

## WHAT IS A PERFECT STATE?

ATSUKO NISHIYAMA

*Ritsumeikan University*

JEAN-PIERRE KOENIG

*University at Buffalo*

Although many previous studies have tried to explain the English perfect's various readings, none of them have been entirely successful. In this article, we argue that the perfect is pragmatically, rather than semantically, ambiguous. The meaning of the perfect introduces a base eventuality and a perfect state whose category is underspecified semantically. Neo-Gricean reasoning leads hearers to appropriately fill in the value of that variable. We present the results of a corpus study of over 600 present perfect examples. The results of this study suggest that (i) most English present perfects receive entailed resultative or continuative readings, (ii) the English perfect need not elaborate on a preexisting topic, and (iii) the English perfect plays a role in establishing discourse coherence by helping hearers establish discourse relations between discourse segments.\*

*Keywords:* present perfect, pragmatic ambiguity, aspect, discourse coherence, semantic underspecification, pragmatic enrichment

**1. INTRODUCTION.** It has been customary ever since McCawley 1971 to distinguish various interpretations of the English present perfect (e.g. resultative perfects, existential perfects, and continuative perfects). But there is wide disagreement on how to categorize those interpretations and whether they correspond to different meanings. There is also wide disagreement on the function of the perfect operator, that is, why speakers and authors choose a perfect form rather than a simple past form. In this article, we propose first to shift some of the interpretative burden from the semantics of the perfect to its pragmatics. We argue that the various uses of the perfect are partly the result of pragmatic enrichment and that the perfect exhibits PRAGMATIC AMBIGUITY in the sense of Horn 1985. More specifically, we propose that the category of the state the perfect introduces (the perfect state) is left underspecified semantically and is determined pragmatically through Gricean inferences. The various uses of the perfect correspond to different ways of pragmatically filling in the underspecified category of the perfect state. Second, in line with the increased role we assign to pragmatics in the interpretation of the perfect, we argue that the use of the perfect helps establish discourse relations between utterances and, thus, enhances discourse coherence. We present the results of a corpus study that support our inferential, Gricean, account of the interpretation of the perfect as well as its hypothesized role in the establishment of discourse coherence.

**2. THE VARIOUS INTERPRETATIONS OF THE ENGLISH PERFECT.** This article puts forth five hypotheses regarding the meaning of the English perfect.

- HYPOTHESIS 1. The English perfect introduces into discourse an eventuality that precedes a reference interval (the prior eventuality) as well as a state (the perfect state).
- HYPOTHESIS 2. The English perfect is monosemous.
- HYPOTHESIS 3. The English perfect does not require that the perfect state and the prior eventuality temporally abut.

\* We would like to thank Jürgen Bohnemeyer, Cleo Condoravdi, Brian Joseph, Karin Michelson, and two anonymous referees for their valuable comments on earlier drafts of this article. This article significantly revises and expands Nishiyama & Koenig 2004, 2006, and 2008.

- HYPOTHESIS 4. The English perfect leaves semantically underspecified the category of the perfect state.
- HYPOTHESIS 5. The English perfect receives a full interpretation only through pragmatic inferences.

The first hypothesis is widely (although not universally) held and for that reason we leave its justification to the appendix. Although the second hypothesis is the null hypothesis when considering the meaning of any lexical item or construction, it is more controversial. We provide support for it after we present our analysis of the perfect's meaning, that is, after a thorough discussion of hypotheses 3 through 5 in the next two sections. In the rest of this section, we simply describe the various readings of the perfect and how scholars have previously semantically classified them.

Consider the following examples from McCawley 1971:104.

- |  |                        |
|--|------------------------|
| (1) I can't come to your party tonight. I've caught the flu. | (resultative perfect)  |
| (2) I have read <i>Principia Mathematica</i> five times.     | (existential perfect)  |
| (3) I've known Max since 1960.                               | (continuative perfect) |
| (4) Malcolm X has just been assassinated.                    | ('hot news' perfect)   |

Sentence 1 is an example of the resultative perfect reading where the direct resultant state of a past event still continues ('stative perfect' in McCawley 1971). Sentence 2 exemplifies the existential perfect reading; it is claimed that this use of the perfect merely asserts the existence of past events of a certain type. Sentence 3 illustrates the continuative perfect reading, in which the state denoted by the verb and its arguments holds at some interval stretching from the past into the present ('universal perfect' reading in McCawley 1971). Sentence 4 exemplifies the so-called hot-news reading, in which the perfect is used to report hot news ('perfect of recent past' in Comrie 1976). This reading was later reduced to an existential perfect reading by McCawley (1981), and we do not discuss it any further.

Many scholars describe the different interpretations as deriving from different semantic representations. Some scholars assume a trichotomy among resultative, existential, and continuative perfects, while others assume a dichotomy between continuative perfects and noncontinuative (existential) perfects. Among the latter, some focus on the difference between resultative perfects and existential perfects, while others focus on the difference between continuative perfects and noncontinuative perfects. To complicate matters, scholars do not necessarily agree on how to classify certain examples, in particular whether they constitute examples of resultative or existential perfect use. For clarity of exposition, we call the past eventuality described by the verb and its arguments the *BASE EVENTUALITY*, and we follow Smith (1991) in calling the combination of the verb and its argument the *VERB CONSTELLATION*.

Sentence 5 is said to be an example of the resultative perfect, because it suggests that a state that is the direct result of a past event holds at reference time (here, speech time) (McCawley 1971). That state is described by 5a. The event described by the verb constellation results in the state of the speaker having the flu and it is the fact that this state holds at present that the present perfect expresses.

- (5) I've caught the flu.
- a. I have the flu.
  - b. It is too late to have a flu shot.

Since McCawley 1971, the use exemplified in 5 has been called a 'resultative perfect' use. However, there are two types of resultant states of a past event. One kind of state

results directly from the occurrence of an event, the one paraphrased in 5a. That state is entailed by the sentence whose verb is in the perfect (see §4 for qualifications). If someone catches the flu, his/her having the flu (for some time after the event) is entailed. The other kind of state is the indirect result of an event's occurrence and thus is not entailed by the sentence whose verb is in the perfect. The sentence in 5b describes one such state for the event described by sentence 5. That it is too late to have a flu shot might be inferred from the fact that one has caught the flu (and the truth of sentence 5b might be implicated from the utterance of 5), but it is certainly not entailed by it. Some scholars use the term *resultative perfect* only when an entailed resultant state holds at present. If the entailed resultant state of the base eventuality does not hold at present, the use of the perfect is often considered to be another kind of perfect, typically an *existential perfect* (McCawley 1971, Kratzer 2000, Kiparsky 2002). Other scholars use the term *resultative perfect* when any entailed or implicated resultant state holds at present (e.g. Depraetere 1998).

More generally, Depraetere (1998) argues that the resultative interpretations associated with English present perfect sentences can derive either from resultant-state entailments or conversational implicatures based on world knowledge. For sentence 6, for example, the resultant-state entailment is 6a, while resultant states derived via conversational implicatures are shown in 6b.

- (6) Susan has watered the plants. (resultative perfect)
- a. The plants are watered.
  - b. (i) The plants do not need to be watered straightaway.  
(ii) Susan must be recovering as she has managed to water the plants.  
(iii) The plants are likely to die as Susan always gives them too much water.

As Depraetere notes, conversationally implicated resultant states can be inferred even in the absence of resultant-state entailments, as sentence 7 shows.

- (7) He has lived in London.
- a. (No entailed resultant state is available.)
  - b. (i) He knows the place very well.  
(ii) That is why he receives letters from England. (Depraetere 1998:610)

Sentence 7 is an atelic eventuality description and, as such, does not entail that any resultant situation ensues. Resultant states can still be inferred through conversational implicatures, however, as in 7b. That we are dealing with conversational implicatures is justified by the fact that these propositions are cancelable. Thus, 6b and 7b can be canceled after they are implicated, as 8 and 9 show. Furthermore, when the utterances of 6 and 7 are objected to by the utterances in 8 and 9 (by the addressee's saying 'No', for example), the conversational implicatures of the original sentences are not negated (although they may lose some of their credibility). In contrast, the entailed resultant state 6a is negated by such responses (Depraetere 1998).

- (8) The plants have been watered, but, with this temperature, they still need to be watered.
- (9) He has lived in London, but he doesn't know the place very well.

Some scholars categorize implicated resultative readings as *existential perfect* uses. Another way of distinguishing existential perfect readings from resultative readings, however, is to associate with the former a 'present possibility' requirement (McCawley 1971, Inoue 1979, Michaelis 1994). 'Present possibility' is the presupposition that the

subject of existential perfects should be alive or exist so that it is possible for the event to occur again in the present, as seen in the oddness of sentence 10.<sup>1</sup>

(10) #Einstein has visited Princeton. (McCawley 1971)

Although many studies distinguish between resultative and existential perfects, many other studies group them together into one class or give them a single semantic representation (McCawley 1981, Moens & Steedman 1988, Parsons 1990, Kamp & Reyle 1993, Smith 1997) and contrast this single reading with the continuative perfect reading. These scholars point out that the continuative perfect reading differs from other perfect readings in that the base-eventuality description is stative and that the described state started to hold in the past and continues to hold until the present, as seen in sentence 11 (= 3).

(11) I've known Max since 1960.

Table 1 summarizes the classifications of the readings of the English perfect proposed in previous studies. (Note that because of terminological inconsistency across studies, the terminology we use does not necessarily correspond to that of previous studies.) The top row indicates the readings of the perfect that have been recognized in previous studies and/or by us, that is, what type of state is understood as holding at reference time. As we have explained, sentence 5a exemplifies entailed resultant-state readings, while examples of implicated resultant-state readings were given in 5b and 7b. Examples of 'no resultant state' readings will be given later in 15 and 18. Finally, sentence 11 exemplifies continuative readings. Rows A–D show how those readings have been classified into distinctive meanings.

READINGS	ENTAILED RESULTANT STATE	IMPLICATED RESULTANT STATE	NO RESULTANT STATE	INPUT STATE CONTINUES
A	resultative <sup>a</sup>	existential <sup>b</sup>		continuative
B	resultative		existential	
C	noncontinuative or existential			
D	perfect			

#### Key

A: McCawley 1971, Kiparsky 2002

B: Michaelis 1998

C: McCawley 1981, Mittwoch 1988, Kamp & Reyle 1993, Portner 2003, Declerck et al. 2006; Declerck et al. 2006 further classifies the two readings into subcategories.

D: Monosemous hypothesis: this article among others (Moens & Steedman 1988, van Eijck & Kamp 1997)

TABLE 1. Various classifications of English perfect readings.

<sup>a</sup> 'Target state' perfect readings in Parsons 1990 and Kratzer 2000

<sup>b</sup> 'Resultant state' perfect readings in Parsons 1990 and Kratzer 2000, 'permanent state' in ter Meulen 1995

**3. WHAT IS THE PERFECT STATE?** Our analysis of the perfect assumes that the perfect introduces a state (a widely held assumption, but still, see the appendix for arguments that it does), that is, that the perfect is a stativizer. But what kind of state does the per-

<sup>1</sup> The observation that the subject should be alive or exist was originally made by Curme (1935). Scholars have noted that sentence 10 is acceptable if it follows the utterance *How can you say that Princeton is a cultural backwater?*, on the premise that the event type whose repeatability is at issue can be 'Princeton-visiting by a luminary' (Michaelis 1998). See §5 for a more thorough discussion.

fect introduce? There is again wide disagreement among scholars about the nature of that state, what category it belongs to, and how it relates to the base-eventuality description. In this section, we show that previous analyses that present a SEMANTIC treatment of the category of the perfect state and its relation to the base eventuality are inadequate. Simply put, they do not properly cover all uses of the perfect. The next section shows that the perfect is PRAGMATICALLY ambiguous and that this pragmatic ambiguity follows from the fact that the category of the perfect state is not specified semantically, but inferred pragmatically.

**3.1 THE PERFECT STATE IS A STATE THAT ABUTS THE BASE EVENTUALITY.** In DISCOURSE REPRESENTATION THEORY, scholars have often analyzed the perfect as introducing a state ( $s$ ) (the perfect state) that abuts the base eventuality ( $e$ ) (Kamp & Reyle 1993, de Swart 1998). According to this view, the perfect state  $s$  starts exactly when the base eventuality  $e$  ends, and the relation between the base eventuality  $e$  and the perfect state  $s$  is purely temporal. Kamp and Reyle (1993) (see de Swart 1998 for a very similar view) provide two distinct DISCOURSE REPRESENTATION STRUCTURES (DRSs) for the perfect, one for eventive verbs and one for stative verbs. In both cases, the perfect introduces an event  $e$  and a state  $s$ . We present them in turn.

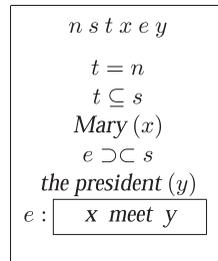


FIGURE 1. Kamp and Reyle's (1993) style DRS for sentence 12.

(12) Mary has met the president.

(Kamp & Reyle 1993:570)

Figure 1 is a (simplified) DRS for 12. It introduces as discourse referents an utterance time  $n$ , a reference time  $t$ , a state  $s$ , an event  $e$ , and  $x$  and  $y$ . Reference time  $t$  is constrained to equal utterance time  $n$  in the present perfect ( $t = n$ ) and is temporally included in the state  $s$  ( $t \subseteq s$ ).  $e$  is an event described by the verb constellation. It is in an abutting relation with the state  $s$ :  $s$  starts at the very moment when  $e$  ends ( $e \supset\subset s$ ). Thus, the relationship between  $e$  and  $s$  is purely temporal and the pastness of the described event  $e$  derives from the fact that  $e$  abuts  $s$ . There is no other constraint on the nature of the state  $s$  or on the relationship between  $e$  and  $s$ . Kamp & Reyle 1993 gives a distinct but similar DRS for perfects that modify stative verbs. When the base eventuality is a state ( $s'$ ), the event of the base state starting ( $e = beg(s')$ ) for continuative readings or the event of the base state ending ( $e = end(s')$ ) for existential readings is introduced via coercion. The perfect state abuts such coerced events. For example, sentence 13 has two readings, the existential perfect reading in which Mary lived in Amsterdam for three years at some point in the past and the continuative reading in which Mary still lives in Amsterdam and the duration of Mary's stay now amounts to three years. Figures 2 and 3 show the DRSs for those readings, respectively.

