weeks after the utterance time (RB).

    As we said earlier, previous views on this point have held that the U-perfect reading of the present perfect asserts only that the underlying state holds up till now, and it is left to the pragmatics to determine whether the state holds at the utterance time or not. Indeed, one can say while sipping a cup of coffee *I have been digging in the yard for two hours.* The context of utterance makes it clear that no digging is actually happening at utterance

time. However, this is not a counterexample to point 1 since one can say *I am (busy) digging in the yard* while sipping a cup of coffee during a break in the digging. The progressive (which can be used only with nonstatives) seems to allow assertions about subeventualities of the underlying eventuality. This "flexibility" remains when the predicate is part of a perfect sentence. Stative predicates do not allow the same leeway as nonstatives. That is, one cannot say *He is in the room* during even a short absence from the room. And neither can one say *He has been in the room ever since this morning* (as a U-perfect) when he is not in the room anymore. This asymmetry between statives and non-statives exists outside the perfect and is inherited in the perfect, creating the illusion that in the U-perfect reading, the eventuality does not hold at the utterance time.

From now on, we will use the noncancelable inclusion of RB in the predicate as a diagnostic for the U-perfect reading. However, we will use only stative adjectives, to avoid the aforementioned difficulties.

In summary, in the U-perfect reading, the underlying eventuality holds by assertion at all the points of the perfect time span, including its endpoints (LB and RB). As we have shown, LB is set by the argument of the perfect adverbial and RB by tense.

3.2.   Point 2: U-perfect and adverbial modification.

First, we will show that truly unmodified perfects are never U-perfects.[15] Later we will return to why this may be so.

3.2.1. *Unmodified perfects are never U-perfects*

To demonstrate that the U-reading is never available to a perfect unless it is modified by certain adverbials, we have to look at predicates that in principle can yield the U-perfect. We will look at individual-level predicates, stage-level statives and progressives.

Individual-level statives that hold throughout an individual's life and cannot be coerced into stage-level statives, like *be tall* and *have brown eyes*, are ungrammatical in the perfect without adverbials. The unacceptability of such sentences shows a fortiori that the U-perfect is missing:[16]

(8)   *He has had brown eyes *(since he was born).*

Next, consider the perfect of stage-level statives (and individual-level-predicates that can be coerced into stage-level predicates). Stage-level predicates are possible in the perfect without adverbials.

(9)   *Mary has been sick*

Does this sentence have a U-reading? It can certainly have an experiential reading, but there is also a context in which it can appear where the reading is clearly not experiential. We have to consider this context, shown in (10), to see whether we are dealing with a U-reading.

(10)   A: *I haven't seen Mary in a while. Where is she?*
       B: *She has been sick.*

Is B's utterance (*She has been sick*) a U-perfect? It is at least compatible with (10B) that Mary is still sick at the utterance time (the sentence can be continued with *and she still is and so she hasn't been coming to the office*), which raises the suspicion that we are, in fact, dealing with a U-reading.[17]
However, unlike a U-perfect, (10B) is also compatible with Mary's not being sick at the utterance time; (10B) could also be continued with *but she is fine now and she will come to the office soon*. In other words, *She has been sick* is simply silent about whether Mary is sick at present and this is precisely not how the U-perfect behaves.
    What type of perfect is (10B), then? We argue that (10B) has the range of meanings found with (11).

(11)   *She has been sick lately.*

Sentence (11) says nothing about whether Mary is sick at the present time.

(12)   *She has been very sick lately. I don't know how she is now.*

In other words, there is a covert *lately* in (10B), or, possibly, there is an anaphoric reference to something with that interpretation, provided by the context in (10A). From the nature and meaning of this adverbial it follows that (10B) is an example of the perfect of recent past.
    There is also crosslinguistic evidence showing that (10B) is not a U-perfect and that it most likely is a perfect recent past. Some languages, such as Bulgarian, have a U-perfect but not a perfect of recent past. In Bulgarian, the discourse in (10) cannot be rendered with a perfect in B's answer at all.

(13)   A: *I haven't seen Mary in a while. Where is she?*
       B: *#Tja   e   bila   bolna.*
            she   is   been   sick
            'She has been sick.'

In Bulgarian, there are two possibilities. Either B's utterance can contain a present tense, in which case it is asserted that Mary is still sick, just as it would be in English; or it can contain a simple past, leaving the context to determine whether Mary is still sick or not or whether the speaker is just ignorant about this matter (i.e., exactly the meaning of the simple past). We conclude that (9)/(10B) is not a U-perfect.

Why should English and Bulgarian differ with respect to having the perfect of recent past? Whatever the ultimate answer is, at a first level it is that the two languages in the temporal morphology that accompanies *lately*. In English, this adverbial must take the present perfect; in Bulgarian, it takes the past tense.

(14)   a. *She has been sick lately.*
       b. **She was sick lately.*
       c. **Tja   e   bila   bolna naposleduk.*
          She   is   been   sick   lately
          literally: 'She has been sick lately'
       d. *Tja   beše   bolna naposleduk.*
          she   was   sick   lately
          literally: 'She was sick lately'

This correlates with the fact that English but not Bulgarian has a perfect of recent past in the absence of an overt adverbial. An English present perfect can "pick up" a *lately* in the discourse, but a Bulgarian present perfect cannot. This possibly points to a lexical idiosyncrasy.[18]

Finally, this brings us to the perfect of the progressive. It is sometimes said that the perfect of the progressive has only the U-reading (Vlach 1993).[19]

(15)   *I have been cooking.*

However, in fact (15) is not a U-perfect, as nothing is asserted about the utterance time (the sentence can be continued by *but I'm done now*), but it can be an experiential perfect or a perfect of recent past. As before, then, we conclude that the perfect of the progressive in isolation does not have the U-perfect reading.[20] Other examples pointing to this conclusion are found in Mittwoch 1988 (e.g., *He has been eating your porridge; it's all gone/I have been writing a difficult letter; thank goodness it's finished*).

3.2.2. *So what do adverbials do?*

We have shown that the U-reading is possible only when the perfect is modified by an adverbial. Of the adverbials that trigger a U-reading, there are some with which the U-reading is simply possible and some with which it is obligatory:

(16) a. U-reading possible: since, for five days
       b. U-reading required: at least since, ever since, always, for five days now

With Dowty (1979), Vlach (1993), and others, we assume that there are at least two levels of adverbials, perfect-level and eventuality-level, "level" here corresponding to scope.[21] We take perfect-level adverbials to be situated higher than eventuality-level adverbs. This simply reflects the fact that the perfect morphology is higher in the tree than the part describing the eventuality. The perfect adverb is below tense, whose [+/-past] feature can appear on the perfect, yielding present, past or infinitival perfects. In the addendum, we address issues pertaining to the order of functional categories in the perfect and to the placement of adverbs.

One diagnostic for whether an adverb is perfect-level is whether the perfect morphology is obligatory.[22] For example, *since*-adverbials require perfect morphology:[23]

(17) a. *I have been sick since yesterday.*
       b. **I am sick since yesterday.*
       c. **I was sick since 1990.*

There are also adverbials that are perfect-level but appear to not require perfect morphosyntax (e.g., *for*-adverbials). However, the appearance that perfect morphology is optional with these adverbials is only an illusion. In fact, such adverbials are ambiguous; they can be either perfect-level or eventuality-level. As the latter, they do not require perfect morphosyntax; as the former, they do. We will return to more details of this issue when we discuss *for*-adverbials.

Not all perfect-level adverbials are capable of forming a U-perfect. For example, *lately* and *five times before* require perfect morphology and hence are perfect-level – but they do not form a U-perfect.

When there is perfect morphology but no overt perfect-level adverbial, we argue (with Vlach [1993]) that there is a covert adverb. (We will return to the nature of this covert adverbial.) When there is no overt eventuality-level adverbial, the context (possibly as a default mechanism along the lines of existential closure Heim (1982) provides one with roughly the

meaning (*at least*) *once* (henceforth, ONCE) (see also Bennett 1977, Bäuerle 1979).[24]

Adverbials that relate to intervals can either have a "durative" or an "inclusive" interpretation (e.g., Dowty 1979, Mittwoch 1988, Vlach 1993). The same holds for perfect adverbials. If the perfect-level adverb is durative, the underlying predicate must hold of every subinterval of the perfect time span (universal quantification over the points of the interval); that is, the perfect time span must be "filled up" with a homogeneous predicate. On a durative interpretation, since LB and RB belong to the perfect time span, the predicate holds of them too. This is how the U-perfect is derived.

If the perfect-level adverbial is inclusive, then the perfect sentence asserts that a particular eventuality is properly included in the perfect time span (existential quantification over the points of the interval). In other words, neither of the boundaries is asserted to be part of the eventuality (see Mittwoch 1988 for a detailed discussion of this point with respect to LB). This is how the E-perfect is derived.

Let us now discuss some perfect-level adverbials in more detail.

Since-adverbials For *since*-adverbials, LB is set by the argument of *since* and RB is set by tense. *Since*-adverbials are ambiguous between being durational and being inclusive. When *since* is durational, it yields the U-perfect only. When *since* is inclusive, it yields the E-perfect (Vlach 1993; see also Bennett and Partee 1972, Dowty 1979). Alternatively (Arnim von Stechow, personal communication), *since* can be described as being neither durational nor inclusive, but the *default* perfect-level adverbial in the sense that it merely sets the LB of the perfect time span denoted by the perfect; therefore, all possible readings are permitted with *since*-adverbials. Either characterization is compatible with our proposal, though we will use the former terms in what follows.

The adverbial *ever since* has only the U-perfect reading, most likely because of the universal association of *ever*, which indicates universal quantification over the points of the perfect time span.

The adverbial *at least since* also has only the U-perfect reading. Without going into details, we will sketch what may be going on here. Addition of *at least* to other adverbials also forces the durative reading. For example, *He was in his office between 3 and 4* permits both the durative and the inclusive interpretation of the adverbial. But *He was in his office at least between 3 and 4* has only the durative interpretation.[25]

We have said that *since* is both durative and inclusive. But in order to obtain the U-perfect reading, it is not enough to access the durative reading of *since*. We also need a predicate that can satisfy the subinterval requirements of the durative side of *since*, in other words, a homogeneous predicate (later, we will show some effects of this requirement). Such a predicate is available in (18a) but not in (19a). This is why the U-perfect reading is

possible in (18a), as illustrated in the interpretation in (18b) and the logical form in (18c), alongside the E-reading (see [18d] and [18e]), whereas it is not possible in (19a), which only has the existential reading (see [19b] and [19c]). In other words, the eventuality denoted by *be sick* but not the one denoted by *read "The Book of Sand" five times* is such that it satisfies the requirements of the universal quantifier provided by durative *since* (as in the logical form in [18c]). The E-perfect is derived by replacing the universal quantifier with an existential quantifier, as in (18e) and (19c). We will show later that there are languages and environments that have all the elements of the perfect but not the right type of eventuality to plug into (18c).

