THE SEMANTICS AND PRAGMATICS OF THE PERFECT

IN ENGLISH AND JAPANESE

by

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To my mother

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A List of Abbreviations

ACC   accusative

CL   classifier

COMP   complement

COP   copula

GEN   genitive

HON   honorific

IMPFTV   imperfective

LOC   locative

NEG   negative

NOM   nominative

NONPAST   nonpast tense

PASS   passive

PAST   past tense

PERF   perfect

PFTV   perfective

PRTCL   particle

TAG   tag expression

TOP   topic

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Abstract

This dissertation investigates the semantics and pragmatics of the English and Japanese perfect. It first argues that the perfect is a stativizer and provides a monosemous analysis of the meaning of the English perfect by modifying the standard Discourse Representation Theory's approach to the perfect (Kamp and Reyle 1993, De Swart 1998) and incorporating into it some semantic underspecification. In particular, it is argued that the perfect introduces a state whose category is semantically an underspecified free variable and that the underspecification of that category triggers inferences that lead to the various interpretations of the perfect. Secondly, an analysis of the meaning of the Japanese aspect marker *-te-i-*, which corresponds to both the English progressive and the English perfect, is presented. It is shown that the progressive and perfect readings of *-te-i-* derive from the single meaning of the two morphemes that compose *-te-i-*, the imperfective marker *-te-* and the stativizer *-i-*. Third, a model of the inferential process that leads to the distinct interpretations of the perfect in both English and Japanese is provided. This model is validated by two corpus studies of English present perfect and Japanese *te-i-ru* (nonpast perfect) examples. These studies bring out two further results. First, the kinds of inference rules which addressees must use to arrive at the interpretations of perfect sentences are very few in number. Second, by invoking these inference rules, the use of the perfect helps establish discourse coherence. This thesis finally compares the uses of the present perfect and the past tense. I show that the Japanese marker *-ta* is a past tense marker, not a present perfect marker and that the difference in invited inferences between

the English and Japanese past tenses can be explained in neo-Gricean terms. Second, I revise current definitions of reference time and show that differences in use between the past tense and the perfect follows from the fact that the eventuality described by the main verb and its arguments is anchored to reference time only when a past tense is used.

Chapter 1

Introduction

1.1   What is this dissertation about?

The main object of most our discourses is to describe events. An important aspect of interpreting those event descriptions consists in locating those events in time. It is conventionally said that tense expressions in natural languages serve to locate events in time and that aspect markers serve to select portions of events (Comrie 1976). Perfect markers, for many, are particularly interesting in this respect because they have both a tense and aspect component, i.e. somewhat simplifying they locate an event in the past and "select" the aftermath of that event. Furthermore, the interpretive process hearers or readers engage in to interpret perfect markers includes a pragmatic component. Their interpretation depends more on pragmatic processes than those of ordinary tenses or aspect markers.

This thesis will look at the meaning and interpretations of the perfect in two languages, English and Japanese, and it will answer the following questions:

- Are the perfect markers in English and Japanese semantically ambiguous or pragmatically ambiguous?

- How can the same marker in Japanese correspond to both the English progressive and perfect markers?

- What are the pragmatic processes that give rise to the contextual interpretation of the perfect in both languages?

- How can one distinguish between a past tense and a perfect marker?

- What inferences do addressees need to draw to interpret perfect markers?

- Why do authors choose to use a perfect marker rather than a past tense marker?

Here are simplified descriptions of the answers this thesis will argue for. First, the English and Japanese perfect markers involve pragmatic, not semantic ambiguity. That is, they have a single underspecified meaning. Their distinct contextual readings arise from a pragmatic reasoning process. Differences among the readings of these markers arise from different kinds of inferential processes hearers and readers engage in to fully specify the English and Japanese perfects which are underspecified semantically. Furthermore, this thesis will argue that what is special about the perfect is that the pragmatic process is triggered by an underspecified

property variable that is part of its semantics. Second, the reason that the Japanese "perfect" has both progressive and perfect readings is that it actually combines *two* aspect operators, an imperfective operator and a stativizing operator, and, thus, resembles most the English perfect progressive (e.g. *John has been writing a paper*). Third, a look at English and Japanese corpora reveals that there are very few distinct types of inferences that hearers need draw to specify the interpretation of the perfect and that the distribution of perfect readings is very skewed, with the inferentially simplest type of reading being the most frequent.

The following sections of this introductory chapter lay the basic semantic and morphological ground for the rest of the thesis.

1.2   Basic notions: eventuality, aspect, and (a)telicity

This section defines some basic notions. I assume that a sentence describes some type of state of affairs (a situation). Sentence (1.1), for example, describes the event of Ken writing two papers and locates this situation in the past. The corresponding Japanese sentence is (1.2). Sentence (1.3) describes the state of Ken being sick and its corresponding Japanese sentence is (1.4).[1,2]

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[1] Japanese examples are romanized in the Hepburn system. Following a conventional variety of the Hepburn system used in signs, English documents, or legal documents, some long vowels such as [o:] in *Tokyo* (*Tōkyō* or *Tookyoo*) are not indicated and uvular nasals are romanized as 'n'. '-' indicates morpheme boundary.

[2] 'NOM' stands for nominative case marker; 'ACC' stands for accusative case marker; 'CL' is a numeral classifier. 'NONPAST' is a nonpast tense, as opposed to 'PAST', a past tense. See the list at the beginning of the thesis.

(1.1)   Ken wrote two papers.

(1.2)   *Ken-ga   ronbun-o   ni-hon kai-   -ta.*
        Ken-NOM paper-ACC two-CL write -PAST

        'Ken wrote two papers.'

(1.3)   Ken is sick.

(1.4)   *Ken-wa byoki-   -da.*
        Ken-TOP sickness- COP

        'Ken is sick.'

This thesis uses the term *eventuality* as a cover term for all those states of affairs, including both events and states (Bach 1986).

A set of *eventualities* is denoted by an *eventuality description*. An *eventuality description* consists of a predicate together with its arguments, i.e. a sentence without inflectional components, including tense, aspect, and mood (hereafter, a *sentence radical*) (de Swart 1998; de Swart and Verkuyl 1999; Herweg 1991a; Herweg 1991b). In the above sentences (1.1) and (1.2), the *sentence radicals* are informally (1.5) and (1.6), respectively.

(1.5)   *Sentence Radical*: Ken_write_two_papers

(1.6)   *Sentence Radical*: Ken-ga_ronbun-o_ni-hon_kak-

        (Ken-NOM_paper-ACC_two-CL_write-)

This thesis often refers to an eventuality description characterized by a sentence radical as a *base eventuality description* in order to distinguish it from eventuality descriptions modified by aspectual operators; it also refers to an eventuality denoted by the base eventuality de-

scription as a *base eventuality*. In examples (1.1) and (1.2), base eventuality descriptions are characterized in (1.5) and (1.6). The base eventuality is the event of Ken writing two papers for examples (1.1) and (1.2). For the sake of readability, this thesis often uses English corresponding words to represent Japanese eventuality descriptions or eventualities.

I assume that aspectual operators (including perfects) modify eventuality descriptions. Therefore, perfects such as those in (1.7) and (1.8) are considered to take eventuality descriptions such as the ones characterized in (1.5) and (1.6) and modify them as seen in sentences (1.7) and (1.8).

(1.7)   Ken has written two papers.

(1.8)   *Ken-ga   ronbun-o   ni-hon kai-   -te-i- -ru.*
        Ken-NOM paper-ACC two-CL write -TE-I- NONPAST
        'Ken is writing/has written two papers.'

Aktionsart types or situation aspects such as activities (or process), accomplishments, achievements, and states (Smith 1997) are assumed to be associated with *eventuality descriptions*, not with types of verbs, unless specified. Thus, *(a)telicity* is a property of eventuality descriptions. While *atelic* eventuality descriptions, e.g. activities and states, do not encode any endpoint, *telic* descriptions, e.g. accomplishments and achievements, encode a natural or intended endpoint (Depraetere 1995). I restrict the use of those terms to eventuality descriptions unless specified.

The perfect is often considered to introduce an eventuality which occurred before a reference time and a state which holds at a reference time and is somehow related to the introduced

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eventuality (Jespersen 1931; Moens and Steedman 1988; Kamp and Reyle 1993; Michaelis 1994; ter Meulen 1995; van Eijck and Kamp 1997; Michaelis 1998; de Swart 1998). For example, sentence (1.9) introduces an event of Ken catching a cold and a present state which is related to the event, e.g. a state of Ken having a cold.

 (1.9) Ken has caught a cold.

This thesis often refers to the eventuality and state introduced by the perfect form as *the prior eventuality* and *the perfect state*, respectively.

1.3 Scope of the dissertation

This dissertation investigates the meaning and interpretations of the perfect in English and Japanese. It analyzes two perfect forms and their uses, i.e. the English perfect form *have +* Verb Stem-*ed* (or a past participle form of a verb) and the Japanese aspectual marker(s) *-te-i-* (*-te-* which is attached after a verb stem and *-i-* which follows *-te-*).

1.3.1 The English perfect

The English perfect form has various interpretations which have been recognized since McCawley (1971), as seen in sentences (1.10) - (1.12).

(1.10) I can't come to your party tonight. I've caught the flu.

(1.11) I have read *Principia Mathematica* five times.

(1.12)   I've known Max since 1960. (McCawley 1971:104)

The use of the perfect sentence in (1.10) is often called a 'resultative perfect' use, where the sentence implicates that a state that results from the occurrence of the base eventuality holds at present, namely, *the speaker has the flu*. The use in sentence (1.11) is often called an 'existential perfect' use. 'Existential perfect' uses do not implicate that a consequent state holds at reference time, but it is often said that it entails one or more past occurrences of the base eventuality (McCawley 1971; McCawley 1981; Michaelis 1998). The use of the perfect in sentence (1.12) is called a 'continuative perfect' use. The base eventuality of the sentence in (1.12) is stative and holds at an interval of time that ranges from a past time up until the present.

Some scholars have suggested that the perfect is ambiguous between its several uses (McCawley 1971; Dowty 1979; Mittwoch 1988; Kamp and Reyle 1993; Michaelis 1994; Michaelis 1998; Portner 2003). I will show that there is no convincing evidence for the ambiguity of the perfect and the proposals advanced by these scholars cannot explain all the relevant data. Other scholars have suggested that the perfect has a single meaning (Moens and Steedman 1988; ter Meulen 1995; van Eijck and Kamp 1997). However, their analyses cannot explain all the relevant data either and they also typically only discuss some of the readings perfect forms can receive. Crucially, previous scholars have not discussed how a speaker and a hearer can derive those different readings from the meaning of the perfect.

This dissertation examines anew the different interpretations of the English perfect and proposes a monosemous semantics of the English perfect from which all of its different in-

terpretations can derive, something that has not yet been done successfully. It also discusses how all the readings of the perfect can derive from the semantics of the English perfect and provides a model of the inferential process by which these readings are derived.

1.3.2 The Japanese marker *-te-i-*

In English the perfect and the progressive are expressed by separate markers, i.e. *have+ -ed* vs. *be -ing*, and so are they in many other languages such as French or Chinese (Smith 1997). However, the progressive and the perfect are expressed by the same form, *-te-i-*, in Japanese. Progressives and perfects differ in that the base eventuality is incomplete in progressives, as seen in sentence (1.13), whereas it is complete in perfects, as seen in sentence (1.14). In sentence (1.13), the event of Ken writing a letter is not complete, while in sentence (1.14) it is complete.

(1.13)   Ken is writing a letter.

(1.14)   Ken has written a letter.

It is, therefore, puzzling that Japanese *-te-i-* can receive either progressive or perfect interpretations. As seen in sentence (1.15), The Japanese form *-te-i-* has progressive, perfect, and habitual interpretations.

(1.15)   *Ken-wa   tegami-o   kai-   -te- -i- -ru.*
         Ken-TOP letter-ACC write- TE- -I- NONPAST
         'Ken is writing a letter'/'Ken has written a letter.'/'Ken writes letters (habitual).'

Many scholars have studied the lexical and syntactic behaviors of *-te-i-* (Kindaichi 1976a; Kindaichi 1976b; Okuda 1978; Soga 1983; Kudo 1995; Ogihara 1998), but much less work has been done on the semantics of *-te-i-*, particularly on why it can receive both progressive and perfect interpretations.

In this thesis, I show that the progressive and various perfect readings of *-te-i-* can be accounted for by the combination of the single meanings of the two morphemes *-te-* and *-i-* and by extending the analysis I provide for the English perfect.

1.3.3   The perfect in context

Many previous studies have tried to describe the meaning of the perfect and explain its various interpretations (McCawley 1971; Dowty 1979; Mittwoch 1988; Kamp and Reyle 1993; Michaelis 1998). However, few scholars have studied how the perfect is interpreted in discourse or how a speaker and a hearer can arrive at those various interpretations from the meaning of the perfect. This thesis looks at the uses of the English perfect and Japanese *-te-i-* in various corpora (newspapers, conversational data, narrative, and discussion) and studies the inference rules involved in deriving the various interpretations of the perfect and the functions of the perfect in texts and conversations.

1.3.4 The past tense vs. the present perfect

Past tenses and present perfects often overlap in their uses. Both past tenses and present perfects introduce in discourse an eventuality that occurred in the past. It is, therefore, sometimes difficult to distinguish a present perfect from a past tense marker. First, I discuss the meaning of the past tense by looking at the Japanese marker *-ta*, which is typically considered to be a past tense but has uses similar to that of present perfect markers. Second, I discuss the different inference patterns between the Japanese and the English past tense. Third, I discuss the notion of reference time and how it interacts with inferences triggered by the use of the past tense and the perfect. I also compare my approach to the notion of reference time in discourse with the approach to time for an acting agent in Ismail (2001) which is implemented in SNePS (Semantic Network Processing System) (Shapiro and Rapaport 1992; Shapiro and Group 1999) and discuss the difference between temporal reasoning in discourse and in the real world.

The Japanese past tense -*ta*. The Japanese marker *-ta* has a past tense interpretation, as seen in sentences (1.16) -(1.17). It also behaves like a present perfect marker in some contexts, as seen in sentence (1.18), where the base stative eventuality still continues.

(1.16) *Ame-ga   fu- -tta.*
      Rain-NOM fall- PAST

      'It rained.'

(1.17) *Ame-ga   fu- -te-i- -ta.*
Rain-NOM fall- TE-I- PAST

'It was raining. It had (already) rained.'

(1.18) *Kagi-ga   koko-ni- a-   -tta.*
Key-NOM here-LOC exist PAST

'Lit. The key was here.' (Intended: The key is here. I've found it.)

I argue that despite uses such as (1.18) *-ta* is a past tense marker and not a present perfect marker and, in doing so, I discuss the main differences between present perfects and past tenses.

Different inference patterns between the Japanese and English past tense. The Japanese and English past tense sentences differ in that Japanese stative past tense sentences often lead to the inference that the state described in the past tense still continues as seen in sentence (1.18), while the English stative past tense sentences often lead to the opposite inference, namely, that the state described in the past tense does not continue any more.

(1.19) The key was here. (It is not here anymore.)

I propose that differences in the English and Japanese tense and aspect systems lead to the difference in default inferences triggered by using the past tense form.

Reference time One semantic difference between the past tense and the present perfect resides in how a base eventuality is introduced in relation to reference time. In a standard Reichenbachian view (Reichenbach 1947), for example, the event of the speaker eating break-

fast in sentence (1.20) is introduced at a reference time in the past, while the same event in sentence (1.21) is introduced before a reference time which overlaps utterance time. However, there have been some disagreements on the notion of reference time and reference time updates among linguists. In addition, the use of a past tense such as in (1.20) and that of a present perfect such as in (1.21) are often interchangeable in some contexts, but when and how uses of a past tense and a present perfect overlap has not been explained. I discuss the notions of reference time and reference time updates and also compare reference time or reference time update in discourse with the time or time progress for an acting agent that has been implemented in the SNePS knowledge representation, reasoning, and acting system.

(1.20)   I ate breakfast.

(1.21)   I have eaten breakfast.

1.4   Claims

The claims of this dissertation are, first, that the English perfect has a single meaning. More specifically, the English perfect introduces a prior eventuality and a perfect state whose category is underspecified, and whose identity has to be pragmatically inferred. Therefore, the identity of the perfect state, as described in the underlined sentences for the perfect sentences in (1.22) and (1.23), is pragmatically inferred from the occurrence of the prior eventuality by the addressee.

(1.22)   I have caught a cold. <u>I have a cold</u>, <u>I am not well prepared for my presentation</u>, or ...

(1.23)   I have lived in London. <u>I know a good restaurant in London</u>,

    <u>I have a lot of friends in London</u>, or ...

Furthermore, I claim that these inferences can be modeled as the effect of a Gricean reasoning process.

Secondly, this thesis argues that this analysis of the English perfect can extend to Japanese *-te-i-*. Japanese *-te-i-* also introduces a prior eventuality, but this eventuality is a subpart of the base eventuality because *-te-* is an imperfective operator. The stativizer *-i-* then introduces a state whose category is underspecified like that of the state introduced by the English perfect. I show that because the output of the imperfective operator *-te-* does not have to be a *proper* subpart of the base eventuality, *-te-i-* can receive either progressive or perfect interpretations.

Thirdly, I claim that only a few inference rules are needed to arrive at the various interpretations of the English perfect and Japanese *-te-i-*, some default rules such as the rule of persistence (McDermott 1982), some rules based on the felicity conditions associated with speech acts (Searle 1969), and, in rare cases, commonsense entailment rules (Lascarides and Asher 1993). I show that the use of a perfect form helps coherence in discourse.

Finally, this thesis argues that the crucial difference between the perfect and the past tense is that, first, the perfect triggers a pragmatic inference that specifies the identity of an underspecified state while the past tense does not and second, the temporal trace of an eventuality described in the past tense overlaps reference time while in the perfect only the perfect

state overlaps reference time. Differences and overlap in uses between the past tense and the present perfect are then shown to follow from differences in the possibilities their tense and aspect systems provide speakers with.

1.5 Background

1.5.1 The English and Japanese tense systems

The English tense system consists of a past, present, and future tense as seen in sentence (1.24). The Japanese tense system consists of a past and a non-past tense. The past tense is expressed by *-ta* and the non-past tense is expressed by the same form as the non-finite form of verbs, adjectival predicates, or a copula, that is, *-(r)u* for verbs, *-i* for adjectival predicates, and *-da* for a copula, as seen in sentences (1.25) - (1.27).

(1.24)   It rained/rains/will rain in London.

(1.25)   *Tokyo-wa   ame-ga   fu- -tta/-ru.*
        Tokyo-TOP rain-NOM fall- PAST/NONPAST
        'It rained/rains (habitual) or will rain in Tokyo.'

(1.26)   *Soto-wa   samuka-tta/samu-i*
        outside-TOP cold-PAST/cold-NONPAST
        'It was/is cold outside.'

(1.27)   *Hieizan-wa   utsukushii yama-   da-tta/-da.*
        Mt. Hiei-TOP beautiful mountain COP-PAST/COP(NONPAST)
        'Mt. Hiei was/is a beautiful mountain.'

When a sentence includes the non-past tense, it can receive a future interpretation as well as a present interpretation. Sentence (1.28) can, thus, receive a future progressive, a future perfect, and a future habitual reading as well as a present progressive, a present perfect, and a present habitual reading if those interpretations are consistent with the context. However, future readings will be omitted from the English translations of examples in this thesis unless they are relevant to the discussion.

(1.28)   *Ken-wa   benkyo-shi-   -tte- -i- -ru.*
         Ken-TOP benkyo-shi- TE- I- -NONPAST
         'Ken is studying/has studied/studies (habitual)/will be studying/will have studied/will study (habitual).'

It should also be noted that English tenses are absolute tenses, whereas Japanese tenses are relative tenses.[3] Basically, the Japanese non-past tense can receive a past tense interpretation in a subordinate clause when the main clause is in the past tense, while the English present tense cannot (Ogihara 1996).

(1.29)   *Taro-wa   nai- -te-i- -ru   otoko-o   mi- -ta. (Ogihara 1996)*
         Taro-TOP cry- TE-I- NONPAST man-ACC see PAST
         'Taro saw a man who was crying [at the time of the meeting].'

Sentence (1.29) shows that the nonpast tense *-(r)u* in the relative clause receives a past tense interpretation because it is interpreted in relation to the past tense in the main clause. The difference between absolute and relative tense is only relevant when the tense marker appears

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[3]See Comrie (1985) for the definition of absolute and relative tenses.

in subordinate clauses.