(13) Mary has lived in Amsterdam for three years.

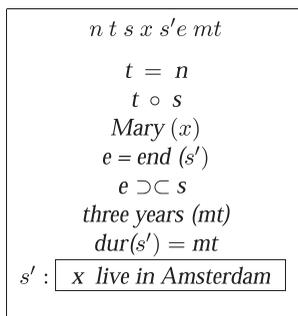


FIGURE 2. DRS for the existential reading of sentence 13.

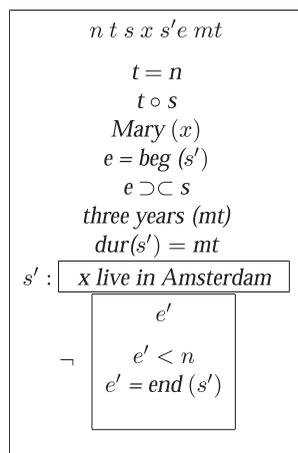


FIGURE 3. DRS for the continuative reading of sentence 13.

The main problem with Kamp and Reyle's temporal definition of the perfect state  $s$  is that it cannot exclude a temporally coincidental but irrelevant state that starts when the occurrence of the base eventuality ends. For example, if the state of Susan being married starts when the event of Ken breaking his leg ends, we cannot exclude 14b as being the intended perfect state for sentence 14.<sup>2</sup>

- (14) Ken has broken his leg.
- a. His leg is broken.
  - b. #Susan is married.

A second, potential difficulty is that Kamp and Reyle's analysis does not cover all implicated resultant-state readings, to the extent one recognizes such readings. Their temporal definition of the perfect state can account for entailed resultative perfect readings of the kind illustrated in 14a because entailed resultant states start at the very moment when the base eventuality ends. They cannot account for all conversationally implicated resultant-state readings, however, since implicated resultant states such as 6b and 7b do not necessarily start when the base eventuality ends. The perfect state can, for example, start earlier than the end of the base eventuality, as seen in 15. Sentence

<sup>2</sup> Both Kamp and Reyle (1993) and de Swart (1998) mention that the perfect state is a consequent state of the base eventuality, but their DRSs do not reflect this.

15a can be uttered to implicate 15b when the hearer is looking for a key. The eventuality of a speaker's son seeing the key and the state of it being in this room do not abut, however. The second state starts earlier than the first state (see also example 18 below).

- (15) a. My son has seen the key in this room.  
b. The key is in this room

A third, admittedly more metatheoretical, issue with Kamp and Reyle's analysis is that it requires postulating coercion operators that are difficult to justify independently in order to cover continuative readings

**3.2. THE PERFECT STATE IS A CONSEQUENT STATE.** The perfect state has often been regarded as a consequent state resulting from  $e$ 's occurrence (Moens 1987, Moens & Steedman 1988, Kamp & Reyle 1993, Smith 1997, van Eijck & Kamp 1997, de Swart 1998). These scholars assume a causal relation between the base eventuality and the perfect state. Moens (1987) and Moens and Steedman (1988) describe the function of the perfect as mapping a culmination onto a consequent state. A culmination is an event that is viewed as punctual or instantaneous and is accompanied by a transition to a new state of the world. Moens (1987) and Moens and Steedman (1988) argue that the perfect state is the consequent state of the base eventuality. When the input to the perfect operator is not a culmination (e.g. a process such as *working in the garden*), the input is first coerced into a culminated process, and the result is then mapped onto some consequent state. The distinct interpretations of the perfect discussed in §2 are attributed to the different possible consequent states (Moens & Steedman 1988).

Van Eijck and Kamp (1997) represent the causal relation between the described eventuality and the perfect state via the symbol  $\rightsquigarrow$ .  $e \rightsquigarrow e'$  means  $e'$  is the resultant state of  $e$ . It is represented in the simplified DRS for sentence 16 in Figure 4 (van Eijck & Kamp 1997).

- (16) Bill has smiled.

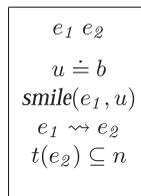


FIGURE 4. Van Eijck and Kamp's (1997) DRS for sentence 16.

Moens's and Van Eijck and Kamp's view explains resultative perfect readings, but not continuative readings such as 17. This is because the continuing state in such readings is not the consequent state of the (coerced) bounded event of having lived in London for three years.

- (17) I've lived in London for the last three years.

Furthermore, it seems that when speakers utter a perfect sentence, they do not necessarily do so in order to convey the resultant state of the described event, as example 15 above and example 18 below suggest. Sentence 18 can be uttered to convey 18a, but the fence's fragility need not result from its falling three times; it may be its cause.

- (18) This fence has fallen three times now.  
a. It is fragile.

**3.3. THE PERFECT STATE IS A PERMANENT STATE.** Finally, the perfect state has sometimes been regarded as equivalent to simply the state of the base eventuality having occurred (Galton 1984, Parsons 1990, ter Meulen 1995), on the basis of the fact that the end of an event always entails the beginning of the state of the base eventuality having occurred. The state of the base eventuality having occurred is logically entailed and lasts forever.<sup>3</sup> Since it is always possible to associate such permanent states with every occurrence of an event, this view of the nature of the perfect state is hard to disprove. There are several factors, though, that suggest that this view is less than optimal. First, the nature of such permanent states is not clear. In particular, there are no positive, internal properties that characterize this state. It is only characterized by its following the base eventuality.

Second, most entailed resultant states do not temporally coincide with permanent states. Consider the state of Ken's leg being broken for sentence 14. The state associated with an utterance of that sentence would be the permanent state of Ken's leg having been broken at some time *t*. States such as this are, as ter Meulen (1995:5) puts it, 'atemporal in the sense that once they have begun, they never end', and this particular state is clearly distinct from the resultant state typically understood to be introduced by sentence 14, the state of Ken's leg being broken at utterance time, since this state ends (one hopes!).

Third, introducing such states unduly populates the space of states, since for every event token there will be a corresponding permanent state. These considerations are not cogent, but they show that permanent states differ markedly from other states (e.g. Mary's happiness, the earth's flatness, and so forth).

Fourth, and more significantly, this view does not extend easily to continuative perfects. Consider sentence 19.

(19) I have lived in Buffalo since 1994.

The permanent-state view would analyze this sentence as introducing the permanent state of the event that results from bounding the state of living in Buffalo. Aside from the fact that it is not clear how to then derive the supposed entailment that the speaker still lives in Buffalo, the permanent-state view will have a hard time explaining the use of the phrase *since 1994*. Such 'universal' uses of *since*-phrases (Mittwoch 1988, Kiparsky 2002) indicate the initial boundary of a state that has held constantly from this initial point all the way to reference time. According to the permanent-state view, the state that holds now is that of the event (i.e. bounded state) of living in Buffalo having occurred at time *t*. Let us assume that the state of living in Buffalo is bound along the lines of Kamp and Reyle's (1993) proposal, that is, that the base eventuality in this case is the onset of the state of living in Buffalo. The permanent state introduced by sentence 19 and that started in 1994 is the state of the onset of the state of living in Buffalo having happened. That permanent state is not to be confused with the state of living in Buffalo. The latter, in contrast to the former, can end. More importantly, that permanent state does not entail that the speaker lived continuously in Buffalo. It just entails she lived there long enough for its onset to have occurred in 1994. In other words, that permanent state is NOT the perfect state that corresponds to the continuative perfect interpretation of sentences such as 19. The 'universal' use of *since 1994* in sentence 19 is,

<sup>3</sup> This analysis is sometimes considered to be equivalent to the meaning of existential perfect readings: that is, there is at least one occurrence of the event up to now. But this is not so, since there will be a different permanent state for every token of the same event type.

therefore, left unexplained by the hypothesis that the perfect state is the permanent state of the relevant event having occurred.

Fifth, the hypothesis that the English perfect is used to introduce into discourse the permanent state of the base eventuality having occurred does not seem to match the use of the perfect in texts, as we show in §6. Briefly put, the fact that states traditionally assumed to be introduced by the present perfect (e.g. 14a and 18a for sentences 14 and 18 respectively) hold at reference time helps establish discourse coherence (§6). Choosing to describe an event in the present perfect is a way for speakers and writers to help addressees construct a coherent representation of the discourse. Permanent states do not play that role. It is therefore unclear why speakers would choose a present perfect form, if it merely introduces the permanent state of the base eventuality having occurred.

**4. THE UNDERSPECIFIED SEMANTICS OF THE PERFECT.** We have shown that previous attempts at providing a unified SEMANTIC characterization of the nature of the perfect state have been unsuccessful. This section proposes a PRAGMATIC characterization of the perfect state. Our pragmatic analysis differs from Depraetere's (1998), as her analysis covers only resultative readings. We propose the following meaning for the English perfect within the context of a discourse representation theory's approach to aspect (Smith 1991, Kamp & Reyle 1993, van Eijck & Kamp 1997, de Swart 1998).

(20) The meaning of the perfect introduces:

- i. an eventuality  $ev$ , which satisfies the base-eventuality description  $\phi$  such that the temporal trace of a subpart  $ev'$  of  $ev$  (that also satisfies  $\phi$ ) precedes reference time  $r$  (or  $\tau(ev') \prec r$ );<sup>4</sup>
- ii. a perfect state  $s$ , which overlaps reference time  $r$  (or  $\tau(s) \circ r$ ) and whose category is semantically a free variable  $X$ .<sup>5</sup>

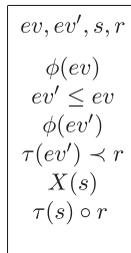


FIGURE 5. The meaning of the perfect.

Figure 5 shows the discourse representation structure of the meaning of the perfect.  $\phi$  stands for the base-eventuality description contributed by the verb constellation. The first line lists discourse referents. The lines below the list of discourse referents represent discourse conditions on those referents. The first condition says that the eventuality  $ev$  satisfies the description  $\phi$ . The second condition says that  $ev'$  is a (not necessarily proper) subpart of  $ev$ , and the third condition says that  $ev'$  also satisfies the description  $\phi$ . The fourth condition says that the temporal trace of  $ev'$  precedes reference time. The

<sup>4</sup>  $\tau$ , adapted from Krifka 1989, is a function that maps an eventuality onto its temporal trace, that is, the time interval in which an event occurs or a time interval during which a state holds.

<sup>5</sup> Alternatively, as Kamp and Reyle (1993) propose, the perfect state, like all states, could include  $r$ , at least for present perfects. Nothing substantial hinges on this issue.

fifth condition says that  $s$  satisfies the unspecified property  $X$  (more on this crucial aspect of our analysis of the English perfect below); the last condition constrains  $s$  to overlap reference time  $r$ . Additionally, for pluperfects, the reference-time interval  $r$  precedes utterance time  $n$  ( $r < n$ ); for present perfects,  $r$  overlaps  $n$  ( $r \circ n$ ).

Our definition of the meaning of the perfect expands on current analyses of the perfect as a stativizer in several ways:

- the base eventuality  $ev$  can be any type of eventuality, including states;
- the temporal constraint that the base eventuality  $ev$  must precede reference time is cast in terms of one of its subparts  $ev'$  rather than  $ev$  itself;
- the category of the perfect state  $s$  is semantically a free variable ( $X$  in Fig. 5).

The first two differences between our analysis and other analyses of the perfect as a stativizer allow our definition to cover both stative, dynamic homogenous, and quantized base eventualities (and, therefore, continuative, existential, and resultative uses of the perfect). When the base eventuality is an event (a quantized eventuality), then  $ev' = ev$ , since events do not have the subinterval property (proper parts of events satisfying  $\phi$  do not satisfy  $\phi$ ). For continuative uses of the perfect, by contrast,  $ev' < ev$ , since the base eventuality  $ev$  still continues at reference time and its temporal trace cannot precede  $r$  if  $ev' = ev$ . Furthermore, since homogenous eventualities possess the subinterval property, if  $ev$  satisfies  $\phi$ , so will its proper subparts, at least for subparts that are not too small. Lifting the restriction on the category of the base eventuality and requiring that only a nonnecessarily proper subpart of the base eventuality precedes reference time allows our model to cover continuative and noncontinuative uses of the perfect under a single meaning (in contrast to Kamp & Reyle 1993 and other DRT treatments of the perfect). It also avoids requiring that base eventualities that are state descriptions be first bounded. In brief, our slightly more complex description of the precedence relation between the base eventuality and reference time avoids positing distinct rules when the Aktionsart of the base eventuality varies.

More importantly, these first two differences allow an explanation of why perfects differ across languages as to whether they do or do not have continuative readings. For example, the perfect uses of the French *passé composé*, the Greek perfect (Iatridou et al. 2003), or the German *Perfekt*, according to Comrie (1976) or Kamp and Reyle (1993), do not have continuative readings (see Dahl 1985 for a longer list of languages whose perfect operators do not have continuative readings). In such languages, the temporal constraint that the base eventuality precede reference time is cast in terms of  $ev$  itself (the second and third conditions from Fig. 5 are absent and the fourth condition is replaced by  $\tau(ev) < r$ ). This simple variation excludes the possibility that the base eventuality is continuing. If the base eventuality itself (not a subpart of it) precedes reference time, it cannot be ongoing. We view the ability of our analysis to easily model crosslinguistic variation in the interpretive range of perfect operators as an argument in its favor.

The third difference (the category of the perfect state is semantically a free variable) is the main innovation of our analysis, as it shifts some of the interpretive burden from the semantics of the perfect to its pragmatics. Simply put, which state holds at reference time is not determined by the meaning of the perfect form and the verb's arguments, but by Gricean-style pragmatics. In DRSs, the presence of a free variable  $X$  for perfect sentences is a semantic constraint imposed by the perfect form: the perfect requires a state to hold at reference time. But the value of  $X$  (what particular state holds at reference time) must be filled by the addressee in accordance with Gricean inference rules; that is, the speaker must presume that the addressee can infer the particular value of  $X$  she has

in mind. In other words, the only constraint on  $X$  is pragmatic in nature. Its value must be inferable from the statement that  $ev$  of category  $\phi$  occurred together with contextual information. This use of a free property variable  $X$  in the semantics of the perfect can be compared to the use of property variables in Kay & Zimmer 1978 and Partee 1984 (this use is akin to the notion of ‘implicature’ in Bach 1994; Hardt (1999) also uses property variables in his DRT model of VP ellipsis). Kay and Zimmer (1978) argue that the relation between two nouns in English nominal compounds (e.g. *car seat*) or in the English genitive construction (e.g. *Martha’s book*) is evoked, not expressed. Partee (1984:293) similarly suggests that those two constructions introduce a free variable for that relation. The value of the free variable  $X$ , according to Partee, is not determined directly from the meanings of the constructions’ parts, nor in the way they are combined, nor by the context, but by inferences drawn by addressees that make use of both the content of the parts and the context. Just as the contextual interpretation of nominal compounds or genitive includes, after pragmatic inferences, a specification of the relation between the two noun denotations, so also does the contextual interpretation of the perfect include, after pragmatic inferences, a specification of the category of the perfect state (a value for the free variable  $X$ ).<sup>6</sup>

We illustrate our hypothesis with example 21.