(18) a *Since 1990 I have been sick.*
      b. *U-reading:*
          There is[26] a time span (the perfect time span) whose LB is in 1990 and whose RB is the utterance time, and throughout[27] that time span I was sick.
          or
          There is a time span (the perfect time span) whose LB is in 1990 and whose RB is the utterance time, and all the points of that time span are points of my being sick.
          or
          There is a time span (the perfect time span) whose LB is in 1990 and whose RB is the utterance time, and that entire time span is filled with one eventuality of my being sick.
      c. $\exists i$ (LB= 1990 & RB = Now & $\forall t \in i$ (Eventuality (t)))
      d. *E-reading*
          There is a time span (the perfect time span) whose LB is in 1990 and whose RB is the utterance time, and in that time span is an eventuality of my being sick.
      e. $\exists i$ (LB= 1990 & RB = Now & $\exists t \in i$ (Eventuality (t)))

(19) a. *Since 1990, I have read "The Book of Sand" five times.*
      b. There is a time span (the perfect time span) whose LB is in 1990 and whose RB is the utterance time, and in that time is an eventuality of my reading "The Book of Sand" five times.[28]
      c. $\exists i$ (LB= 1990 & RB = Now & $\exists t \in i$ (Eventuality (t)))

For-adverbials (following Vlach 1993): *For*-adverbials can be perfect-level or eventuality-level. We conclude the latter since a *for*-adverbial does not require the perfect (*I was sick for 5 days*). *For*-adverbials are only durational (Dowty 1979).[29] When a *for*-adverbial is perfect-level, LB is calculated backward from RB. Being durational, *for*-adverbials, when they are perfect-level, can only yield the U-perfect.

(20) a. *I have been sick for five days.*
      b. *For five days, I have been sick.*
      c. There is a time span (the perfect time span) whose LB is five days
          before RB and whose RB is the utterance time and throughout
          that time span I was sick.

When the *for*-adverbial is eventuality-level and it is in a perfect sentence
(i.e., when we are dealing with the perfect version of the sentence *I was
sick for five days*), it co-occurs with a (covert or overt) perfect-level adver-
bial:

(21) a. *Since 1970, I have been sick for five days.*
      b. There is a time span (the perfect time span) whose LB is in 1970
          and whose RB is the utterance time, and in that time span is an
          eventuality of my being sick for five days.[30]

When a perfect sentence contains no overt perfect-level adverbial, what
is missing is only the LB of the perfect time span, since RB is set by tense.
In such a case, LB can be set contextually or by other interpretive elements;
for example, the scene set by present tense would be the existence of the
subject.[31] Consider a sentence like (22a). If the *for*-adverbial is perfect-
level, the U-perfect results as in (22b) in the way already described: But
when the *for*-adverbial is eventuality-level, there is no overt perfect-level
adverbial. RB of the covert perfect-level adverbial is set by tense. In the
absence of any information (contextual or otherwise) about LB, present
tense also affects LB, since present tense is relevant over the entire exis-
tence of the individual.[32] So when the *for*-adverbial is eventuality-level, the
interpretation of (22a) is an E-perfect along the lines of (22c):

(22) a. *I have lived in Thessaloniki for ten years.*
      b. There is a time span (the perfect time span) whose LB is ten years
          ago and whose RB is the utterance time, and throughout that time
          span I lived in Thessaloniki.
      c. There is a time span (the perfect time span) whose LB is when I
          was born and whose RB is the utterance time and in that time
          span there is an eventuality of my living in Thessaloniki for ten
          years.

Recall that sentence-final *for*-adverbials yield sentences that are ambiguous
between the U-perfect and the E-perfect while sentence-initial *for*-
adverbials yield only the U-perfect reading (e.g., Dowty 1979, Mittwoch
1988).

(23)   a. *John has been in Boston for two weeks. (Ambiguous: E- and U-perfect)*
       b. *For two weeks, John has been in Boston. (Unambiguous: U-perfect only)*

From the above contrast, the general conclusion is often drawn that sentence-initial adverbials yield U-perfects and sentence-final adverbials yield U-perfect and E-perfects. This is wrong, however. Sentence-initial adverbs can also yield E-perfects.

(24)   *Since 1990, I have read "The Book of Sand" five times. (E-perfect)*

The difference in what readings they permit when sentence-initial is a function of how the adverbials in question yield the U/E-perfects. *Since*-adverbials are always perfect-level, while *for*-adverbials can be either perfect-level or eventuality-level. The readings that a *for*-adverbial (which is always durative) permits are a direct result of whether it is perfect-level (yielding U-perfect only) or eventuality-level (yielding E-perfect only). On the other hand, the readings that a *since*-adverbial permits are a function of whether the durative or the inclusive persona of the adverbial has been chosen.

For a *since*-adverbial, position in the syntactic tree is irrelevant; it combines with other elements of the sentence to yield a U-perfect or an E-perfect in the manner described above.

For a *for*-adverbial, on the other hand, position in the syntactic tree does matter. The fact that a sentence-final *for*-adverbial can yield an E-perfect or a U-perfect means that a sentence-final *for*-adverbial can be either eventuality-level or perfect-level. The fact that a sentence-initial *for*-adverbial yields only the U-perfect in turn means that the sentence-initial *for*-adverbial can only be perfect-level.

Why should sentence-initial position determine that *for*-adverbs are necessarily perfect-level? The answer is that perfect-level adverbials attach higher than eventuality-level adverbials, as we suggested at the beginning of this section.

A distinctive property of adverbial modification is that it is highly local. An adverbial cannot modify parts of a clause that are more deeply embedded than itself. The domain of an adverbial's modification is determined by its surface position – that is, the position of Merge.[33] Now *for*-adverbials that appear in sentence final position may have been merged lower down (in the VP-domain, or, as we will argue in the next sections, in the domain including grammatical aspect), in which case they are eventuality-level, or they may have been merged later, higher in the structure, where the perfect resides (perfect-level). But a *for*-adverbial that appears on the left has nec-

essarily been merged late, outside the VP-domain. Thus, this adverb cannot be eventuality-level; it can only be perfect-level. Alternatively, if it is assumed that temporal adverbials in sentence-initial position are topicalized (see footnote 37), the lack of ambiguity with *for*-adverbials follows from Shortest Move. If it is assumed, as we argue here, that in a perfect sentence, there are always two levels of (overt or covert) adverbials, eventuality-level and perfect level, then an eventuality-level adverbial will not be able to skip an (overt or covert) perfect-level adverbial.[34] A similar though not identical argument is presented in Thompson (1995).[35] We leave this issue since it has little effect on our main proposals.

Always Always can also be either perfect-level or eventuality-level,[36] and different meanings arise in the two cases. Individual-level predicates can take *always* only in the perfect:

(25)   a. *Emma has always been tall.*
       b. **Emma is/was always tall.*

From (25b), we conclude that *always* cannot be an eventuality-level adverbial with IL predicates and that when IL predicates appear with *always* in perfect sentences, *always* is a perfect-level adverbial. More evidence for this comes from the fact that *always* cannot co-occur with other perfect-level adverbials when an individual-level predicate appears.

(26)   **Since 1990, I have always been tall.*

On the other hand, with eventives or stage-level statives, *always* can occur in nonperfect sentences (27a) and it can co-occur with perfect adverbials (27b-c), showing that with such predicates. it can be eventuality-level:

(27)   a. *I always give/gave him a dime when he ask/asked me for money.*
       b. *Since 1990, I have always given him a dime when he (has) asked me for money.*
       c. *Since 1990, I have always been sick when he (has) visited me.*

In summary, *always* can be eventuality-level with stage-level predicates but not with individual-level predicates. It can be perfect-level with individual-level predicates and with stage-level predicates.

What does perfect-level *always* mean? It means 'throughout the perfect time span'; that is, there is universal quantification over the points of the perfect time span, therefore including the boundaries – the meaning, in other words, of a U-perfect. Since there is no space for another perfect-level adverbial, there is no further indication about LB (RB being the utterance time in the present perfect). And as before, in the absence of any overt

information, either LB is contextually determined or the meaning of tense kicks in, for example, in the present perfect, the perfect time span starts with the beginning of the existence of the subject.

Covert perfect-level adverbial What is the nature of the covert perfect-level adverbial? Since the presence of the covert perfect-level adverbial precludes a U-perfect, we must conclude that the covert adverbial is not durative but inclusive. Though we have no more to say about this here, this conclusion may not be surprising, given that existential quantification is the nature of default closure and that universal quantification requires lexical specification.

3.3   Point 3: The E__R interval does not have a distinguished status in the perfect

It is very important not to confuse the perfect time span with the E__R interval, which is a common representation of the perfect in Reichenbachian frameworks (e.g., Hornstein 1990). RB may be reminiscent of Reichenbach's R, but LB of the perfect time span is not E; LB is set by the adverbial. Consider the following sentence:

(28) *Since 1991, I have been to Cape Cod only once, namely, in the fall of 1993.*

(29) 1991........_____......................NOW
               (fall 1993)

In (28), E is temporally located in the fall of 1993, which means that the E__R span starts with the fall of 1993 and continues until the utterance time. On the other hand, the perfect time span starts in 1991.

Neither should the perfect time span be confused with the interval in which the state resulting from the underlying eventuality holds, for example, the "poststate", or the "result state", both of which are also common descriptions of the perfect. In (28), for example, the poststate holds from (after) the fall of 1993 and stretches indefinitely into the future.[37] On the other hand, the perfect time span starts earlier (1991) and ends earlier (utterance time).

3.4.   Point 4: (Im)perfective morphology and the U-perfect

As mentioned earlier, because the U-perfect is restricted crosslinguistically, it has been claimed to be more of a language-specific, unpredictable quirk, not a central use of the perfect. Indeed, standard means that yield the U-

perfect in English, such as modification by *always* or *since*-adverbials result in ungrammaticality in, for example, Greek.

(30)   *Eχο   panta   zisi   stin   Athina.*
       have-1sg   always   lived   in-the   Athens
       'I have always lived in Athens.'

We propose that the availability of the U-perfect is fully predictable from the morphological composition of the perfect participle. Specifically, we argues that grammatical aspect – imperfective or perfective specification of the participle – determines whether or not the U-perfect is possible.