1.5.2   Notes on Japanese data

Three further remarks are in order. First, the Japanese aspectual markers and verb stems have several allomorphs. The Japanese aspectual marker *-te-* has *-de* and *-tte* as allomorphs, and the past tense marker *-ta* has *-da* and *-tta* as allomorphs, e.g. *oyoi-de-/-da* ('swim- *-te-*/*-ta*') or *ka-tte-/-tta* ('buy--*te-*/*-ta*'). Japanese verb stems ending in /k/ or /g/ often substitute /i/ for /k/ or /g/, e.g. *kai-* (<*kak-* 'write'), *kii-* (<*kik-* 'listen'), *oyoi-* (<*oyog-* 'swim'); verb stems ending in /m/ substitute /n/ for /m/, e.g. *yon-* (<*yom-* 'read').

Secondly, Japanese examples, both cited examples and my own examples often suffix the topic marker *-wa* on subject NPs instead of the nominative marker *-ga*, as seen in sentences (1.28) and (1.29). The topic marker *-wa* and the nominative marker *-ga* are interchangeable as far as the relevant interpretations are concerned. Because the nominative marker *-ga* is also used as a focus marker, unstressed *-wa* is more common when the subject NP is not in focus.

Finally, Japanese examples in this dissertation are mine unless specified otherwise.

1.6   Organization of the thesis

The following chapters are organized as follows: Chapter 2 discusses previous studies of the perfect, especially of the English perfect. Chapter 3 proposes a new analysis of the English

perfect. Chapter 4 deals with the Japanese aspectual markers *-te-* and *-i-* and extends the analysis of the English perfect in Chapter 3 to the Japanese perfect *-te-* and *-i-*. Chapter 5 looks at the uses of the perfect in a corpus and the inference rules it triggers and discusses the discourse functions of the perfect. Chapter 6 discusses differences between the present perfect and the past tense in Japanese and English. Chapter 7 concludes the dissertation.

Chapter 2

Background Issues

2.1 Introduction

This chapter presents an overview of how previous studies have analyzed the semantics of the perfect. Despite numerous studies of the English perfect, there remain a number of unresolved issues. One such issue is how many meanings or interpretations the English perfect form has. Another is the number of distinct interpretations the English perfect has. Some scholars recognize three distinct readings for the present perfect (McCawley 1971; Michaelis 1994; Michaelis 1998; Kiparsky 2002), while others, two readings (Mittwoch 1988; Kamp and Reyle 1993; Iatridou *et al.* 2003).[1] Some scholars assume that these readings correspond to different meanings (i.e. they assume that the English perfect is polysemous) (McCawley 1971;

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[1]I use 'interpretation' and 'reading' interchangeably.

Michaelis 1994; Michaelis 1998; Kiparsky 2002), while others do not (i.e. they assume that the English perfect is monosemous) (Inoue 1975; Moens and Steedman 1988; ter Meulen 1995). Some claim that the meaning of the perfect form is semantically ambiguous (McCawley 1971; Michaelis 1998) while others claim that it involves a structural ambiguity (Dowty 1979; Portner 2003). The hypothesis proposed in the next chapter is that the English perfect has a single meaning, i.e. is monosemous, and that all its readings can be pragmatically derived from that single meaning. Although the hypothesis does not exclude the English past perfect, future perfect, or non-finite perfect, this and the following sections often discuss only present perfect examples for the sake of simplicity.[2]

Classifications of the readings of the English perfect in previous studies are summarized as Table 2.1. The first row names the distinct readings various scholars recognize. As will be shown in the following sections, those readings vary based on (i) whether or not a resultant state holds at present in the present perfect, (ii) what type of resultant state holds, and (iii) whether or not the state description that the perfect modifies continues to hold. The second, third and forth rows represent different hypotheses on the appropriate way of grouping those recognized readings into meanings. The bottom row represents the hypothesis I will defend, i.e. a monosemous analysis of the perfect. In this thesis, the term 'resultative perfect use' is used whenever the perfect introduces a state holding at present in the present perfect (or at reference time) that results from the occurrence of a past event (or an event prior to reference

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[2]Some scholars consider the present perfect and other perfects different constructions (Michaelis 1998).

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time), a terminology that follows Comrie's (1976) definition of the resultative perfect ('perfect of result') or Michaelis (1994) and Michaelis (1998).

Table 2.1: The classifications of perfect readings

Readings Hypothesis	Entailed resultant state[1]	Implicated resultant state	no resultant state	input state continues
Polysemous A	Resultative Perfect	Existential Perfect		Continuative Perfect (Universal Perfect)
B	Resultative		Existential	
C	Non-continuative or Existential Perfect			
Monosemous	Perfect			

[A] McCawley (1971), Kiparsky (2002)
[B] Michaelis (1994); Michaelis (1998).
[C] McCawley (1981), Mittwoch (1988), Kamp and Reyle (1993), Portner (2003)
[1] 'Target State' in Parsons (1990) and Kratzer (2000).

The first half of this chapter looks at the various interpretations of the English perfect and shows that they do not differ semantically or structurally. The second half examines previous analyses of the English present perfect. Some studies consider that the perfect form introduces a state (i.e. is a stativizer) while others do not. The latter view defines the meaning of the perfect as a temporal operator relating a past event and reference time. Although this thesis favors the former view, i.e. that the perfect form introduces a state, it should be noted that previous proposals along these lines have not successfully explained the nature of the state introduced by the perfect and captured all the readings of the perfect. Section 2.3.1 first looks

at the problems that plague temporal views of the perfect. Section 2.3.2 is devoted to the view that the perfect is a stativizer and discusses problems with this view. Finally, some scholars among those who either take a temporal operator view or a stativizer view further provide a functional perspective on the perfect, namely, propose that the perfect involves a discourse topic (Inoue 1975; Inoue 1979; Portner 2003; Borillo *et al.* 2004). Section 2.3.3 discusses their views.

2.2 Multiple readings: meanings or interpretations?

Several different interpretations of the English present perfect form have been recognized. Consider the following examples from McCawley (1971:104):

(2.1)   I can't come to your party tonight— I've caught the flu. (=(1.10))

(2.2)   I have read *Principia Mathematica* five times. (=(1.11))

(2.3)   I've known Max since 1960. (=(1.12))

(2.4)   Malcolm X has just been assassinated.

Sentence (2.1) is an example of a resultative perfect reading where the direct resultant state of a past event (the speaker has the flu) still continues ('stative perfect' in McCawley (1971)). Sentence (2.2) exemplifies an existential perfect reading; it indicates there was one or more occurrence of an event. Sentence (2.3) has a continuative perfect reading, where the state denoted by the verb constellation holds at some interval stretching from the past into the present

('universal perfect' reading in McCawley (1971)). Sentence (2.4) has a 'hot news' perfect reading, where it is used to report a hot news ('perfect of recent past' in Comrie (1976)). This use of the perfect has been argued to be a special case of existential perfect uses by McCawley (1981). This section examines these distinct interpretations of the perfect, i.e. resultative, existential, and continuative perfect readings, and how they have been categorized in previous studies.

Many scholars describe those different interpretations as deriving from different semantic representations (Kamp and Reyle (1993); Michaelis (1998) and others). Some scholars assume a trichotomy among resultative, existential, and continuative perfects (Michaelis (1998) and others), while others assume a dichotomy between continuative perfects and non-continuative (existential) perfects (Mittwoch (1988) and others), as shown in Table 2.1. Some studies focus on the difference between resultative perfects and existential perfects (Moens and Steedman 1988; Michaelis 1998), while others focus on the difference between continuative perfects and non-continuative perfects (Mittwoch 1988; Iatridou *et al.* 2003). In addition, scholars do not necessarily agree on what is considered to be a resultative perfect use or an existential perfect use.

One of the main purposes of this thesis is to determine what is exactly encoded in the meaning of the perfect and what is contributed by pragmatics. It is therefore important to determine whether the distinct readings of the perfect are due to separate meanings or are derived from a single meaning. The following subsections discuss these previous classifications of the interpretations and show that the classifications are not *semantically* grounded.

2.2.1 Resultative perfect readings: two types of resultant state

The resultative perfect reading in sentence (2.5) (=(2.1)) refers to a direct resultant state of a past event (McCawley 1971). That is, the direct resultant state of the event described in the sentence radical, the state of the speaker having the flu in sentence (2.5), holds at a present time.

(2.5)   I've caught the flu.

Since McCawley (1971), the use exemplified in sentence (2.5) has been called a 'resultative perfect' use. However, there are two types of resultant states of a past event. One is a direct resultant state illustrated in sentence (2.5), where the resultant state is entailed in the perfect sentence because of the lexical properties of the base eventuality description. That is, if someone catches the flu, the direct resultant state of the event, his/her having the flu, is entailed. The other type of resultant states is indirect resultant states of past events, where the state can be considered to result from the past event but is not entailed by the perfect sentence. For example, the state of Mike knowing about the best Buffalo wings is not entailed in the perfect sentence (2.6) but is a resultant state of the past event of Mike living in Buffalo.

(2.6)   Mike has lived in Buffalo. He knows where we can eat the best Buffalo wings.

Some scholars only use the term 'resultative perfect' when an entailed resultant state holds at present, whereas others use 'resultative perfect' when any direct or indirect resultant state holds at present. If the entailed resultant state of a prior event denoted in the perfect form

('Target state' in Parsons (1990))[3], e.g. the speaker having the flu in sentence (2.5), does not hold at present or if the resultant state is not entailed as seen in sentence (2.6), the use of the perfect is often considered to be an existential or other kind of perfect use (McCawley 1971; Kiparsky 2002). For these authors, resultative perfect uses are only available when a perfect sentence entails the resultant state.[4]

Some scholars suggest that the English present perfect cannot be felicitously used as a resultative perfect when its entailed resultant state does not hold or is unavailable. For example, Moens (1987) claims that process expressions such as *work in the garden* normally cannot occur in the perfect unless they are coerced into a culminated process. Coercion is a reinterpretation process which is often triggered when the co-occurrence of two constituents or elements conflict in their co-occurrence restrictions and reinterprets either one of the conflicting elements to meet the restriction. Therefore, Moens (1987) suggests that (2.7) normally sounds odd without coercion. Furthermore, according to Steedman (2002), sentence (2.8) also sounds odd because the entailed resultant state is cancelled.[5]

(2.7) #I have worked in the garden.

(2.8) I have lost my watch (#but I have found it again).

However, the claim that resultative perfect readings are not available when no entailed resultant state is available nor holds (Boogaart 1999) is not consistent with the view of other

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[3]Parsons (1990) uses the expression 'resultant state' differently, as we will see in Section 2.3.2.

[4]A similar way of categorizing resultative readings of Japanese perfect sentences is widespread in previous research on the Japanese perfect markers *te-i-*, as will be discussed in Section 4.2.

[5]A similar observation is made in Boogaart (1999).

scholars. Depraetere (1998) argues that the resultative interpretations associated with English present perfect sentences can derive either from resultant state entailments or conversationally implicated resultant states. Those possible resultant state propositions that are derived from a present perfect sentence are understood to hold at the present time. In sentence (2.9) the resultant state entailment is (2.9a), while conversational implicatures are shown in (2.9b):

(2.9)   Susan has watered the plants. (resultative perfect)

    a. The plants have been watered.

    b. The plants do not need to be watered straight away.

       Susan must be recovering as she has managed to water the plants.

       The plants are likely to die as Susan always gives them too much water . . .

    c. No, she hasn't.

Resultant state entailments are not required to get conversationally implicated resultant states, as seen in the following:

(2.10)   i. He has lived in London.

      a (No entailed resultant state is available.)

      b He knows the place very well.

        That is why he receives letters from England (Depraetere 1998:p.610).

   ii. No, he hasn't.

Example (2.10i) is an atelic sentence and it does not linguistically entail resultant situations.[6] However, a resultant state can be inferred through cancelable conversational implicatures as in (2.10b). That we are dealing with conversational implicatures is justified by the facts that these propositions are cancelable and that they are not in the scope of negation when the content of a sentence is negated in the following utterance. That is, the implicatures in (2.9b) and (2.10ib) can be cancelled after they are implicated by sentences (2.9) and (2.10i). Even when sentences (2.9) and (2.10i) are negated by the following utterances (2.9c) and (2.10ii), respectively, the conversational implicatures in (2.9b) and (2.10b) are not negated even though they may loose some of their credibility, while the resultant state entailment in (2.9a) is negated by the negation (Depraetere 1998).[7] The perfect uses in sentence (2.10i) or in sentence (2.9) when it receives the readings in (2.9b) have often been regarded as existential readings.[8] However, it is clear that they implicate resultant states. The infelicity of sentence (2.8), repeated as (2.11), seems due to the difficulty of thinking of a resultant state of loosing and then finding a watch and the inability of the English perfect to describe such temporally ordered sequences of events[9]

(2.11)   I have lost my watch (#but I have found it again).

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[6]The state which is logically entailed from an occurrence of an event will be discussed in Section 2.3.2.

[7]Note that conversational implicatures here are implicatures based on the speaker and hearer's world or cultural knowledge and roughly equivalent to R-implicatures in Horn (1984); Horn (2001) or I-implicatures in Levinson (2000), as I will discuss in Chapter 3. It is known that another type of implicatures, i.e. Q-Implicatures, do not survive when a sentence is logically or metalinguistically negated (Horn 1985; Horn 2001).

[8]These uses are also called 'experiential perfects' (Dahl 1985).

[9]The past tense, but not the present perfect, is usually used to describe a temporal sequence of events, as will be discussed in Chapter 4 and Chapter 6.

Sentence (2.7) and the first clause in (2.8) sound fine in the following context (the descriptions of the implicated resultant states are underlined).

(2.12) I have worked in the garden. <u>You should do the dishes</u>.

(2.13) I've lost this watch, <u>which is why I have another one</u>. ('This watch' refers to the watch the speaker wears.)

Sentence (2.13) can be used when 'this watch' refers to the watch which the speaker lost in the past but found later after the second watch was purchased. The speaker has two watches now, and the first watch is present in front of the speaker and the addressee. The context cancels its entailed resultant state, i.e. the state of the watch missing.[10] Moens (1987) also argues that the oddity in sentence (2.11) (=(2.8)), in fact, comes from the denial of the consequence which addressees can most easily think of from the event of loosing a watch.

Moens (1987) and Moens and Steedman (1988) recognize the resultative perfect readings for activity sentences as well when the descriptions they convey are first coerced into a culminated event and the perfect introduces the consequent state of the culminated event.

The purported distinction between resultative perfects and non-resultative perfects does not derive from differences in aspectual types of the event described in the base eventuality description. Perfect sentences with telic base eventuality descriptions such as (2.11) or (2.9) can have both entailed and non-entailed resultative perfect interpretations. There is no

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[10]Some native speakers of English think that example (2.13) is marginal without the adverb *before* in the first clause. Another example (2.70b) will be discussed below.

linguistic clue to determine which interpretation, an entailed resultative or non-entailed re-sultative perfect reading, can obtain in this case. Perfect sentences with atelic eventuality descriptions such as (2.12) can also have resultative perfect interpretations. If the difference between those two interpretations could be attributed to the *semantic* difference between re-sultative (i.e. entailed) and non-resultative (i.e. non-entailed) meanings of perfects and if the only possible resultant state of a resultative reading must be entailed by the occurrence of the base eventuality, sentences with atelic eventuality descriptions (i.e. without entailment) such as example (2.12) or sentences whose contexts cancel the entailment of the base eventuality such as example (2.13) would not be able to have resultative readings.

Both of the two readings, the entailed resultant state reading in sentence (2.9a) and the non-entailed resultant state reading in sentence (2.10) or (2.12), fall within a standard semantic notion of resultativeness, namely, the description of a resultant state that results from earlier events. Distinguishing those two readings semantically is not conceptually warranted when both readings involve states that result from the occurrences of the base eventualities. That is, one type of resultant state is directly entailed by the occurrence of a described eventuality while the other type is not directly entailed but is a resultant state which can be caused by it nonetheless. However, because both types are available in examples such as the first clause in (2.13), where the occurrence of the described event can entail a resultant state, hearers cannot decide which type of resultant state is intended without more information than the linguistic content encoded in the clause. In the case of (2.13), additional information is provided in the

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second clause, so that hearers can choose a non-entailed resultative reading such as 'That is why I have another watch.' Even in the case of entailed resultative readings, hearers still rely on their general world knowledge that the consequent state entailed by the occurrence of the event of loosing a watch would continue for a while to choose an entailed resultative reading such as 'my watch is missing' and such readings will not arise whenever they conflict with what the hearer knows.[11] Since the world knowledge needed to determine which of the two resultant readings is at play is not encoded in a perfect clause, the choice between the two readings is not based on a semantic difference between two distinct meanings of the perfect.

2.2.2   Existential perfect readings

The previous section has argued that both the entailed resultative perfect reading and the non-entailed resultative reading fall under the same conceptual notion of resultativeness and that the difference between them can be contextually determined. Some scholars categorize the non-entailed resultative use as existential perfect uses, but the difference between resultative and existential perfects has been characterized by the presence of two distinct implications, i.e. a resultant state implication as just discussed and a 'present possibility' requirement, respectively (McCawley 1971; Michaelis 1994; Michaelis 1998). 'Present possibility' in existential perfects was originally defined as the presupposition that the subject of existential perfects should be alive or exist so that it is possible for the event to occur again,[12] as the oddness of

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[11]I will discuss this type of general knowledge in Section 3.4.

[12]The observation that the subject should be alive or exit was originally made by Curme (1935).

sentence (2.14) illustrates.

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

More generally, it is now widely believed that the acceptability of existential present perfects is affected by whether interlocutors can construe the event denoted by the base eventuality description as repeatable. For example, (2.14) is acceptable if it follows the utterance 'How can you say that Princeton is a cultural backwater?', because the event category at issue can be construed as events of "Princeton-visiting by a luminary" (Michaelis 1998:242). The notion of 'present possibility (or replicability)' has been claimed to capture the low acceptability of (2.14) (McCawley 1971; Inoue 1979; Michaelis 1998).

A problem with the claim that 'present possibility' is a presupposition which distinguishes existential perfects from other perfect uses is that 'present possibility' does not behave like typical presuppositions. That is, in contrast to typical presuppositions, 'present possibility' cannot be negated by using metalinguistic negation (Horn 1985; Horn 2001). Contrast the felicity of sentence (2.15b) with the infelicity of sentence (2.16b) (Nishiyama and Koenig 2004).

(2.15)   a. #The king of France is bald. (Presupposition: There is a king of France.)

          b. The king of France is not bald, because there is no king in France.

(2.16)   a. #Einstein has visited Princeton. (Putative presupposition: Einstein is alive.)

          b. #Einstein has not visited Princeton, because he is not alive. (He may have visited Princeton when he was alive, though.)

Sentence (2.15a) has a presupposition that there is a king in France, which is not satisfied and therefore leads to the infelicity of the sentence. Sentence (2.15b) is felicitous because the presupposition is negated by the metalinguistic use of the negation. In contrast, 'present possibility' in the perfect sentence (2.16a) cannot be felicitously negated by metalinguistic negation as seen in sentence (2.16b). It, thus, seems that the replicability of some event which is pragmatically related to the base eventuality description in existential perfect uses does not have the status of a typical presupposition such as that of (2.15a).

What kind of status a typical presupposition but not the replicability requirement has, or in other words, what can be negated by metalinguistic negation, is discussed in the analysis of metalinguistic negation in Koenig and Benndorf (1998). They show that the target of metalinguistic negation is the hearer's understanding of part of the utterance, i.e. what was said, on either phonological, syntactic, or semantic grounds, while metalinguistic negation cannot negate what is not part of the utterance but part of world knowledge or cultural beliefs. If they are correct, the fact that the present possibility cannot be metalinguistically negated suggests that the present possibility constraint is not semantically part of the utterance. It, therefore, cannot characterize the difference between resultative perfects and existential perfects. 'Present possibility' is not a semantic constraint that can distinguish existential perfects from resultative perfects in English and can explain the infelicity of (2.16a); it is just an epiphenomenon of some perfect uses.

Identity tests (conjunction reductions, pronominalization, 'the same thing'-test, and so on) have sometimes been suggested as tests for the ambiguity of the perfect between a resultative and an existential reading (McCawley 1971; Michaelis 1994; Michaelis 1998). Consider, for example, sentences (2.17) - (2.19).

(2.17)   Max has been fired.