(21) Ken has broken his leg.

The meaning of the perfect form of the verb in sentence 21 introduces into the DRS a base eventuality that satisfies  $\phi$ , that is, the event of Ken breaking his leg. It also introduces a state  $s$  whose category is left underspecified as  $X$ , as shown in Figure 6.

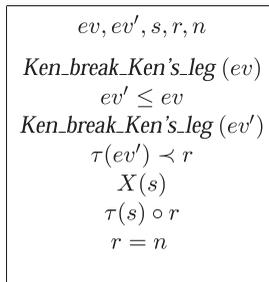


FIGURE 6. DRS for the sentence *Ken has broken his leg*.

The different interpretations of the perfect depend on how the addressee PRAGMATICALLY infers from the occurrence of  $ev$  the category of the perfect state  $s$ . They therefore constitute an instance of pragmatic ambiguity. The inferential process by which the value of  $X$  is determined can be modeled via Atlas and Levinson’s (1981) and Levinson’s (2000) principle of informativeness (I-PRINCIPLE) (see also the notions of Q- and

<sup>6</sup> Readers might wonder, as a referee did, whether the fact that there is no SEMANTIC constraint on the category of the perfect state makes our analysis prone to the same objection we levied against permanent states, that is, that no positive property characterizes those states. The answer is ‘No’, since, as we show below, contextual interpretations of the perfect include a value for  $X$  that constitutes a positive property of the perfect state. What made the permanent state so different from other states is not that its properties were not specified semantically, but that there were no positive properties that could characterize that state, whether semantically encoded or pragmatically derived.

R-implicatures in Horn 1984). The I-principle consists of a speaker's maxim of MINIMIZATION and a hearer's pragmatic enrichment as its corollary.

(22) I-principle:

- a. A speaker chooses the less informative utterance ( $q$ ) when the more informative one ( $p$ ) is available (maxim of minimization).
- b. The addressee enriches the less informative utterance and finds the most SPECIFIC interpretation he thinks the speaker intended.

When a speaker chooses to utter 21 (whose meaning is represented in 23<sup>7</sup>) and when the more informative utterances  $p$  and  $p'$  in 24 are available, hearers, following the maxim of minimization, enrich the less informative utterance into  $p$  or  $p'$ , assuming the speaker's use of minimization.

(23)  $\exists ev \exists s [\text{Ken\_break\_his\_leg}(ev) \wedge X(s) \wedge \tau(ev) < n \wedge \tau(s) \circ n]$

- (24) a. Ken has broken his leg and Ken's leg is broken. (=  $p$ )  
 b. Ken has broken his leg and Ken is behind in his project. (=  $p'$ )

The various ways in which addressees can fill in the value of  $X$  through the I-principle correspond to the categories of readings of the English perfect previous scholars have recognized. We start with sentence 21. An entailed resultative perfect reading obtains when the value of  $X$  corresponds to 'Ken's\_leg\_be\_broken', as shown in 25.

(25) Entailed resultative perfect reading:

$X = \text{Ken's\_leg\_be\_broken}$

To derive this value for  $X$ , addressees must make use of the default rule of persistence (McDermott 1982), which, for our purposes, basically says that conversational agents should believe that states that they have been told about persist until they are given evidence to the contrary. Thus, even if the category of the perfect state corresponds to an entailment, as in 25, a pragmatic inference is still required to conclude that this state persists until reference time ('the inference of persistence', McDermott 1982), since there is no guarantee that the entailed state of Ken's leg being broken continues from the end of the base eventuality until the present (an inference of persistence is also needed for continuative perfect readings; see below).<sup>8</sup>

Con conversationally implicated resultative perfect readings obtain when the value of  $X$  is, for example, 'Ken\_be\_behind\_in\_Ken's\_project', as seen in 26 for 21 or 'I\_be\_tired' for sentence 27B.

(26) Conversationally implicated resultative perfect reading:

$X = \text{Ken\_be\_behind\_in\_Ken's\_project}$

(27) A: Why are you so tired?

B: I've cleaned the entire house (today).

To derive this kind of value for  $X$ , addressees must use much more particular knowledge of the speaker's intentions, world knowledge, and contextual information. For example, imagine that sentence 21 is uttered when a supervisor (the addressee) asks whether Ken's project is on schedule. The utterance of 21 is likely to then lead the su-

<sup>7</sup> For ease of presentation, we use in the following discussion first-order predicate calculus formulas rather than DRSs and state temporal constraints in terms of the base eventuality rather than a subpart of it.

<sup>8</sup> Several considerations can, in principle, come into play in inferring a value for  $X$  for sentence 21: for example, how recently the base eventuality occurred or how fast, generally, Ken heals. But, we argue, because McDermott's persistence rule is a general, default inference rule, addressees can infer (and speakers can expect addressees to infer) the state of Ken's leg upon hearing or reading 21 without having to engage in such reasoning.

pervisor to infer 26. Similarly, the utterance of 27B is likely to lead speaker A to infer that speaker B is tired. (Note that the cleanliness of the house is irrelevant to the conversation and is not therefore the perfect state.)

Clearly, deriving conversationally implicated resultative perfect readings is a more complex inferential process and we expect it to be rarer in texts. In fact, such perfect readings are quite rare (see §6). Less than 5% of present perfect occurrences we have looked at involve conversationally implicated resultative perfects.

Existential (nonresultative) perfect readings obtain when the value of  $X$  is, for example, ‘Ski\_jumps\_be\_difficult’, as seen in 28.<sup>9</sup> Here, the difficulty of the ski jumps is not a resultant state, but rather it can be a cause of Ken’s broken leg, or put differently, Ken breaking his leg is evidence that the ski jumps are difficult (see §6 for more examples of this type).

(28) Existential (nonresultative) perfect reading:

$X = \text{Ski\_jumps\_be\_difficult}$

Since the meaning of the perfect can take any eventuality description  $ev$  as its input, including a state, when the input eventuality description is stative, the value of  $X$  MAY be of the same category as that of the base eventuality. When this occurs—that is, when the category of the perfect state is that of the prior eventuality—we are dealing with what are typically labeled continuative perfect readings. For example, the meaning of sentence 29, represented as 30, can lead to the inferences paraphrased in 30a and 30b as possible perfect states.

(29) Ken has lived in London.

(30)  $\exists ev \exists s [\text{Ken\_live\_in\_London}(ev) \wedge X(s) \wedge \tau(ev) < n \wedge \tau(s) \circ n]$

a. Ken (still) lives in London.

b. Ken knows good restaurants in London.

When the value of  $X$  is ‘Ken\_live\_in\_London’ (and  $ev$  is  $s$ ), we are dealing with a continuative reading (see 31). When the value of  $X$  is interpreted as ‘Ken\_know\_good\_restaurants\_in\_London’, we are dealing with a noncontinuative, implicated resultative perfect reading (see 32).

(31) Continuative reading:

$X = \text{Ken\_live\_in\_London}$

(32) Noncontinuative reading:

$X = \text{Ken\_know\_good\_restaurants\_in\_London}$

Finally, the value of  $X$  cannot be an unrelated state such as ‘Susan\_be\_married’, because this value is NOT INFERRABLE from the occurrence of the event of Ken breaking his leg in normal contexts.

(33)  $X \neq \text{Susan\_be\_married}$

(This value is not normally inferable from  $ev$ ’s occurrence.)

Whereas Kamp and Reyle (1993) provide a mere temporal characterization of the relation between the perfect state and the base eventuality, which cannot exclude unrelated states from being interpreted as the perfect state, Moens and Steedman (1988) and van Eijck and Kamp (1997) provide a causal characterization of that relation, which cannot account for existential and continuative readings. Our answer to this too coercive/too permissive dilemma is to locate the source of the constraint on possible perfect

<sup>9</sup> Some scholars also regard ‘Ken’s\_breaking\_his\_leg\_have\_occurred( $s$ )’ as an instance of an existential perfect reading for sentence 21. See the previous section for details.

states in Gricean pragmatics, that is, in what relations between the base eventuality and the perfect state hearers can infer and speakers can presume hearers can infer. The fact that the inference process addressees must engage in is governed by the neo-Gricean principles of minimization and maximization properly excludes as values of *X* temporally coincidental, but otherwise unrelated, states such as 33 (= 14b). In normal contexts, addressees cannot infer that Susan is married from the fact that Ken broke his leg. The fact that the nature of the constraint is pragmatic properly allows other relations between the base eventuality and the perfect state than one of cause and effect (e.g. effect-cause or identity), as seen in examples 18, 28, and 30a.

Our analysis of the perfect makes traditional classifications of perfect uses mere mnemonic categories and denies their descriptive relevance. But it is interesting to note that the different interpretations of the English present perfect that have been recognized in previous studies correspond to the different types of inferences used to fill in the value of *X*. An entailed resultative perfect reading arises when the addressee fills in the value of *X* as an entailed resultant state using the principle of persistence. A nonsemantically entailed resultative perfect reading arises when the value of *X* is filled through an inferential process that makes use of the speaker and hearer's commonsense knowledge of causality (Lascarides & Asher 1993). So-called existential perfect (or nonresultative perfect) readings arise when the value of *X* is again inferred through the use of world or contextual knowledge, but one that need not rely on knowledge of causes and effects. Finally, we are dealing with continuative perfect readings when the value of *X* is determined, through an inference of persistence, to be equivalent to the base-eventuality description.

**5. IS THE PERFECT TRULY MONOSEMOUS?** The preceding two sections have explained our main claims about the semantics and pragmatics of the English perfect, that is, hypotheses 3–5 mentioned at the beginning of §2. We must now come back to hypothesis 2, that the perfect is monosemous. Clearly, we assign a single, underspecified meaning to the English perfect. But, can our monosemous analysis account for data that have been claimed to show that the perfect is semantically ambiguous? This is the question we answer in this section.

**5.1. PURPORTED EVIDENCE FOR A RESULTATIVE/EXISTENTIAL AMBIGUITY.** The results of identity tests (conjunction reductions, pronominalization, 'the same thing'-test, and so on) have sometimes been cited as evidence for the ambiguity of the perfect between a resultative and an existential reading (McCawley 1971, Michaelis 1994, 1998). Sentence 34, for example, is argued to be ambiguous, not vague, between an existential and resultative reading, because sentence 35 does not allow a crossed interpretation. That is, sentence 35 cannot be used to assert both that Max was fired at some point (existential reading) and that Fred is currently out of work as a result of having been fired (resultative reading). It can only be used to assert either that both Max and Fred were fired at some point or that both are currently out of work. But the unreduced sentence 36 does not allow the crossed interpretation either. Therefore, the absence of a crossed interpretation for 35 cannot be attributed to an identity-of-sense constraint on VP ellipsis (see Zwicky & Sadock 1975). The absence of crossed interpretations must be due to some pragmatic factors, rather than to semantic ambiguity, as McCoard (1978:188) has already noted.

(34) Max has been fired.

(35) Max has been fired, and so has Fred.

(36) Max has been fired and Fred has been fired.

Another argument sometimes adduced for distinguishing between existential and entailed resultative meanings of the perfect is that the former, and only the former, carries an additional ‘present possibility’ requirement (McCawley 1971, Michaelis 1994, 1998). Recall that ‘present possibility’ is the presupposition that the referent of the subject of existential perfects should be alive or exist so that it is possible for the event to occur again in the present, as seen in the oddness of sentence 37.

(37) #Einstein has visited Princeton. (McCawley 1971)

Pace McCawley and others, the replicability of an event type contextually associated with the base eventuality does not seem to be a PRESUPPOSITION of sentences such as 37. Presuppositions can usually be negated by a metalinguistic use of negation, as seen in sentence 38 (Horn 1985, 2001). The putative present-possibility presupposition cannot be negated, however, as the infelicity of sentence 39 shows (Nishiyama & Koenig 2004). This suggests that the source of the present-possibility effect is not presuppositional in nature. As Cleo Condoravdi (p.c.) points out, the present-possibility constraint could still be semantic and a conventional implicature, since such implicatures typically cannot be negated. But, as we now show, there is a good pragmatic motivation for the present-possibility constraint and no need to resort to a conventional implicature.

(38) The king of France is not bald, because there is no king of France.

(39) #Einstein has not visited Princeton, because he is not alive. (He might have visited there when he was alive.)

The perfect state for existential uses of the perfect is typically predicated of the referent of the subject of the sentence containing the perfect. For example, the first sentence of 40 is naturally followed by the second sentence, which encodes the perfect state implied by the perfect in the first sentence. (Recall that existential perfect uses, in our account, are compatible with resultant-state implications.)

(40) John has visited France three times. He knows how to get to Paris from the airport.

But imagine John, like Einstein, is dead. What perfect state still holds and can be implied to hold of John? Although there are states one can predicate of a dead man (e.g. *Hitler is a monster*), such predications are hard to conceive of. In fact, when ascribing properties to the deceased, we tend to use the past tense. When giving Mary’s eulogy, we might say that she was a caring person and would only say that she *is* a caring person when trying to implicate she is still with us. In other words, the present-possibility constraint arises from the fact that the perfect state is typically predicated of the subject’s referent in so-called existential uses of the perfect and the fact that there is no state of the dead, so to speak.