Before we explicate this further, let us briefly consider the meaning contribution of (im)perfective outside the perfect. *Perfective aspect* conveys the meaning that the eventuality in question is completed, which for telics means achievement of the goal, and for atelics, termination. The effect of the perfective is illustrated in (31), which asserts that the eventuality of building a house is completed; that is, the goal has been achieved and the house has been built. Typically, the perfective on telics can be accompanied by *in*-adverbials but not *for*-adverbials (see note 29).

(31)   *Eχtisa   ena spiti (mesa se ena χrono/*για ena χrono).*
       build-pst-perf-1sg a house   (in one year/*for one year)
       'I built a house (in a year/*for a year)'

We will call the feature that appears as perfective morphology [*bounded*].

On the other hand, *imperfective aspect* presents a situation as ongoing,[38] without including the endpoints. When the imperfective appears on telics, the achievement of the goal is not included in the assertion. Typically, the imperfective (on both telics and atelics) can be accompanied by *for*-adverbials and not by *in*-adverbials.

(32)   *Eχtiza   to spiti   (*mesa se ena χrono/*
       build-pst-imperf-1sg   the house (*in one year/

       για ena χrono).
       for one year)

       'I was building the house (*in a year/for a year).'

We will call the feature that appears as imperfective morphology [*unbounded*].

Let us return now to the perfect and to the role of the (im)perfective in the availability of the U-perfect reading. In order for an eventuality to hold

throughout an interval, it must be homogeneous; that is, the subinterval property must hold of it (recall [18a-c]). Perfective morphology on the predicate describing the eventuality blocks the subinterval property. It presents the eventuality as bounded, and bounded eventualities are not homogeneous since any interval including the completion/termination differs in nature from the preceding intervals. We will demonstrate the relevance of the perfective and imperfective aspect for the readings of the perfect by looking at Greek, Bulgarian and English.

3.4.1. Greek

In Greek, the perfect participle is based only on the perfective stem, even though Greek verbs show a perfective/imperfective distinction outside the perfect.[39] On telics, the perfective, and therefore the perfect participle, asserts the achievement of the goal. As a result, the U-perfect, which requires the subinterval property, is not possible. We will return later to activities. On statives, it happens that in Greek, as in many other languages, the perfective yields an inchoative reading (though we don't know why):

(33) *O   γιannis   aγapise   tin   Maria   to 1981.*
      The   Jannis   love-pst-perf-3sg the   Mary   in 1981
      'John started loving/fell in love with Mary in 1981.'

This sentence does not mean that there was an eventuality of loving that lasted for some interval in 1981 or throughout 1981, the way the English *John loved Mary in 1981* could be interpreted. Instead, it means that Jannis fell in love with Mary in 1981. An inchoative is a change-of-state (i.e., telic) eventuality. Therefore, the perfective of a stative Greek verb will lack the U-perfect reading. It is possible to form the present perfect of a stative, but the resulting sentence has only an E-reading:

(34) *O   γιanni   eχi   aγapisi   tin   Maria.*
      The   Jannis   has-3sg loved   the   Mary
      'John has started loving/fallen in love with Mary'

3.4.2. Bulgarian

In Bulgarian, the perfective has a similar effect. With telics, it asserts achievement of the goal and therefore the U-perfect is precluded. And as in Greek, the perfective on statives turns them into inchoatives. For example, *love* in the perfective means *come to love*; and the perfect based on the

perfective participle lacks the U-perfect reading. The perfect formed from this participle is grammatical, but only an E-perfect reading, as the gloss in (35) indicates.

(35) *Marija*   *(*vinagi)*   *e*   *obiknala*   *Ivan*   *(*ot*   *1980*
      Maria   (*always)   is   love-perf.part   Ivan   (*from   1980

     nasam).
     towards- now)

     'Maria has fallen in love with Ivan.'

However, unlike Greek, Bulgarian also has a perfect participle that is based on the imperfective stem. The imperfective does not present the eventuality as completed; in other words, it does not describe it with a distinct final subinterval. Therefore, the predicate can satisfy the subinterval require-ments of a durative adverbial and therefore, this perfect can have the U-perfect reading:

(36) *Marija*   *vinagi*   *e*   *običala*   *Ivan.*
      Maria   always   is   love-imperf.part.   Ivan
      'Maria has always loved Ivan.'

Since the imperfective participle of any Aktionsart presents that eventuality as homogenous (i.e., without a distinguished final subinterval of termina-tion or completion), the imperfective will permit a U-perfect reading.
    In addition to having perfect participles based on the perfective and on the imperfective, Bulgarian has a participle based on another aspect, which we will call *neutral*.[40] This term has been used by Smith (1991) – though not for Bulgarian – to mean that only LB (i.e., the beginning point) and some of the internal process of the eventuality is talked about. Crucially, according to Smith, the neutral differs from the perfective in that it allows reference to the internal temporal structure of the eventuality, and in that no RB is asserted.[41]
    The relevance of the neutral to our discussion is that there is a perfect participle based on it and that this participle can yield a perfect with the U-perfect reading. What is crucial in the present context, then, is to show that the neutral is unbounded (i.e., it does not assert the achievement of the goal when it takes telic predicates), so that its behavior is predicted to differ from that of the perfective in Bulgarian and in Greek.
    The desired distinction clearly exists. The perfective asserts the achievement of the goal, neutral is silent about it, just as the imperfective is.

(37) a. *Maria*   *izpi*   *vinoto*   *(# no* *ne*   *znam*
           Maria   drink-perf.past   the-wine   but   not   know-1SG

          dali   *go*   *izpi*   *cjaloto).*
          whether it   drank-perf   all

          'Maria drank up the wine (#but I don't know whether she finished
          it.)'
     b. *Maria*   *pi/ pieše*   *vinoto*   *(no*   *ne*   *znam*
          Maria   drink-neutral/ imperf   the-wine but   not   know-1SG

          dali   *go*   *izpi*   *cjaloto).*
          whether it   drank-perf   all

          'Maria was drinking the wine (but I don't know whether she fin-
          ished it.)'

Sentence (37a), with the perfective, asserts that the wine was finished.
Sentence (37b), with the neutral, says nothing about whether the wine was
finished but simply asserts that an activity of wine drinking took place, and
in this respect, it is similar to the expansion with the imperfective.

   Thus, we can conclude that the neutral asserts unboundedness (i.e., lack
of RB), or at least, it does not assert boundedness. This is retained in the
perfect that uses the participle based on the neutral, as one would expect.
Compare the perfect based on the perfective participle with the perfect
based on the neutral participle.

(38) a. *Tja*   *e*   *izpila*   *vinoto*   *(# no* *ne*   *znam*
           she   is   drink-perf.part.   the-wine   but   not   know-1SG

          dali   *go*   *e*   *izpila*   *cjaloto).*
          whether it   is   drunk-perf   all

          'She has drunken the wine (#but I don't know whether she fin-
          ished it).'
     b. *Tja*   *e*   *pila*   *vinoto*   *(no*   *ne*   *znam*
          she   is   drink-neut.part.   the-wine but   not   know-1SG

          dali   *go e*   *izpila*   *cjaloto).*
          whether it is   drunk-perf   all

          'She has been drinking the wine (but I don't know whether she
          finished it)'

Given the facts in (38), we expect the perfect formed from the neutral participle to have a U-reading. This is indeed the case, as (39) illustrates.

(39) *Az*   *šum*   *pila*   *vinoto*   *ot*   *sutrinta*
      I   am   drink-neut.part   the-wine from   this-morning

      nasam.
      towards-now

      'I have been drinking the wine since this morning.'

A final point concerning the neutral and the U-perfect is that although, in principle, the imperfective participle can be formed for all verb classes, only verbs denoting accomplishments and activities have a neutral participle.[42]

3.4.3. English

Now let us examine the English perfect. Given that the perfect asserts the achievement of the goal of a telic predicate, it seems that the syntactico-semantic features below the perfect contribute boundedness:

(40)   *He has read the book #but he didn't finish it.*

With activities, there is no achievement of goal that can be tested for, but let us assume on the basis of the above that boundedness is contributed. If the perfect indeed incorporates boundedness, then it follows that the U-perfect will not be possible with the perfect of telics and activities.

(41)   a. **He has danced ever since this morning.*[43]
       b. **He has drawn a circle ever since this morning.*

However, if we follow the above reasoning and conclude that the morphology of the English perfect participle incorporates boundedness, we have created a problem. We would expect that boundedness would also be contributed to the perfect of statives. Consequently, we would expect the U-perfect to not be possible there either. In other words, we would expect the English perfect to behave like the Greek or Bulgarian perfect with the perfective participle. But the U-perfect *is* possible with English statives, as shown in section 1. In light of this, we must refine our earlier remarks. What we need to be able to derive is that the perfect of telics and activities

is interpreted as incorporating boundedness, whereas the perfect of statives is not.

There is a way to achieve this goal. Telics and activities (i.e., non-statives) can carry either progressive or nonprogressive morphology, the choice between the two corresponding to unbounded versus bounded interpretation. We take this to mean that when a non-stative has the feature [unbounded], the morphological component will make it appear in the progressive; when a nonstative has the feature [bounded], it will appear as nonprogressive. Statives, on the other hand, appear only as nonprogressive.[44] This is not because they can only have the feature [unbounded], however. Statives can be either [bounded] or [unbounded], but independent properties preclude the expression of [unbounded] with the progressive morphology.[45] But, of course, regardless of the overt signal, the specification of [bounded]/[unbounded] is visible to the semantics. In summary:

(42) a. nonstative, [unbounded] → progressive
      b. nonstative, [bounded]⎫
      c. stative, [unbounded]   ⎬ → nonprogressive
      d. stative, [bounded]   ⎭

It now follows that when the underlying eventuality is nonstative, only the perfect of the progressive will permit the U-perfect, because the perfect of the nonprogressive incorporates boundedness. With statives, the U-perfect will always appear to be possible, because a stative can always be interpreted as unbounded, the bounded/unbounded aspectual distinction never being expressed overtly with English statives.[46]

3.4.4. Aspectual morphology and the interpretations of the perfect

Let us recapitulate. On the basis of data from Greek, Bulgarian, and English, we propose that (un)boundedness is contributed by syntactico-semantic features of the verb that are retained when the verb becomes a participle. The perfect itself does not contribute (un)boundedness. In other words, when a perfect sentence conveys the meaning of completion, this meaning comes from features asserting boundedness that are embedded below the perfect and not from the perfect itself. The perfect merely sets up a time span, in which an (un)bounded eventuality occurs. In other words, the meaning of the perfect is roughly as in (43), with the possible expansions in (44a-d):

(43) There is an interval (the perfect time span) in/throughout which there is a bounded/unbounded eventuality.