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

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

Sentence (2.17) is argued to be ambiguous, not vague, between a resultative and existential reading because sentence (2.18) does not allow a crossed-interpretation. That is, sentence (2.18) cannot be used to assert both that Max was fired at some point and that Fred is currently out of work as a result of having been fired. However, the unreduced sentences do not allow the crossed interpretation either, as sentence (2.19) shows. The absence of a crossed interpretation of sentence (2.18) cannot therefore be attributed to an identity-of-sense constraint on VP ellipsis (see Zwicky and Sadock (1975)). The absence of crossed interpretations must be due to some pragmatic factors, rather than to semantic ambiguity, as McCoard (1978) already noted.

More generally, it seems that a clear-cut semantic distinction between resultative and existential perfects cannot be found in English. Many previous studies reduce either the existential perfect to the resultative perfect or the resultative perfect to the existential perfect or give them a single semantic representation (McCawley 1981; Moens and Steedman 1988; Par-

sons 1990; Kamp and Reyle 1993; Smith 1997) and contrast this reading with the continuative perfect, a classification to which I now turn.

2.2.3   Continuative perfect readings

Many scholars have argued that continuative perfect readings are distinguished from other perfect readings in that the base eventuality is a state and that the state started in the past and continues to hold at present, as seen in sentence (2.20) (=(2.3)).

(2.20)   I've known Max since 1960.

Inoue (1975); Inoue (1978); Inoue (1979) have shown that there is no clear evidence to distinguish continuative and non-continuative (existential) perfect readings in terms of their behaviors such as their co-occurrence restrictions with adverbial phrases.

   Even the distinction between continuative and non-continuative readings is not so clear as it appears. Some scholars suggest that a continuative perfect often implies that states denoted by stative verbs do not hold any more without durational adverbial phrases such as *since*- or *for*-phrases as seen in the text in (2.21) (McCoard 1978; Michaelis 1998). Michaelis (1998) proposes that continuative perfects express the recent termination of a state. She cites the following text.

(2.21)   My nails have been decent. Today I bit them off. My skin has been fine. Today it broke out. My demeanor has been poised and professional. Today I spilled coffee on my hair .... (Michaelis 1998:240)

The termination of the states expressed in the perfect such as the state of my nails being decent, my skin being fine, and my demeanor being poised and professional, is contextually implied in (2.21).

Some analyses favoring the ambiguity between a continuative perfect and an existential (or non-continuative) perfect simply assume that durational adverbials are obligatory for a continuative perfect reading to arise (Mittwoch 1988). According to this view, the perfect uses in (2.21) would not be considered continuative perfects because they do not include durational adverbials and because the stative base eventualities are said to have terminated.

However, the perfect without durational adverbials can also have the continuative reading that the state denoted by the base eventuality continues to hold, as seen in sentence (2.22).

(2.22) Ken has been sick.

    a. Ken is still sick.

    b. Ken is not sick any more.

Sentence (2.22) can be interpreted either as a continuative or an existential perfect. Under a continuative reading, sentence (2.22) says that for all time intervals from a given point in the past to the present Ken's sickness holds. Under an existential reading, all that sentence (2.22) is saying is that there exists one or more occurrences of the denoted situation during the period from a given point in the past to the present.

Differences in the position of durational adverbials in continuative and non-continuative perfect uses is also often mentioned as one piece of evidence for a structural ambiguity be-

tween continuative and non-continuative (or existential) perfects (Dowty 1979; Mittwoch 1988; Iatridou *et al.* 2003; Portner 2003). Dowty (1979) suggests that when a *for*-phrase is preposed, the only available interpretation is a continuative interpretation, as seen in sentence (2.23b), and further argues that this is evidence for a structural ambiguity between continuative and existential perfects.

(2.23) a. John has lived in Boston for four years.

  b. For four years, John has lived in Boston. (Dowty 1979:343)

According to Dowty (1979) and some researchers following him, sentence (2.23a) is ambiguous between a continuative and an existential reading. That is, it has both the reading that John still lives in Boston (continuative perfect) and the reading that John lived in Boston in the past but not any more (existential perfect). In contrast, sentence (2.23b) has only a continuative perfect reading (Mittwoch 1988; Iatridou *et al.* 2003; Portner 2003). However, this distinction is no more than a tendency. Existential perfect readings are possible even when *for*-phrases are preposed in some cases. For example, sentences (2.24) are acceptable among native speakers of English I consulted, given the context where the speaker and the hearer are talking about Matthew's field work experiences, and receive an existential perfect reading.

(2.24) For one year, Matthew has lived in Papua New Guinea. For three months, he has lived in Malaysia.

  — (Existential perfect reading)

At least one of the sentences in (2.24) must receive an existential reading, since it is impossible that both sentences in (2.24) receive a continuative reading, as Matthew cannot live in two places at the same time.

I conclude that the distinction between continuative and existential perfect readings does not stem from a structural ambiguity reflected in the possible positions of the durational adverbial phrases.

The contrast between sentence (2.25) and sentence (2.26) has also sometimes been adduced to support the claim that perfects are ambiguous between continuative and existential readings (Brugger 1998; Iatridou *et al.* 2003). According to this view, existential perfects such as sentence (2.25) allow both the simultaneity of the events described by the main and embedded clause or the precedence of the event described by the embedded clause. In contrast, continuative perfects such as sentence (2.26) are claimed not to allow the simultaneity of the events described by the main and embedded clauses. That is, Ken's claim in (2.26) cannot be simultaneous with his wife's sickness. His wife has to have recovered before Ken's claim that his wife was sick.

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

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

However, all native English speakers I consulted disagreed. Both continuative perfect uses as well as existential perfect uses allow both simultaneous (overlapping) and shifted readings.

This section has shown that the English perfect has several interpretations but that there is no clear evidence that those interpretations correspond to two or more meanings or structures contra many previous proposals. The next section looks at how previous studies have explained these different uses of the English perfect.

2.3   Previous analyses: Why the perfect, and not the past tense?

Adequate analyses of the perfect should not only be able to explain all the interpretations the perfect can receive but also why we use a perfect form rather than a past tense when both introduce an event that occurred in the past. This section shows how previous studies have analyzed the readings of the perfect discussed in the previous section and attempted to explain its choice over that of a past tense form. I will review three types of analyses. One type of analysis of the perfect defines the meaning of the perfect temporally; as a result, the meaning of the perfect is often indistinguishable from the meaning of a past tense. Another type of analysis regards the meaning of the perfect as introducing a prior event and a state holding at present. Proponents of this view do not agree on the nature of the state introduced by a perfect form. The third type of analysis either defines the basic meaning of the perfect temporally like the first type or defines it as introducing a state like the second type, but also provides functional explanations of the use of the present perfect in discourse. This section shows that previous proposals have not given a satisfactory account of all the various interpretations of the perfect and that they can account for some of the interpretations of the

perfect, but not all of them.

2.3.1   Temporal views

Whether the meaning of the perfect is taken to be purely temporal or not, part of the meaning of the perfect has been defined by using the Reichenbachian notions of E ('point of event'), R ('point of reference'), and S ('point of speech') (Reichenbach 1947) or variations on them. The meaning of the perfect is then, partly or wholly, defined in terms of relations among those time intervals (or points of time in Reichenbach (1947)).

Extended Now Theory

McCoard (1978) discusses problems with two dominant theories of the perfect before him, i.e. what he calls 'Current Relevance theory' and 'Indefinite Past theory', and tries to remedy their problems in his 'Extended Now Theory.' In the Current Relevance theory, the perfect describes a state that results from a past event (Jespersen 1931). The Current Relevance theory can explain the use of the present tense, McCoard argues, but involves inferring a result of a past event, an inference which is not the meaning of the perfect. In fact, the inference can be included in the meaning of the perfect in a sense I will explain in the next chapter, but it is true that the nature of the inference is not fully specified in the meaning of the perfect and must be carried out pragmatically. More importantly, the notion 'current relevance' is not clearly defined. Any utterance in the past tense is, presumably, currently relevant too.

In the Indefinite Past theory, on the other hand, the perfect introduces a past event which is not specifiable in terms of the time of the event as opposed to a past tense (Allen 1966). The Indefinite Past theory can explain the difference between the present perfect and a past tense but counterexamples exist where the time of the event is definite and specified by a past time adverbial as seen in sentences (2.27) - (2.29).

(2.27)   From last Friday up till now, I have had nothing but problems.

(2.28)   I have gone back to visit two months ago, last weekend, and just yesterday (so far).

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

In contrast, McCoard's 'Extended Now Theory' (XN theory) says that the event denoted in the present perfect form falls within the period starting at a past time and stretching into the present (Extended Now), which would appear to account for the use of the present tense on the auxiliary without resorting to the notion of 'current relevance' and without introducing an indefinite constraint regarding the time of the event. Dowty (1979:342) formulates McCoard's 'Extended Now' (XN) within his interval semantics as follows:

(2.30)   XN (t) is true at $< w, i >$ iff i is a final subinterval of the interval denoted by t.

In (2.30), t is an Extended Now interval at i in the world w. In the present perfect, i corresponds to an utterance time interval (i.e. *now*) and an extended now interval t is a time interval starting at sometime in the past and ending at *now*. The meaning of the perfect expresses that the event denoted by the verb in the perfect form and its arguments occurs within

a subinterval t' of an extended now interval t. That is to say, the base eventuality in a present perfect falls within an 'Extended Now.'

The XN theory further argues that past time adverbials such as *yesterday* are contradictory with present perfects because any part of the time interval denoted by *yesterday* cannot be an Extended Now (Dowty 1979:345). Therefore, sentence (2.31) is not acceptable.[13]

(2.31)   *Kathy has left yesterday.

Studies which adopt the Extended Now Theory or a variation of it include Bennett and Partee (1978), McCoard (1978), Dowty (1979), Richards (1982), Heny (1982), Mittwoch (1988), Iatridou *et al.* (2003), Portner (2003), among others.

As Klein (1992) points out, the main problem with the XN theory is that it cannot distinguish the present perfect and a simple past tense. This is because if an Extended Now is simply a time interval defined as starting from a past time and extending to a present time (speech time), there is such an interval in the simple past tense too. Clearly for there to be a distinction between the present perfect and a simple past tense in this view, the length of the extended now interval must be limited. Indeed, the XN theory explains that sentence (2.33) sounds odd because the event of Gutenberg's discovery of the art of printing does not fall within an "extended now" interval, while sentence (2.14), repeated as sentence (2.32), is acceptable depending on the context because the event of Einstein visiting Princeton can fall

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[13]Dowty (1979:373) mentions that the time denoted by a series of past adverbials conjoined with *and* in sentence (2.28) can be considered an Extended Now. However, he does not give any account for other present perfect examples co-occurring with past time adverbials such as (2.29).

within an "extended now" (McCoard 1978; Portner 2003). However, the "extended now" interval seems to be able to be quite long. Sentence (2.34), for example, sounds natural in a course of the history of philosophy, even though the event of Plato's discovery happened earlier than Gutenberg's discovery. Another example (2.35) can be used in the description of the history of China and Marco Polo's writing is also earlier than Gutenberg's discovery. Therefore, if the time span of the "extended now" interval is restricted, it does not seem that the restriction is temporal.

(2.32)   Einstein has visited Princeton. (McCawley 1971) (=(2.14))

(2.33)   ??Gutenberg has discovered the art of printing. (McCoard 1978; Portner 2003)

(2.34)   Plato has discovered the existence of a priori knowledge. (Attested)[14]

(2.35)   One of them, Marco Polo, has left a vivid (if one-sided) glimpse of Mongol China. (Attested)[15]

Another drawback of the XN theory is that it is not clear why the auxiliary *have* occurs in the simple present if the perfect does not describe a state or is not a stativizer. As is well-known, the English present tense is incompatible with episodic readings of event descriptions, except in speech acts or sports caster context (Michaelis 1998). Episodic readings of event descriptions describe a particular/specific occurrence of an event.

(2.36)   a. Mike drinks a lot of beer.

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[14]http://www.fiu.edu/~hermanso/over9
[15]http://www.historyworld.net/wrldhis/PlainTextHistories.asp?groupid=179HistoryID=aa21

b. ?? Mike drinks a lot of beer because today is his 21st birthday.

c. Mike has drunk a lot of beer.

As seen in sentences (2.36), the present tense is compatible with non-episodic or habitual readings, e.g. sentence (2.36a) (habituals are often considered to be stative (Brinton 1987)); while it is not compatible with an episodic event reading in sentence (2.36b). However, when the utterance is in the present perfect as seen in sentence (2.36c), it describes an episodic past event of Mike drinking a lot of beer and the auxiliary is in the present tense. Because there is no constraint on the use of the present with state descriptions, the fact that the perfect auxiliary *have* can bear the present tense in episodic contexts is immediately accounted under analyses of the perfect which hypothesize it introduces a perfect state (see Section 2.3.2). In contrast, the use of the simple present tense on the auxiliary *have* remains unexplained in the XN theory.

It should also be noted that the incompatibility of past time adverbials with English present perfects, which is often argued to favor the XN Theory, does not extend to other perfects crosslinguistically. For example, German, Dutch and Japanese perfects can co-occur with past time adverbials, as seen in sentences (2.37) - (2.39), respectively.

(2.37) *Gestern   um zehn habe ich den Brief abgeschickt.*
       Yesterday at   ten   have I   the letter sent off

       '%$_{Ger}$I have sent off the letter at ten yesterday.' (Klein 2000)

(2.38) *John is gisterenochtend   om 10 uur   vertrokken.*
       John is yesterday morning at   10 hour left

42

'%_{Dut}John has left yesterday morning at 10 o'clock.'(Boogaart 1999)

(2.39) *Kare-wa kyonen   Kyoto-ni i-   -tte-i- ru.*
        He-TOP last year Kyoto-to go- -TE-I- NONPAST

        '%_JHe has been to Kyoto last year.'[16]

Of course, it is possible that German, Dutch or Japanese present perfects might differ in their semantics from the English perfect. In particular, the German *perfekt* is sometimes considered ambiguous between a present perfect and a past tense. However, Dutch and Japanese perfects do not seem ambiguous between a present perfect and a past tense (see Boogaart (1999) and Chapter 4) and their co-occurrence with past time adverbials would remain to be explained.

Furthermore, as already mentioned, English present perfects can co-occur with past time adverbial phrases in certain contexts (McCoard 1978) and in certain dialects such as Australian English (Engel and Ritz 2000), as seen in sentence (2.40).

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

Klein (1992, 1994, 2000)

Klein presents another theory of the perfect that does not assume perfects introduce states (Klein 1992; Klein 1994; Klein 2000). Klein (1992) introduces three types of time spans, the time of the situation (T-Sit), the topic time (TT), and the time of utterance (TU). T-Sit and TU roughly correspond to Reichenbach's E (Event Time) and S (Speech Time), respectively. TT plays a

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[16]'%_{Ger}', %_{Dut}, and '%_J' mean that the English translations are not acceptable in English but the corresponding sentences are acceptable in German, Dutch, and Japanese, respectively.

similar role to Reichenbach's R (Reference Time), but it is different. TT is an interval for which an assertion is made. Klein discusses that aspect can be captured as a temporal relation between T-Sit and TT, while tense is a temporal relation between TT and TU. The meaning of the perfect says that TT occurs after T-Sit, and TT includes TU when the perfect is in the present tense. In Klein's view, therefore, all that the perfect introduces is a post- situation temporal interval. However, it seems that the very notion of Topic Time (TT)— an interval about which an assertion is made—, requires something like an eventuality (possibly a state) to 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 the perfect as stativizer theories.

2.3.2 Perfect as stativizer views

Many scholars consider that the perfect not only encodes a temporal relationship between some time intervals but also is a stativizer, i.e. it introduces a base eventuality that precedes a reference time interval *and* a state which is somehow related to the base eventuality and holds at reference time. Consider example (2.41).

(2.41) I have lost my key.

The perfect in sentence (2.41) introduces the past occurrence of the base eventuality, the event of the speaker losing her key and, under one reading, the present state of the speaker not having her key which is related to (i.e. resulted from in this case) the occurrence of the base

eventuality.

Even those who advocate a temporal view of the perfect meaning often admit some stativity of the perfect, but they tend to attribute that stativity to pragmatics or to adverbials co-occurring with the perfect (McCoard 1978; Mittwoch 1988). Their reluctance to include the stativity in the semantics of the perfect comes from their criticism of the Current Relevance theory, which can be considered an earlier version of the perfect as stativizer view.[17] I will repeat McCoard's (1978) points here. First, there is no clear definition of the notion 'current relevance.' A past tense sentence can also be currently relevant. Secondly, McCoard believes that the inferential process Current Relevance theory would require in order to arrive at a resultant state interpretation is not part of the meaning of the perfect. According to McCoard (1978), the stative nature of the perfect is due to some type of ineffable state of mind of the speaker evoked by the perfect. However, if such a mind state is consistently evoked by the perfect form and if it is different from the type of mind state evoked by a simple past tense, for instance, we should be able to incorporate the difference in their semantics.[18]

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[17]See McCoard (1978) or Binnick (1991) for details on the Current Relevance theory.

[18]One possible explanation for the stative nature of the perfect within temporal views may be Horn's division of labor (Horn 1984; Horn 2001). It can be assumed that the past tense form in sentence (i) is an unmarked form while the present perfect in (ii) is a marked form to describe the situation and that the marked form evokes the speaker's state of mind in the parenthesis. However, the evoked state of 'I don't have the key' seems very typical and an unmarked state after the past event of the speaker loosing a key, and sentence (i) can also evoke that same state. Since the situations expressed by a marked form and an unmarked form have to be complementary according to Horn's division of labor, the difference between the present perfect and the past tense cannot be explained this way.

In addition, in the case of continuative perfect sentences (iii) and (iv), it is not clear which form, the simple past tense or the simple present tense (or the past progressive or the present progressive), should be considered the unmarked form to express these situations.

   i. I lost my key.

The stativity of the English perfect: How to test for stativity

This section shows how the stativity of the perfect can be tested. Herweg (1991a, b) discusses the distinction between events and states and their corresponding predicates, eventive and stative sentence radicals. In sentences such as *Ken has caught the flu* or *Ken has been busy*, the eventive sentence radical *Ken_catch_the_flu* describes an event, while the stative sentence radical *Ken_be_busy* describes a state.

A state radical is a homogeneous predicate, while an event radical is a heterogenous predicate. Homogeneity here reduces to distributivity and cumulativity (Bach 1986; Herweg 1991a; Herweg 1991b). That is, every part of a quantity of a state of type S is also a quantity of a state of type S (distributivity) and the sum of two quantities of a state of type S is again a quantity of a state of type S (cumulativity). In contrast, no part of an event of type E is also an event of type E (Herweg 1991a:380-81).[19]

However, when we discuss the stativity of the output of an aspectual operator such as a progressive, habitual, or perfect operator, it is not so obvious whether the output is a state or an event. Herweg (1991a, b) proposes some criteria to distinguish event-predicates and state predicates such as countability for events, which can be tested by the possible co-occurrence of

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    ii. I have lost my key. (I don't have the key.)

   iii. I have lived in London for three years. (I live in London.)

   iv. It's been raining for three hours.

[19]In this definition, there is no distinction between state-type predicates and activity- or process- type predicates except for a minimum duration requirement on process-type predicates.

count adverbials with event radicals, and the possible co-occurrence of time-span adverbials (with event radicals) or durational adverbs (with state radicals). However, applying some of those criteria to the perfect is tricky because the perfect also asserts the existence of a prior event, which can satisfy tests for eventhood. Tests for the eventhood can be therefore satisfied by the introduced base eventuality, as seen in sentences (2.42) - (2.43):

(2.42)   He has been to Germany three times.

(2.43)   He has written a dissertation in one month.

In sentences (2.42) - (2.43), the count adverbial *three times* and the time span adverbial *in one month* are possible because the base eventive eventualities are also introduced.

Tests for statehood also seem to be satisfied by sentences in the perfect when the base eventuality is a state or a process. As seen in the following sentences (2.44) - (2.45), present perfect sentences can co-occur with durational adverbials *for-* phrases:

(2.44)   He has lived in Buffalo for three years.

(2.45)   Chris has taught English at UB for three years.

(2.46)   He has forsaken me for years.

(2.47)   Max has visited the hospital for years. (Max is a service dog.)

Several other phenomena have been suggested as evidence for the stativity of progressive or habitual sentences. However, some of them do not provide very clear evidence despite the fact that they seem to apply to the perfect at first glance. Those phenomena include the

co-occurrence of the perfect with *already* (Mittwoch 1988; Bertinetto 1994), and the incompat-

ibility of the perfect with imperative forms (Bertinetto 1994).