Our pragmatic account of the present-possibility constraint is supported by Inoue’s (1979) and Portner’s (2003) observation that the identity of the subject’s referent may render moot the constraint. As Portner notes, passivizing sentence 37 improves its felicity (see sentence 41). This is because the perfect state conveyed by 41 is most likely to be predicated of Princeton (as is well known, the choice of subject affects the identity of discourse topics) and the fact that Einstein does not exist anymore is now irrelevant to the felicity of the perfect-state predication. Furthermore, the subject’s referent can be deceased, as the felicity of example 42 shows, when uttered by a teacher trying to convey the importance of creative thinking to his students, that is, in contexts where the perfect state is not predicated of the subject’s referent.

(41) Princeton has been visited by Einstein.

(42) Einstein has said that imagination is more important than knowledge.

Since the perfect state for 42 (in the intended context) is that imagination is more important than knowledge and is not predicated of Einstein, Einstein's demise does not detract from the sentence's felicity (see §6 for a discussion of other corpus examples in which the perfect state is described by the complement of a verb of speech report such as *say*).

Michaelis (1994, 1998) presents a different kind of argument for the ambiguity of the perfect. She argues that several grammatical constraints bear on resultative but not existential perfect readings. The grammatical relevance of the distinction between resultative and existential readings, she argues, requires the inclusion of at least these two perfect constructions in the grammar of English speakers. The overall gist of Michaelis's observations is that it is possible to specify the base eventuality's circumstances only when the perfect receives an existential reading. Thus, 43 and 44 have an existential, but not a resultative, reading.

(43) A: My God! Look at that cast!

B: #I've broken my ankle in a skiing accident.

(44) Harry has walked the dog at noon.

We view the inability of specifying the base eventuality's circumstances for resultative perfect readings as an effect of Grice's maxim of relevance: the pragmatic infelicity of B's response in 43 stems from the fact that the specification of how the speaker's ankle was broken is NOT RELEVANT to the perfect state (the speaker's ankle being broken at reference time). It is harder to determine why 44 does not have a resultative reading, as it is not clear out of context what its perfect state is. Michaelis explains the absence of a resultative reading for that sentence as follows:

Sentence (72) [= 44] cannot, however, be used at two or three in the afternoon to assert the present existence of a walked dog, panting or enervated as a result of having been exercised by Harry at noon that day. (Michaelis 1994:149)

Gricean considerations explain why 44 cannot convey THAT perfect state, we believe. Speakers cannot expect hearers to infer that it is the fact that the dog was walked AT NOON rather than another time (12:30, 1:00, or ... ) that led to his present panting. Therefore, mention of the time of the walk is NOT RELEVANT to the speaker's communicative act. Of course, we cannot, unfortunately, demonstrate that mention of the time of occurrence of the base eventuality is NEVER relevant to the inference of a perfect state for 44 or similar sentences, that is, is irrelevant no matter what the value of *X* is.

One possible objection to our Gricean account of Michaelis's observations is that there seems to be crosslinguistic variation in the infelicity of the specification of the base eventuality's circumstances. Many of the constraints on resultative readings that Michaelis reports do not apply to the Japanese *te-i-ru* construction, for example (see Nishiyama 2006 for a detailed analysis of the construction). Similarly, Australian English welcomes past-time adverbials whereas standard English does not (see the appendix for more details). We analyze this variation as possible evidence that English has conventionalized differences in the relevance of the specification of the base eventuality's circumstances. Thus, one may need to recognize several perfect GRAMMATICAL CONSTRUCTIONS that differ in the kinds of inferences that lead to assigning a value to *X* (cause-effect inferences or other kinds of inference). But, crucially, the possible existence of distinct constructions does not bear on the SEMANTIC ambiguity of the perfect, as each construction would be individualized on the basis of how a value of *X* is inferred, not on the basis of two distinct semantic representations.

**5.2. PURPORTED EVIDENCE FOR A CONTINUATIVE/EXISTENTIAL AMBIGUITY.** Some scholars have observed that when a stative verb occurs in the perfect, there is often an impli-

cation that the described state does not hold any more when no durational adverbial phrases such as *since-* or *for-*phrases are added (McCoard 1978, Michaelis 1998). The purported fact that durational adverbials are needed for continuative perfect readings has been taken as evidence that the perfect is ambiguous between continuative (or universal) and existential perfects (Mittwoch 1988). Sentences whose verbs are in the perfect, however, can receive continuative readings even when no durational adverbs are present, as sentence 45 shows.

- (45) Ken has been sick.  
 a. Ken is still sick.  
 b. Ken is not sick anymore.

Sentence 45 can be interpreted either as a continuative or an existential perfect. Under a continuative reading, 45 says that for all time intervals from a given point in the past to the present Ken was sick and that sentence 45a is therefore true. Under an existential reading, 45 is saying is that there exist one or more episodes of Ken's sickness during a period that extends from a point in the past to the present and that sentence 45b is therefore true.

DURATIONAL PHRASES AND THE PERFECT. The position of durational phrases is often mentioned as another piece of evidence for the ambiguity of the perfect between a continuative and a noncontinuative (or existential) reading (Dowty 1979, Mittwoch 1988, Iatridou et al. 2003, Portner 2003). Dowty (1979) points out that when a *for-*phrase is preposed, as in sentence 46b, only the continuative interpretation is available. In other words, according to Dowty (1979) and several researchers following him (Mittwoch 1988, Iatridou et al. 2003, Portner 2003), 46a is ambiguous between a continuative and an existential reading while 46b has only a continuative perfect reading. Dowty further argues that this constraint on the noncontinuative perfect is evidence that sentences whose verbs are in the perfect are structurally ambiguous between a continuative and an existential reading. The traditional explanation for the difference in interpretive possibilities of 46a and 46b is that the relative scope of the measure phrase and the perfect operator differs in the two sentences.<sup>10</sup>

- (46) a. John has lived in Boston for four years (as of January 1985/as of now/as of some time).  
 b. For four years, John has lived in Boston (as of now/\*as of some time).

But Hitzeman (1997) shows that matters are more complex. She notes that the same difference in interpretive possibilities of fronted and postverbal *for-*phrases arises when the verb is in the simple past tense, casting doubt on the claim that the relative scope of measure phrases and the perfect operator appropriately models the contrast between sentence 46a and sentence 46b. Sentence 47a is ambiguous in the same way sentence 46a is (the addition of *once* eliminates one of the two possible interpretations); sentence 47b is unambiguous just as sentence 46b is (the interpretation favored by the addition of *once* is no longer felicitous). Hitzeman's account of the phenomenon illustrated in 46 and 47 is based on the assumption that temporal measure phrases are always overtly or covertly temporally located. (This anchoring is indicated via the *as of ...* phrases in parentheses in 46.) Hitzeman further argues that when the temporal location of measure phrases is not overtly expressed, it can either be understood from context (speech time for the present perfect, that is, be equivalent to *as of now*, the so-called p-definite inter-

<sup>10</sup> Note that the difference in range of interpretations of 46a and 46b disappears when the measure phrase is part of a contrastive topic.

pretation) or be understood via some existential closure (i.e. be equivalent to *as of some time*, the so-called non-p-definite interpretation). Hitzeman (and Portner (2003) after her) proposes to account for the difference in interpretive possibilities of sentences 46a–47a and 47a–47b by suggesting that, since fronted measure phrases occur outside the VP, they occur outside the scope of the existential-closure operator. Since existential closure is ruled out, the measure phrase must be temporally located contextually, that is, with respect to speech time. Non-p-definite interpretations of sentences such as 46a, by contrast, require existential closure to locate the measure phrases (that the base eventuality occurred AT SOME POINT IN THE PAST is the hallmark of existential perfect uses). The impossibility of existential closure to apply when the measure phrase is fronted thus accounts for the sole availability of a continuative perfect reading for sentence 46b.

- (47) a. Jodi swam for three hours (once).  
 b. For three hours, Jodi swam (#once).

Taking stock of Hitzeman's and Portner's observations, we now outline how our analysis of the perfect accounts for the contrast in 46.<sup>11</sup>

Following Kamp and Reyle (1993), we represent the semantic contribution of measure phrases as properties of time intervals, as shown in Figure 7.<sup>12</sup> The predicative condition  $Fin\_pt(mnt) \circ r$  represents, somewhat informally for now, the anchoring of measure phrases (the functor  $Fin\_pt$  selects the final point of a time interval, as defined in Partee 2004). Whether the final point of the measure phrase is included in reference time  $r$  or in another discourse referent (indicated by  $i$  for ease of exposition in the figure) represents the difference between p-definite and non-p-definite interpretations of measure phrases. The absence of ambiguity of sentence 46b is due to the impossibility of a non-p-definite reading of fronted *for*-phrases; that is, in that case the final point of  $mnt$  is required to be included in  $r$ . Crucially, the existence of a constraint that forces that final point to be included in  $r$  does not bear on the perfect's semantic ambiguity, as it equally applies to simple past sentences. What our adaptation of Hitzeman's and Portner's analysis leaves unexplained is why *for*-phrases cannot measure the length of the perfect state, a puzzle shared by other approaches that claim the perfect introduces a perfect state. In fact, an EXTENDED-NOW approach to the perfect such as Mittwoch's (1988) faces a corresponding difficulty. As far as we can see, it has no explanation for the fact that the scope of the *for*-phrases correlates with the so-called existential or universal (continuative) interpretations of the perfect.

NEGATION AND THE PERFECT. As is well known, the combination of measure phrases, negation, and the perfect leads to several distinct readings of sentences containing a perfect verb form (see Mittwoch 1988). We now show how our monosemous analysis of the perfect accounts for all of these readings. Using first-order predicate calculus for ease of exposition, we can represent the three possible logical forms of a negated perfect sentence as in 48–50, or 49–51 (since 48 is equivalent to 51). Only the content rep-

<sup>11</sup> Hitzeman's model of the interpretive difference between fronted and VP-interval temporal PPs relies on Diesing's MAPPING HYPOTHESIS (see Diesing 1992). We would rather analyze the interpretive difference as stemming from differences in information structure (fronted PPs tend to be topics). Since nothing substantial hinges on the choice of model or on how to best incorporate Diesing's mapping hypothesis into DRS construction rules, we leave further discussion of this issue to another venue.

<sup>12</sup> Moltman (1991) argues that measure phrases are quantifiers over intervals of time rather than properties of time intervals. Since, as far as we can see, nothing substantial for our purposes hinges on this distinction, we adopt the standard DRT treatment of measure phrases.

$ev, s, r(i), n, mnt$
$John\_live\_in\_Boston(ev)$
$ev' \leq ev$
$John\_live\_in\_Boston(ev')$
$\tau(ev') \prec r$
$dur(ev) \geq dur(mnt)$
$dur(mnt) = 3\_years$
$Fin\_pt(mnt) \sqsubset r(i)$
$X(s)$
$\tau(s) \circ r$
$r = n$

FIGURE 7. DRS for the sentence *For 3 years, John has lived in Boston.*

resented in 49, we claim, is pragmatically felicitous. Consider situations that would support formula 50. These are situations in which the base eventuality occurred, but no state currently holds. Communicating the content of 50 requires the addressee to (i) infer the category of a state that does not hold currently and (ii) recognize that this inference is what is intended by the speaker (Gricean inferences must be mutually recognized). We find it unlikely that the speaker would ever have such intentions, let alone expect her addressee to recognize it. Nor is it clear to us what the perlocutionary point of such a message would be. For the same reason, formula 51, which is equivalent to 48, will be interpreted by addressees as conveying what 49 conveys, namely that the base eventuality did not occur and that the perfect state holds at present.

$$(48) \neg(\exists ev\phi(ev) \wedge \exists sX(s))$$

$$(49) (\neg(\exists ev\phi(ev)) \wedge \exists sX(s))$$

$$(50) \exists ev\phi(ev) \wedge \neg(\exists sX(s))$$

$$(51) \neg(\exists ev\phi(ev)) \vee \neg(\exists sX(s))$$

For all intents and purposes, then, uttering a sentence expressing 48 is committing oneself to the falsity of  $\exists ev\phi(ev)$  and the truth of  $\exists sX(s)$ . The first sentence in 52 illustrates. Its interpretation is that there was no kill and that the absence of a kill implicates that the perfect state expressed in the second sentence holds.

(52) I haven't killed anything yet. I am not much of a hunter.

Now, consider what happens when negated perfect sentences also include *for*-phrases and the base eventuality is stative, as in sentence 53. We have argued in the preceding subsection that *for*-phrases always measure the duration of the base eventuality, and we just argued that in a (nonmetalinguistic) negated perfect sentence, only the base eventuality is negated. If this is correct, sentence 53 can receive two interpretations, depending on the relative scope of the negation and the measure phrase. These two interpretations are represented in 54 and 55, respectively.

(53) I haven't lived in Paris for 20 years.

(54) 20\_years (not (live\_in\_Paris(I, ev))) and X(s)

(55) not (20\_years (live\_in\_Paris(I, ev))) and X(s)

We assume with Krifka (1989), de Swart and Molendijk (1999), and others that the negation of a state is itself a state. More precisely, 53 describes a maximal state  $s$  such that no eventuality of the speaker living in Paris is included in  $s$ . The maximal state that does not include the eventuality of the speaker living in Paris can last twenty years and,

of course, living in Paris for twenty years is itself a state. Since the first conjuncts of both 54 and 55 describe states, they can continue on to the present and *X* can be equated with this state's category, in which case we have an interpretation that corresponds to the continuative reading of the perfect. When those states held in the past and *X* is distinct from the description of those states, by contrast, we have an interpretation that corresponds to an existential reading of the perfect. The two relative scopes of the negation and the measure phrase and the identification or nonidentification of *X* with the negated state give a total of four possible readings for sentence 53. These four readings correspond to four of the five possible readings of sentence 53 discussed in Mittwoch 1988. (The existence of a distinct fifth reading is dependent on the adoption of an extended-now theory of the perfect, which we reject for the reasons given in the appendix.) We conclude that our analysis of the perfect and, more generally, any analysis of the perfect as a stativizer can account for the ambiguity created by the combination of a negated perfect sentence and measure phrases.

We conclude this section with a brief discussion of the interaction of *since*-phrases and negation. Cleo Condoravdi (p.c.) suggests that one possible argument in favor of an extended-now model of the English perfect (see the appendix for an extensive discussion) is that it provides a time interval to anchor *since*-phrases. For example, the domain of quantification of the temporal quantifier in 56a must be restricted to those Sundays that occurred between early August and the time of utterance. Similarly, the maximal state that does not include an event of the speaker meeting Bob in 56b must hold of the time interval between early August and the time of utterance, that is, of an interval that appears equivalent to the extended-now interval, Condoravdi suggests.