(44) a. ...throughout... unbounded   → universal perfect
      b. ...in...   unbounded... → experiential perfect
      c. ...in...   bounded...   → experiential perfect
      d. ...throughout... bounded   → depends on Aktionsart

Let us start with expansion (44a). The U-perfect is obtained when a predicate holds throughout the perfect time span. Given the durative interpretation of the interval and the unbounded eventuality in (44a), the U-perfect is possible here. The cases we have illustrated are statives and progressives in English and the perfect based on the imperfective and neutral participles in Bulgarian.

Next, consider expansion (44b). Since *inclusive* means 'properly included', the boundaries of the perfect time span will not by assertion be part of the eventuality; therefore, the U-perfect is not possible. The cases we have illustrated are all the cases mentioned in the previous paragraph but on the experiential reading.

Similarly in expansion (44c): the proper inclusion requirement precludes the U-perfect reading.

Finally, consider expansion (44d). If the predicate is telic, boundedness asserts achievement of the goal. Therefore, the subinterval requirement of *throughout* cannot be satisfied. But what if the predicate is an activity? Can we "fill up" the perfect time span with an activity that happens to terminate exactly at RB, so that the requirements of both *throughout* and boundedness are satisfied?

One Greek adverbial that can bring this situation about (possibly the only one, in fact) is *apo... meχri* 'from... to'.[47] We can obtain truth-conditions similar to those of a U-perfect by making 'now' the second argument of the adverbial. This permits us to include the utterance time in the eventuality (as long, of course, as the underlying eventuality is not a telic or stative, the latter because it would turn into a telic owing to the perfective component of the perfect participle):

(45)   *Eχi   kivernisi   apo   to   1990   meχri tora.*
       Has-3sg   governed   from   the   1990   until now
       'S/he has governed from 1990 to now.'

3.5. Point 5: Anteriority is not part of the meaning of the perfect (participle)

We have argued that the notions of completion and boundedness, which are often associated with the perfect, are not part of the meaning of the perfect

at all, but a reflex of the aspectual morphology ([un]boundedness) that is embedded below the perfect.

At the outset, we mentioned that the present perfect is said to express anteriority or some type of pastness. How does the anteriority/pastness of the present perfect come about? First of all, in the U-perfect reading of the present perfect, the underlying predicate holds at the utterance time as well. This means that the anteriority/pastness is related to the experiential reading (recall Brugger's independent argument for this based on sequence of tenses), in other words, to the inclusive interpretation of the perfect time span. And now it should be obvious how (and why) the anteriority comes about: since in the present perfect, RB of the perfect time span is the utterance time and since the underlying eventuality happens in the perfect time span, it follows that the eventuality will occur before RB/utterance time. Similarly in the pluperfect, since RB is before the utterance time and the eventuality happens before RB (since it happens *in* the perfect time span), the eventuality will happen before the utterance time. Finally, in the future perfect, RB is in the future with respect to the utterance time. Since the eventuality happens in the perfect time span (i.e., before RB), it can happen before or after the utterance time, which is exactly the underspecified meaning of the future perfect. In other words, we can derive the fact that the present perfect can express anteriority and that the U-perfect cannot. This is possible owing to the meaning of the perfect together with the fact that when tenses combine with the perfect, it situates RB with respect to the utterance time.

To summarize and highlight: there is no component of the perfect that directly expresses anteriority; that is, we should not look at the morphology of (e.g.) the participle and postulate a morpheme or an operator whose meaning is anteriority. Postulating such a morpheme or operator is unnecessary since anteriority can be derived as just described – but it would also be wrong, as then the U-perfect would be impossible to derive, given that it asserts that at the utterance time, the eventuality still holds.

4. Stativity versus unboundedness

We said earlier that morphology that marks unboundedness on the underlying eventuality is a necessary condition for the formation of a U-perfect. An eventuality is described as unbounded when it is not asserted to have reached an endpoint (achievement of the goal, in the case of telics; termination for atelics). How does our position relate to the claim that for English, a stative or a progressive is required in order to yield a U-perfect (Dowty 1979, Mittwoch 1988, Vlach 1993)?

Stativity has been defined in different ways. According to Smith (1991: 67) (along with many others who follow Vendler's (1957) original description), "[dynamism and agency], which are closely related, distinguish non-statives from statives." Crucially, for Smith, the progressive and statives differ because the progressive, unlike statives, is dynamic and agentive. In Smith's system, we can classify a predicate for situation aspect in the absence of any inflectional morphology; that is, we can classify what Smith calls the verb constellation, the verb plus its arguments. Grammatical aspect ([im]perfective) is on a different tier, so to speak, not affecting situation aspect (to which stativity belongs).

Vlach (1981) defines stativity as below:

(46)   A sentence F is stative if and only if the truth of (Past F) *when I arrived* requires that F was true for some period leading up to the time of my arrival.

It is clear that unlike Smith's characterization of stativity, Vlach's definition is applicable only after inflectional morphology has applied since the test requires interpretation in a particular sentential context. For Vlach, then, stativity is characterized by a combination of situation aspect and grammatical aspect.

The rationale behind Vlach's proposal is basically that predicates that are readily agreed to be statives behave a certain way in his schema and everything that behaves in the same way must also be stative. Take for example the predicate *be asleep*, which is [-dynamic], and so on, a stative by anyone's definition:

(47)   *John was asleep when I arrived.*

Vlach, like many others who investigate English, assumes that *was asleep* in (47) is a state, pure and simple. However, *was asleep* in (47) is not just an uninflected stative predicate. Basically *was asleep* in (47) has the feature [unbounded], as shown by the obligatory use of the imperfective in languages with richer morphology than English. So one could say that Vlach's test actually checks for stative + [unbounded] or just plain [unbounded]. Indeed, the latter is the case, as we can show by adding the feature [unbounded] contributed by imperfective/progressive morphology on a perdicate that is clearly not stative (i.e., [-dynamic], etc.) in Vendler's or Smith's sense.

(48)   *John was lifting weights/building a rocket/throwing bricks/... when I arrived.*

The predicates in (48) all pass Vlach's test for stativity, and indeed Vlach argues that the progressive is stative (unlike Smith, who explicitly argues that progressives and statives are different). However, if we draw the conclusion with Vlach that *lifting weights/building a rocket/throwing bricks/...* are statives, we have clearly left behind the idea that statives are [-dynamic], [-agentive], and so on.

Clearly, the predicates that pass Vlach's test are not the same as Vendler's [-dynamic] states or predicates that Smith's system would classify as statives.[48]

In effect, Vlach described the effects of imperfective marking. We can call it "stativity", but this can be misleading, as this term is also used to refer in the Vendlerian sense to [-dynamic] predicates. We are using the term *statives* in the Vendlerian way and the term *unbounded* for bigger parts of the syntactic tree that satisfy Vlach's diagnostic. As noted earlier, this terminology is used because on some tests, English statives behave like progressives/imperfectives and because on English statives, the imperfective is not visible.[49]

One final but important point. One might say that regardless of the terminology issue, Vlach's test does correctly isolate the crucial property that is required for the U-perfect. That is, one might be tempted to argue that the predicates that pass the test are the ones that yield the U-perfect. But this is not so. As noted earlier, the Bulgarian neutral yields the U-perfect. Moreover, consistent with the crosslinguistic picture, the neutral marks unboundedness; that is, it does not describe an eventuality as terminated/completed. However, the neutral, unlike the imperfective, does not pass Vlach's test.

(49) a. **Ivan pisa   pismoto   kogato Maria*
       Ivan   write-neutral.past the-letter when   Maria

       vleze   v   stajata.
       entered in the-room

       'Ivan was writing the letter when Maria entered the room.'
     b. *Ivan   pišeče   pismoto   kogato Maria*
       Ivan   write-imperf.past the-letter when   Maria

       vleze   v   stajata.
       entered in the-room

       'Ivan was writing the letter when Maria entered the room.'

In other words, we have not been using the term *stative* because on the one hand, the term is used in different ways, on the other hand, certain tests for stativity (e.g., Vlach's) do not yield the appropriate class for the U-perfect.

Most researchers take Dowty's test (the subinterval property) and Vlach's test to yield the same class of predicates. As indicated, though, predicates marked with the Bulgarian neutral satisfy the subinterval property but do not pass Vlach's test.

5. Conclusion

We have argued for a version of the Extended-Now Theory as well as for the role of adverbials in the interpretation of the perfect and the universal/existential ambiguity. We have also demonstrated that the crosslinguistic availability of the universal perfect can be explained on principled grounds once the morphosyntactic composition of the perfect participle is taken into account. In turn, the fact that the availability of the universal perfect is dictated by morphosyntactic factors shows that the universal/existential distinction is not a pragmatic distinction (the universal being a subcase of the existential) but one generated by different (morpho-)semantic compositions. In the addendum, we discuss certain syntactic issues that arise in conjunction with the semantic issues examined so far.

Addendum

A.1   Functional heads and their order

We are now in a position to draw preliminary conclusions about the order of the syntactic heads in a perfect sentence. In Greek and Bulgarian, the participle is specified for (im)perfective, which we take to mean that the functional head that corresponds to the perfect (i.e., the node that contains features of the perfect itself) is above the (im)perfective head, which we will refer to as *Asp(ect)*. Also, in English, the perfect is above the progressive and not the reverse, as the relative order of the auxiliaries shows (i.e., *He has been singing*, not **He is having sung*). In addition, the T(ense) node is clearly above Perf. As for passive/active specification, we assume that if Voice is projected as a separate node, it is below Perf. In perfect passive constructions, the perfect is above the passive in all the languages we have examined (e.g., in English, *He has been arrested,* not **He was had arrested*). This result is not surprising given that the passive is related to the argument structure of the eventuality whereas the perfect relates the eventuality as a whole to the temporal domain. When the progressive and the passive co-occur, their relative order is Asp > Voice (*The house was being*

built). By putting the pieces together (leaving aside for the time being the issue of the auxiliary), we arrive at the tree in (50), fully instantiated by the sentence in (51) from Chomsky (1957):

(50)
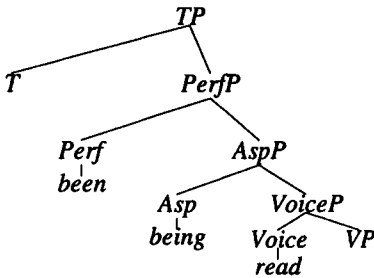
(51)   *These books have been being read all year.*

As discussed in section 3.2, there are at least two levels of adverbials in a perfect sentence, and their syntactic ordering correlates with semantic scope. Depending on whether temporal adverbials are eventuality-level or perfect-level, they attach to AspP/VP or PerfP respectively. Hence, the order of morphemes or auxiliaries correlates with the order of adverbials, as expected given our assumptions (see also Alexiadou 1997 and Cinque 1999 for a broader claim along these lines).