For example, the ability to co-occur with *already* is true of both a stative sentence and a

perfect sentence as seen in sentences (2.48) - (2.49) (Mittwoch 1988).

(2.48)   John is already in the office.

(2.49)   John has already worked for eight hours.

However, Michaelis (1998) observes that *already* does not need to occur with stative sentences,

as seen in examples (2.50) - (2.51).

(2.50)   I've already eaten.

(2.51)   I already ate.

The impossibility of stative sentences to occur in the imperative is not absolute, as seen in

sentence (2.52), and it is thus possible that the imperative does not occur with the perfect for

a different reason than its stativity.

(2.52)   Be quiet.

In brief, it is not obvious how to demonstrate that the perfect introduces a state besides a prior

eventuality.

This thesis adopts four criteria to test whether the perfect is stative. The first criterion is

its ability to co-occur with the present-time adverb *now* (Michaelis 1998; Ismail 2001). *Now*

occurs with a subset of states. The second one is its ability to co-occur with *seem to* (Mittwoch

1988). The third is its ability to co-occur with present tense morphology (Michaelis 1998). The fourth one is the interpretation that results when a clause in the perfect is modified by a *when*-clause (Herweg 1991a; Herweg 1991b; Michaelis 1998).

The first criterion, the compatibility of the present perfect with present-time adverbs such as *now*, is based on the distributivity of states. That is, every part of a quantity of a state of type S is also a quantity of a state of type S (distributivity) (Herweg 1991a; Herweg 1991b). Therefore, the duration of a state can be narrowed down to any small quantity, i.e. the utterance time interval *now*.

(2.53)   Kevin lives in Buffalo now.

(2.54)   Kevin has gone to Japan now.

(2.55)   Kevin drinks coffee now.

As shown in (2.53) - (2.55), both the stative sentence in (2.53) and the present perfect sentence in (2.54) can co-occur with the present temporal adverb *now*, while the event sentence describing a particular event, not habitual recurrent events, in (2.55) sounds odd with a present temporal adverb in the present tense.[20]

The second criterion is the perfect's co-occurrence with *seem to*, which only takes stative predications as its complement. This criterion is suggested by Mittwoch (1988) in order to discuss the stativity of the progressive. See the following examples:

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[20]Not all states welcome *now* (Ismail 2001) and non-temporal uses of *now* are not considered here (Schiffrin 1987).

(2.56) John seems to be running.

(2.57) #John seems to run.

(2.58) John seems to have run.

(2.59) John seems to be rich.

(2.57) is only good when it receives an habitual reading, while the progressive and a stative predicate after *seem to* are good, as seen in sentences (2.56) and (2.59), respectively (Mittwoch 1988). Although Mittwoch (1988) does not extend her discussion to the perfect, the perfect form in (2.58) sounds fine too.

The third criterion, the use of simple present tense inflection on *have*, is illustrated in the following contrast.

(2.60) Kevin writes letters.

(2.61) Kevin has written letters.

(2.62) Kevin is a good writer.

As discussed in the previous section, eventive sentences cannot be used in the present tense to describe an episodic event, except in speech acts or sports caster context (Michaelis 1998). Sentence (2.60) is acceptable only when it describes Kevin's habit of writing letters, not when it describes a particular writing occurrence. By contrast, sentence (2.61) describes a particular incident which happened in the past and yet still includes a present tense inflection just like the simple stative sentence in (2.62).

The final criterion is the temporal interpretations that are available when main clauses are modified by a *when*-clause (Herweg 1991a; Herweg 1991b; Michaelis 1998). As seen in the parallel between sentences (2.63) and (2.64), the situation described by the main clause, the state of Kevin being in the kitchen or Kevin studying is interpreted as starting before, or overlapping, the time of the event denoted in subordinate *when*-clauses. In contrast, when the main clause describes an event, as seen in sentence (2.65), the time of the event described in the main clause is not interpreted as starting earlier than the event described in the subordinate *when*-clause (Vlach 1981; Mittwoch 1988; Herweg 1991a; Herweg 1991b; Bertinetto 1994).

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

(2.64)   Kevin was studying when I arrived.

(2.65)   Kevin studied when I arrived.

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

The past perfect sentence in (2.66) behaves like the stative or progressive sentences (2.63) - (2.64), and unlike the eventive sentence in (2.65).[21] This is explained if there is a state of aftermath of the event described in the main clause (Michaelis 1998) which may start earlier than the event in the *when*-clause.

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[21]The following example has been used to argue that the event described in the main clause may be interpreted as starting earlier than the event described in the *when*-clause (Hinrichs 1986).

   i. When the Smiths threw a party, they invited all their old friends.(Hinrichs 1986:75)

However, the event of the Smiths inviting all their old friends seems to be part of the event of the Smiths throwing a party in example (i). Therefore, it does not show that an event described in a main clause can start earlier than an event described in a *when*-clause.

Some may argue that this last fact could be explained in a Reichenbachian semantics or temporal views of the perfect, i.e. as following from the different temporal relations among event time intervals, reference time intervals, and speech time intervals encoded in the past tense and the perfect. Temporal views may explain why the time interval of the base eventuality in the main clause in the past perfect in (2.66) 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 perfect, its event time precedes the reference time which is established by the event described in the *when*-clause, because event time precedes reference time in Reichenbachian or temporal views of the perfect (Reichenbach 1947; Klein 1994).[22] However, without mentioning a difference between stative and eventive sentences, this argument would not be able to explain the difference in interpretations between the other stative sentences (2.63) - (2.64) and eventive sentence (2.65). The temporal relation between event time, reference time, and speech time does not differ between event and states in Reichenbachian views in those cases, i.e. 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 *when*-clause in (2.65) whose temporal trace equals reference time while the state in the main clause does not in (2.63) - (2.64). The parallel between sentences (2.63) - (2.64) and (2.66) as well as the contrast between sentences (2.63) - (2.64) and (2.65) can be explained if we assume a difference between states

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[22]In Klein (1994) reference time roughly corresponds to Topic Time (TT) and event time to Situation Time (T-Sit).

and events and if the perfect introduces a state.

The evidence I just presented suggests that English sentences whose main verb is in the perfect form are stative. However, among those who assume that the perfect is a stativizer, there has been considerable uncertainty on both the nature of the state introduced by the perfect and its relation to the base eventuality. The following subsections look at three types of views on the nature of the state introduced by the perfect form and discuss problems with each of them.

Does the perfect introduce a state abutting on the base eventuality?

In Discourse Representation Theory (DRT), scholars have argued that the perfect introduces a state (s) (a perfect state) abutting on the base eventuality (e) (Kamp and Reyle 1993; de Swart 1998). According to this view, the perfect state s starts when the prior eventuality e ends, and there is a purely temporal abutting relation between e and s. Kamp and Reyle (1993) provide two distinct Discourse Representation Structures (DRSs) for perfects used with an eventive main verb and perfects used with stative main verbs. In both cases, the perfect introduces an event e and a state s.

First, let us take a look at the use of the perfect with eventive verbs.

(2.67)   Mary has met the president. (Kamp and Reyle 1993:570)

Figure 2.1 is a DRS for sentence (2.67). It introduces as its discourse referents an utterance time n, a reference time t, a state s, an event e, and entities x and y. Reference time t is utterance

$$
\boxed{
\begin{array}{c}
n\ s\ t\ x\ e\ y \\[4pt]
t = n \\
t \subseteq s \\
Mary(x) \\
e \supset\subset s \\
the\ president\ (y) \\
e : \boxed{x\ meet\ y}
\end{array}
}
$$
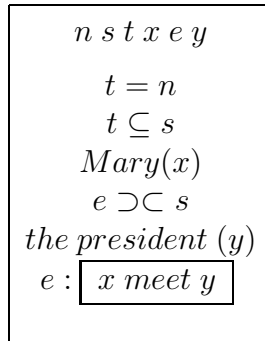
Figure 2.1: Kamp and Reyle's style DRS
Mary has met the president. (Kamp and Reyle 1993:573)

time n in the present perfect ($t = n$) and is temporally included in the temporal trace of the state s ($t \subseteq s$). e is the event described by the eventive base eventuality description and is in an abutting relation with the state s. That is, s starts at the very moment when e ends ($e \supset\subset s$). The relationship between e and s is purely temporal and the pastness of the described event e in the perfect derives from the temporal relation between e and s. There is no other constraint on the nature of the state s or the relationship between e and s.

Kamp and Reyle (1993) give a distinct, but similar DRS for the use of the perfect with stative verbs, as seen in Figures 2.2 and 2.3. When the base eventuality description describes a state (s'), the perfect introduces the event of starting a state ($e = beg(s')$) via the coercion operator 'beg'[23] for continuative readings or the event of ending a state ($e = end(s')$) via the coercion operator 'end' for existential readings, as well as a perfect state which is abutting on

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[23]See Section 2.2.1 for more details on coercion.

the event e, either the event of starting a state or ending a state ($e = beg(s')$ or $e = end(s')$). For example, sentence (2.68) has two readings, one is an existential perfect reading where Mary lived in Amsterdam for three years at some point in the past and the other is a continuative reading where Mary still lives in Amsterdam and the duration of Mary living in Amsterdam now amounts to three years. Figure 2.2 and 2.3 show the DRSs for those readings, respectively.

(2.68)   Mary has lived in Amsterdam for three years. (Kamp and Reyle 1993:579)

In Figure 2.2, the event of ending the state of Mary living in Amsterdam (e=end (s')) is introduced and it abuts on the perfect state s. The discourse referent mt refers to an amount of time. The function dur maps intervals and eventualities onto the amount of time they last (Kamp and Reyle 1993). In Figure 2.3, the event of beginning the state of Mary living in Amsterdam (e=beg (s')) is introduced, but there is no ending event. The embedded DRS which is negated represents the lack of ending of the state, i.e. no event of the state ending (s') precedes utterance time (n). Therefore, the state of Mary living in Amsterdam still continues.

De Swart (1998) also considers the perfect as a stativizing operator which takes any eventuality description and maps it onto a state as described in (2.69).

(2.69)   PERF:$\epsilon \rightarrow S$ (ϵ is the union of the set of states, the set of processes, and the set of events.)

The perfect, according to de Swart (1998), asserts the existence of both the eventuality e and its consequent state s which starts when the eventuality e ends. The relation between the prior eventuality and the perfect state is defined as an abutting relation in her definition too.

$$n \; t \; s \; x \; s'e \; mt$$

$$t=n$$
$$t \circ s$$
$$Mary \; (x)$$
$$e=end \; (s')$$
$$e \supset \subset s$$
$$three \; years \; (mt)$$
$$dur(s') = mt$$
$$s' : \boxed{x \; live \; in \; Amsterdam}$$
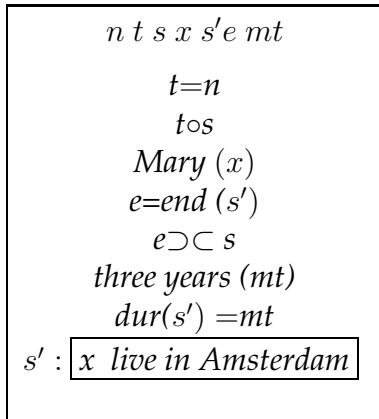
Figure 2.2: Existential reading
(Kamp and Reyle 1993:586)

$$n \; t \; s \; x \; s'e \; mt$$

$$t=n$$
$$t \circ s$$
$$Mary \; (x)$$
$$e=beg \; (s')$$
$$e \supset \subset s$$
$$three \; years \; (mt)$$
$$dur(s') = mt$$
$$s' : \boxed{x \; live \; in \; Amsterdam}$$

$$\neg \boxed{\begin{array}{c} e' \\ \hline e' < n \\ e' = end \; (s') \end{array}}$$
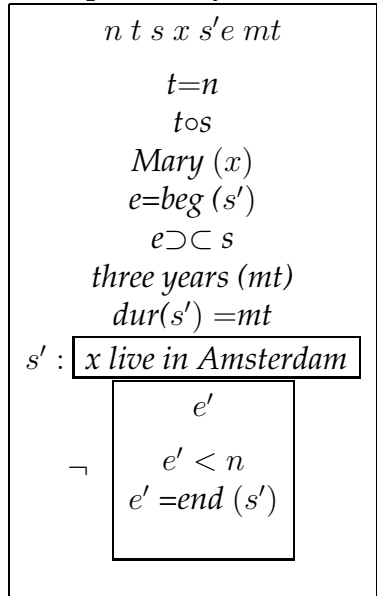
Figure 2.3: Continuative reading
(Kamp and Reyle 1993:587)

There are difficulties with both de Swart's (1998) and Kamp and Reyle's (1993) analyses of the present perfect. Whether explicitly mentioned or not, most analyses which adopt the perfect as a stativizer view, including de Swart's and Kamp and Reyle's analyses, commonly assume that possible perfect states reflect and therefore account for the interpretations which perfect sentences normally receive in the discourse context and without which the uses of the perfect sentences do not make sense or are difficult to make sense of, an assumption this thesis shares. For example, (2.70a), (2.70b), (2.70c), and (2.71a) are possible perfect states for (2.70) - (2.71) under those analyses, while (2.70d) cannot count as a perfect state in normal contexts. Their temporal definition of a perfect state s can account for an entailed resultative perfect reading such as (2.70a). However, it cannot generally account for implicated resultant states (Depraetere 1998) since implicated resultant states do not necessarily start when the described event ends. (2.70) can implicate the resultant state in (2.70b) or (2.70c) in certain contexts, for example, in the context where Ken is an athlete who is training for the next Olympic Games and the speaker is talking about the conditions of athletes while looking at Ken and other athletes training.[24] The state of Ken being behind in his training may start a while after Ken breaking his leg. The perfect state can even start earlier than the end of the base eventuality's occurrence, as seen in (2.71a). Sentence (2.71) can be uttered to implicate (2.71a) to help someone who is looking for a key. However, the event of the speaker seeing the key and the state of the key being in the room are not in an abutting relation. The state of

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[24]Note that in this context Ken's leg is not broken so that he can practice.

the key being in the room would typically start earlier than the event of seeing the key.

(2.70) Ken has broken his leg.

   a. His leg is broken (s)

   b. Ken is behind in his training (s).

   c. It is difficult for Ken to get in the team (s), ...

   d. #Susan is married (s)

(2.71) I have seen the key in the room.

   a. The key is in the room (s)

It is possible that the perfect state for sentence (2.71) is the speaker and hearer's epistemic states resulting from the event of the speaker seeing the key in the room, i.e. 'I know (or I think) that the key is in the room,' rather than (2.71a). In this case, the perfect state abuts on the base eventuality. However, the event of seeing does not have to be done by the speaker to implicate (2.71a). Take example (2.72).

(2.72) Mr. Smith has seen the key in the room.

Sentence (2.72) can also implicate (2.71a) or the state of the speaker knowing that the key is in the room, but neither the state of the key being in the room nor the speaker's epistemic state of knowing that the key is in the room abuts on the event of Mr. Smith seeing the key in the room. The state of the speaker knowing that the key is in the room should start when Mr. Smith reports the event of his seeing it.

Secondly, if the only semantic constraint on the perfect state is its temporal relation to the base eventuality, one cannot exclude that a temporally coincidental but irrelevant state that starts when the occurrence of the base eventuality ends may be treated as a perfect state. For example, if the state of Susan being married starts exactly when the event of Ken breaking his leg ends, the semantics of the present perfect in Kamp and Reyle (1993) and de Swart (1998) cannot exclude (2.70d) as one of the possible state readings for (2.70).

In fact, both Kamp and Reyle (1993) and de Swart (1998) mention that the perfect state s is a consequent state of the event or eventuality e, but their DRSs for the meaning of a perfect sentence do not reflect it. In their DRSs, the state s is only defined in terms of the temporal relation with the base eventuality e and the nature of the perfect state s is simply left underspecified. In order to prevent overgeneration, we need a constraint on the nature of the perfect state.

Does the perfect introduce a consequent state?

The perfect state has often been regarded as a consequent state resulting from an eventuality e's occurrence (Moens 1987; Moens and Steedman 1988; Kamp and Reyle 1993; Smith 1997; de Swart 1998; van Eijck and Kamp 1997).

These scholars assume a causal relation between the prior eventuality and the perfect state, although some of them do not incorporate the idea in their representations of the semantics of the perfect, as just mentioned (Kamp and Reyle 1993; de Swart 1998).

59

Moens (1987) and Moens and Steedman (1988) propose a tripartite event structure consisting of a preparatory process, a culmination, and a consequent state, and describe the function of the perfect as follows:

(2.73) Perfect: CULMINATION $\longmapsto$ CONSEQUENT STATE (Moens 1987:70)

(2.73) means that the perfect is a function which maps a culmination into its consequent state. A culmination is an event that is punctual or instantaneous and accompanied by a transition to a new state of the world (the consequent state of the event). Moens (1987) and Moens and Steedman (1988) argue that the perfect state is the consequent state of the base eventuality's culmination. When the base eventuality is part of a causal sequence of events, the perfect can be used to refer to its consequence. The exact nature of the consequent state is determined on the basis of world knowledge (Moens 1987), and the distinct interpretations of the perfect discussed in Section 2.2 are attributed to different consequent states (Moens and Steedman 1988).

When the base eventuality is not a culmination, for example, a process such as working in the garden, the base eventuality is first coerced into a culminated process and then mapped onto some consequent state. This explains resultative perfect readings, but not the continuative reading illustrated in (2.74), because a continuing state is not the consequent state of a coerced input state (temporally bounded state).[25]

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[25]If the input state is coerced into the inchoative event of starting a state as Kamp and Reyle (1993) assume, it is possible to consider the continuing state as the consequent state of the inchoative event, although Moens (1987) and Moens and Steedman (1988) do not consider this type of coercion (or transition) in their Aspectual Network.

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

Even when the perfect's input is a culminated event, Moens and Steedman's (1988) proposal

cannot account for uses of the perfect where no causal relation exists between the base even-

tuality and the state holding at present, as will be shown in example (2.76) below.

Van Eijck and Kamp (1997) represent the causal relation between the described eventuality

and the perfect state by using the relation $\rightsquigarrow$. $e \rightsquigarrow e'$ means that e' is the resultant state of e.

The temporal precedence of e is entailed by the causal relation $e \rightsquigarrow e'$. Figure 2.4 represents

the new DRS representation for sentence (2.75) (van Eijck and Kamp 1997:232).

(2.75)   Bill has smiled.

$$
\boxed{
\begin{array}{c}
e_1 \; e_2 \\
\hline
u \doteq b \\
smile(e_1, u) \\
e_1 \rightsquigarrow e_2 \\
t(e_2) \subseteq n
\end{array}
}
$$
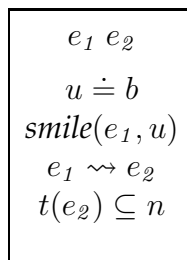
Figure 2.4: van Eijck and Kamp (1997)'s style DRS for the perfect: *Bill has smiled*

This is a simplified DRS that represents the relationship between the described eventuality

(e_1) and another introduced eventuality (the perfect state e_2) and locates them with respect

to utterance time (n). The temporal trace of e_2 is included in utterance time n. $u \doteq b$ is an

equational condition, u equals b. A full version of this DRS would include a reference time

interval and its relation with utterance time and the temporal trace of eventuality e_2, issues I

discuss later. For now, let us focus on the two eventualities introduced by the perfect utterance and the causal relation between them.

The advantages of van Eijck and Kamp's (1997) DRS over Kamp and Reyle's (1993) DRS is, first, that it can take any eventuality as its input and output any eventuality which satisfies the conditions in the DRS. Therefore, it does not need any coercion operator when it takes a stative input, unlike DRSs in Figure 2.2 and 2.3.[26] Secondly, the output eventuality, i.e. the perfect state, is not defined in terms of its temporal relation with the base eventuality. Therefore, it does not have to start at the very moment when the occurrence of the described event ends. Thirdly, the causal relation represented as '⤳' constrains the nature of the perfect state and excludes the possibility of mere temporal coincidence between the base eventuality and the perfect state.

However, there are still problems. First, the perfect state cannot start earlier than the event's occurrence, and this proposal still cannot account for sentences such as (2.71) above. Second, when a speaker utters a perfect sentence, they do not necessarily do so to convey that the resultant state of the base eventuality's occurrence holds. For example, (2.71a) is not the resultant state of the event of a speaker seeing the key in the room. The state of the key being in the room in (2.71a) is the cause of the event. Here is another example.

(2.76)   This fence has fallen three times now.

      i. It is fragile.

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[26]On the other hand, it does not exclude the possibility that the output eventuality is an event either, which is clearly contrary to their intentions.