- (56) a. I have met Bob every Sunday since early August.  
 b. I haven't seen Bob since early August.

Although a formal treatment of *since*-phrases within DRT would lead us too far afield, we do not see any reason to assume that reference to an extended-now interval is required to interpret *since*-phrases. We need only appeal to a reference interval: a phrase of the form *since*  $\alpha$  introduces an interval  $t_\alpha$  whose 'left' bound is the denotation of  $\alpha$  and whose 'right' bound is reference time, that is, the time of utterance in the case of a present perfect sentence (see Wickboldt 1998 and Kamp & Reyle 1993 for broadly similar descriptions of the interpretation of *since*-phrases).

Interestingly, it seems that *since*-phrases can sometimes cooccur with the simple past, as shown in the attested examples in 57 and 58. Although such examples are rare and subject to speaker variation, 57 and 58 were accepted by most speakers we asked. We view the fact that *now* rather than *r* can sometimes provide the 'right' bound of a *since* interval as confirmation that the interpretation of *since*-phrases does not require positing an extended-now interval.

- (57) I think I saw him twice since 1996 and only briefly, yet I think I've told the story of him converting me to 'Democratic' at least 30 times.

(<http://jeffgod.blogspot.com/>; March 23, 2009)

- (58) An hour before they were to meet, Bonder told NJ Jewish News, 'It's very exciting. I'm looking forward to seeing him. I didn't see him since 1945.'

(<http://njewishnews.com/article/statewide/an-emotional-reunion-for-rescued-and-rescuer/>)

SEQUENCE OF TENSES AND PERFECT INTERPRETATIONS. The contrast between sentences 59 and 60 has also sometimes been adduced in support of the claim that the perfect is ambiguous between continuative and existential readings (Brugger 1998, Iatridou et al. 2003). According to this view, sentence 59, an existential perfect example, allows the

events described by the main and embedded clauses to be simultaneous or the event described by the embedded clause to precede the event described in the main clause. In contrast, sentence 60, a continuative perfect example, is claimed not to allow the events described by the main and embedded clauses to be simultaneous. That is, Ken's claim in 60 cannot be simultaneous with his wife's sickness. His wife has to have recovered before Ken began making his claim.

(59) Since Christmas, Ken has claimed that his wife was sick.

(60) Since Christmas, Ken has been claiming that his wife was sick.

Our consultants disagreed, however. Both continuative perfect uses as well as existential perfect uses allow both simultaneous (overlapping) and shifted readings.

Kiparsky (2002) (after Declerck 1991) provides other sequence-of-tense examples that show that resultative uses of the perfect behave differently from other uses. Consider sentences 61–63 (see Declerck 1991 for similar examples). The critical observation for Declerck is that when a subordinate clause is in the past tense and the main verb receives an entailed resultative perfect interpretation, the state in the subordinate clause is understood as a past state, not holding at present anymore. Thus, sentence 61 sounds odd since we know the state in the subordinate clause still holds. No such restriction applies to other perfect uses, as shown in sentences 62 and 63.

(61) #I have finally realized that the earth was round.

(62) I have always known that the earth was round.

(63) I have often thought that the earth was round. (Kiparsky 2002)

The infelicity of sentence 61 has a simple explanation, we believe, which does not depend on the perfect being semantically ambiguous. Perfect verb forms like *have realized* or *figured out* entail that a mental state holds at present that did not hold in the past. By saying *Marc has (just/finally) realized that p*, the speaker says that Marc now holds the true belief that *p* and that Marc did not have that belief before now, as the infelicity of sentence 64 below shows. In contrast, perfect verb forms like *have (always) known* or *have (often) thought* entail that the mental state held in the past. For a sequence-of-tense rule or constraint to apply, the (base) eventuality described by the main clause must hold or occur in the past, and so verb forms such as *have (always) known* or *have (often) thought*, but not verb forms such as *have realized* or *figured out*, can display sequence-of-tense effects.

(64) #Marc has realized it, in fact he knew it already.

In summary, we have shown in this section that all putative evidence that the perfect is semantically or structurally ambiguous is, upon closer inspection, unconvincing. There does not seem to be good evidence that the various readings of the English perfect correspond to different MEANINGS. Since the null hypothesis is that lexical items or constructions are monosemous, we take our second hypothesis, implicit in the analysis of the perfect we presented in the previous section, to be confirmed.

**6. THE PRAGMATICS OF THE ENGLISH PERFECT.** Our monosemous account of the semantics of the perfect leaves a significant part of its interpretation to pragmatics: the interpretation of the present perfect requires addressees to draw pragmatic inferences. The examples that we provided suggest that such inferences are possible. But our use of a limited number of constructed examples does not allow us to assess the kinds of rules speakers may or must typically use to draw the pragmatic inferences relevant to the interpretation of the perfect, nor does it allow us to determine whether such inferences are plausibly drawn by addressees. This section purports to fill this gap through a corpus

study of over 600 English present perfect examples from a diverse range of genres (newspapers, discussions, conversations, and narrative texts).<sup>13</sup>

To ensure that our pseudo-random sampling of uses of the English present perfect was representative, we collected data from various genres, two newspapers of the same date (July 1, 1996) (Graff 1995–1997), the first two discussion articles of the same month of the year (July 1996) in *CQ Researcher Online*,<sup>14</sup> conversational data from the Switchboard Corpus (Graff et al. 1998, files sw2001 through sw2019.txt), and narrative texts from Netlibrary (two novels, one biography).<sup>15</sup> We examined the interpretation of all present perfect examples, including those that occurred in embedded clauses in the corpora. Nonfinite forms of the perfect, for example, the perfect following modal auxiliaries or *to*, were excluded from analysis, as was the idiomatic expression *'ve got to*.<sup>16</sup>

All examples were first classified in accordance with traditional labels, that is, whether they received an entailed resultative perfect, a continuative perfect, a conversationally implicated resultative perfect, or a nonresultative perfect interpretation.<sup>17</sup> These classifications reflect which type of perfect state must be understood to hold in order for each use of the perfect to make sense in its discourse context. When an example is ambiguous between two distinct categories (e.g. an entailed resultative or continuative perfect) it is labeled as 'others'.

81.82% of all examples were either entailed resultative perfects or continuative perfects;<sup>18</sup> most of the other examples were nonresultative or implicated resultative perfects (18.02%). Table 2 shows the percentages of entailed resultative, continuative, nonresultative, and implicated resultative perfect readings in each corpus.

We then determined for each example which inference rules addressees must have used, if they were to have successfully determined the value of the property variable *X*. We isolated three major classes of inference patterns.

**6.1. TYPE (i): ENTAILED OR CONTINUATIVE PERFECTS.** For this, the most frequent, class of examples, readers need draw only trivial inferences in order to find the value of *X*. The state described or entailed by the base-eventuality description persists until the present.

<sup>13</sup> See Nishiyama & Koenig 2006 for an earlier presentation of the material in this section.

<sup>14</sup> <http://library.cqpress.com/cqresearcher>, subscriber access only

<sup>15</sup> <http://www.netlibrary.com>, subscriber access only

<sup>16</sup> Several other corpus studies have focused on the uses of the English perfect (Dubois 1972, Vermant 1983, Elsness 1997, Mindt 2000, and others) and provide detailed descriptions of the distribution of the uses of the perfect in various types of corpora, its occurrence with other items such as time adverbials or types of verbs, and/or the difference in frequency among different type of corpora such as British English vs. American English corpora or expository vs. conversation corpora (Dubois 1972, Elsness 1997, Mindt 2000). As one of the referees points out, there sometimes appears to be a discrepancy between their results and ours. Their classifications are based on different criteria from ours, however. About 15% of the perfect examples in Vermant 1983, for example, are classified as 'ambiguity perfect', as opposed to 0.83% of 'others' in Table 2. Vermant's 'ambiguity perfect' category, however, covers examples where the base eventuality can be interpreted as occurring once or more than once in the context. It therefore includes many nonentailed resultative and nonresultative examples in our data. Since our focus is different from other corpora studies (what is the value of *X* in attested perfect examples; how the choice of a perfect can help the establishment of discourse coherence), it is difficult to compare previous corpus studies to ours, and we do not discuss them any further in this article.

<sup>17</sup> Some nonresultative perfects (and even implicated resultative perfects) may be categorized as existential perfects in traditional terminology.

<sup>18</sup> The percentage includes examples that can be categorized as entailed resultative or continuative perfect uses in Table 2.

	ENTAILED RESULTATIVE	CONTINUATIVE	NONRESULTATIVE	IMPLICATED RESULTATIVE	OTHERS	TOTAL
A	24	22	0	13	2	61
B	64	68	6	13	0	151
C	86	52	8	7	2	155
D	32	38	10	20	0	100
E	46	59	9	23	1	138
TOTAL	252 (41.65%)	239 (39.50%)	33 (5.46%)	76 (12.56%)	5 <sup>a</sup> (0.83%)	605 (100%)

**Key**A: Newspaper 1: *Reuters Financial News*, 07.01.1996 (Graff 1995–1997)B: Newspaper 2: *Wall Street Journal*, 07.01.1996 (Graff 1995–1997)

C: Discussion: CQ Researcher, 07.1996

D: Conversation: Switchboard Corpus (Graff et al. 1998:sw2001–sw2019)

E: Narrative: H. G. Wells, *The time machine*; I. Bernard Cohen, *Howard Aiken: Portrait of a computer pioneer*; Willa Cather, *O! Pioneer!*

TABLE 2. Numbers and percentages of entailed resultative, continuative, nonresultative, and conversationally implicated resultative perfect examples in various corpora.

<sup>a</sup> Four of these five examples can be interpreted either as entailed resultative or continuative perfect readings, while one can be interpreted either as a continuative or resultative perfect.

To derive  $X$ , readers need only apply the presumption-of-PERSISTENCE default rule (McDermott 1982). Sentences 65 and 66 are examples of continuative perfect readings, while sentences 67 and 68 illustrate entailed resultative perfect readings.

- (65) ... , he **has been** a member of her household ever since. ( $X$  = He is a member of her household.) (Cather 1996:24)
- (66) Since the war ended, the U.S. **has kept** 5,000 troops in Saudi-provided housing, ... . ( $X$  = The US keeps 5,000 troops in Saudi-provided housing.) (Graff 1995–1997: *Wall Street Journal*, 07.01.1996)
- (67) Yeltsin's health **has become** a major issue in the closing days of Russia's presidential race. ( $X$  = Yeltsin's health is a major issue in the closing days of Russia's presidential race, ... ) (Graff 1995–1997: *Wall Street Journal*, 07.01.1996)
- (68) A few tribes **have managed** to establish a foothold in their local economies without the benefit of gaming revenues. ( $X$  = A few tribes have a foothold in their local economies without the benefit of gaming revenues.) (Cooper 1996)

**6.2. TYPE (ii): SPEECH-ACT/EPISTEMIC PERFECTS.** Some perfect sentences have speech-act verbs or epistemic verbs as their main verbs, and the value of  $X$  can be inferred via default rules that reflect the speaker and hearer's expectations about each other's speech acts. They can be divided into two subtypes.

**SUBTYPE (ii-a): EVIDENTIAL USES.** Speakers and authors may use a perfect to communicate that the denotation of the complement of performative or epistemic verbs such as *say* or *promise* presently holds or is likely to hold in the future, as seen in 69 and 70.

- (69) Sumitomo **has said** its losses from Mr. Hamanaka's trading stand at \$1.8 billion. ( $X$  = Sumitomo's losses from Mr. Hamanaka's trading stand at \$1.8 billion.) (Graff 1995–1997: *Wall Street Journal*, 07.01.1996)
- (70) Britain's opposition Labor Party **has also promised** a ban on all tobacco advertising if it wins the election due to be held by May next year. ( $X$  = There is likely to be a ban on all tobacco advertising if the Labor Party wins the election.) (Graff 1995–1997: *Reuters Financial News*, 07.01.1996)

To infer the value of  $X$ , readers of 69 rely on the default rule that if somebody says  $p$  and if she is trustworthy (conforms to our cultural model of language and information, Sweetser 1987),  $p$  is (typically) true and therefore holds (assuming that if  $p$  is true, the

state whose category is  $p$  holds, Ismail 2001). Similarly, to infer the value of  $X$ , readers of 70 rely on the default rule that if somebody promises something, it is likely to become true and therefore it is likely to hold. Both rules are based on the sincerity conditions associated with the speech acts of saying and promising, respectively (Searle 1969, Searle & Vanderveken 1985), and reflect our expectations that speakers are sincere when they speak. They can be described as follows ('>' means 'nonmonotonically/defeasibly entail' (Pelletier & Asher 1997)).

(71)  $\forall x \forall p (\text{say}(x, p) \wedge \text{trustworthy}(x) > p)$

(72)  $\forall x \forall p (\text{promise}(x, p) \wedge \text{trustworthy}(x) > \text{likely}(\text{future}(p)))$

Relying on such rules, readers can easily infer that what Sumitomo says is true in 69 or that what the Labor Party promised is likely to become true if they win in 70.

SUBTYPE (ii-b): TOPIC NEGOTIATION. Speakers sometimes use a perfect at the beginning of a conversation to set up a topic. Utterances 73 and 74 are examples of such uses from the Switchboard Corpus.

(73) **Have** you **done** a lot of camping recently? ( $X = I$  want to talk about camping.)  
(Graff et al. 1998:sw2009.txt)

(74) A: **Have** you **seen** DANCING WITH WOLVES? ( $X = I$  want to talk about the movies.)

B: Yeah. I've seen that, , that's, uh, that was a really good movie.

(Graff et al. 1998:sw2010.txt)

The speaker in these examples uses the present perfect to negotiate a topic she wants to talk about. She does so by asking the addressee whether an epistemic precondition for having a conversation on her chosen topic is satisfied, by asking the extent of the addressee's experience or knowledge of the topic. In such uses, the speaker counts on the addressee making use of the default rule in 75, which says that if she wants to know whether he knows something (and thus can talk about it), she probably wants to talk about it.