A.2   Where does the meaning of the perfect reside?

A natural question is how the meaning of the perfect is distributed over the auxiliary and the participle in languages with a periphrastic perfect.[50] This question can be investigated by separating the participle from the auxiliary and examining what aspects of the meaning survive.

Reduced relatives represent one environment where a participle can occur without an auxiliary. In Bulgarian, it is possible to form a reduced relative with perfects of all verb classes:

(52)   *Zapoznah*   *se*   *sus*   *žena-ta*   *napisala*
       met-1sg   refl   with   woman-the   written-active.part-fem-sg

       knigata.
       book-the

Literally: I met the woman written the book.
            (= 'I met the woman who has written the book')

In Bulgarian, the meaning components discussed earlier – namely, the role of the (im)perfective in the U/E-perfects – remain with the participle. This is shown in (53) – (54):

(53) a. *ženata   pročela   knigata.*
          the-woman   read-perf.part.   the-book
          'the woman who has read the book'
      b. *ženata   čela   knigata.*
          the-woman   read-neutral.part.   the-book
          'the woman who has read the book'

(54) a. **ženata   pročela   knigata ot   sutrinta   nasam.*
          the-woman   read-perf.part.   the-book from   the-morning till-now
          'the woman who has read the book since this morning'
      b. *ženata   čela   knigata ot   sutrinta*
          the-woman   read-neutral.part.   the-book from   the-morning

          nasam.
          till-now

          'the woman who has read the book since this morning'
      c. *ženata   običala   Ivan ot   1980 nasam.*
          the-woman   love-imperf.part   Ivan from   1980 till-now
          'the woman who has loved Ivan since 1980'
      d. *ženata   celuvala   Ivan ot   sutrinta   nasam.*
          the-woman   kiss-imperf.part.   Ivan from   the-morning till-now
          'the woman who has been kissing Ivan since this morning'

The reduced-relative perfect in (53a) employs a perfective participle and as a result asserts the achievement of the goal (i.e., asserts that the book is finished). This is not the reading contributed by the neutral participle in (53b); here, it is only asserted that the woman has engaged in book-reading at some point. Just as in the case of the present perfects discussed earlier, the perfective participle precludes the U-reading (54a). The perfect in reduced relatives can have a U-reading only when the participle is neutral (54b) or imperfective (54c-d). We conclude that in Bulgarian, there is no semantics exclusively related to the perfect that is contributed by the auxiliary, at least not from the aspects of meaning associated with the perfect that we have investigated in this chapter.

Duplicating the above test in English, however, proves impossible; reduced relatives containing a perfect are not allowed.

(55)   a. *I saw the boy *(who has) eaten the fish.*
     b. *I saw the boy *(who has) left on time.*
     c. *I saw the boy *(who has) walked through the park.*

On the other hand, reduced relatives containing other participles are possible:

(56)   a. *The boy (who is) singing the "Marseillaise" is my brother.*
     b. *I saw a house (which was) built in 1925.*

The property that correlates with the ability to form a reduced relative containing a perfect is the type of auxiliary. A reduced relative can contain a perfect if the missing auxiliary is 'be' (this is the essence behind "whiz-deletion" accounts; also see Pesetzky (1995: 295 – 296) n. 19). A reduced relative cannot contain a perfect if the missing auxiliary is 'have'. We have found this to hold throughout the European Indo-European languages. As just noted, reduced relatives with a perfect are impossible in English, where the auxiliary is 'have'. In Bulgarian, on the other hand, the auxiliary is always 'be' (Bulgarian does not have a null copula, unlike other Slavic languages) and therefore reduced relatives with a perfect are always possible.

As one might expect at this point, in auxiliary-selection languages (e.g., Italian), reduced relatives containing perfect participles are possible with verbs whose participles in the perfect combine with 'be' (supposedly unaccusatives) but impossible with verbs whose participle combines with 'have' (supposedly transitives and unergatives; Burzio [1981, 1986]):

(57)   a. *Il   treno [arrivato entro le 3]   è   ripartito subito.*
        the   train [arrived by 3]   left   again   immediately
        'The train which had arrived by 3 left again immediately'
     b. **Un   ragazzo [ballato nella stanza] sembrava   conosciuto.*
        a   boy   [danced in the room] looked   familiar
     c. **Una   donna   [mangiata/o un panino] fu   avvelenata.*
        A   woman   [eaten a sandwich]   was   poisoned

And as in Bulgarian, we can construct a U-perfect for a reduced relative that contains a perfect:

(58)   *Le   attrici   [piaciute a mia madre fin dal 1970].*
     The   actrici [pleased/FEM/PLU to my mother since 1970]
     'The actresses that have appealed to my mother since 1970...'

On the basis of these facts, we conclude that in the cases where the participle can be seperated from the auxiliary (all of Bulgarian, perfects of unaccusatives in auxiliary selection languages), the participles alone incorporate sufficient content to generate sentences with the range of perfect-related meanings discussed here. But the participle cannot be separated from the auxiliary in 'have'-perfects. Why should this be so? Is it the semantics or the syntax that blocks the separation of 'have' from the perfect participle?

The impossibility of separating perfect participles from *have* reduces to the question of the difference between the participles in 'have'-perfects and 'be'-perfects. It might be argued that separation is impossible because in 'have'-perfects, the features of the perfect partly reside on 'have'; on this view, the participle by itself is simply not sufficient to "bring about" the perfect. We cannot give an exhaustive answer to this question here; we will only discuss the issue in the context of some existing theories of the 'have'/'be' relation and auxiliary selection.

Consider first Burzio's (1981, 1986) analysis of 'have' and 'be' in Italian. Burzio proposes the following rule for *essere* 'be':

(59)   *Essere*-assignment
    a. The auxiliary is realized as *essere* whenever a "binding relation" exists between the subject and a "nominal contiguous to the verb".
    b. A "nominal contiguous to the verb" is a nominal that is either part of the verb morphology (i.e., a clitic) or a direct object.

Rule (59) allows two sub-cases of *essere*-assignment:

(60)   *Essere-a*ssignment
    a. NPcl-V   (the subject binds a clitic)
    b. NP V NP   (a binding relation between the subject and the direct object)

This captures the main environments where auxiliary "be" is found in Italian, namely, contexts of *si*-cliticization (60a) and contexts of NP-movement (i.e., passives and unaccusatives, (60b)).

Implicit in Burzio's analysis is that 'have' is the canonical realization of an auxiliary. The special case is 'be', which requires a construction-specific rule. The environments in which the special rule applies are defined on purely formal syntactic grounds. Meaning does not play a role. In such an analysis, there is no reason to expect that 'have' will have more perfect-related semantic content than 'be'.

Another type of approach to the 'have'/'be' relationship takes 'have' to be closer to a main verb than 'be' is, in that 'have' has a basically transitive

syntax. Hoekstra (1984), Roberts (1986) and (Cowper 1989a,b), among others, propose that 'have' has an external θ-role and a Case feature to assign. In languages in which the passive and the perfect participle coincide morphologically (Romance, Germanic), participles always have the syntax of a passive. In the perfect of transitive verbs, 'have' combines with the (passive) participle and, by doing so, it "restores" the transitivity of the predicate. In other words, approaches like this one are tailor-made for the languages where the perfect and the passive participles are identical in form (except for agreement). This makes such approaches unworkable in the present context because in the languages discussed here, such a homophony/ syncretism does not occur. In Greek, for instance, the passive is synthetic; and in Bulgarian, the perfect and passive participles differ.

Still other accounts of the 'have'/'be' relationship take 'be' to be the canonical realization for an auxiliary and 'have' to be the special case – that is, exactly the reverse of what Burzio (1981, 1986) proposes. Here we will discuss one influential proposal of this type: the idea that 'have' is the lexicalization of 'be' + head X – that is, 'be' plus an incorporated head (Freeze 1992 – though only for possessive 'have'/'be'; Kayne [1993])[51]. But within such assumptions as well, it seems that auxiliary 'have' differs from 'be' only syntactically. More specifically, in Kayne's work, the variation between 'have' and 'be' is argued to be sensitive to morphosyntactic factors like first and second person versus third person, verb class, and so on. It is clear that for Kayne the 'have'/'be' variation does not result in or depend on a difference in the semantics of the auxiliaries or the participles.

So from these approaches to the 'have'/'be' relationship, nothing follows that would dictate a semantic difference between 'have' and 'be' or the corresponding participles. This provides a potential answer to the original question of how the semantics of the perfect are distributed over the auxiliaries and participles. However, it does not answer the question we encountered along the way, namely, why is a reduced relative with a perfect participle impossible when the missing relative would have been 'have'? We will conclude the chapter with a possible answer. We do not want to commit ourselves to any particular theory of auxiliary selection. The main idea can be expressed with different background assumptions. We will cast our suggestion in the framework according to which 'have' is 'be' with an incorporated head, but we do so for illustrative purposes only. Because the letter of Kayne's proposal cannot be transferred to the present discussion,[52] we will switch to an adaptation of Kayne's analysis due to Peter Svenonius (personal communication).
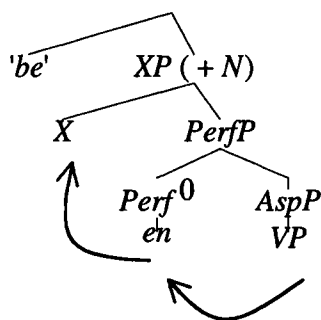
Svenonius's adaptation capitalizes on the fact that in 'be'-perfects, the participle agrees with the subject, while in 'have'-perfects, it does not.[53] This generalization also holds within reduced relatives containing a perfect; that is, when the missing auxiliary is 'be' – the only type of reduced rela-

tive possible after all – the participle shows the agreement it does in a full perfect. This can be made to follow from the derivations in (61) and (62):

(61)   (62)

```
'be'      XP (+ N)                    'be'      XP (+ N)
     X        PerfP                        X        PerfP
  Perf⁰   AspP                          Perf⁰   AspP
   en      VP                            en      VP
'have'
```
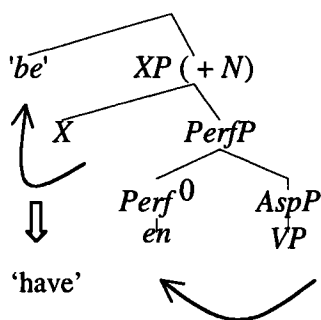
The part of the tree below PerfP was discussed in section A.1. X is a nominal head that may incorporate to 'be', resulting in 'have'. In (61), X incorporates to 'be', giving 'have'. In such a case, the participle stays where it is and it does not show agreement. In (62), the participle raises to X and therefore shows nominal inflection (number, gender).[54] In such a case, the auxiliary remains 'be'. In languages like English, (61) is the only possible derivation for the perfect. In languages like Bulgarian, (62) is the only possibility. And there are languages in which both derivations are possible, namely, auxiliary selection languages. This Kayne-like analysis maintains the derivational relationship between 'be' and 'have' and also derives the complementarity between 'have' and participle agreement.