Sentence (2.76) can be uttered to convey (2.76i), but the state of the fence being fragile does not necessarily result from the event of the fence falling three times. Rather, it is most likely the cause of the event. In other words, the base eventuality and the perfect state do not always relate as causes do to effects.

Some may argue that the states such as (2.71a) or (2.76i) are not possible perfect states for (2.71) or (2.76) while some other resultant states can be. However, sentence (2.71) can be used to implicate the state in (2.71a) in the same way as the answers in (2.77) B or B' are used to implicate their entailed resultant state. (Perfect states are underlined in (2.77).)

(2.77)   A: Where is the key?

B: I've left it in the classroom. The key is in the classroom.

B': I've lost it. The key is missing.

B": I've seen it in the room. The key is in the room. (=(2.71))

If perfect states have to be consequent states resulting from the base eventuality, the parallel between the uses of the perfect in (2.77) B, B', and B" cannot be explained.

Does the perfect introduce a permanent state?

Finally, the perfect state has been sometimes regarded as equivalent to the state of the event having occurred (Galton 1984; Parsons 1990; ter Meulen 1995), on the basis of the fact that the end of an event can always entail the beginning of the state of the event having occurred. The state of the event having occurred is logically entailed and lasts forever ('Resultant or R-state'

in Parsons (1990)). This interpretation of the perfect is often considered to be equivalent to existential perfect readings, i.e. that there is at least one occurrence of the event up to now.[27] This view, thus, reduces the meaning of the perfect to that of 'existential perfects,' which is defined as introducing the logically entailed permanent state of the event having occurred.

However, as Ismail (2001) points out, the perfect state linguistically introduced by the perfect form is not the same as the logically entailed permanent state of the base eventuality having occurred, based on the common assumption underlying most perfect-as-stativizer analyses, i.e. that distinct interpretations of perfect sentences reflect different possible perfect states holding at reference time. The states in (2.78a) (=(2.70a)), (2.78b) (= (2.70b)), (2.79a) (=(2.71a)) and (2.80a), for example, are possible perfect states based on this assumption. However, in the logically permanent state view, they are not possible perfect states, because they are not permanent. In addition, if a perfect state is the state of an event having occurred, the perfect state should start at the very moment when the event occurs like Kamp and Reyle (1993) or de Swart (1998) claim. However, the implicated state can start before the event occurs as seen in (2.79a).

(2.78)   Ken has broken his leg.

    a. His leg is broken (s)

    b. Ken is behind in his training (s)

(2.79)   Mr. Smith has seen the key in this room.

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[27]This is not so, as I will discuss shortly.

a. The key is in this room (s)

(2.80)   I've been in London since last week.

a. I am in London (s)

In order to capture those interpretations, the perfect must be allowed to introduce another state besides that permanent state.

However, despite these arguments, it is not easy to disprove this logically permanent state view of the perfect. One could always argue that the common assumption about possible perfect states is wrong, i.e. that those states in (2.78) - (2.80) are not possible perfect states but pragmatically implicated and that only a logically permanent state is a possible perfect state.

Still, there are some problems with this logically permanent state view of the perfect state. First, the nature of permanent states is not exactly clear. There is no positive, internal properties that characterize this state. It is only characterized by the fact that it follows the base eventuality. Second, this view assumes that for every event there will be a corresponding permanent state and, thus, populates the space of states excessively. This is particularly so, as although this view is sometimes considered to be equivalent to the meaning of existential perfect readings (i.e. there is at least one or more occurrence of the event up to now), this is not the case. Because the logically permanent state view of the perfect assumes a different permanent state for every event *token*, this view is committed to introducing as many permanent states as there are occurrences of an event-type. I conclude that logically permanent states are very different from our understanding of other ordinary states such as 'it is cold' or

'I am happy.' It is hard to imagine what such permanent states can be or why speakers want to use the perfect, rather than the simple past tense to convey that such "states" hold.

Third, another argument against the logically permanent state view of the perfect is based on the possible co-occurrence of the present perfect with *still*. Ismail (2001) suggests that co-occurrence with *now* and *still* constitute tests that distinguish eternal states, permanent states and temporary states. Eternal states are states without an onset and a cessation (i.e. without events that start and end the state), permanent states have an onset but not a cessation, and temporary states have both an onset and a cessation. A state with an onset, i.e. permanent states and temporary states, passes the *now*-test, but a state without an onset or cessation, i.e. eternal states, fails the *now*-test, as seen in sentences (2.81) - (2.83). A state with a cessation, i.e. temporary states, passes the *still*-test but a state without a cessation, i.e. eternal states and permanent states, fails the *still* test, as seen in sentences (2.84) - (2.86).[28]

(2.81) Mike is dead *now*. (Permanent)

(2.82) The litmus paper is red *now*. (Temporary)

(2.83) * Whale are fish *now*. (Eternal)

(2.84) ?Mike is *still* dead. (Permanent)

(2.85) The litmus paper is *still* red. (Temporary)

(2.86) ?Whale are *still* fish. (Eternal)

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[28]Both *now* and *still* have non-temporal uses, but those non-temporal uses are not relevant here.

Because a logically permanent perfect state would have to have an onset but no cessation, it is a permanent state in Ismail's (2001) classification. Therefore, if a sentence whose main verb is in the perfect introduces a permanent state, it should pass the *now*-test and fail the *still*-test.[29] However, a present perfect sentence can co-occur with both *now* and *still*, as seen in sentences (2.87) - (2.88). It follows that the perfect state is not permanent but temporary.

(2.87)   Mike has finished his paper *now*.

(2.88)   Harry has *still* only visited three times. (Michaelis 1998:184)

Still indicates that the state modified by *still* which might have been expected to cease at reference time continues to hold.

Not all present perfect sentences can co-occur with *still*. Many English present perfect sentences do not welcome *still*, as seen in (2.89).

(2.89)   #Harry has *still* hired an assistant.

The possible explanation for why the English perfect is not easily compatible with *still*, is that *still* carries a presupposition, namely that the state modified by *still* which continues at reference time also held at a time preceding reference time (Michaelis 1993). Since the asserted event in the English perfect is newly introduced, the perfect state resulting from or related to that event is also typically newly introduced in discourse. It follows that English present

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[29]The co-occurrence of *still* with temporary states is also discussed in Nedjalkov and Jaxontov (1988). In Nedjalkov and Jaxontov (1988), though, the test is used to distinguish perfects and resultative constructions, as they assume that perfects are not stative.

perfect sentences are not compatible with the presupposition that the same perfect state held

before reference time. For example, in sentence (2.89) the event of Harry hiring an assistant is

newly asserted and the perfect state, e.g. Harry having an assistant, is also newly introduced

in discourse. Therefore, sentence (2.89) does not satisfy the presupposition that the state of

Harry having an assistant also held at a time interval preceding reference time.

However, Michaelis (1993) and Michaelis (1998) observe that existential perfect uses con-

taining the adverb *only* welcome *still*, as sentence (2.88) shows.[30]

Now, the adverb *only* is a focus sensitive expression and requires the modified phrase to

be in focus. In sentence (2.88), the presence of the adverb *only* removes the constraint of the

English present perfect that the event and the perfect state have to be new by having *three*

times in focus, namely, inactive or new information. That is, because *three times* which is

modified by *only* is in focus and newly asserted, the event of Harry visiting and the perfect

state resulting from the event do not have to be newly introduced in discourse. This removes

the constraint that they have to be new. Therefore, no constraint prevents the same state as

the perfect state from holding prior to reference time and perfect sentences from satisfying

the presupposition of *still* in this case.[31]

Finally, this logically permanent view of the perfect does not provide a convincing expla-

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[30] According to Michaelis (1998), the assertion of an event will be always true after reference time. Sentence (2.88) is acceptable with upper-bounding scalar adverbs such as *only*, because the presence of *only* removes the forward compatibility of *three times* and the perfect state of (2.88) can end when Harry makes a fourth visit. While this explains the restricted distribution of *still* in English, it does not account for the fact that the corresponding Japanese adverb *mada* can co-occur with present perfect sentences without scalar adverbs.

[31] See Bonomi (1993); Beaver (2003) on *only* or focus sensitive expressions.

nation for continuative perfect readings. Claiming that a state which is interpreted to hold in continuative perfect readings is not a possible perfect state but that a logically permanent state is the perfect state sounds counterintuitive. First, in continuative perfect readings, the base eventuality is a state and a state does not logically entail a permanent state.[32] Second, even if one assumes that the state is coerced into the inchoative event of a state starting or into the event of a bounded portion of a state, the permanent state logically entailed from the coerced event differs from the state which is understood as holding in continuative readings because the state understood as holding is not understood to be permanent. In addition, the first type of coercion would make the modification of the base state by duration adverbials such as *for*-adverbials impossible while the second type of coercion would make the modification of the perfect state by time-span adverbials such as *since*-adverbials unacceptable.

(2.90) Ken has lived in London for three years.

(2.91) Ken has lived in London since 1984.

In example (2.90) the durational adverbial *for three years* can modify the base stative eventuality of Ken living in London, which would not be possible if the perfect coerces the stative input to an inchoative event of starting a state. In example (2.91), if the perfect coerces the stative input onto the occurrence of a bounded state and introduces a permanent perfect state after that bounded state, the adverbial *since 1984* would not be able to denote the lower boundary

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[32]Parsons (1990) assumes that states can be followed by permanent states, but he does not explain how a permanent state can be introduced if the base state does not culminate.

of the time span of the state of Ken living in London and get the universal reading. Since the state of Ken living in London is bounded and the permanent state must start after the bounded state, it is difficult to see how sentence (2.91) could receive the reading that there is a continuative state which holds throughout the time span from the time which is denoted by *since 1984* up to the present. Given these arguments, I conclude that the logically permanent state view of the perfect cannot be correct.

To sum up, previous studies which assume the perfect introduces a state have not explained all uses of the perfect successfully or the nature of the state introduced by the perfect form.

2.3.3   Functional views

The perfect makes reference to a topic

Some scholars focus on the use of the perfect in discourse and have tried to capture some aspects of its use in an additional component of the meaning of the perfect. They typically assume that the perfect is related to the topic of the utterance.

Following McCawley's (1971) suggestion that the topic of the utterance that includes the perfect form is related to the present possibility presupposition seen in (2.14) (= (2.92) below), some scholars propose that the current relevance component of the meaning of the perfect can be characterized as a repeatability condition on a topic or the situation described in a topic proposition (Inoue 1975; Inoue 1979; Michaelis 1994; Michaelis 1998). A topic is, informally,

what a sentence is about. If a topic is a thing or person, it has to be existent or living. If a topic is a proposition, the situation described in it has to be repeatable (Inoue 1975). Therefore, if sentence (2.92) is about Einstein or if it is about Einstein visiting Princeton, it is not acceptable, because Einstein is dead or the situation described by the topic, 'Einstein visits Princeton', is no longer repeatable. However, if sentence (2.92) is about a luminary visiting Princeton, it is acceptable, because the topic situation, 'a luminary visits Princeton,' is repeatable (Michaelis 1998:242).

(2.92)   (*) Einstein has visited Princeton.

In a similar vein, Portner (2003) proposes that the perfect presupposes the existence of a topic and constrains the nature of that topic. Portner adopts the view that a discourse topic is a set of possible answers to an implicit question, not a single proposition. Thus, according to Portner, the perfect in sentence (2.93) presupposes the implicit question in (2.94a).

(2.93)   Mary has read *Middlemarch*.

(2.94)   a. We need to get an explanation of George Eliot's style, Who can we ask?

         b. Well, George Eliot wrote Middlemarch, and if someone reads an author's books, they understand her style. Unless they're stupid of course. Mary is smart, and she has read *Middlemarch*...

Borillo *et al.* (2004) also proposes that the utterance situation or writing context provides the topic that the sentence that contains the perfect form elaborates.

The view that the perfect makes reference to a topic may explain some uses of the perfect, as seen in example (2.93) or in the felicitous interpretation of (2.92), but not all uses of the perfect. Sentences that contain present perfect forms can be uttered out of the blue when no presupposed topic is present. For example, (2.95) can be felicitously uttered in a classroom when participants are talking about going to a party or about the next exam.

(2.95)   Prof. Smith has left his keys on the table. We should take them to him.

The fact that a sentence containing a perfect can be uttered felicitously out of the blue suggests that no presupposition or existent topic that, e.g. 'Prof. Smith is forgetful,' 'Prof. Smith is looking for his keys', or, 'Prof. Smith, ' etc. is attached to the use of the perfect.[33]

2.4   Summary

This chapter has shown that there is no clear evidence that the distinct readings of the English present perfect which have been recognized in previous studies correspond to separate meanings. There is no evidence for a structural ambiguity between continuative perfect readings and non-continuative perfect readings, either. Second, this chapter has shown that temporal views of the perfect cannot explain the difference between the present perfect and the past tense and also that the perfect is a stativizer. However, I have argued that current analyses of the perfect as a stativizer are not satisfactory because their views on the nature of the state in-

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[33]More examples of perfects that do not presuppose a topic will be discussed in Chapter 6.

troduced by the perfect do not explain all its possible interpretations. Finally, I also discussed

problems with the view that the perfect must be related to a topic.

Chapter 3

The English Perfect

3.1 Introduction

Chapter 2 has argued that there is no clear evidence that the perfect is semantically or structurally ambiguous and that there is sufficient evidence to believe that the perfect is a stativizer. This chapter proposes a monosemous analysis of the perfect. The proposed analysis consists of two parts: one semantic, one pragmatic. Taking for granted the stativity of the perfect, the proposed semantic component extends the analyses of Kamp and Reyle (1993),van Eijck and Kamp (1997), and de Swart (1998) in Discourse Representation Theory. The pragmatic component is an inferential process that makes use of Levinson's (2000) principle of Informativity. It explains how various interpretations can derive from the perfect's single meaning. This chapter also proposes that those two components are connected and governed by two gen-

eral principles which are at play in phenomena involving underspecification and inferences. It shows how the proposed new analysis accounts for the different interpretations the perfect receives and solves all the outstanding problems mentioned in Chapter 2.

3.2   The semantics of the perfect

This section deals with the first, semantic component of my analysis of the perfect. Within the context of a Discourse Representation Theory's approach to aspect (Kamp and Reyle 1993; van Eijck and Kamp 1997; de Swart 1998), Nishiyama and Koenig (2004) proposes an early version of the meaning of the perfect this thesis advocates. They propose that the meaning of the perfect introduces (i) an eventuality ev, whose temporal trace precedes reference time r (speech time n in present perfects) ($\tau(ev) \prec r$), and (ii) a perfect state s, which overlaps reference time r ($\tau(s) \circ r$) and whose category is semantically a free variable whose value is pragmatically inferable from the occurrence of ev.

In sentences (3.1) - (3.2), the eventuality ev is the event of Mike writing a novel or the state of Mike living in Japan, respectively. The meaning of the perfect introduces the base eventuality ev and a perfect state holding at reference time.

(3.1)   Mike has written a novel.

(3.2)   Mike has lived in Japan.

Note that the base eventuality introduced by the sentence containing a perfect form does not

have to temporally precede a reference time interval (here, utterance time) in a strict sense when it is stative, as seen in (3.2). The state of Mike living in Japan in (3.2) can continue to hold at present.

This section revises Nishiyama and Koenig (2004) and proposes the following meaning for the perfect:

(3.3) The meaning of the perfect introduces:

    i. an eventuality ev which satisfies the base eventuality description ϕ such that

        a. the temporal trace of a subpart ev' of ev precedes reference time r (utterance time n in present perfects) $(\tau(ev') \prec r)$ and

        b. the subpart ev' satisfies ϕ,

        and

    ii. a perfect state s, which overlaps reference time r $(\tau(s) \circ r)$ and whose category is semantically a free variable X.

The eventuality description ϕ in condition (3.3i) is either the base eventuality description or the eventuality description modified by a progressive operator in a progressive perfect sentence. The eventuality ev can be any type of eventuality, including states. Reference time r is a time interval where an eventuality described in the corresponding simple tense would be introduced.[1] It is utterance time in the case of the present present perfect. Utterance time roughly corresponds to Reichenbach's (1947) Speech Time (S), but it could be a writing time

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[1]The notion of reference time will be discussed in more details in Chapter 6.

in written discourse, a subjective present or utterance time for a particular character in texts, a shifted present time in fictions, e.g. a future time in a science fiction, an actual utterance time in conversation, and so on, depending on the context.[2]

First, according to the definition in (3.3), the perfect introduces an eventuality which satisfies the eventuality description ϕ. As seen in examples (3.1) - (3.2), the base eventuality description ϕ can be either eventive or stative in the English perfect. In sentence (3.1) the base eventuality description is the description of an event of Mike writing a novel. On the other hand, in sentence (3.2) the base eventuality describes the state of Mike living in Japan.

Second, according to the definition in (3.3) the perfect introduces a state s (a perfect state). The perfect state s can be, for example, the state of a novel being written for (3.1), the state of Mike living in Japan or the state of Mike being able to speak Japanese for (3.2).

One of the main innovations of the analysis proposed by Nishiyama and Koenig (2004) and this section is that the category of the perfect state s is introduced as a free property variable, as seen in condition (3.4) (X), which must be filled in by the addressee pragmatically.

(3.4) $X(s)$

The presence of a free variable X is a semantic constraint (imposed by the perfect form), but the value of X has to be filled in via pragmatic inferences. Because s is not defined temporally or causally, the only constraint on X is that it be inferable from an occurrence of ev. However, note that this inferability of the value of X is not a semantic constraint; it is a consequence of

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[2]See Almeida (1987); Almeida (1995); Segal (1995); Zubin and Hewitt (1995) for more details.

the fact that the value of X is found via pragmatic inferences, as will be discussed in the next section.

This use of a free variable X for the category of the perfect state can be compared to the use of property variables in semantics by Kay and Zimmer (1978) and Partee (1984a).[3] Kay and Zimmer (1978) argue that the relation between two nouns in nominal compounds or the genitive construction is evoked, not expressed. Partee (1984a:293) similarly argues that those constructions introduce a free variable corresponding to the relation between the two nouns' denotations. The value of this free variable is neither determined directly from the meanings of the parts or the way they are combined, nor directly by the context. It is determined by the addressee's carrying out inferences from the content of the parts and the context, as Partee (1984a:291) discusses.

One important modification of Nishiyama and Koenig's (2004) analysis in (3.3) is that the temporal trace of only a subpart of the introduced base eventuality, not necessarily that of the entire part of the base eventuality, strictly precedes a reference time interval. In conditions (3.3i-a) and (3.3i-b) the base eventuality whose temporal trace precedes a reference time interval does not have to be maximal with respect to the base eventuality description ϕ.

When the base eventuality ev is a telic event (an achievement or an accomplishment), the subpart ev' of the base eventuality ev which satisfies the base eventuality description ϕ is equivalent to the base eventuality ev, because there is no proper subpart of ev which also

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[3]Bach (1994) does not use the term 'free variable' in the sense of Partee (1984a), but his notion of 'impliciture' corresponds more or less to Partee's (1984a) or our use of free variables in semantic representations.

satisfies ϕ.

When the base eventuality is a state, a proper subpart of the base eventuality can also satisfy the same base eventuality description ϕ. Therefore, as long as the temporal trace of its subpart precedes a reference time interval, the base eventuality can still hold at reference time. It does not have to end before reference time. In the case of activities, which are atelic eventualities, a proper subpart ev' of the base eventuality can satisfy the base eventuality description too. Although it is not a frequent interpretation, the meaning of the perfect does not prevent activities which are the same as the base eventualities introduced by the perfect, from still going on at reference time in some contexts, as seen in sentence (3.5).

 (3.5)   I've already worked a lot. I should stop now. (The speaker is still working.)

However, there is a difference between activities and states in the sense that the former requires a minimal subinterval for the activity description to be satisfied, while the latter does not (Dowty 1979).

While the duration of a state can be narrowed down to any small quantity such as an utterance time interval, an activity requires a certain minimal duration. Therefore, a state can hold at utterance time, but an activity does not except in sports caster contexts or in habitual readings, as seen in sentence (3.6) discussed in Section 2.3.1.

 (3.6)   He works.

It is, thus, important to distinguish an activity as an event from an on-going (i.e. stativized) activity as a state. In sentence (3.5), when a subpart of the base eventuality which also satisfies

the base eventuality description precedes reference time r, it is an event which precedes r. In contrast, in sentence (3.7) the progressive operator modifies the base eventuality description first and stativizes it. The perfect takes the stativized eventuality description (progressive state) as its input and introduces a progressive state as a prior eventuality and a perfect state.[4]

(3.7) I've been working since seven o'clock in the morning.