(75)  $\forall x \forall y (\text{ask\_addressee\_know}(x, y) > \text{want\_talk}(x, y))$

In 74 the addressee (B) accepts the topic by saying that he has had the experience of watching the movie and therefore knows and can talk about it. Importantly, the perfect is used in examples 73 and 74 at the start of a new conversation between two strangers, where it makes little sense to presume the existence of a presupposed or shared topic between the speech participants. Such examples are therefore difficult to explain for theories such as that of Portner (2003) and Borillo and colleagues (2004), who claim that the use of a perfect form presumes the existence of a shared topic in the context.

Of course, one might counter that the perfect's putative presupposition that there is a mutually agreed-upon topic for the current conversation may be accommodated in examples such as 73 and 74. We find this possibility quite unlikely. Accommodation is a repair strategy by which addressees can make sense out of the speaker's utterance, despite its pragmatic infelicity (Lewis 1979). For example, if the addressee does not know that the speaker has a daughter and hears that the speaker's daughter is getting married, he might be willing to accommodate the failed presupposition and simply assume post facto that the speaker has a daughter. But consider the conversational turns that follow example 74.

(76) B: Probably one of the best things about it was the scenery and, uh, I thought the story was pretty good, too. I, I think Kevin Costner did a really good job with it.

A: **Have** you ever **lived** in that part of the country? ( $X = I$  want to talk about that part of the country.)

B: No. I haven't.

A: **Have** you ever **visited** it? ( $X$  = I want to talk about that part of the country.)

B: Um, I've visited the Wyoming area. I'm not sure exactly where DANCES WITH WOLVES was filmed.

A: I think it was the black hills of South Dakota.

B: Could be. I, n-, I haven't been to South Dakota. **Have, have** you **been** up to that? ( $X$  = I want to talk about South Dakota.)

A: Well, I lived in Omaha for five,

B: Oh.

(Graff et al. 1998:sw2010.txt)

In 76 participant A uses the perfect several other times to shift topic. By uttering *Have you ever visited it?* or *Have you ever lived in that part of the country?*, the speaker suggests that she now wishes to discuss the region in which *Dances with wolves* was filmed. The repeated use of the perfect to introduce or shift topics makes it unlikely that B accommodates a presupposed existing topic. The notion of topic shift is inconsistent with accommodating a presupposition that there exists a mutually agreed-upon topic.

Furthermore, these examples and several similar ones we found were taken from a telephone conversation between two people who do not know each other and who could chat about whatever they wanted, although a topic was suggested by the research team that culled the Switchboard Corpus. The fact that there is less mutual ground among strangers, the fact that no shared situational information could provide a topic, makes it also particularly unlikely for the speaker to expect the hearer to be willing to accommodate the presupposition that there was an already agreed-upon topic. Resorting to accommodation to explain away examples 73–76 would render the notion of presupposition vacuous in that it is hard to imagine what unsatisfied presupposition cannot be accommodated, if the presuppositions putatively carried by the perfect in examples 73–76 can be.

**6.3. TYPE (iii): COMMONSENSE ENTAILMENT.** Authors sometimes use the perfect to indicate that the occurrence of an event provides evidence or an explanation for the truth of a claim they made or will make. The value of  $X$  in these cases is the state description conveyed by a clause that preceded or followed the sentence containing the perfect. For example, in 77 the event introduced by the perfect sentence (that the author curled up and watched international programs) supports and provides evidence for the assertion conveyed by the first sentence. The fact that the author curled up on a couch and watched those international programs serves as proof that one can metaphorically go around the world in eighty channels.

(77) ... , you can go around the world in 80 channels [=  $X(s)$ ]. ... I've **curled** up on my living room couch, clicker in hand, and **watched**, among other things, an Italian salute to mothers; Latin American telenovelas and variety shows; Greek movies; Japanese samurai epics and modern domestic dramas; Indian musicals; the evening news from Moscow; Chinese-language pop videos; Korean game shows; and France's 'Bouillon de Culture,' ...

(Graff 1995–1997: *Wall Street Journal*, 07.01.1996)

In order to find the value of  $X$  in example 77, readers need to make use of a rather specific commonsense entailment rule such as 78.<sup>19</sup>

<sup>19</sup> This rule is stated more specifically than is plausible. But it is easy to generalize, and nothing substantial hinges on the particular formulation of the commonsense rule that we posit, as long as there is one such rule (or set of rules) that is plausibly shared by speech participants.

- (78)  $\forall x((curl\_up\_clicker\_in\_hand(x) \wedge watch\_international\_programs(x)) > can\_go\_around\_the\_world\_in\_80\_channels(x))$

Example 79 is similar.

- (79) House Democratic leader Richard Gephardt of Missouri, who has been less enthusiastic about budget cutting than Mr. Clinton, **has played** a key role in recruiting the party's congressional candidates. Many are merely reflecting his priorities, as opposed to those of the White House. [=  $X$ ]

(Graff 1995–1997: *Wall Street Journal*, 07.01.1996)

Here, Gephardt's key role in recruiting candidates explains that many congressional candidates reflect his priorities. Readers infer the value of  $X$ , using another rather specific commonsense entailment rule, the one stated in 80.

- (80)  $\forall x\forall y(play\_key\_role\_recruiting(x, y) > reflect\_priorities\_of(y, x))$

It is striking that the value of  $X$  for the overwhelming majority of present perfect examples we have looked at can be found through very general default principles. 81.82% of all the examples belong to type (i), where the value of  $X$  can be derived through the principle of persistence. 11.24% of the examples belong to type (ii), where the value of  $X$  can be inferred through general default expectations regarding speech acts. In total, 93.06% of the examples of perfect we looked at require general default rules to assign a value to  $X$ . Only a small number of examples (4.63%) (e.g. 77 and 79) require specific commonsense knowledge rules.<sup>20</sup>

Table 3 summarizes the types of rules used to determine the value of  $X$  in our sample.

	TYPE (i)	TYPE (ii)		TYPE (iii)	OTHERS
	PERSISTENCE	(a) EVIDENTIAL	(b) TOPIC NEGOTIATION	COMMONSENSE	
A, B: Newspaper	180	21	0	9	2
C: Discussion	140	5	0	6	4
D: Conversation	70	7	13	8	2
E: Narrative	105	18	4	5	6
TOTAL	495 (81.82%)	51 (8.43%)	17 (2.81%)	28 (4.63%)	14 (2.31%)

TABLE 3. Numbers and percentages of perfects of types (i)–(iii).

Type (i) in Table 3 corresponds to examples labeled entailed resultative and continuative perfect readings in Table 2. Implicated resultative or nonresultative perfect readings in Table 2 are either of type (iia-b) or type (iii) in Table 3, depending on the inference patterns they require. Two main differences distinguish types (i) and (ii) from type (iii). First, the entailment rules used in type (iii), such as those in 78 or 80, are much more specific than the kinds of rules used in type (i) and type (ii). Second, the value of  $X$  can be found in the surrounding text, either before or after the sentence containing the perfect in type (iii). In 77, the first sentence's state description corresponds to the value of  $X$  for the perfect form in the second sentence. In 79, the value of  $X$  for the perfect form in the first sentence is provided by the state description found in the second sentence.

<sup>20</sup> It must be noted here that all of the inference rules used in types (i)–(iii) are available independently of using the perfect, whenever speech participants are aware that the base eventuality occurred. The perfect simply triggers a search for available and relevant inference rules, because of the need to find a value for  $X$ . Although the inferential process is semantically triggered by the perfect, the triggered inference rules are not part of its semantics.

**6.4. DISCOURSE COHERENCE AND THE PERFECT.** Until now, we have focused on the perfect's interpretation, that is, what information about the world is conveyed by the use of a perfect form. We have argued that a larger portion of that interpretation than has hitherto been recognized comes from the pragmatic enrichment of an underspecified meaning. This section focuses on another aspect of the pragmatics of the perfect and tries to answer the following question: Why do writers or speakers choose a perfect form to describe an eventuality that occurred or started in the past? Simply put, our answer is that the choice of a perfect form is guided by writers' or speakers' desire to help addressees understand the coherence of the discourse they read or hear.

It is often said that discourses cohere to the extent one can establish discourse relations between its segments (typically, clauses) (Mann & Thompson 1988 and Hobbs et al. 1993, among others). We assume the correctness of this hypothesis and discuss the role the perfect plays in enhancing discourse coherence in the context of the approach to discourse coherence proposed in SEGMENTED DISCOURSE REPRESENTATION THEORY (SDRT) (Asher & Lascarides 2003).

In SDRT, for two sentences or other pieces of text to form a coherent discourse segment, there must be a discourse relation  $R$  that relates their corresponding meaning representations or DRSs. More precisely,  $R$  takes two utterances' meaning representations as its arguments ( $R(\pi_1, \pi_2)$  where  $\pi_i$  is a label for the DRS of an utterance or clause) and is nonmonotonically inferred from the information content of utterances, discourse contexts, and world knowledge.

For reasons of space, we merely outline two ways in which determining the value of  $X$  enhances discourse coherence.<sup>21</sup> For uses of type (i)–(ia-b), the fact that the perfect state holds can multiply the number of discourse relations between the relevant DRSs and help discourse coherence in virtue of the MAXIMAL DISCOURSE COHERENCE PRINCIPLE, which says that the more discourse relations can be inferred to hold between discourse segments, the more coherent a discourse is (Asher & Lascarides 2003). We illustrate this function of the perfect state on the discourse in 81 (which provides a larger context for sentence 69).

- (81) Mr. Hamanaka spent billions of dollars in an effort to force the price of copper ever higher over the past year. ... Sumitomo **has said** its losses from Mr. Hamanaka's trading stand at \$1.8 billion. [ $X$  = Sumitomo's losses from Mr. Hamanaka's trading stand at \$1.8 billion]

In 81 the relation between the event of Mr. Hamanaka spending billions of dollars and the value of  $X$  (Sumitomo's losses from Hamanaka's trading stand at \$1.8 billion) follows from rule 82. Rule 82 says that if  $ev$  is the eventuality of  $x$  spending  $n$  and if  $ev'$  is the eventuality of  $y$ 's loss (from  $x$ ) standing at  $n$ , normally eventuality  $ev$  caused  $ev'$ .

- (82)  $\forall x \forall y \forall n \forall ev \forall ev' ((spend(x, n, ev) \wedge loss\_stand\_at(y, n, ev')) > cause(ev, ev'))$

For the two sentences in 81, the relevant discourse relation is *Result*. The rule that licenses positing this discourse relation is given in 83.

- (83) Result rule:  
 $\forall \alpha \forall \beta \forall P \forall P' \forall ev \forall ev' ((P(ev, \alpha) \wedge P'(ev', \beta) \wedge cause(ev, ev')) > Result(\alpha, \beta))$   
 ( $\alpha$  and  $\beta$  are DRSs,  $P$  and  $P'$  are eventuality descriptions.)

<sup>21</sup> See Nishiyama & Koenig 2008 for more examples of how the perfect in both English AND Japanese can help discourse coherence.

Rule 83 says that if the eventuality descriptions  $P$  and  $P'$  are true of  $ev$  and  $ev'$  in DRSs  $\alpha$  and  $\beta$  and if there is a causal relation between  $ev$  and  $ev'$ , then  $\alpha$  and  $\beta$  can form a *Result* discourse relation.<sup>22</sup> Crucially, for this rule to ‘fire’, the reader needs to find two eventualities that stand in a causal relation. There is no clear direct causal connection between the eventualities described in the two sentences in the discourse in 81. But there is a causal connection between the eventuality described in the first sentence and the perfect state (that the losses stand at \$1.8 billion) introduced by the present perfect in the second sentence. The cohesion of the discourse in 81 is thus enhanced by the present perfect *has said* insofar as it introduces the perfect state that the losses are factual and that this perfect state stands in a causal relation with the event described in the first sentence (see rule 82). A simplified SDRS for the discourse in 81 is represented in Figure 8.<sup>23</sup>

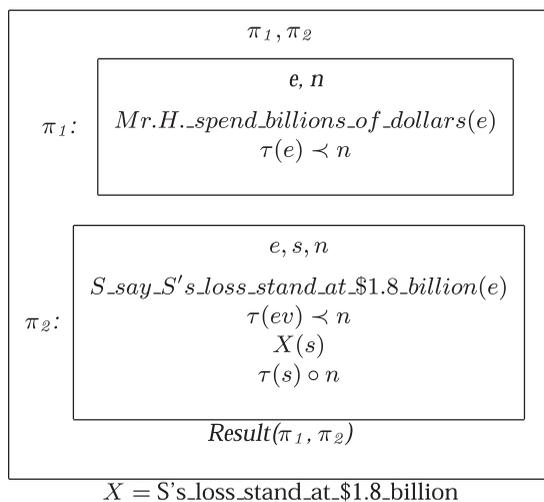


FIGURE 8. The SDRS for 81.

For uses of type (iii), the present perfect does more than allow additional discourse relations to be posited. It helps establish THE discourse relation between the two discourse segments. We illustrate this function on discourse 77. Our claim is that the use of the perfect *'ve curled up and watched* in discourse 77 facilitates the establishment of an *Evidence* coherence relation. This is because the perfect triggers a search for the value of  $X$  and the retrieval of the commonsense rule in 78. The use of this rule, in turn, triggers the rule in 84 and helps establish an *Evidence* coherence relation between the sentence in which the perfect occurs and the previous sentence that includes the state description that is the value of  $X$ .

<sup>22</sup> Our inference rules are stated somewhat informally for ease of presentation and differ slightly from those found in Asher & Lascarides 2003. Nothing substantial hinges on these simplifications.

<sup>23</sup> The version of SDRT presented in Asher & Lascarides 2003 assumes that each clause describes a single eventuality. There is thus a one-to-one correspondence between DRS labels and discourse markers anchored to eventualities. As a result, relations between eventualities easily map onto relations between DRSs of clauses that describe these eventualities. Unfortunately for any theory that assumes that perfect operators introduce an additional stative eventuality, like that of Kamp and Reyle (1993) and ours, the mapping between eventuality relations and discourse segment relations is slightly more complex. Since this technical issue is of no relevance to this article, we do not discuss it any further.