How do derivations (61) and (62) account for the distribution of reduced relatives based on perfect participles? The generalization that reduced relatives with perfect participles are possible if and only if the missing auxiliary is 'be' now translates into the question of why participles can be isolated from auxiliaries only when they move to X as in (62) and not when X moves to 'be' as in (61).[55]

We have already encountered a reason to assume that X is nominal in nature. If the participle moves to it, the complex declines in the nominal paradigm. If the participle does not move up, and X incorporates to 'be', the resulting complex is not nominal, since the host of the incorporation is the auxiliary verb.

If indeed X is nominal, we can say that the reason that the reduced relative can contain a perfect in the 'be'-cases but not in the 'have'-cases is that the reduced relative is nominal in the former but not in the latter. This means that a reduced relative is possible only as long as it is nominal. Why should this be so? Possibly all categories whose meaning intersects with a

head that they modify must be of the same categorial type as the head (or weaker, there should be no mismatch). This explains why adjectives cannot modify verbs, nor adverbs nouns). This means that everything that modifies a noun must be nominal. This is certainly clear for adjectives. Perhaps it also holds for relative clauses. Then reduced relatives must be nominal.

That the availability of reduced relatives correlates with the nominal nature of the participle is supported also by data from Spanish, a language with only 'have'-perfects. Consistent with what we have said so far, reduced relatives containing a perfect are largely impossible in Spanish. But there is an exception: reduced relatives with a perfect are possible for (possibly a subset of) unaccusatives. Crucially, the participle in such reduced relatives shows subject agreement:

(63) *Las   chicas[recen   llegadas   a la   estacion] son*
      The   girls [recently arrived/FEM/PLU at the   station]   are

      mis   hermanas.
      my   sisters

      'The girls who have just arrived at the station are my sisters.'

Such subject agreement is impossible in a full perfect:

(64) *Las   chicas   han   llegado/*-as.*
      The   girls   have   arrived /*FEM/PLU

We do not know what licenses a construction like (63) but the obligatory nominal nature of the participle, evidenced by its agreeing in the nominal paradigm, shows that the correlation between the availability of reduced relatives with a perfect participle and the nominal nature of the latter is on the right track.

If modification of a nominal requires that the modifier be nominal, an obvious question is how full relative clauses can modify nominals, if they are CPs. There are two possible answers. First, one could stipulate that there is no mismatch between a CP and a noun. Second, one could say that relative-clause CPs are also nominal. This may not be as outlandish as it initially seems if one takes into account the existence of free relatives, which look like CPs but have the category of the *wh*-word. That is, free relatives whose *wh*-word is nominal can themselves be shown to be nominal (Bresnan and Grimshaw [1978], Groos and van Riemsdijk [1981]). How can we derive the nominalness of relative-clause CPs? Chomsky (1995) assumes that the category resulting from Move/Merge is the category of the host. What if this weren't necessarily so? In certain cases it

would be forced because the alternative (i.e., the category of the whole being the category of the moved element) would give uninterpretable results or (e.g.) violate selectional restrictions of a higher node.[56] However, if there are no such restrictions, then the category of the moving element may be able to determine the category of the whole. This would derive free relatives, but it would also be a possibility for relative clause CPs. After all, being adjuncts, the latter have no selectional restrictions imposed on them, so that if the relative pronoun determines the category of the whole, no problem is created for a higher projection. In addition, if modification of the noun by the relative clause requires the relative clause to be nominal, then category determination by the moving element will even be forced.

Incidentally, this might also explain why there is movement in relative clause CPs in languages with overt A-bar movement. This movement is not triggered by what triggers A-bar movement in questions, since there is no [+Q] feature to worry about. In other words, movement of the relative pronoun is triggered by the need to make the entire clause nominal. This also might account for why inversion does not take place in relative clauses. If inversion is movement of the verb to C in order to check a feature on C, then we do not expect it in relative clauses. There is no feature in C in such cases; the relative pronoun moves to change the category of the relative clause. Bhatt (1999) implements within a head-raising frameworkwork (Brame [1968], Vergnaud [1974], Kayne [1994]) the idea that relative clauses are a case of movement that projects.

Notes

1. There are even languages that have a perfect that is distinct from a simple past only in the passive and not in the active (Russian, Irish, Comrie [1976: 63, 84]). We will not be looking at such languages either.

2. We refer here to the Reichenbachian parameters E, R, and S, with respect to which the meaning of the various tenses is described. E is the point (or interval, depending on the framework) at which the eventuality holds; S is the utterance time, and R is a reference point/interval. Klein (1992, 1994) (among others) also proposes a three-way composition of tenses, although somewhat different from that of Reichenbach's; when cast in Klein's terms, the distinction between the present perfect and the simple past is quite similar to that described in the main text. For McCawley (1993), who is otherwise writing within Reichenbachian assumptions, the perfect does not specify an E__R relationship; rather, the R interval coincides with an extended-now interval (see McCoard [1978]) and the E interval is a subinterval of the R interval. In that sense McCawley's treatment is similar to that of Dowty (1979), as well as to ours, neither of which rely on the Reichenbachian parameters, as we will show.

3. In addition to the crosslinguistic parametrization of the present perfect puzzle (e.g., English has it, Italian and Dutch do not), there is variation within the same language. In Modern Greek, for example, one cannot say *Mary has built this house in 1963*, but one can say *This house has been built in 1963*:

   (i) *H   *Maria*   *eχi*   *χtisi*   *to*   *spiti*   *to*   *1963*.
        The   Mary-NOM   has   built-ACT   the   house-ACC   the 1963
   (ii) *To   *spiti*   *eχi*   *χtisti*   *to*   *1963*.
        The   house-NOM   has   built-NONACT   the 1963

4. Others, such as Klein (1992, 1994) propose that the perfect has a tense part and an aspect part, but for Klein both tense and aspect are relations between time spans. So, for Klein the aspect part of the perfect is that the topic time is "in posttime" of the situation time, while the tense part of the perfect concerns the relation between the topic time and the utterance time.

5. The contribution of the features [unbounded] and [bounded] can be said to be as in (ia) and (ib), respectively (representations in the spirit of Klein's (1994) characterization of the imperfective/perfective distinction).

   (i) a. $\lambda P.\lambda t.\exists e \ [t \subseteq \text{Time}(e) \ \& \ P(e)]$
       b. $\lambda P.\lambda t.\exists e \ [\text{Time}(e) \subseteq t \ \& \ P(e)]$

These aspectual features have the effect of turning properties of events into properties of interval (von Stechow 1999). We should emphasize, though, that nothing in (ia) predicts the obligatory property of framing, exhibited by the English progressive and other imperfectives (*He was reading the book *#[when the bomb exploded/when I saw him/etc]*). We will show later that there are aspects that do not describe an eventuality as terminated/completed, and yet they do not have the framing property (e.g., the Bulgarian neutral).

     Since they do not contain a completion/termination interval, unbounded eventualities are homogeneous. This means that putting the issue of granularity

aside, unbounded eventualities correspond to intervals having the subinterval property (Dowty 1979)

   (ii) *Subinterval property*:

   The subinterval property holds of an interval iff the eventuality that holds at that interval holds of every subinterval of that interval.

The notion of granularity was meant to further subdivide between activities and statives, but that has been notoriously hard to achieve.

   See Bennett and Partee (1978), Dowty (1979), Hinrichs (1983), Parsons (1990), Smith (1991) and Landman (1992), among many others, for discussion of (im)perfectiveness, its relation to boundedness, and its effect on (a)telics.

6. Brugger (1997) makes a proposal that formally distinguishes between the experiential perfect and the perfect of result. Moreover, Kratzer (1994) develops a semantic treatment of the perfect of result in terms of the notion of "target state" (Parsons 1990). She argues that as a semantic category, the perfect of result is encoded in the meaning of the adjectival suffix in adjectival participles. In her proposal, the verbs that can form adjectival participles are those that comfortably allow the perfect of result in that they are easily conceptualized as having target states.

7. Dowty (1979: 343) points out that the lack of ambiguity when the adverb is preposed is evidence that a true syntactic ambiguity underlies the two readings. We will come back to this later.

8. Brugger also points out that the present perfect in Portuguese has only the U reading. If this is so, then it cannot be that the U-perfect is just a special case of the E perfect.

9. As Richard Larson (personal communication) points out, traditional parallelism tests suggest that the U/E distinction is not a matter of vagueness. For example, in *John has been sick since 1990, and Mary has too,* it is not possible to get a U-reading for one of the conjuncts and an E-reading for the other. Either both are U or both are E.

10. Von Stechow (1999) argues that in German, the Universal perfect does not assert that the utterance time is included in the underlying eventuality. Thus, a sentence like *Ich habe hier schon immer gewohnt* 'I have always lived here' can be followed by the continuation *...bis vor kurzem* 'until recently' without leading to a contradiction. This is different in, for example, English and Bulgarian. Arnim von Stechow (personal communication) suggests that the German facts can be taken to show that whether or not the U-perfect asserts inclusion of the utterance time is open to parametric variation, possibly related to the properties of the present tense in the languages in question. On this view, the present tense has a more extended function in German than in English and for this reason, only the present asserts inclusion of the utterance time in the eventuality. Von Stechow further suggests that this might also explain why sentences with *seit* 'since' in German are in many cases more natural in

the present than in the perfect (contrary to English, where *since* requires the perfect).

11. In the case of perfects modified by *for*-adverbials, Klein (1992, 1994) takes the adverbial to be modifying the underlying eventuality. Thus, for him, a sentence like *Mary has lived in Boston for three years* asserts that the state of Mary's living in Boston for three years has ended without making any assertion about whether Mary continues to live in Boston at the utterance time or not, leaving it to discourse to specify. However, Klein does not discuss U-readings with *since*-adverbials, and we believe that they provide the crucial evidence regarding the interpretation of the perfect because they can never modify the underlying eventuality. So, for a sentence like *Mary has lived in Boston since 1990,* it is not clear how Klein would justify that a particular subinterval of the state of Mary's living in Boston is identified as having ended.