Sentence (3.7) often receives a continuative perfect reading, i.e. the state of the speaker working still goes on. Because the base eventuality introduced is a state in sentence (3.7) while an event in sentence (3.5), inferences based on the prior occurrence of the state (i.e. the progressive state) which are available for sentence (3.7) may not tend to be drawn for sentence (3.5). Thus, the interpretations they receive typically differ in that the progressive perfect often receives a continuative perfect reading while perfects of activity base eventuality descriptions do not (see Section 3.4 for details.).

Figure 3.1 shows a discourse representation structure (DRS) of the meaning of the perfect. The first line shows the discourse referents which are introduced by an utterance that contains a perfect after existential closure by a tense operator.[5] The second to seventh lines show discourse conditions which constrain those discourse referents. ϕ in the first condition stands for the base eventuality description and the first condition $\phi(ev)$ says that the eventuality ev satisfies the description ϕ. '$\leq$' in the second condition represents a subpart relation and the second

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[4]This thesis assumes that the progressive is a stativizer, along with many other scholars.
[5]The DRS does not include tense yet, but the relevant discourse referents are listed nonetheless for expository purposes.

$$
\begin{array}{|l|}
\hline
ev, ev', s, r \\
\hline
\phi(ev) \\
ev' \leq ev \\
\phi(ev') \\
\tau(ev') \prec r \\
X(s) \\
\tau(s) \circ r \\
\hline
\end{array}
$$

Figure 3.1: The meaning of the perfect

condition $ev' \leq ev$ says that ev' is a subpart of ev. The third discourse condition $\phi(ev')$ says

that the subpart ev' also satisfies the eventuality description ϕ. The fourth condition $\tau(ev') \prec r$

says that the temporal trace of ev' precedes a reference time interval r. τ is a function which

maps eventualities onto their temporal traces. The third and the fourth conditions make sure

that the subpart of the base eventuality is maximal when it is telic (an accomplishment or an

achievement). Namely, the entire base eventuality precedes reference time in this case. In the

fifth condition $X(s)$, a perfect state s is is said to satisfy the variable eventuality description

X. Its temporal trace $\tau(s)$ is said to overlap r in the last condition $\tau(s) \circ r$. In the past tense,

i.e. in the past perfect, reference time r precedes utterance time n ($r \prec n$) and in the present

tense r overlaps (or equals) n ($r = n$).

Now take a look at some perfect sentences.

(3.8)   Ken has broken his leg.

(3.9)   Ken_break_Ken's_leg

(3.10)   Ken has been busy.

(3.11)   Ken_be_busy

The eventuality description ϕ for sentence (3.8) is informally represented as (3.9) and ϕ for sentence (3.10) is (3.11). The meaning of the perfect form in sentence (3.8) or (3.10) introduces a prior eventuality ev which satisfies ϕ, i.e. the event of Ken breaking his leg or the state of Ken being busy, and a subpart ev' of ev which also satisfies ϕ precedes the reference time interval r. The meaning of the perfect, then, introduces a state s whose category is X. The DRSs for sentences (3.8) and (3.10) are in Figure 3.2 and Figure 3.3.

A simplified DRS for sentence (3.8) is in Figure 3.4, where the subpart ev' is omitted because it is equal to the base eventuality ev.[6]

This analysis solves the main problem with Kamp and Reyle's (1993), de Swart's (1998) or van Eijck and Kamp's (1997) analyses in DRT, i.e. the fact that not all perfect interpretations require a causal or abutting relation between the eventualities described in the perfect and the state introduced by the perfect.

In Kamp and Reyle (1993) or de Swart (1998), a perfect state has to start at the very moment when the described eventuality ends, whereas in van Eijck and Kamp (1997) a perfect state is a consequent state resulting from the event's occurrence, which, in turn, entails that the

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[6]When the subpart ev' of the base eventuality ev which satisfies the base eventuality description is maximal with respect to the base eventuality description, i.e. when the base eventuality description is telic, the subpart ev' of ev is equal to ev and may be omitted from a DRS.

$$\boxed{\begin{array}{c} ev, s, r \\[4pt] \textit{Ken\_break\_Ken's\_leg}\ (ev) \\ ev' \leq ev \\ \textit{Ken\_break\_Ken's\_leg}\ (ev') \\ \tau(ev') \prec r \\ X(s) \\ \tau(s) \circ r \\ r = n \end{array}}$$
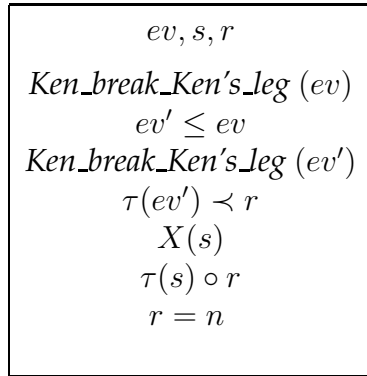
Figure 3.2: DRS for *Ken has broken his leg*

$$\boxed{\begin{array}{c} ev, s, r \\[4pt] \textit{Ken\_be\_busy}(ev) \\ ev' \leq ev \\ \textit{Ken\_be\_busy}(ev') \\ \tau(ev') \prec r \\ X(s) \\ \tau(s) \circ r \\ r = n \end{array}}$$
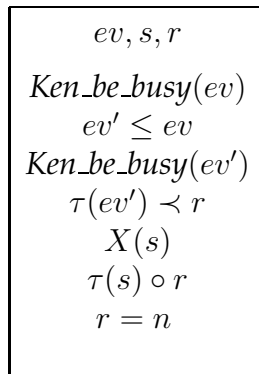
Figure 3.3: DRS for *Ken has been busy*

$$\boxed{\begin{array}{c} ev, s, r \\[4pt] \textit{Ken\_break\_Ken's\_leg}\ (ev) \\ \tau(ev) \prec r \\ X(s) \\ \tau(s) \circ r \\ r = n \end{array}}$$
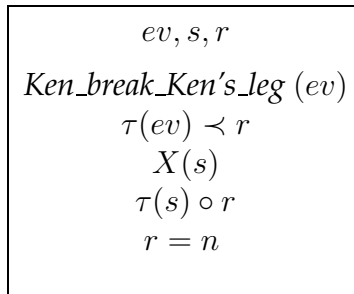
Figure 3.4: Simplified DRS for *Ken has broken his leg*

event precedes the state. In definition (3.3), the relation between the described eventuality and the perfect state is not defined temporally or causally. Therefore, the perfect state does not have to start at the very moment when the described eventuality ends nor does it have to temporally follow the occurrence of the described eventuality. This analysis can explain that the perfect state of sentence (3.12) can be interpreted as (3.12b), sentence (3.13) as (3.13a) and that of sentence (3.14) as (3.14a):

(3.12) Ken has broken his leg. (=(2.70))

    a. His leg is broken (s)

    b. Ken is behind in his training (s)

    c. *Susan is married (s)

(3.13) Mr. Smith has seen the key in the room. (=(2.72))

    a. The key is in the room (s)

(3.14) The fence has fallen three times. (=(2.76))

    a. The fence is fragile (s).

As discussed in Chapter 2, the perfect state in (3.12b) may start quite awhile after the event of Ken breaking his leg and may not be in an abutting relation with it, contra what Kamp and Reyle's (1993) or de Swart's (1998) analyses claim.[7] The perfect state in (3.13a) or (3.14a) does not follow the event of seeing the key or the fence falling down and the event is not a cause

---

[7]Note that sentence (3.12) can implicate (3.12b) without its entailed resultant state in (3.12a) holding. See 2.3.2.

of the perfect state, as van Eijck and Kamp's (1997) analysis claims.

In addition, Kamp and Reyle's (1993) and de Swart's (1998) analyses could not exclude a temporally coincidental but irrelevant state as a perfect state as seen in (3.12c) for (3.12) because the category of the perfect state was left totally underspecified except for the temporal abutting relation with a prior eventuality. The analysis proposed in this section can, in fact, correctly exclude those irrelevant states from possible perfect states. This is because, as Section 3.3 argues, the value of X has to be contextually inferred from the occurrence of the described eventuality and therefore the value of X has to be inferable.[8] Also note that the inferability relation between the occurrence of the described event and the perfect state does not entail the presence of a particular temporal relation between them, unlike the causal relation proposed in van Eijck and Kamp (1997).

The DRS for the meaning of the perfect in Figure 3.1 or 3.2 also differs from the ones proposed in Kamp and Reyle (1993), van Eijck and Kamp (1997), and de Swart (1998) in terms of how reference time intervals are introduced.

Kamp and Reyle (1993) and van Eijck and Kamp (1997) assume a principle that any event (in contrast to states) has to follow a reference time interval. This principle makes reference time move forward in a sequence of past tense sentences. In order to maintain this principle in sentences that contain perfects, their analyses do not represent the temporal relation between the event introduced by the base eventuality description in the perfect and reference time

---

[8]This inferential process and constraint on the value of X are not reflected in the DRSs in Figure 3.1 - 3.4, because they are guided by general pragmatic principles, as I will discuss shortly.

directly. The temporal relation between them is only indirectly represented as resulting from a combination of the temporal relations between the event and the perfect state ($ev \supset\subset s$ or $ev \rightsquigarrow s$ in Figure 2.1 or Figure 2.4) and reference time and the perfect state ($t \subseteq s$ or $t \circ s$ in Figure 2.1 or Figure 2.4). The presence of an abutting or causal relation between ev and s is crucial in their analyses because of the absence of a direct representation of the temporal location of the event introduced in the perfect. The hypothesis that s follows or abuts ev reflects the pastness of the event introduced in the present perfect. However, as discussed above, neither an abutting relation or a causal relation between the prior eventuality and the perfect state are required of all interpretations of the perfect. Therefore, those relations cannot be used to make sure the prior eventuality ev occurs in the past of the reference time interval.

Although it is not clear exactly how Kamp and Reyle (1993) maintain the principle that any event follows reference time in their simplified representations for the perfect, van Eijck and Kamp (1997:232) represent the temporal relation between the prior eventuality and reference time in a more detailed fashion, based on Muskens's (1995) reference time update system.[9] Figure 3.5 shows the meaning of sentence (3.15).

(3.15) Bill has smiled.

In Figure 3.5, ev is a prior eventuality and s corresponds to the perfect state. b is *Bill* and the value of the variable u is assigned as the value of b (*Bill*) in the first condition $u \doteq b$.

---

[9]Muskens's (1995) reference time update system is different from van Eijck and Kamp's (1997) system in Figure 3.5 in that Muskens (1995) does not maintain the principle that an event follows reference time. For example, in Muskens (1995) an event in a past narrative sequence is evaluated with respect to a current reference time and it is its evaluation that causes a reference time update, i.e. makes reference time move forward.

$$
\boxed{
\begin{array}{l}
\qquad ev \; s \\[4pt]
\qquad u \doteq b \\
\qquad o \doteq r \\[4pt]
\neg\neg \;\;
\boxed{
\begin{array}{l}
\qquad r \\[4pt]
\quad r < o \\
\; smile(e_1, u) \\
\quad ev \rightsquigarrow s \\
\; r < t(e_1)
\end{array}
} \\[6pt]
\qquad r := t(e_2) \\
\qquad r \subseteq n
\end{array}
}
$$
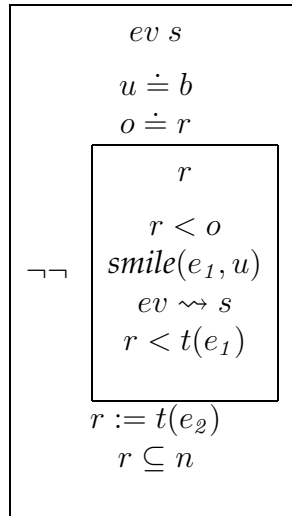
Figure 3.5: van Eijck and Kamp (1997)'s DRS for
Bill has smiled

In the second condition, o is a store and r is the original reference time before any event is introduced in discourse. In $o \doteq r$ the value of the original reference time interval r is stored in o, i.e. the original value of r is assigned to the value of o. Then, r is reset to the time interval preceding the original reference time saved in o in the embedded DRS ($r < o$; $<$ represents a temporal precedence relation in Figure 3.5.). Now, the perfect introduces the prior eventuality ev as following the new reference time r ($smile(ev, u)$, $r < t(ev)$) and another eventuality s (a perfect state) as resulting from ev ($ev \rightsquigarrow s$). Then the original reference time value of r is said to equal the temporal trace of s ($r := t(s)$) and is located with respect to utterance time in the main DRS ($r \subseteq n$).

Note that this analysis does not represent directly the temporal location of the base even-

$$
\boxed{
\begin{array}{c}
r, n, ev, ev', s \\
\hline
Bill\_smile\,(ev) \\
ev' \leq ev \\
Bill\_smile\,(ev') \\
\tau(ev') \prec r \\
X(s) \\
\tau(s) \circ r \\
r = n
\end{array}
}
$$
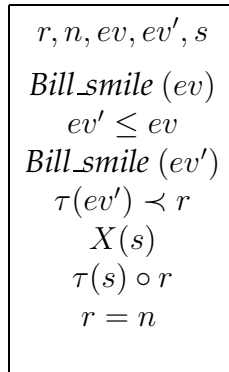
Figure 3.6: Bill has smiled.

tuality introduced by the perfect form with respect to the current reference time interval r in the main DRS either, because $t(ev)$ could follow o if there was no causal relation between ev and s. Therefore, the causal relation is needed to reflect the fact that the prior eventuality ev must precede the original reference time r (=o).

In contrast, in the analysis proposed here, the perfect form is claimed to introduce a base eventuality which precedes a current reference time interval in the main DRS, thus directly reflecting the pastness of the event in the present perfect, and the temporal relation between the event and the perfect state is not specified (see the DRS for (3.15) in Figure 3.6).[10] That way, the perfect state does not have to start at the very moment the event ends or does not even have to follow the occurrence of the event while it correctly predicts the pastness of the event

---

[10]This use of a reference time interval is rather similar to the traditional Reichenbachian notion of R (reference point). In Reichenbach's system, E (event time) precedes R (reference time) and R coincides with S (utterance time) in the perfect.

in the present perfect. It would be possible to translate my analysis into a system that uses Muskens's (1995) style of update of reference time intervals and maintain the principle that events should follow reference time. However, it would be unnecessarily complicated. Since the perfect does not update reference time in the main DRS, it would be redundant to include such a system for updating reference times when that update would have no effect on the current reference time.[11] Furthermore, the principle that an event is always introduced after reference time does not seem to be well motivated even for sequences of past tense sentences. It is known that past tense sentences often allow reverse-order readings (Dowty 1986; Moens 1987; Lascarides and Asher 1993). I will not discuss exactly how events and reference time intervals should interact any further in this chapter. However, suffice it to say that the issue is irrelevant to modeling the pastness of the prior eventuality in the present perfect.

The semantic analysis of the perfect I just proposed also eschews the problems encountered by views that treat the perfect state as a logically permanent state (Galton 1984; ter Meulen 1995). Recall that a logically permanent state view cannot explain continuative perfect uses. When the base eventuality is a state, as seen in sentence (3.16), the prior existence of the base eventuality does not logically entail the state of an event having occurred.

(3.16) Ken has been sick.

One way to avoid this problem may be thought to bound the base eventuality via coercion

---

[11]In some languages, a perfect form can move reference time forward, e.g. the German *Perfekt* or the French *passé composé*. However, they are often considered to be polysemous between a perfect use proper and a past tense use.

into an event. However, a bounding function would not allow the same state to continue to hold at present because a bounding function (represented as a maximality operator) requires the eventuality to be maximal with respect to the eventuality description (Koenig and Muansuwan 2000; Egg 2005).[12] Perfect sentences could therefore still not receive continuative readings. In contrast, in the analysis proposed in this section the base eventuality does not have to logically entail the state of an event having occurred nor does it have to be maximal with respect to the base eventuality description. The base eventuality can be stative and the meaning of the perfect can introduce a subpart of the base eventuality as a prior eventuality. Therefore, perfect sentences with a stative description can receive continuative perfect readings.

This analysis also provides a possible explanation why perfects in some languages do not have continuative perfect readings, for example, the French *passé composé* or the German *Perfekt*. In French and German, a continuative reading in the English perfect has to be translated using the simple present, as seen in the following (Kamp and Reyle 1993:568).

(3.17) *Marie a   habité ici   pendant trois   ans.   (French passé composé)*
         Mary have lived here for   three years

         Mary hat hier drei   Jahre lang gewohnt. (German Perfekt)
         Mary has here three years long lived

         Mary has lived here for three years. (Existential reading only)

---

[12]See Chapter 4 for more details about the maximality operator.

(3.18) *Marie habite   ici   depuis trois ans. (French simple present)*
         Mary live(Pres) here since three years

         Mary wohnt   hier seit drei Jahren. (German simple present)
         Mary live(Pres) here since three years

         Mary has lived in here for three years. (Continuative reading)

The lack of continuative readings in French and Germen perfect forms can be explained if perfects in those languages do not introduce a subpart of the base eventuality as a prior eventuality temporally preceding reference time. Figure 3.7 illustrates the situation for the French sentence in (3.17). Note that in this case the prior eventuality introduced by the perfect has to be a maximal event with respect to the base eventuality description. Therefore, because the perfect cannot introduce a subpart of the base eventuality but only introduces the entire base eventuality, there is no larger subpart of eventuality which can satisfy the base eventuality description. When the present perfect introduces the base eventuality preceding reference time, the base eventuality cannot continue holding *now* because the base eventuality introduced by the perfect has to precede reference time and is maximal with respect to the base eventuality description even when it is stative.

We can then account for the fact that unlike the English perfect, they cannot receive continuative perfect readings. However, a detailed analysis of the semantics of the French *passé composé* or the German *Perfekt* is beyond the scope of this thesis.

$$\boxed{\begin{array}{c} r, n, ev, s \\ \textit{Marie\_habiter\_ici\_pendant\_trois\_ans}\ (ev) \\ \tau(ev) \prec r \\ X(s) \\ \tau(s) \circ r \\ r = n \end{array}}$$

Figure 3.7: *Marie a habité ici pendant trois ans*. ('Mary has lived here for three years.')

3.3 Semantics meets pragmatics

The previous section discussed the semantics of the perfect, which is the first component of this thesis' analysis of the perfect. It argues that the English perfect has only one meaning. Therefore, all the interpretations discussed in Section 2.2 must derive from this single meaning. Now, how those interpretations derive from a single meaning belongs to the second, pragmatic, component of this thesis' analysis of the perfect. Deriving various interpretations from a single meaning is only possible when addressees make pragmatic inferences from that meaning and contextual information. More specifically, the perfect introduces a perfect state whose category is semantically a free variable X and the addressee has to fill in the value of X via pragmatic inferences. Depending on the value the addressee infer as the value of X, perfect sentences receive different interpretations.

However, before going to the discussion of the pragmatic inferences leading to the various

interpretations of the perfect, this section needs to digress a little and discuss more general assumptions on which the analysis of the perfect is based.

One of those assumptions concerns, what triggers the inferential process that finds the value of X. In general, inferences can be drawn from any type of sentences regardless of the existence of a free variable X. Compare sentences (3.19) - (3.20).

(3.19)   Ken has broken his leg.

(3.20)   Ken broke his leg.

Addressees can draw the inference that Ken's leg is broken from the perfect sentence in (3.19), and so can they from the past sentence in (3.20). Moreover, even if the perfect introduces a free variable X, it is in principle possible that addressees would just leave X unspecified, assuming that a speaker is following Grice's maxim of Quantity 1, i.e. 'make your contribution as informative as is required'. Assuming that a speaker is following the first maxim of quantity, the hearer may not infer anything more than what a speaker said and may further infer that what a speaker did not say is not the case. Such an inference would be a Q-based inference or Q-implicature in Horn (1984); Horn (2001); Levinson (2000). A Q-based inference or implicature follows from a principle that says that in saying '... P_i ...' a speaker implicates that for all s/he knows '... at most P_i...', i.e. what is not said is not the case (Horn 1984; Horn 2001). In the case of sentence (3.19), the hearer may think that if determining the value of X were required, the speaker would have identified that value and that sentence (3.19) implicates that the hearer should not fill in the value of X via further inference. Of course, if this

reasoning is correct, perfect sentences would not be able to receive their perfect readings.

To ensure that the inferential process that fills in the value of X is fired, I propose that whenever a free variable is introduced in discourse, the existence of the variable triggers a search for the value via inferences so that the addressee tries to find it, assuming that the addressee tries to make the communication successful. I call this principle **the full specificity principle (FS-Principle)**.