(84) Evidence rule:

$$\forall \alpha \forall \beta \forall P \forall P' \forall ev \forall ev' ((P(ev, \alpha) \wedge P'(ev', \beta) \wedge (P(ev, \alpha) > P'(ev', \beta))) > Evidence(\alpha, \beta))$$

The rule in 84 says that if the eventuality descriptions  $P$  and  $P'$  in DRSs  $\alpha$  and  $\beta$  are true of  $ev$  and  $ev'$  and one can defeasibly infer  $P'(ev', \alpha)$  from  $P(ev, \alpha)$ , then  $\alpha$  is evidence for  $\beta$ . In other words, if one makes two claims such that one can (defeasibly) infer the truth of the first from that of the second, the second claim is evidence in favor of the first claim. By evoking a rule on the basis of which one can defeasibly derive  $P'(ev', \alpha)$  ( $P'$  = You can go around the world in eighty channels) from  $P(ev, \beta)$  ( $P$  = I curled up and watched international programs) (rule 78), the perfect helps trigger the rule in 84 on which the coherence of the discourse in 77 partly rests. The simplified SDRS for 77 is shown in Figure 9. ( $\pi_1$  and  $\pi_2$  are labels for the simplified DRSs corresponding to the first and second sentences of 77, respectively.)

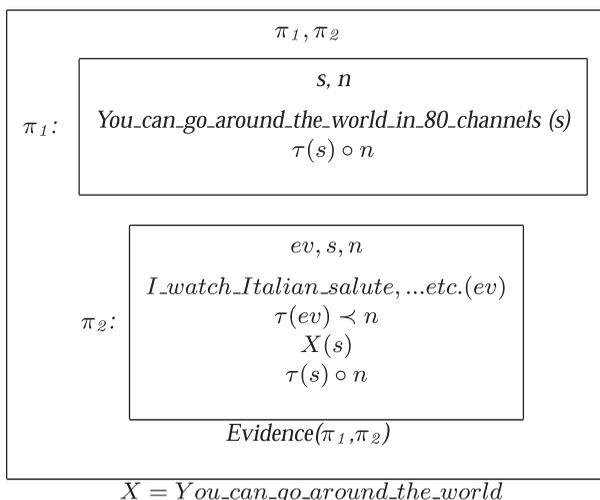


FIGURE 9. The SDRS for 77.

Several preliminary conclusions result from our examination of 605 attested present perfect examples. First, the overwhelming majority of present perfects are continuative or entailed resultative perfects. Their understanding requires only trivial inferences on the part of hearers. Second, the remaining examples fall into a few inference patterns that use either general default rules or easily accessible commonsense rules. The overall picture that emerges from our corpus study is that determining the nature of the perfect state posited by theories that treat the perfect as a stativizer is a feasible task. Third, theories of the perfect that hypothesize that it presupposes or elaborates a topic do not seem to account for all uses of the perfect, in particular its use in conversation to establish a topic or shift a topic. Fourth, inferring the state we labeled ‘perfect state’ serves further ‘perlocutionary’ functions in texts and conversations. It helps establish or enhance discourse coherence between the various discourse segments. Table 4 summarizes the perfect’s various uses and differences among the kinds of inferences addressees must perform when interpreting present perfects.

7. CONCLUSION. Scholars have long debated to what extent the semantics of the English perfect accounts for its interpretation and how many distinct meanings the perfect

	TYPE (i)	TYPE (ii)		TYPE (iii)
		(a)	(b)	
General inference	+	+	+	-
Value of <i>X</i> is in the surrounding text	-	-	-	+
Perfect state	is introduced implicitly	is introduced with qualification	suggests a new topic	already present in discourse
Discourse function	to add discourse relations in discourse		to negotiate a topic	to help establish the primary discourse relation

TABLE 4. Inference types and discourse functions of English present perfects.

has. In this article we have claimed that a successful monosemous analysis of the English perfect is possible and argued that differences among uses of the English perfect are not based on a semantic or structural distinction, but on differences in the kinds of inferences people contextually draw from the occurrence of a base eventuality. In other words, the perfect is pragmatically, not semantically, ambiguous. Second, we proposed that the meaning of the perfect introduces a base eventuality and a perfect state whose category is underspecified semantically (is represented as a free property variable) and that neo-Gricean reasoning and Levinson's I-principle lead hearers to appropriately fill in the value of that variable. Finally, although scholars since Reichenbach 1947 have recognized the role of the English perfect in discourses, few studies have looked at a large data set of perfect examples. We presented the results of a corpus study that assessed anew the role that the English present perfect plays in discourse by examining the kinds of interpretations that 605 present perfect examples receive and the inferences readers and hearers need to make to arrive at these interpretations. The results of this study suggest that (i) most English present perfects receive entailed resultative or continuative readings, (ii) the English perfect need not elaborate on a preexisting topic, and (iii) the English perfect plays a role in establishing discourse coherence by helping hearers establish discourse relations between discourse segments.

## APPENDIX: THE PERFECT AS A STATIVIZER

In this appendix, we justify the claim that the perfect is a stativizer against a frequent, competing view that defines the meaning of the perfect exclusively temporally. According to this latter view, the meaning of the perfect is characterized as a relation between time intervals.

NONSTATIVIZER, TEMPORAL VIEWS. The EXTENDED-NOW THEORY (hereafter, XN theory) says that the event described in the present perfect form falls within a period of time that starts in the past and stretches until the present (more precisely, an 'extended-now' interval). An extended-now (XN) interval can be defined as follows (see Dowty 1979:342).

(A1) XN (*t*) is true at  $\langle w, i \rangle$  iff *i* is a final subinterval of the interval denoted by *t*.

The meaning of the perfect is then defined as follows. The base eventuality described by the verb and its argument occurs within an interval *t'* that is included in an XN interval *t*. The XN theory thus claims that the base eventuality falls within the 'extended now'. According to the XN theory, past-time adverbials such as *yesterday* cannot cooccur with present perfects in part because any portion of the time interval denoted by *yesterday* cannot belong to an extended-now interval (Dowty 1979, Portner 2003). Sentence 86 is therefore pragmatically anomalous.<sup>24</sup>

(A2) \*Kathy has left yesterday.

Studies that adopt an XN theory or a variant of it include Bennett & Partee 1978, McCoard 1978, Dowty 1979, Heny 1982, Richards 1982, Mittwoch 1988, Iatridou et al. 2003, and Portner 2003. As Klein (1992)

<sup>24</sup> Dowty (1979) mentions that the interval denoted by a sequence of time adverbials conjoined with *and* can be considered to constitute an extended now. But his analysis does not provide an account of other sentences in which the present perfect cooccurs with past-time adverbials, such as sentence A8 below.

points out, the main problem with the XN theory is that it cannot distinguish the present perfect from the simple past tense.<sup>25</sup> This is because if an XN interval is defined as any interval starting in the past and extending to speech time, there is a subinterval of such an interval with respect to which any sentence in the simple past is true. For there to be a distinction between the present perfect and the simple past tense, the length of the XN interval must be somehow limited. Indeed, the XN theory claims to explain the oddity of sentence A4 on the basis of the fact that Gutenberg's discovery of the art of printing does not fall within an XN interval, while sentence A3 is felicitous in at least some contexts because the event of Einstein's visiting Princeton can fall within an XN interval (McCoard 1978, Portner 2003). But Portner (2003) argues that how far the XN interval can stretch back to the past would depend on the context (the discourse topic), and explains the varied acceptability of A3 accordingly ('lifetime effect'). In fact, the XN interval can be quite long. Sentence A5, for example, sounds natural in the context of a course on the history of philosophy, even though Plato's discovery happened earlier than Gutenberg's. If what counts as an XN interval is restricted, it does not seem to be temporally.

(A3) Einstein has visited Princeton. (McCawley 1971)

(A4) ??Gutenberg has discovered the art of printing. (McCoard 1978, Portner 2003)

(A5) Plato has discovered the existence of a priori knowledge. (attested)<sup>26</sup>

It should be noted that the incompatibility of past-time adverbials with English present perfects, often taken to constitute an argument in favor of the XN theory, does not extend to other present perfects crosslinguistically. For example, both German and Japanese perfects can cooccur with past-time adverbials, as seen in 90 and A7, respectively.

(A6) Gestern um zehn habe ich den Brief abgeschickt.

yesterday at ten have I the letter sent.off

'<sup>%</sup><sub>Ger</sub>I have sent off the letter at ten yesterday.'

(Klein 2000:359)

(A7) Kare-wa kyonen Kyoto-ni i-tte-i-ru.

he-TOP last.year Kyoto-to go-TE-I-NONPAST

'<sup>%</sup><sub>J</sub>He has been to Kyoto last year.'<sup>27</sup>

In fact, English present perfects can cooccur with past-time adverbial phrases in certain contexts, as sentence A8 shows (see Osborne 1997 for a detailed discussion), and even more widely in certain varieties of English such as Australian English (Engel & Ritz 2000).

(A8) We have already discussed this affair at some length last night. (McCoard 1978:128)

The possible cooccurrence of present perfect forms and past-time adverbs is not unexpected if the perfect introduces both a prior event and a state, as there is then no SEMANTIC constraint that would prevent past-time adverbials from modifying a prior event.

Klein (1992, 1994, 2000) presents another theory of perfects that does not assume they introduce states. Klein's theory of the perfect postulates the existence of three types of time intervals associated with sentences, the time of the described situation (T-Sit), topic time (TT), and the time of utterance (TU). T-Sit and TU roughly correspond to E (event time) and S (speech time), respectively (Reichenbach 1947). TT resembles R (reference time), but it differs from it. TT is an interval of time for which an assertion is made. Klein's main hypothesis is that aspect markers express temporal relations between T-Sit and TT, while tense expresses temporal relations between TT and TU. The meaning of the perfect is then defined as stating that TT follows T-Sit and that of the present tense as stating that TT includes TU. In Klein's view, all that the perfect introduces is a temporal interval that follows the described situation. However, it seems that the very notion of topic time (TT)—an interval about which an assertion is made—requires something like an eventuality description (possibly a state) to also be introduced by the perfect. Without anything to assert, how can there be an interval of time about which an assertion is made? When seen in this light, Klein's theory reduces to a variant of theories that assume that the perfect introduces a state.<sup>28</sup>

EVIDENCE FOR THE STATIVITY OF THE PERFECT. Until now, our arguments that the perfect introduces a state or that sentences containing a perfect form are stative have been mostly negative or metatheoretical. That hypothesis accounts for distributional data better than the XN theory. But is there more positive evidence that

<sup>25</sup> Some scholars redefine the XN interval as a 'perfect time span' (Iatridou et al. 2003, Pancheva 2003). As far as we can see, the issue mentioned in the text remains.

<sup>26</sup> <http://www.fiu.edu/~hermanso/over9>

<sup>27</sup> '<sup>%</sup><sub>Ger</sub>' and '<sup>%</sup><sub>J</sub>' indicate that the English translations are not acceptable but the corresponding sentences are acceptable in German and Japanese.

<sup>28</sup> Fenn (1987) and Declerck and colleagues (2006) propose yet other temporal analyses of the perfect. We do not discuss them here for reasons of space.

sentences whose main verb is in the perfect are stative? Several studies have provided evidence of the stativity of the perfect. We mention only a few pieces of evidence here. More details can be found in the referenced literature. First, as Mittwoch (1988) and Michaelis (1998) mention, clauses whose main verb is in the perfect behave like stative predications when they combine with *when* subordinate clauses.

(A9) Kevin studied when I arrived.

(A10) Kevin was in the kitchen when I arrived.

(A11) Kevin was studying when I arrived.

(A12) We had concluded our discussion when Mom came in. (Michaelis 1998:174)

Sentence A9 shows that a main-clause event description is not interpreted as starting earlier than the event described in the subordinate *when*-clause. Sentence A10 shows that a main-clause stative description is interpreted as starting before, or overlapping, the time of the event denoted by a subordinate *when*-clause. Sentences A11 and A12, whose main verbs are in the progressive and perfect respectively, behave as stative predications; that is, the described eventualities may precede or overlap with the event described in the subordinate *when*-clause (see Hinrichs 1986:75 for some qualifications). The studying started before the speaker's arrival in A11 and the aftermath of the end of the discussion also started earlier than Mom's entrance in A12.

Proponents of a Reichenbachian or temporal theory of the perfect may argue that this fact follows from the different temporal relations between event-time, reference-time, and speech-time intervals encoded in the past tense and the perfect. They may explain why the time interval of the base eventuality in the main clause in the past perfect in A12 precedes that of the eventuality in the *when*-clause, by assuming that the event in the *when*-clause establishes reference time (which equals its event time). When the event described in the main clause is in the pluperfect, its event time precedes the reference time established by the event described in the *when*-clause. But such a view cannot explain the difference in interpretations between other stative sentences such as A10–11 and eventive sentences such as A9. The temporal relation between event time, reference time, and speech time does not differ between events and states in Reichenbachian views. The event time of a stative or eventive base eventuality equals reference time. This alternative hypothesis does not therefore explain why the event in the main clause follows the event in the *when*-clause in A9 while the state in the main clause does not in A10–11. The parallel between sentences A10–11 and A12 and the contrast between sentences A9 and A10–12 can only be explained if we assume that the temporal relations between *when*- and main-clause eventualities are sensitive to the state vs. event distinction and if the perfect introduces a state.

Second, as Mittwoch (1988) mentions, only stative predications are felicitous as complements of *seem to*. The stative description in sentence A13 can follow *seems to* without coercion. In contrast, the eventive description *run* must be coerced into a stative habitual reading for sentence A14 to be felicitous. VPs whose verbs are in the progressive or perfect (sentences A15 and A16) pattern with stative predications in A13; they do not require a habitual interpretation when following *seem to*.<sup>29</sup>

(A13) John seems to be rich.

(A14) #John seems to run.

(A15) John seems to be running.

(A16) John seems to have run.

Together with the arguments provided earlier, we take these last two pieces of evidence to favor the view that sentences whose verbs are in the perfect are stative.

Some scholars, while recognizing the stativity of sentences in the perfect, have suggested that this stativity is not part of the semantics of the perfect, but rather arises pragmatically (McCoard 1978, Mittwoch 1988). Their reluctance to include the stativity in the semantics of the perfect comes from their criticisms of the CURRENT-RELEVANCE theory of the perfect (see McCoard 1978 or Binnick 1991 for details on current relevance). Leaving aside current-relevance theories of the perfect, a pragmatic account of the perfect's stativity is not satisfactory. According to McCoard (1978), the stative nature of the perfect is due to the speaker's ineffable state of mind evoked by the perfect. If such a state of mind is consistently evoked by the perfect form and differs from the type of state evoked by a simple past tense, those two forms must encode this difference in their semantics.