12. Mittwoch conjectures that if a state has obtained for some time and still obtains at the utterance time, there is no reason for using the perfect; rather, Gricean principles would favor the use of the present tense. She notes that in response to *I haven't seen John lately* one would rather say *He is ill* (and not *He has been ill*) if John is known to be ill at the utterance time. However, we argue later that present tense would be preferred in this case because a sentence like *He has been ill (lately)* is not a U-perfect and thus is compatible with John's not being ill at the utterance time. Therefore, such sentences do not provide an argument against the position that the U-perfect *asserts* that the underlying eventuality holds at the utterance time.

13. In effect, this is a version of the Extended-Now Theory (McCoard 1978, Vlach 1993), even though we do not take it either to be a pragmatic theory of the perfect or to be restricted to the present perfect (see also Dowty 1979).

14. In Reichenbachian terms, this means that RB is representable by R.

15. By *truly unmodified,* we mean to exclude those perfect sentences that do not themselves contain an overt adverb but are part of a discourse where one is present. For example:

    (i) A: *What has he been doing since yesterday at 5 p.m.?*
       B: *He has been writing a paper.*

    B's utterance contains no overt adverb, but it is clear that it means *Since yesterday at 5 p.m. he has been writing a paper.*

16. The unacceptability of such sentences also shows that the experiential reading is absent. This is probably due to a combination of factors. If the subject is alive and therefore still has brown eyes, then the simple present tense must be used. If the subject is dead, then the sentence cannot be used because of the present tense part of the present perfect (see note 33).

17. One could actually argue that there is no reason to suspect that (9) is a U-perfect, exactly because one can continue it with *and she still is*. If (9) were a U-perfect, it would assert that Mary is still sick and the continuation would

therefore feel redundant. There is a feeling of such redundancy in *Mary has lived here ever since 1990 and she still does*. This indeed would be one more argument for the conclusion we are drawing in the main text, namely, that (9) is not a U-perfect.

18. Note that in English, the adverb *lately* takes the present perfect only, while *recently* can take either the perfect or the past tense. Thus, lexical idiosyncrasy of the sort we are discussing is found not only crosslinguistically, but also within one and the same language.

19. This is said because it is assumed that the perfect of the progressive does not have the experiential reading. However, this seems to be inaccurate, as (i) illustrates.

(i) *Have you ever been watching TV when the tube exploded?*
     (Comrie 1976)

Why should there have been difficulty in detecting the experiential reading of the perfect of the progressive? Possibly the reason is that we need to control for the factors that justify the presence of the progressive to begin with. One such factor is that the progressive in isolation (e.g., as a conversation starter) is infelicitous (maybe even ungrammatical) if it does not frame an adverbial clause. The progressive does frame such a clause in Comrie's example and therefore the sentence is fine. One might ask whether the progressive's need to frame is satisfied in the reading of the recent past. It probably is in (15), if we take the progressive to frame the recent past adverbial *just*, with the reading that the interval denoted by *just* is inside an interval of cooking. But see the next note on a related matter.

20. Interestingly, *I have been cooking lately* can be uttered by somebody who used to eat in restaurants a lot but has recently changed habits. It is not exactly clear to us how the progressive functions here, given that it is normally not compatible with habitual contexts. Possibly, something like this is going on. We know that there are local effects that appear to override larger constraints. For example, the existential *there is* construction is supposed to not take definites, yet, one can easily say *There is the tallest girl you have ever seen in the room next door*. Superlatives require the definite article and so the latter appears in an environment where one would not expect it (though it does appear without the discourse-oldness that the *there is* construction cannot tolerate). Similarly in the case under discussion, progressives and habituals usually do not mix; but since *lately* requires the progressive on non-stative underlying predicates (something reminiscent of the U-perfect; see just below), the latter appears in a habitual environment with *lately*, overriding the usual incompatibility between the habitual and the progressive.

Moreover, in the case of the habitual reading, an assertion is made about the utterance time, namely, that the habit still holds. This is, of course, reminiscent of the U-perfect (which however is not restricted to habitual contexts). An additional reason to believe there is a connection between this habitual-

ity/*lately* reading and the U-perfect is that in languages that can use the present tense with adverbs to convey what the U-perfect does, it is also the present tense that is used with recent past adverbials to convey a recently formed habit. On the other hand, if this habituality/*lately* reading of the perfect were a subcase of the U-perfect, we would expect it to be present in other languages that have the U-perfect. However, we have found no such language. We leave the resolution of this issue for a future occasion. As this reading of the perfect progressive is not an instance of a perfect that is unmodified by adverbials (since there is either an overt or a covert 'lately' that is recoverable from the context), its existence does not impinge on the discussion in the main text.

21. According to Vlach, among others, there is an additional level of adverbial modification, namely, the one that relates to the present/past tense specification of a sentence.

22. This reflects the idea that temporal morphology is just an instance of agreement between the verb and adverbs (in all sentences, not just the ones with the perfect). This view of tense morphology as agreement permits a parallel to subject agreement. When the subject is *Peter*, and the verb is inflected, the morphology that appears must be third person singular. When a verb is not inflected as in *I consider Peter to be the best candidate*, *Peter* can still be the subject. What is not possible is for *Peter* to be the subject of a verb that is (e.g.) second person plural. Similarly in the domain of temporal interpretation: the adverbial determines the meaning and if the verb inflects, it must do so appropriately. If it does not inflect, then there is no mismatch in features and the adverbial interpretation goes through. For example, even though *by*-adverbials in a pluperfect require a past tense on the auxiliary when the latter is inflected, the adverbial can also appear with infinitival perfects: *He must have left by 3 o' clock*. Tense is [+/-past] to reflect the overt or covert presence of a past- or present-oriented adverb. This position, which is also taken in Vlach (1993), is the topic of some debate (see, e.g., Dowty 1979; Partee 1984).

23. There is only one case in which *since* is allowed without perfect morphology:
    (i) *It is two years since he died.*
    See Mittwoch (1988: 219) for discussion of this construction.

24. Another possibility would be existential closure over intervals filled by an eventuality. This might be better, but we will keep on talking about *ONCE* closing over eventualities.

25. This holds only when the alternatives are superset intervals of the interval between 3 and 4. When the alternatives are disconnected, as when the interval between 3 and 4 is being compared with the intervals between 11 and 12 and between 7 and 8 as in (i), things are different.
    (i) A: *Was he in his office between 11 and 12, between 3 and 4, and between 7 and 8?*

> B: *Well, he was in his office at least between 3 and 4. I don't know about the other times.*

B' statement can be uttered truthfully if the subject was in his office for 10 minutes between 3 and 4. In the case of *at least since*, the alternative intervals are supersets of the perfect time span. This is because RB is fixed (set by tense) and so only LB can be made to vary.

26. Ever since Partee (1973), whether tense is a definite or existentially quantified expression, appropriately restricted, has been a matter for debate. Similarly, in our case, the perfect time span could be expressed as a definite. We have nothing to say here about the larger debate; we will continue to use existential quantification, but we do not believe that any crucial element of our proposal would change if the perfect time span were expressed as a definite.

27. The prepositions *throughout* and *in* are meant to indicate the durative and inclusive readings, respectively.

28. Not surprisingly, it is possible to have complex eventualities that consist of subeventualities. We will argue later that notions like "poststate" do not have any distinguished status in the perfect; however, if we were to revert to this terminology for a moment, the relative scope of the perfect- and eventuality-level adverbs would also explain why a sentence like (i) cannot be paraphrased with (ii).

    (i) *I have read "The Book of Sand" five times.*

    (ii) *I have been fives times in the poststate of reading "The Book of Sand".*

30. *For*-adverbials are durative, which means that the predicate they modify must be homogenous/have the subinterval property. It follows that *for*-adverbials cannot appear when a telic eventuality is asserted to culminate because of the distinguished final subinterval of culmination. It is very often said that *in*-adverbials test for telicity and *for*-adverbials for atelicity, but this is an oversimplification.

    (i) *He walked to the park in/*for an hour.*

    (ii) *He walked in the park for/*in an hour.*

    The oversimplification is due to a common jump in the logic: we think we test for Aktionsart, but what we are really examining is a particular Aktionsart + grammatical aspect ([im]perfective) combination. So we do not a priori know whether what we are diagnosing is the result of Aktionsart, grammatical aspect or their combination. The fact that we can have an *in*-adverbial in (i) and not in (ii) means that *in*-adverbials go with the telicity + perfectivity combination. This is even clearer in languages other than English. In effect, *in*-adverbials tell you when the (inherent) endpoint/goal has been achieved. This means that we need an Aktionsart that has such an inherent endpoint (i.e., telics) and grammatical aspect that asserts that the eventuality has culminated.

    When a telic predicate is put in the imperfective, nothing is asserted about the achievement of the goal and *in*-adverbials are not possible. (The imper-

fective + telicity combination is exactly the domain of the imperfective paradox. See Dowty 1979; Landman 1992; and others).

In other words, *in*-adverbials test for achievement of the goal (telicity + perfecivity), not just telicity (i.e., not just existence of an inherent endpoint).

We can also explain why *for*-adverbials are not possible in (i). What we actually see is that *for*-adverbials are incompatible with the telicity + perfectivity combination. That is, they are incompatible not with the existence of an inherent endpoint but with the assertion of culmination (i.e., the assertion that the inherent endpoint has been achieved). In other words, *for*-adverbials test not for atelicity but for the absence of culmination (i.e., the complement set of the telicity + perfectivity combination).

30. This correctly says nothing about whether the five days were contiguous or not. Here is one place where having *ONCE* close over time intervals rather than eventualities might offer an advantage (see the discussion in note 27). Even if the five days are disconnected, their sum still forms an interval (since it is just the result of adding smaller intervals). Instead of (21b) we could have (i):

(i) There is a time span (the perfect time span) whose LB is in 1970 and whose RB is the utterance time, and in that time span is a five-day interval of my being sick.

31. This comes close to saying that when there is no overt perfect-level adverbial, the sentence contains enough interpretive elements to bring about a perfect interpretation and that therefore no covert perfect-level adverbial is needed. But even if this is the case, the major question (why there is no U-perfect reading in the absence of an overt perfect-level adverbial) remains.

32. This is the domain of Chomsky's (1970: 85) famous "Einstein sentences" which have become the topic of considerable debate in studies of the perfect. The issue is that *Einstein has visited Princeton* cannot be said after Einstein's death if *Einstein* is the topic of the sentence. However, it can be uttered after Einstein's death in the context of (e.g.) listing famous people who have visited Princeton.