Principle 1 *The full specificity principle (FS-Principle): The value of a free variable introduced by an utterance needs to be filled in by the addressee via pragmatic inferences.*

Free variables introduced by linguistic expressions include the ones introduced by nominal compounds or genitive constructions (Partee 1984a), pronouns, and the perfect. This **FS-Principle** makes sure that the addressees look for the value of X and that a speaker can also count on the addressee starting inferring the value when she introduces a free variable.

It is true that the same inference may be available to both perfect and past tense sentences, as seen in sentences (3.19) and (3.20), because they can convey the same past event's occurrence. The difference between the two forms, however, is that the existence of a free variable X in the perfect sentence (3.19) triggers the inference in order to find the value of X, given the FS-Principle, while the past sentence (3.20) does not semantically trigger an inference because of the absence of free variables in its semantic representation. Therefore, triggering the inference on a current state is obligatory in the present perfect, while it is not in the past tense.

The important underlying assumptions in the FS- Principle are that the speaker or the au-

thor always tries to make a felicitous statement and that the addressee always tries to under-

stand it. That is, both the speaker/writer and the addressee try to make their communication

successful. Therefore, the inferential process may not be triggered when these assumptions

are not satisfied, e.g. when the addressee is not attending to the speaker's utterance or is just

skimming a written text. When an addressee who abides by the above assumption still fails

to find an appropriate value for X, the utterance is infelicitous. In such a case, the speaker

often tries to make it felicitous by providing more information which makes the value of the

free variable inferable.

Another important issue, first mentioned in Section 3.2, is that, because the value of X

must be inferred by the addressee, when a speaker introduces X, she needs to make sure

that the addressee is capable of carrying out the inference needed to find the right (intended)

value of X from the information encoded in her utterance and the context. Otherwise, the

addressee may not be able to find the value and the utterance may end up being infelicitous.

This is a general constraint on the specification of any free variable in a felicitous utterance,

including pronoun resolution.

Consider sentence (3.21); it can receive the interpretation paraphrased in (3.22), for exam-

ple.

(3.21)   Ken has lived in the southern part of India.

(3.22)   Ken is used to very spicy food.

The value of X for the perfect sentence in (3.21) here is Ken being used to spicy food. Crucially,

the speaker cannot use sentence (3.21) to implicate (3.22) if the addressee cannot infer (3.22) from the utterance of (3.21) even if it is inferable by the speaker. That is, the value of X needs to be inferable from the utterance in the context for the addressee as well as the speaker.

For example, imagine that the speaker is talking to his grandmother who has never been anywhere outside her small town and who always cooks her food with her family recipes and has no idea about southern Indian food. In such a situation, (3.22) is not inferable by the addressee. Then, the speaker cannot implicate (3.22) by uttering sentence (3.21).

In addition, the speaker also needs to be able to infer that the addressee is able to infer the value of X. If the speaker is not able to infer that the value is inferable by the addressee, she cannot intend to implicate the value of X.

For example, if the speaker is talking to his grandmother who secretly loves very spicy food and loves Indian food too, but the speaker does not know her secret and cannot infer that his grandmother can infer (3.22) from sentence (3.21), he would not implicate (3.22) by saying sentence (3.21) even though it is, in fact, inferable by her.

Furthermore, in order for the addressee to find the value of X which is implicated by the speaker, the addressee needs to be able to infer that the speaker is able to infer that the value of X is inferable by him.

For example, if the addressee does not know that her grandson actually knows her secret that she knows about Indian food, she cannot infer that her grandson can infer that she can infer (3.22) from sentence (3.21). In this case, she cannot fill in the value of X as (3.22), because

she thinks that the speaker would not implicate (3.22) since the speaker would think that it is not inferable by her.

Thus, when the speaker *felicitously* utters a sentence containing a free variable, the value of the free variable has to be mutually inferable by the speaker and the addressee in the discourse context from an omniscient point of view. However, if the speaker makes the wrong inference that the value is inferable by the addressee, he may still intend to implicate the value of X; he simply cannot get it across.

For example, if the speaker is talking to his grandmother who loves very spicy food and who knows a lot about it *except* for Indian food and if he mistakenly infers that she can infer (3.22) from sentence (3.21), he may intend to implicate (3.22), but may not be understood by her. It is possible that when the addressee cannot find the value of X, the speech participants start a repair conversation, e.g. the speaker further says 'Most South Indian foods are very spicy' or the addressee asks why the speaker says (3.21). Thus, in real conversations, although the speaker does try to make a felicitous utterance and the addressee assumes so and starts the search, the utterance may not necessarily be felicitous.

Practically, then, when the speaker utters a sentence containing a free variable, the value of the free variable is considered (possibly erroneously) to be mutually inferable by the speaker. This is a principle which applies to any free variable introduced in discourse. I will call it **the mutual inferability principle (MI-Principle)**. Following the idea of a one-sided definition of *mutual knowledge* in Clark and Marshall (1981); Clark (1992), mutual inferability can be

defined as follows:

Def. 3.1 *p is mutually inferable by the speaker and the addressee when*

> *q: the speaker is able to infer that p and that: the addressee is able to infer p and that q.*

In definition 3.1 p corresponds to the value of a free variable X and q corresponds to a condition which contains itself, i.e. it is self-referential. By representing it as self-referential, we avoid infinite statements to define mutual inferability.

The **MI-Principle** can be defined as follows:

Principle 2 *The mutual inferability principle (MI-Principle): The value of a free variable in a felicitous utterance must be mutually inferable by the speaker and the addressee.*

The **MI-Principle** makes sure that the value of X introduced by the perfect is inferable from the speaker's utterance of a perfect sentence by both the speaker and the addressee and excludes values which are irrelevant in the discourse context.

It should also be noted that although the definition of mutual inferability includes an implicitly infinite number of statements given its use of a self-referential expression, the speaker does not have to check all infinite statements in order to use a free variable. Briefly, the speaker can instead check whether he has evidence (grounds) that the value is mutually inferable. As I will show in Chapter 5, the inference rules used to find the value are very general default rules or commonsense default rules that are shared among the members of the community the speaker and the addressee belong to. If the speaker has evidence that all premises needed

to carry out the inference rules are also shared by the speaker and the addressee (or mutually known to them in the sense of Clark and Marshall (1981) and Clark (1992)), he has grounds to believe in for the mutual inferability of the value of the free variable.[13]

This section has introduced two principles that govern utterances whose semantic representations include a free variable. The inference of a value for the variable is, in successful communications, triggered by the very existence of the free variable under the FS-Principle. The range of possible values of the free variable is in turn constrained by the MI-Principle. The FS-Principle makes sure that the inference is fired by co-operating addressees whenever a free variable occurs, while the MI-Principle helps ensure, if the speaker's assumptions about the common ground are correct, that the right inference is drawn. The overall process may be schematized as follows:

(3.23) $\boxed{\quad ...\ X\ ...\quad}$ (Semantics of an utterance)

> IF there is a free variable X,
>
>> USE inferences to
>>
>> FIND the value of X (FS-PRINCIPLE)
>>
>> so that the value is mutually inferable (MI-PRINCIPLE)
>
> $\boxed{\quad X= ...\quad}$ (Pragmatics of the utterance)

Returning to the analysis of the perfect, the next section discusses the second component of my analysis of the perfect, i.e. the pragmatic inferential process fired by the presence of the

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[13]See the notion of co-presence heuristics in Clark and Marshall (1981) and Clark (1992).

free variable X and the FS-Principle that leads to the various possible interpretations of the perfect.

3.4 Pragmatic inferences and the perfect

The inferential process by which the value of the free property variable X is determined is triggered, given the FS-Principle, by the presence of the free variable X whose value is unspecified. This inferential process parallels the process modeled by the principle of informativeness (I-Principle) (Atlas and Levinson 1981; Levinson 1983; Levinson 2000). The I-principle consists of the speaker's maxim of Minimization and the hearer's pragmatic enrichment as its corollary.

(3.24) I-principle:

1. The speaker chooses the less informative utterance (q) when the more informative one (p) is available (Maxim of Minimization).

2. Assuming the speaker's maxim of minimization, the addressee enriches the less informative utterance into the most *specific* interpretation, making use of world knowledge.

The speaker's maxim of Minimization is equivalent to the second maxim of quantity in Grice, i.e. 'Do not make your contribution more informative than is required (Grice 1975).' It also corresponds to Horn's R-based Principle (R Principle or speaker-oriented principle) (Horn

1984; Horn 2001). That is, in saying '... P_i ...' the speaker implicates '... P_j ...', for some P_j stronger or more informative than P_i, i.e. what might have been said but is not said is the case (Horn 1984; Horn 2001). Horn's R Principle includes Grice's maxims of Quantity 2, Relation, and Manner, while the Q Principle corresponds to the maxim of Quantity 1. Grice's maxim of Relation says 'Be relevant,' while his maxim of Manner says, 'Be perspicuous.' Horn's R-principle associates unmarked expressions with more specific (informative), but stereotypical (default) interpretations in the context.

Grice's second maxim of quantity 'Do not make your contribution more informative than is required' contrasts with his first maxim of quantity 'Make your contribution as informative as is required', because the former leads to the speaker's minimization of her utterance and triggers R-inferences to more informative interpretations while the latter leads to the speaker's maximization of her utterance and triggers a Q-inference to a lower-bounding interpretation. If the addressee assumes that the speaker is obeying Grice's first quantity maxim and if the addressee therefore concludes that the speaker chooses q which is as informative as is required, it would stop the addressee from inferring something more specific than is literally said. Because the addressee would not assume the speaker's maxim of minimization, he would not start the inferential process described in (3.24).

However, when q is a perfect sentence which introduces a free variable X, the value of the free variable X has to be filled in by the addressee (FS-Principle), contra the first maxim of Quantity. That is, when a sentence contains a free variable X, the inferential process mod-

eled by the I-Principle is triggered (in successful acts of communication) by the FS-Principle. The addressee cannot assume that because by saying q which contains a free variable X the speaker is observing the first maxim of Quantity and the value of X can be left unspecified to understand q. As a consequence, q does not trigger a Q-inference but always triggers an inference to find the value of X, i.e. an inference from the less informative utterance to the most specific interpretation.

For example, the meaning of sentence (3.25) can be represented as the formula in (3.26). The formula in (3.26) is a first order predicate calculus formula that corresponds to the DRS representation of sentence (3.25). In formula (3.26) there is an event e, which satisfies 'Ken_break _his_leg' and whose temporal trace $\tau(e)$ precedes utterance time n, and a state s whose category is X and whose temporal trace $\tau(s)$ overlaps n.

(3.25)   Ken has broken his leg. (=q)

(3.26) $\exists e \exists s[\text{Ken\_break\_his\_leg}\,(e) \wedge X(s) \wedge \tau(e) \prec n \wedge \tau(s) \circ n]$

    a.   Ken has broken his leg and Ken's leg is broken. (=p)

       Ken has broken his leg and Ken is behind in his training. (=p')

Here the more informative utterances in (3.26a), p and p', are available. However, when the speaker chooses to utter sentence (3.25) which includes a free variable instead, following the maxim of Minimization, the hearer enriches the less informative utterance q into p or p', given the FS- and MI-Principles. That is, the value of X is filled in as 'Ken's_leg_be_broken' or 'Ken_be_behind_in_Ken's_training' if q corresponds to the speaker's minimization of utterance

p or p', respectively.

The inferential process in the perfect sentence in (3.25) can be described as in (3.27),which is equivalent to the inferential process in (3.24).

(3.27)   a. The speaker (=S) utters a perfect sentence q.

           i. The meaning of the perfect sentence q contains a free variable X.

          ii. A free variable has to be filled in by the hearer (=H) via inferences (FS-Principle).

       iii. The value of X must be mutually inferable by S and H (MI-Principle).

    b. Based on (i)-(iii), H fills in the value of X via inferences.

Note that (i) -(iii) can be paraphrased as the speaker's maxim of minimization (the first part of I-Principle), namely when a more specific utterance such as p or p' is available the speaker may choose to utter q which contains an unspecified free variable X (=(i)) whose value has to be filled in (=(ii)) and this is so, because no more information is needed than q to mutually infer p or p' (=(iii)). Filling in the value of X corresponds to the second part of the I-principle, the addressee's enrichment of the utterance (see(3.24)).

To conclude, when the speaker chooses to utter a perfect sentence, a co-operative hearer tries to carry out a sequence of inferences to fill in the underspecified value of the perfect state. As a result, the perfect receives a specific interpretation, i.e. some value for X, otherwise the perfect sentence is infelicitous.[14] Note, though, that there may be more than one possible

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[14]This claim is empirically justified in the corpus study discussed in Chapter 5.

value of X. Out of the set of all potential perfect states (i.e. the set of possible values of X), only a subset are mutually inferable and an even smaller subset which are intended by the speaker. For communication to be successful, the value of X has to be in that set of potential values which are both mutually inferable and intended by the speaker. It is such values for X that the addressee is looking for and he should find at least one such value if communication is to be successful. To simplify, from now on I will assume that there is only one such value of X and that the hearer always finds it. Nothing substantial hinges on this simplification.

As I now show, the various readings of the perfect for sentence (3.25) in Chapter 2 result from the different values X can take. For example, entailed resultative perfect readings obtain when the value of X is 'Ken's_leg_be_broken,' as shown in (3.28), while conversationally implicated resultative perfect readings, i.e. non-entailed resultative perfect readings, obtain when the value of X is, e.g. 'Ken_be_behind_in_Ken's_training', as seen in (3.29).

(3.28)   Entailed resultative perfect reading:

   $X(s)$=Ken's_leg_be_broken (s)

(3.29)   Conversationally Implicated resultative perfect reading:

   $X(s)$=Ken_be_behind_in_ Ken's_training (s)

In reading (3.28) the value of X is entailed by the base eventuality description of sentence (3.25), while in (3.29) the value of X is not entailed but conversationally implicated. That is, it is common knowledge between most speakers and hearers that if anyone breaks his/her leg, it normally impedes his/her training. Therefore, the hearer can infer that Ken being be-

hind in his training is a resultant state from the event of Ken breaking his leg. Some may argue that because entailed resultative readings are entailed by the meaning of perfect sentences, these readings, unlike other interpretations of the perfect, should not be dealt within pragmatically at all, but only semantically. However, even if the value of X corresponds to an entailment of the eventuality description, a pragmatic inference is still required, i.e. *the inference of persistence* (McDermott 1982). The inference required for reading (3.28) is that the entailed state persists until reference time, since there is no guarantee that the state of Ken's leg being broken continued from the end of the base eventuality until now.

McDermott (1982) explains the inference with an example that if a boulder falls to the bottom of a mountain, it will be at the bottom of the mountain. The inference is that a fact (a set of states) persists until it ceases to be true. Thus, the hearer interprets sentence (3.25) as conveying that the entailed perfect state holds at present via the inference of persistence unless she knows something that is inconsistent with its persistence. For example, unless she finds out that there is a newly developed medical technology which cures a broken leg in one hour and so on, she infers that the state of Ken's leg being broken still persists one hour after the event of Ken breaking his leg.

Non-resultative perfect readings, which are traditionally called existential perfects, obtain when the value of X is, for example, 'Ski_jumps_be_difficult' for (3.25), as seen in (3.30).[15]

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[15]'Ken's_breaking_his_leg_have_occurred (s)' may be considered as a typical existential perfect reading for (3.25). This interpretation corresponds to the logical permanent state of an event having occurred as discussed in Chapter 2. Although it is not *the* meaning of the perfect, some may say that it can still be one of the possible interpretations of a perfect sentence. I will discuss this reading shortly.

(3.30)   Existential (non-resultative) perfect reading:

$X(s)$=Ski_jumps_be_difficult (s)

Here, the state of the ski jumps being difficult is not a resultant state of Ken breaking his leg,

but rather it is the cause of Ken breaking his leg. If the ski jumps are difficult, people tend to

break their legs. Therefore, the hearer can abductively infer from the fact that Ken broke his

leg that the ski jumps were difficult.

Finally, the value of X cannot be 'Susan_be_married,' because this value is not mutually

inferable from the occurrence of the event of Ken breaking his leg in *normal* contexts (MI-

Principle).[16]

(3.31) $X(s)$=#Susan_be_married (s)

(The value is not normally inferable from e's occurrence.)

My analysis, thus, correctly excludes temporally co-incidental but irrelevant states as the

value of X, which a merely temporal abutting view of the perfect state could not exclude (Kamp

and Reyle 1993; de Swart 1998).

Since 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— i.e. when the category of the perfect state

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[16]Strictly speaking, when Susan *is* married, the value 'Susan_be_married' is inferable from anything in classical logic. However, it does not seem to follow that this is mutually inferable by the speaker and the addressee from (3.25) in normal contexts unless they are logicians. Even if they are, using this type of inference, where the content of the sentence in the perfect is virtually vacuous, is highly unlikely. See Chapter 5 for more details on inference rules used to find the value of X.

is that of the base eventuality—, we are dealing with what is typically labeled continuative perfect readings. This is possible in my analysis because the base eventuality introduced by the perfect does not have to be bounded as seen in formula (3.33). Formula (3.33) represents the meaning of sentence (3.32), where a subpart ev' of ev is introduced whose temporal trace precedes now, but where ev does not have to, as discussed in Section 3.2. (3.33) can lead to the I-implicatures in (3.33a) and (3.33b).

(3.32)   Ken has lived in London.

(3.33) $\exists ev \exists ev' \exists s \exists n$[Ken_live_in_London ($ev$) $\wedge$ Ken_live_in_London (ev') $\wedge$ $ev' \leq ev$ $\wedge$ $X(s)$

   $\wedge$ $\tau(ev') \prec n$ $\wedge$ $\tau(s) \circ n$]

   a. Ken (still) lives in London.

   b. Ken knows good restaurants in London.

When the value of X is 'Ken_live_in_London,' we are dealing with a continuative reading (see (3.34)). When the value of X is, e.g. 'Ken_know_good_restaurants_in_London,' we are dealing with a non-continuative, conversationally implicated resultative perfect reading (see (3.35)).

(3.34)   Continuative reading:

   $X(s)$= Ken_live_in_London (s)

(3.35)   Non-continuative reading:

   $X(s)$=Ken_know_good_restaurants_in_London (s)

The inference needed for continuative perfect readings is also an inference of persistence. When the category of the perfect state is interpreted as identical to that of the input state, as in (3.34), the addressee is required to carry out the inference that the input state still persists. On the other hand, the inference needed for non-continuative reading (3.35) is one of causality; i.e. that Ken living in London in the past caused the resultant state of Ken knowing good restaurants in London.

In summary, all the different interpretations of the English present perfect can derive from a single meaning of the English perfect via pragmatic inferences. The different interpretations of the perfect correspond to different values of X that are pragmatically filled in by addressees. Entailed resultative perfect readings obtain when the addressee fills in the value of X as an entailed resultant state via an entailment and a pragmatic inference of persistence, as seen in reading (3.28). Non-entailed resultative perfect readings obtain when the value of X is filled in as a conversationally implicated resultant state which is inferred based on the speaker and hearer's common sense knowledge of causality (Lascarides and Asher 1993), as briefly discussed for readings (3.29) and (3.33b).[17] Non-resultative perfect readings (or existential perfect readings in traditional terminology) obtain when the value of X is filled in as a conversationally implicated state other than a resultant state which is again inferred via world or contextual knowledge, as seen in reading (3.30).

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[17]The use of commonsense knowledge to interpret perfect sentences will be discussed in more details in Chapter 6. See also Nishiyama and Koenig (2006).

The difference between conversationally implicated (non-entailed) resultant perfect readings and non-resultative perfect readings is that only in the former is there a causal relation between the occurrence of the prior eventuality and the perfect state. Compare readings (3.36a) for (3.36) and (3.37a) for (3.37). While there is a causal relation between the event of Ken breaking his leg and the state of Ken being behind in his training in the conversationally implicated resultative reading (3.36a), there is no such relation between the event of the speaker seeing the key in the room and the state of the key being in the room in the non-resultative reading (3.37a).