<sup>29</sup> Some of the criteria typically used to test the stativity of progressive or habitual sentences may not be met by some perfect sentences. Even among indisputably stative predications, however, these criteria are not consistently satisfied.

## REFERENCES

- ASHER, NICHOLAS, and ALEX LASCARIDES. 2003. *Logics of conversation*. Cambridge: Cambridge University Press.
- ATLAS, JAY DAVID, and STEPHEN C. LEVINSON. 1981. *It-clefts, informativeness, and logical form: Radical pragmatics* (revised standard version). *Radical pragmatics*, ed. by Peter Cole, 1–61. New York: Academic Press.
- BACH, KENT. 1994. Conversational implicature. *Mind and Language* 9.124–62.
- BENNETT, MICHAEL, and BARBARA PARTEE. 1978. *Toward the logic of tense and aspect in English*. Bloomington: Indiana University Linguistics Club.
- BINNICK, ROBERT I. 1991. *Time and the verb: A guide to tense and aspect*. New York: Oxford University Press.
- BORILLO, ANDRÉE; MYRIAM BRAS; ANNE LE DRAOULEC; ARIE MOLENDIJK; HENRIËTTE DE SWART; H. J. VERKUYL; CO VET; CARL VETTERS; and LAURE VIEU. 2004. Tense and aspect. *Handbook of French semantics*, ed. by Henriëtte de Swart and Francis Corblin, 233–50. Stanford, CA: CSLI Publications.
- BRUGGER, GERHARD. 1998. Event time properties. *Penn Working Papers in Linguistics (Proceedings of the 21st annual Penn Linguistics Colloquium)* 4.2.51–63.
- CATHER, WILLA. 1996. *O Pioneer!* Raleigh, NC: Alex Catalogue. Online: <http://www.netlibrary.com/>, subscriber access only.
- COMRIE, BERNARD. 1976. *Aspect*. Cambridge: Cambridge University Press.
- COOPER, MARY. 1996. Native Americans' future. *The CQ Researcher Online*. Online: <http://library.cqpress.com/cqresearcher/cqresrre1996071200>, subscriber access only.
- CURME, GEORGE OLIVER. 1935. *A grammar of the English language, vol. 2: Parts of speech and accidence*. Boston: D.C. Heath.
- DAHL, ÖSTEN. 1985. *Tense and aspect systems*. New York: Blackwell.
- DE SWART, HENRIËTTE. 1998. Aspect shift and coercion. *Natural Language and Linguistic Theory* 16.347–85.
- DE SWART, HENRIËTTE, and ARIE MOLENDIJK. 1999. Negation and the temporal structure of narrative discourse. *Journal of Semantics* 16.1–42.
- DECLERCK, RENAAT. 1991. *Tense in English*. London: Routledge.
- DECLERCK, RENAAT; SUSAN REED; and BERT CAPPELLE. 2006. *The grammar of the English verb phrase, vol. 1: The grammar of the English tense system*. Berlin: Mouton de Gruyter.
- DEPRAETERE, ILSE. 1998. On the resultative character of present perfect sentences. *Journal of Pragmatics* 29.597–613.
- DIESING, MOLLY. 1992. *Indefinites*. Cambridge, MA: MIT Press.
- DOWTY, DAVID R. 1979. *Word meaning and Montague grammar: The semantics of verbs and times in generative semantics and in Montague's PTQ*. Dordrecht: Reidel.
- DUBOIS, BETTY LOU CHAFFIN. 1972. *The meanings and the distribution of the perfect in present-day American English writing*. Albuquerque: University of New Mexico dissertation.
- ELSNES, JOHAN. 1997. *The perfect and the preterite in Contemporary and Earlier English*. Berlin: Mouton de Gruyter.
- ENGEL, DULCIE M., and MARIE-EVE A. RITZ. 2000. The use of the present perfect in Australian English. *Australian Journal of Linguistics* 20.119–40.
- FENN, PETER. 1987. *A semantic and pragmatic examination of the English perfect*. Tübingen: Gunter Narr.
- GALTON, ANTONY. 1984. *The logic of aspect: An axiomatic approach*. (The Clarendon library of logic and philosophy.) Oxford: Clarendon.
- GRAFF, DAVID. 1995–1997. *North American News Text Corpus*. Philadelphia: Linguistic Data Consortium, University of Pennsylvania.
- GRAFF, DAVID; ALEXANDRA CANAVAN; and GEORGE ZIPPERLEN. 1998. *Switchboard-2 Phase 1*. Philadelphia: Linguistic Data Consortium, University of Pennsylvania.
- HARDT, DANIEL. 1999. Dynamic interpretation of verb phrase ellipsis. *Linguistics and Philosophy* 22.185–219.
- HENY, FRANK. 1982. Tense, aspect and time adverbials, part 2. *Linguistics and Philosophy* 5.109–54.

- HINRICHS, ERHARD. 1986. Temporal anaphora in discourses of English. *Linguistics and Philosophy* 9.63–82.
- HITZEMAN, JANET. 1997. Semantic partition and the ambiguity of sentences containing temporal adverbials. *Natural Language Semantics* 5.87–100.
- HOBBS, JERRY; MARK STICKEL; DOUGLAS APPELT; and PAUL MARTIN. 1993. Interpretation as abduction. *Artificial Intelligence* 63.69–142.
- HORN, LAURENCE R. 1984. Toward a new taxonomy for pragmatic inference: Q-based and R-based implicature. *Meaning, form and use in context: Linguistic applications*, ed. by Deborah Schiffrin, 11–42. Washington, DC: Georgetown University Press.
- HORN, LAURENCE R. 1985. Metalinguistic negation and pragmatic ambiguity. *Language* 61.121–74.
- HORN, LAURENCE R. 2001. *A natural history of negation*. Stanford, CA: CSLI Publications.
- IATRIDOU, SABINE; ELENA ANAGNOSTOPOULOU; and ROUMYANA IZVORSKI. 2003. Observations about the form and meaning of the perfect. *Perfect explorations*, ed. by Artemis Alexiadou, Monika Rathert, and Arnim von Stechow, 153–204. Berlin: Mouton de Gruyter.
- INOUE, KYOKO. 1979. An analysis of the English present perfect. *Linguistics* 17.561–89.
- ISMAIL, HAYTHEM O. 2001. *Reasoning and acting in time*. Buffalo: State University of New York at Buffalo dissertation.
- KAMP, HANS, and UWE REYLE. 1993. *From discourse to logic*, part 1, 2. (Studies in linguistics and philosophy.) Dordrecht: Kluwer.
- KAY, PAUL, and KARL ZIMMER. 1978. On the semantics of compounds and genitives in English. *Proceedings of the 6th California Linguistics Association*, ed. by R. Underhill, 29–35. San Diego: Campanile.
- KIPARSKY, PAUL. 2002. Event structure and the perfect. *The construction of meaning*, ed. by David Beaver, Luis D. Casillas Martínez, Brady Z. Clark, and Stefan Kaufmann, 113–35. Stanford, CA: CSLI Publications.
- KLEIN, WOLFGANG. 1992. The present perfect puzzle. *Language* 68.525–52.
- KLEIN, WOLFGANG. 1994. *Time in language*. London: Routledge.
- KLEIN, WOLFGANG. 2000. An analysis of the German Perfekt. *Language* 76.358–82.
- KRATZER, ANGELIKA. 2000. Building statives. *Berkeley Linguistics Society* 26.385–99.
- KRIFKA, MANFRED. 1989. Nominal reference, temporal constitution and quantification in event semantics. *Semantics and contextual expression*, ed. by Renate Bartsch, Johan van Benthem, and Peter van Emde Boas, 75–115. Dordrecht: Foris.
- LASCARIDES, ALEX, and NICHOLAS ASHER. 1993. Temporal interpretation, discourse relations and commonsense entailment. *Linguistics and Philosophy* 16.437–93.
- LEVINSON, STEPHEN C. 2000. *Presumptive meanings: The theory of generalized conversational implicature*. Cambridge, MA: MIT Press.
- LEWIS, DAVID. 1979. Scorekeeping in a language game. *Journal of Philosophical Logic* 8.339–59.
- MANN, WILLIAM C., and SANDRA A. THOMPSON. 1988. Rhetorical structure theory: Toward a functional theory of text organization. *Text* 8.243–81.
- MCCAWLEY, JAMES D. 1971. Tense and time reference in English. *Studies in linguistic semantics*, ed. by Charles J. Fillmore and D. Terence Langendoen, 96–113. New York: Holt, Rinehart, and Winston.
- MCCAWLEY, JAMES D. 1981. Notes on the English present perfect. *Australian Journal of Linguistics* 1.81–90.
- MCCOARD, ROBERT. 1978. *The English perfect: Tense choice and pragmatic inferences*. Amsterdam: North Holland.
- MCDERMOTT, DREW. 1982. A temporal logic for reasoning about processes and plans. *Cognitive Science* 6.101–55.
- MICHAELIS, LAURA A. 1994. The ambiguity of the English present perfect. *Journal of Linguistics* 30.111–57.
- MICHAELIS, LAURA A. 1998. *Aspectual grammar and past-time reference*. (Routledge studies in Germanic linguistics 4.) London: Routledge.
- MINDT, DIETER. 2000. *An empirical grammar of the English verb system*. Berlin: Cornelsen.
- MITTWOCH, ANITA. 1988. Aspects of English aspect: On the interaction of perfect, progressive and durational phrases. *Linguistics and Philosophy* 11.203–54.
- MOENS, MARC. 1987. *Tense, aspect and temporal reference*. Edinburgh: University of Edinburgh dissertation.

- MOENS, MARC, and MARK STEEDMAN. 1988. Temporal ontology and temporal reference. *Computational Linguistics* 14.15–28.
- MOLTMAN, FRIEDERIKE. 1991. Measure adverbials. *Linguistics and Philosophy* 14.629–60.
- NISHIYAMA, ATSUKO. 2006. The meaning and interpretations of the Japanese aspectual marker *-te-i-*. *Journal of Semantics* 23.185–216.
- NISHIYAMA, ATSUKO, and JEAN-PIERRE KOENIG. 2004. What is a perfect state? *West Coast Conference on Formal Linguistics* 23.595–606.
- NISHIYAMA, ATSUKO, and JEAN-PIERRE KOENIG. 2006. The perfect in context: A corpus study. *Penn Working Papers in Linguistics (Proceedings of the 29th annual Penn Linguistics Colloquium)* 12.1.265–78.
- NISHIYAMA, ATSUKO, and JEAN-PIERRE KOENIG. 2008. The discourse functions of the present perfect. *Constraints in discourse*, ed. by Anton Benz and Peter Kuehnlein, 201–23. Amsterdam: John Benjamins.
- OSBORNE, JOHN. 1997. Les emplois ‘temporels’ du present perfect. *Anglophonia* 2.85–106.
- PANCHEVA, ROUMYANA. 2003. The aspectual makeup of perfect participles and the interpretations of the perfect. *Perfect explorations*, ed. by Artemis Alexiadou, Monika Rathert, and Arnim von Stechow, 277–306. Berlin: Mouton de Gruyter.
- PARSONS, TERENCE. 1990. *Events in the semantics of English*. Cambridge, MA: MIT Press.
- PARTEE, BARBARA HALL. 1984. Compositionality. *Varieties of formal semantics: Proceedings of the fourth Amsterdam colloquium*, ed. by Frank Veltman, 281–311. Dordrecht: Foris.
- PARTEE, BARBARA HALL. 2004. *Compositionality in formal semantics: Selected papers by Barbara H. Partee*. Malden, MA: Blackwell.
- PELLETIER, FRANCIS JEFFRY, and NICHOLAS ASHER. 1997. Generics and defaults. *Handbook of logic and language*, ed. by Johan van Benthem and Alice G. B. ter Meulen, 1125–77. Cambridge, MA: MIT Press.
- PORTNER, PAUL. 2003. The (temporal) semantics and (modal) pragmatics of the perfect. *Linguistics and Philosophy* 26.459–510.
- REICHENBACH, HANS. 1947. *Elements of symbolic logic*. New York: Free Press.
- RICHARDS, BARRY. 1982. Tense, aspect and time adverbials, part 1. *Linguistics and Philosophy* 5.59–107.
- SEARLE, JOHN R. 1969. *Speech acts*. Cambridge: Cambridge University Press.
- SEARLE, JOHN R., and DANIEL VANDERVEKEN. 1985. *Foundations of illocutionary logic*. Cambridge: Cambridge University Press.
- SMITH, CARLOTA S. 1991. *The parameter of aspect*. Dordrecht: Kluwer.
- SMITH, CARLOTA S. 1997. *The parameter of aspect*. 2nd edn. (Studies in linguistics and philosophy 43.) Dordrecht: Kluwer.
- SWEETSER, EVE E. 1987. The definition of *lie*: An examination of the folk models underlying a semantic prototype. *Cultural models in language and thought*, ed. by Dorothy Holland and Naomi Quinn, 43–66. Cambridge: Cambridge University Press.
- TER MEULEN, ALICE G. B. 1995. *Representing time in natural language: The dynamic interpretation of tense and aspect*. Cambridge, MA: MIT Press.
- VAN EIJCK, JAN, and HANS KAMP. 1997. Representing discourse in context. *Handbook of logic and language*, ed. by Johan van Benthem and Alice G. B. ter Meulen, 179–237. Cambridge, MA: MIT Press.
- VERMANT, STEFAN. 1983. *The English present perfect: A dynamic-synchronic approach*. (Technical report.) Antwerp: Universiteit Antwerpen.
- WICKBOLDT, JUNE MARIE. 1998. *The semantics of since*. Bloomington: Indiana University dissertation.
- ZWICKY, ARNOLD M., and JERROLD M. SADOCK. 1975. Ambiguity tests and how to fail them. *Syntax and semantics*, vol. 4, ed. by John Kimball, 1–36. New York: Academic Press.

Nishiyama  
 Language Education Center  
 Ritsumeikan University  
 56-1 Kita-machi Toji-in Kita-ku  
 Kyoto, 603-8577, Japan  
 [atsuko.nishiyama@gmail.com]

[Received 1 October 2008;  
 accepted with revisions 27 October 2009;  
 revision received 15 February 2010;  
 accepted 18 May 2010]

Koenig  
Linguistics Department  
University at Buffalo  
Buffalo, NY 14260-1030  
[jpkoenig@buffalo.edu]