33. To account for the restriction on an adverbial's interpretational "reach", Hornstein (1990) proposes that adverbs can modify only those elements that they govern. To account for the fact that the modification domain of adverbs is determined at Spell-Out, Thompson (1995) proposes that adverbials are barred from A-movement since they do not have features to check, unlike DPs (see also Chomsky 1995). This does not preclude movement of adverbials in constructions like *wh*-movement, topicalization, and focus movement (see also Alexiadou 1997 for discussion).

34. Why would a Tense-level adverbial not cause a Shortest Move violation? If Tense-level adverbs do not exist (Hornstein 1990), then of course there is no issue. But if they do (Vlach 1993), then something needs to be said. Possibly Tense-level adverbials are not attractable? Possibly they are analogous to the

case of subjects, which although topiclike do not count as interveners for topicalization of the object? Since we have not committed ourselves to the existence of Tense-level adverbials, we leave this question for a different occasion.

35. Thompson discusses the syntactic behavior of adverbials in sentences like *The secretary had eaten at 3 p.m.* which can mean either 'The time that the secretary actually ate was 3 p.m.' (eventuality-level) or 'The secretary had already eaten by 3 p.m.' (perfect-level). She demonstrates that the meaning of the adverbs (i.e., whether they are eventuality-level or perfect-level – what she calls the R point reading) interacts with binding. For example, in (i), the adverbial can only be perfect-level under coreference. On the eventuality-level reading, a Principle C violation arises.

(i) *Mary had seen him$_i$ at the time that John$_i$ presented his paper.*

However, with respect to Thompson's other tests, we have reached a different conclusion. Thompson claims that when the VP is isolated via pseudoclefting, *though*-movement, or VP-fronting, only the eventuality-level reading of the adverbials survives. This would support her position that perfect-level adverbials are attached higher than the VP. But our informants judge that the following sentences are acceptable:

(ii)   *Work at MIT since 1990 though he has, he still doesn't know where Building 20 is.*

(iii)   *John claims he has worked at MIT since 1990 and work at MIT since 1990 he has.*

(iv)   *What he has done is work illegally as a doctor since 1990.*

Given that *since*-adverbials are necessarily perfect-level, the fact that they can appear when the verb is used in isolation shows that in these environments, it is at least the Perf(ect) node that has been topicalized and not just the VP. This is a problem for Thompson's account because she assumes that because the verb is not participial, only the VP is topicalized. However, our test (basically the permissibility of the *since*-adverbial) shows that the syntacticosemantic features of the perfect are there, though something has inhibited the morphological formation of the participle. See Urushibara 1997 for a discussion of facts similar to the ones Thompson addresses and for a morphological account of the appearance of the bare forms in (ii-iv).

36. When *always* is eventuality-level, it is an adverbial of quantification placed within the perfect time span.

37. This is related to the frequent description of the experiential perfect as an individual-level type of property of the subject, since once one participates in an eventuality, one forever has the experience of having done so (see, e.g., Smith 1991).

38. On one of its uses. The imperfective has a wider distribution than is discussed here.

39. Certain stative verbs like 'have', 'be', 'know' do not have a perfective form at all. These verbs also do not have a perfect participle and do not form a perfect.

40. Traditional Bulgarian grammars do not make a distinction between perfective and neutral, calling both the "past completed" form. Not all verbs have a morphological distinction between neutral, imperfective, and perfective forms. Moreover, morphological neutral is available only for the past tense forms.

41. Smith characterizes neutral as "default with a specific positive value" (1991: 119), a definition that is unclear to us. She also says that neutral is found in languages that have no aspectual distinctions or that neutral is the absence of aspectual morphology in languages that do make an imperfective/perfective distinction. However, she also notes (1991: 133, fn. 3) that in principle, a language could have neutral in contrast to perfective and imperfective.

42. Regarding the distribution of imperfective and neutral perfect participles, the following generalization holds: when both an imperfective and a neutral participle are available, it is the neutral participle that is used in forming the U-perfect, and not the imperfective one. The imperfective participle is used in forming a U-perfect only for those verbs that do not mark the neutral. To account for this distribution, we propose that the neutral is more specified than the imperfective and that this is why it is chosen in the relevant environments. In particular, the neutral has the features [unbounded] (or it lacks the feature [bounded]) and it requires the features [dynamic] and [durative]. See Smith (1991) for definition of the primitive features [dynamic] and [durative]. The feature [dynamic] separates statives from nonstatives; the feature [durative] separates statives, activities and accomplishments from achievements and semelfactives. The neutral is precluded on statives, achievements, and semelfactives.. The less marked imperfective has only the feature [unbounded] (or it lacks [bounded]). Thus, as far as the U-perfect is concerned, both the neutral and the imperfective have the relevant feature, [+unbounded]. However, the neutral is chosen over the imperfective when it is applicable because it is the more specified form with respect to the features of the underlying eventuality. The question then arises why the simple past allows either the neutral or the imperfective. We argue that this optionality is only apparent and that the imperfective is chosen for framing purposes (see section 5).

43. A sentence like (i) should not be taken as a counterexample to the claim that the perfect of activities does not permit the U-perfect reading:

(i) *He has worked here ever since he was a child.*

In (i) the predicate is interpreted as 'be a worker' or 'be an employee', which is not an activity but a generic/habitual sentence that pattern with statives.

44. This has been expressed in various ways; for example, it is said that the progressive requires something like [dynamic] or that the progressive contributes [dynamic], this feature not being compatible with statives.

45. Actually, it is unclear whether [bounded] can appear on English statives. As noted earlier, this feature on statives in certain languages makes the predicate inchoative, but there are languages in which statives simply cannot appear with perfective morphology (Comrie 1976). Possibly English is such a language. If so, then statives will only be marked [unbounded]. This would also provide a possible alternative explanation for why statives do not have the progressive/nonprogressive opposition in English.

46. One should not be misled in believing that the experiential reading requires boundedness. In Bulgarian, the experiential reading is possible with the imperfective and neutral participles. A similar situation holds for English, as in Comrie's (1976) (i):

    (i) *Have you ever been watching TV when the tube exploded?*

47. When it accompanies a present tense, RB can be left out and it is automatically taken to be the utterance time.

48. In our opinion, Vlach overinterpreted one particular behavioral pattern. There are other tests that make progressives and states look similar and still others that make them look different:

    Both progressives and statives can appear in the present tense in English without being generics or sportscasters' speech:

    (i) a. *He is lifting weights.*
        b. *He is sick.*
        c. *He lifts weights. (only generic)*

    The fact that (ic) does not have an episodic interpretation can be made to follow from the fact that on nonstatives, activities come in the progressive and nonprogressive forms and therefore the bare (nonprogressive) verb is interpreted perfectively. And recall that there is no such thing as present perfective.

    One difference between progressives and statives is that progressives can take agentive adverbials like *carefully*, *deliberately*, and *conscientiously*, whereas statives cannot.

    Imperatives (both imperfective and perfective) and pseudoclefts are often used as tests for stativity, but what they really test for is agentivity.

49. Dowty (1979) calls the predicates that satisfy the subinterval property "statives". Again, we do not adopt this terminology for the reasons given in the main text. (See also note 5)

50. As is well known, there are two major classes of perfect formation. Class I languages do not use an auxiliary to form the perfect, but the matrix verb contains one or more morphemes that are associated with the perfect (synthetic perfects; e.g., Classical Greek, Latin, Turkish). Class II languages use an auxiliary to form the perfect (analytic/periphrastic perfects). This auxiliary may end up incorporated in the verb (e.g., Tajik) or it may be a separate lexical item (Romance, Slavic, Germanic, (Modern) Greek). Here we discuss only analytic perfects.

51. Benveniste (1966) is often cited in this context. However, this is a misreading of Benveniste's discussion. He says that possessive 'have' replaced possessive 'be to' in many languages, but he does not say that the one shaped the other.

52. In Kayne's system, participle agreement is a function of a local relationship obtaining or not obtaining between a DP object and the participial Agr_O. When 'be' selects for D/PP, participle agreement is the result of the derived subject's passing through the participial Agr_O. When 'be' selects for an Agr_OP, the obligatoriness of participial agreement reduces to the obligatoriness of adjectival agreement. So, Kayne's account has two different mechanisms to derive participle agreement with 'be', depending on whether 'be' subcategorizes for D/PP or Agr_OP. The complementarity between 'have' and participle agreement follows from the assumption that a major source of participle agreement ('be' + Agr_OP) is a source that could never yield 'have'.

    However, Kayne does not consider languages in which the perfect auxiliary is always 'be'. In such languages, it is incorrect to attribute participle agreement to Agr_O. In languages like Bulgarian where the perfect auxiliary is invariably 'be', the perfect participle *always* agrees with the subject as in (i). (Siloni (1997) discusses a similar pattern found in Hebrew, though not specifically for perfect participles; Siloni's discussion covers participles found with all complex tenses.)

    (i) *Maria   e   pisal-a*   *(knigata)*. (Bulgarian)
        Maria   is   write-PERF.PART-FEM.SG   the-book
        'Maria has worked on the book.'

    Obviously, we cannot appeal to Agr_O to account for these cases of participle agreement. We therefore conclude that the source of participle agreement with participles combining with 'be' is not Agr_O, contra Kayne (1993). The same conclusion is drawn by Siloni (1997) on the basis of the Hebrew facts mentioned above.

53. Kayne (1993) mentions three counterexamples to this: a dialect area in central France where agreement appears on the participle of 'be' when it combines with 'have' (e.g., 'Mary has been'), the dialect of Cori described by Chiominto (1984), and the Aquila dialect in Abruzzo. In the latter two cases, agreement on participle combining with 'have' is found only with unaccusatives.

54. This nominal head X is reminiscent of Siloni's (1997) AgrP(articicle), which yields participle agreement with the DP that passes through it.

55. Burzio (1986), Williams (1980), Chomsky (1981) and Stowell (1981) assume that the grammatical subject of the participle in reduced relatives is PRO. Siloni (1997) argues that even though the subject is grammatically present, it is not PRO but a variable bound by a null operator. Kayne (1994) and Bhatt (1999) propose a head-raising analysis for reduced relatives. For our purposes, it is sufficient to assume that reduced relatives are formed on the basis

of the smallest projection that can be lexicalized and can serve as a relative modifier at the same time.

56. For example, if the direct object moves in front of the verb (overtly or covertly), the resulting category should still be verbal in order to be able to successfully interact with the higher nodes (e.g., T).

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