(3.36)   Ken has broken his leg. (=(2.70), (2.78), (3.12))

   a. Ken is behind in his training (s)

(3.37)   Mr. Smith has seen the key in the room. (=(2.71), (2.79), (3.13))

   a. The key is in the room (s)

Non-resultative perfect readings and even non-entailed resultative perfect readings have been often called existential perfects. However, there seems to be no purely existential reading in the present perfect in the sense that a state of one or more occurrences of the base eventuality having occurred holds at present. Such a reading would be equivalent to saying that the speaker does not implicate anything more than one or more past occurrence of the base eventuality and that the value of X is left unspecified. Like logically permanent state dis-

cussed in Section 2.3.2, what exactly holds at present remains unspecified in this case.[18] If one argues that 'an_event_having_occurred' is one possible category of perfect states, the specification for the category of the perfect state includes the perfect form '**having_**occurr**ed**,' which itself implicitly contains a free variable X again, whose value must be filled in to know exactly what 'an_event_having_occurred' means. This proposal would lead to an endless search for the value of X.

Furthermore, the previous chapter has already shown that either a temporal definition or a logically permanent state view of the perfect cannot be maintained as the meaning of the perfect because it does not explain the various readings of the perfect and its difference from a past tense and it has also shown that there is no evidence for the existence of an ambiguity between the perfect's different readings in English, either. Therefore, the logically permanent state cannot be the category of the perfect state.

When the category of the perfect state is introduced as a free property variable, as proposed in this chapter, it has to be filled in by addressees via pragmatic inference (FS-Principle). Otherwise, the utterance is infelicitous. As a consequence, there is no pure existential *reading* of the perfect in actual uses of the perfect. It may be argued that English past perfects have a purely temporal meaning and express a temporal relation between past events, but the analysis proposed in this chapter also seems to extend to past perfect sentences, as seen in sentences (3.38) and (3.39).

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[18]See Section 2.3.2 for the difference between existential perfect readings described above and logically permanent state readings of an event having occurred.

(3.38)   Mike had already left when Katie came.

(3.39)   Mike had visited Paris several times since he was a child.

In sentence (3.38) the inferred value of X is 'Mike_not_be_there'. Sentence (3.39) may be uttered following an utterance such as 'Mike showed us around in Paris.' Then, the value of X is 'Mike_be_familiar_with_Paris'.

Finally, a continuative perfect reading can obtain when the value of X is inferred to be identical to the category of the input eventuality description via an inference of persistence.

The view that the category of the perfect state is any category that can be inferred by addressees can also explain uses of the perfect which Inoue (1979), Portner (2003), or Borillo *et al.* (2004) could not explain. They suggest that the perfect presupposes or elaborates a topic. They cannot therefore explain that a perfect sentence can be uttered out of the blue at the beginning of a conversation as seen in sentence (2.95) in Chapter 2, repeated in (3.40).

(3.40)   Prof. Smith has left his keys on the table. We should take them to him.

According to the view advocated in this thesis, the perfect does not presuppose or elaborate on an agreed upon topic among conversational participants. Sentence (3.40) can be uttered felicitously out of the blue to implicate 'Prof._Smith's_keys_be_on_the_table (s)', which is easily inferable via an entailment and an inference of persistence from the occurrence of the event of Prof.Smith leaving his keys on the table.

3.5 Summary

This chapter has argued that the different uses of the English perfect can be captured by a single meaning. It showed that distinctions among the different uses of the perfect are based on different types of inferences people contextually draw from the occurrence of a base eventuality. Although many studies have tried to explain those various readings of the perfect, none of them have been successful in explaining *all* uses of the perfect and distinguishing the perfect from the past tense. The theory of the perfect proposed in this chapter correctly explains all the readings of the perfect without licensing impossible readings. According to the analysis proposed in this chapter, the meaning of the perfect first introduces a base eventuality and a perfect state whose category is underspecified semantically (i.e. is a free property variable). Second, the distinct readings of the perfect derive from the various kinds of value the free variable can receive through pragmatic inferences. The inferential process is modeled via the I-Principle and is triggered by a general principle, the FS-Principle, which requires addressees to look for a fully specified interpretation when the semantics of a sentence is underspecified, in this case, because of the presence of a free property variable. The value of the free property variable, in turn, is constrained by another general principle, the MI-Principle, which constrains the possible perfect states to be inferable by conversational participants and prevents overgeneration.

Chapter 4

An Imperfective Perfect: The Japanese Aspect Marker(s) *-te-i-*

4.1 Introduction

This chapter extends the analysis of the English perfect proposed in Chapter 3 to the Japanese aspectual markers *-te-i-*, which can have progressive and perfect readings. Progressives and perfects differ in that the denoted eventuality is incomplete and ongoing in one case, but typically complete and not ongoing in the other. Progressives are often associated with an imperfective marker which encodes the incompleteness of the described eventuality, while perfects are often associated with a perfective marker which encodes the completeness of the eventuality or some type of aspectual marker which can entail the termination of the even-

tuality if not the completeness of it (Smith 1997). Many languages such as English, French,

and Chinese have distinct aspectual markers or verbal forms for progressives and perfects.

It is therefore puzzling that the Japanese aspect marker *-te-i-* can have either progressive or

perfect interpretations as seen in sentences (4.1) - (4.4).

(4.1) *Ken-ga   hashi- -tte-i- -ru.*
      Ken-NOM run   -TE-I- NONPAST

   a. 'Ken is running.'

   b. 'Ken has (already) run.'

(4.2) *Ki-ga   taore- -te-i- -ru.*
      Ki-NOM fall   -TE-I- NONPAST

   'A tree has fallen down (and it is lying on the ground).'

(4.3) *Yoko-wa   kono natsu   san   kai   umi-ni i- -tte-i- -ru.*
      Yoko-TOP this summer three times sea-LOC go -TE-I- NONPAST

   'Yoko has been to the sea three times this summer.'

(4.4) *Ken-ga   ichi-jikan-mae-kara   hashi- -tte-i- -ru.*
      Ken-NOM one-hour-ago-since run   -TE-I- NONPAST

   'Ken has been running since one hour before.'

One interpretation for *-te-i-* in sentence (4.1) corresponds to a present progressive in En-

glish, as seen in (4.1a). Sentence (4.2) corresponds to a present resultative perfect, that is, 'the

direct result of a past event still continues ("stative perfect")' (McCawley 1971:104). Inter-

pretation (4.1b) or sentence (4.3) corresponds to a present existential perfect which expresses

'the existence of past events' (McCawley 1971:104).[1] Sentence (4.4) corresponds to a present progressive perfect or a continuative perfect.

In addition to progressive and perfect readings, habitual readings are also possible with *-te-i-*, as seen in sentence (4.5).

(4.5) *Ken-ga   (mainichi)   hashi- -tte-i- -ru.*
       Ken-NOM (every day) run   -TE-I- NONPAST
       'Ken runs everyday.'[2]

These Japanese examples suggest that progressives, perfects, and habituals may not always constitute different semantic classes realized by different markers, but they may in some languages constitute a single semantic class realized by the same aspectual marker.

The Japanese data raise questions: Why and how can those seemingly different interpretations, especially progressive and perfect interpretations, be expressed by the same marker *-te-i-*? What is the difference between the English perfect and the Japanese perfect with *-te-i-*?

To answer these questions, this chapter assumes Krifka's (1998) event structure along with others (Koenig and Muansuwan 2000; Egg 2005) and modifies Kamp and Reyle's (1993), van Eijck and Kamp's (1997), and de Swart's (1998) approach to aspect in Discourse Representation Theory, especially, the progressive and the perfect. I propose a compositional and monosemous analysis of *-te-i-* and show how those different interpretations can be derived

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[1]The interpretation in sentence (4.1b) or (4.3) is commonly called *keiken/kiroku* (experience/record) (Fujii 1966) or 'experiential perfect.' I call it an existential perfect reading in this chapter.

[2]As mentioned in Section 1.5.1, Japanese tense is either marked by the past tense *-ta* or the non-past tense *-ru*. Therefore, each distinct reading of *-te-i-* marked by a non-past tense *-ru* in sentences (4.1) - (4.5) can have a corresponding future reading. I will ignore future readings of *-te-i-*non-past unless they are relevant, so as to focus on the distinct readings of *-te-i-*.

from an unambiguous meaning of *-te-i-* built out of an imperfective marker *-te-* and a stativizer *-i-*. This chapter provides a unified analysis of *-te-i-* which covers an unusual cluster of aspectual interpretations.

There are two consequences of this analysis. First, my monosemous analysis refutes the prevailing view among many Japanese linguists that *-te-i-* is ambiguous or polysemous. Second, this analysis supports the view proposed in Chapter 3 crosslinguistically, i.e. that the distinct readings of the perfect derive from a monosemous meaning of the perfect via inferences. I argue that the difference between two perfect readings of *-te-i-* is also pragmatic in nature and that the same inferential mechanism utilized in the interpretations of the English perfect is used to interpret the Japanese *-te-i-*.

4.2   Problems with ambiguity approaches to *-te-i-*

This section first discusses problems that plague approaches treating *-te-i-* as ambiguous. Despite extensive discussion of the behavior of the different interpretations of *-te-i-* in past research, much less work has been done on the semantics of *-te-i-* per se. According to Kindaichi's (1976a) four-way verbal classification, *-te-i-* has a progressive interpretation when it is attached to *durative verbs* (*keizoku doshi*), e.g. *hashi-* ('run') or *kak-* ('draw') in *en-o kak-* ('draw a circle'), which correspond to activity and accomplishment verbs in Vendler's classification, respectively (Vendler 1957). In contrast, it has a resultative reading when it is attached to

punctual verbs (*shunkan doshi*),[3] e.g. *shin-* ('die'), which correspond to Vender's achievement verbs (Kindaichi 1976a).[4] Following Kindaichi's classification, uses of *-te-i-* (*-te-i-₂* in Table 4.1) in which it receives an existential perfect interpretation (*keiken/kiroku* ('experience/record') in traditional terminology) have been considered to exemplify a distinct morpheme from the other two uses (*-te-i-₁*), because *-te-i-₂* can receive an existential interpretation whether it occurs with durative verbs or punctual verbs (Kudo 1995; Igarashi and Gunji 1998; Ogihara 1998; Shirai 2000).[5]

Table 4.1: Traditional view: two entries of *-te-i-*

verb class	*-te-i-₁*	+*ima* (now)	*-te-i-₂*	+*ima* (now)
durative	present progressive	YES	existential perfect	NO
punctual	resultative perfect	YES		

The interpretations of *-te-i-₁* and *-te-i-₂* have been distinguished by the co-occurrence restrictions of present-time adverbials, as seen in Table 4.1.[6] This co-occurrence restriction has

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[3]The two verbal categories go back to Matsushita (1928:409-11). *Shunkan doshi* is also translated as 'instantaneous verbs,' and *keizoku doshi* as 'continuative verbs' (Jacobsen 1991; Ogihara 1998).

[4]There are two other Japanese verbal categories in Kindaichi's classification.

   i. Stative verbs: verbs which have stative meanings without *-te-i-*, e.g. *a-* ('exist'), *i-* ('exist'), *mie-* ('be visible'), etc.

   ii. Verbs of the fourth category: verbs which always occur with *-te-i-*, e.g. *sobie-* ('tower'), *sugure-* ('become superior'), etc.

Kindaichi (1950) did not give any mnemonic name to the last category. Ogihara (1998) regards it as a defective category of punctual verbs, or instantaneous verbs since they do not usually occur without *-te-i-* in the main clause.

[5]Some other studies only discuss the contrast between progressive readings with durative verbs and resultative perfect readings with punctual verbs (Jacobsen 1991; McClure 1995). They do not discuss cases in which durative verbs (activity) can receive perfect readings with *-te-i-*.

[6]The verbal classification in Table 4.1 follows Kindaichi (1976a). More recent researchers have replaced

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been one major piece of evidence for the hypothesis that *-te-i-* is ambiguous between *-te-i-$_1$*

and *-te-i-$_2$*.

According to the ambiguity hypothesis, if a sentence with *-te-i-* cannot co-occur with a

present time adverb *genzai* or *ima* ('now') (see sentence (4.7b)), it is considered to have an

existential perfect reading ("experiential perfect" in Fujii (1966) or "action perfect" in Kudo

(1995)) (Fujii 1966; Kudo 1995; Ogihara 1998; Shirai 2000). Present progressive and resultative

perfect interpretations, on the other hand, can co-occur with a present-time adverb *genzai*

('now') as shown in sentences (4.6) and (4.8).

(4.6) *Genzai ano hito-wa   tegami-o   kai- -te-i- -ru.*
       Now   that person-TOP letter-ACC write -TE-I- NONPAST

       'That person is writing a letter/letters now.'

(4.7) a. *Ano hito-wa   takusan-no shousetsu-o kai- -te-i- -ru.*
          That person-TOP many-GEN novels-ACC write -TE-I- NONPAST

          'That person has written a lot of novels.' (Kindaichi 1976b)

       b. *(*) Genzai ano hito-wa   takusan-no shousetsu-o kai- -te-i- -ru.*
          (*) Now   that person-TOP many-GEN novels-ACC write -TE-I- NONPAST

          'That person has written a lot of novels now.' (Fujii 1966)

(4.8) *Genzai ano hito-wa   kekkon-shi- -te-i- -ru.*
       Now   that person-TOP marriage-do -TE-I- NONPAST

       'That person is married now.'

According to Fujii (1966), because one cannot add *genzai* to sentence (4.7a), sentences (4.7a)

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the terms 'durative verbs' with *hi-genkai doshi* (literally 'non-limit-verb') and 'punctual verbs' with *genkai doshi*
('limit-verb') (see Okuda (1978); Kudo (1995); Kinsui (1995)).

and (4.8) should be distinguished.[7]

Two difficulties plague this hypothesis. First, it is empirically wrong. In some contexts, sentence (4.7a) can co-occur with *genzai* ('now'). For example, imagine a situation where the speaker of sentence (4.7b) is talking about someone's achievements and continues sentence (4.7b) by listing titles of novels as follows:

(4.9) *Tatoeba,   Kiseki,   Ki-no-kuni,   ...*
       for example, miracle, Ki-GEN-country, ...

       'For example, *Kiseki*, *Ki-no-kuni* (the titles of books),...'

In such a context, sentence (4.7b) is felicitous.[8] Therefore, it does not support the claim that *-te-i-* is ambiguous between resultative and existential perfect readings. The following example also shows that present-time adverbs are compatible with existential readings:

(4.10) *Genzai kare-wa san-kai   taitoru-o bouei-shi- -te-i- -masu.*
        Now   he-TOP three-times title-ACC defend   -TE-I- -NONPAST (POLITE).

        'He has defended his (championship) title three times now.'

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[7]Following Matsushita (1928), Kindaichi (1976b) considers sentence (4.7a) a resultative perfect use and assumes that the verb *kak-* ('write') is ambiguous between a punctual and durative verb. However, there is no independent evidence to support the ambiguity of *kak-* ('write'), as I discuss shortly.

[8]Some may compare the use of *genzai* ('now') in sentence (4.7b) with non-temporal use of *now* in English ('the argumentative use' in Nyan (1998) or its use as a 'discourse marker' in Schiffrin (1987)) as seen in sentence (i.). In these uses, *now* metalinguistically marks transitions between topics or arguments. If *genzai* ('now') had that use, that would explain the felicity of sentence (4.7b) or sentence (4.10) according to the view that *-te-i-* is ambiguous. However, the Japanese present-time adverb *genzai* does not have non-temporal uses, as seen in sentence (ii.):

    i. Now, where else did we go ...(Schiffrin 1987:237)

    ii. {*??Genzai /Sate*}, *hokani doko-ni i- tta   kashira ..*
        Now   /Well else   where go PAST wonder

        'Now, where else did we go? (intended)'

sentence (ii.) sounds odd with *genzai* ('now') following a list of the name of the participants' favorite restaurants. The present-time adverb *ima* ('now') would also sound odd in the above context, although it has some, but not common, argumentative uses.

Secondly, even if the present time adverbs' constraint were true, it is not clear why present-time adverbs would not be able to co-occur with existential perfect readings of *-te-i-*. Michaelis (1998) considers the compatibility with present-time adverbs to be a test of stativity. She argues that the present-time adverb *now* is compatible with all present perfects including resultative and existential perfects in English because of their stativity. If Japanese resultative and existential perfects with *-te-i-* correspond to English resultative and existential perfects, it would be odd for present-time adverbs to distinguish present resultative perfects and existential perfects in Japanese, but not in English. Furthermore, not all states welcome present-time adverbs. The 'now' test rules out eternal states (generic states) (Ismail 2001), as sentence (4.11) illustrates:

(4.11)   *Now, whales are fish. (Ismail 2001:77)

We may therefore at most conclude that the compatibility with present-time adverbs indicates the stativity of a sentence, but it is not a necessary condition of stativity. Without clarifying what type of states present-time adverbs can or cannot really co-occur with, one cannot use their co-occurrence properties to decide that progressive/resultative uses of *-te-i-* and existential use of *-te-i-* correspond to two distinct meanings.

Another piece of evidence which has been adduced to argue for the existence of two meanings for *-te-i-* is the fact that only existential perfects can occur with past-time adverbial phrases in the non-past tense as shown in sentence (4.12). However, this is not always the case, either. See sentence (4.12).

(4.12) *Kare-wa kyonen   Kyoto-ni i- -tte-i- -ru.*
        He-TOP last year Kyoto-to go -TE-I- NONPAST

    a. '%*ⱼ*He's been to Kyoto last year. (He is not in Kyoto now).'

    b. '#He's gone to Kyoto last year. (He is in Kyoto now.)'[9]

(4.12) *Fuirumu-wa senshuu   genzo-ni   dashi- -te-i- -masu.*
        Film-TOP   last week development-to submit -TE-I- -NONPAST

    '%*ⱼ*I've taken the film to the store for development last week.'

The symbol %*ⱼ* marks literal English translations of Japanese sentences which are unaccept-able in English. Although the English translations of sentences (4.12a) and (4.12) are infelic-itous, the corresponding Japanese sentences are not. The most natural reading of sentence (4.12) is the resultative reading that the film is in the store.

    The last piece of evidence typically adduced in favor of the distinction between resultative and existential *-te-i-* is the fact that only existential *-te-i-* is compatible with location adverbs which denote the location of the event (Kudo 1995). An existential *-te-i-* can co-occur with an event-location adverb marked by the postposition *-de* as in sentence (4.13), while a resultative *-te-i-* cannot as shown in sentence (4.13b) (Kudo 1995).

(4.13) a. *Kanojo-wa suisu-no   kyookai-de kekkon-shi-   -te-i-   -ru* (Kudo 1995:119).
            She-TOP   Switzerland-GEN church-at marriage-do -TE-I- NONPAST

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[9]In fact, the resultative perfect reading is possible in sentence (4.12) even though it is not as common as the existential reading. If the adverbial phrase *kyonen* ('last year') is replaced with with *ichijikan-mae* ('an hour ago'), the sentence easily receives a resultative reading as seen in (i).

    i. *Kare-wa ichijikan-mae Kyoto-ni i-   -tte-i- -ru.*
        He-TOP an hour ago Kyoto-to go- -TE-I- NONPAST

    'He has gone to Kyoto an hour ago. (He is in Kyoto now.)'

'She has gotten married at church in Switzerland.'

b. *Genzai kanojo-wa suisu-no   kyookai-de kekkon-shi- -te-i- -ru.
   Now   she-TOP   Switzerland-GEN church-at marriage-do -TE-I- NONPAST

'She is married at church in Switzerland now.'

In sentence (4.13a), *suisu-no kyokai-de* ('at church in Switzerland') denotes the location of the event of getting married, not the location of the resultant state of being married. According to the ambiguity hypothesis, if the sentence has a resultative reading, it should be able to co-occur with present-time adverbs. Since sentence (4.13a) cannot co-occur with *genzai* ('now') as seen in sentence (4.13b), it is said not to have a resultative reading.

However, as I discussed, the incompatibility of present-time adverbials with a certain use of *-te-i-* cannot be used as evidence for the ambiguity of *-te-i-*. Secondly, adverbials marked by *-de* are fine with a resultative reading when it does not pick up the location of the wedding ceremony as in sentence (4.14).

(4.14)   *Genzai kanojo-wa suisu-de   kekkon-shi- -te-i- -ru.*
         Now   she-TOP   Switzerland-at marriage-do -TE-I- NONPAST

'She has gotten married in Switzerland (and is still married there) now.'

When an adverbial marked by *-de* only describes the location (or institution) where the wedding ceremony is held, it is harder for *-te-i-* to receive the entailed resultative perfect reading that a resultant state entailed by a main verb and its arguments holds at present, i.e. 'she is married,' because the information about the location of the ceremony is irrelevant to whether the state of her being married holds at present. On the other hand, sentence (4.14) is fine,

because *suisu-de* ('in Switzerland') can be interpreted as related to the entailed resultant state holding at present. In some contexts, though, sentence (4.13a) can receive an entailed resultative reading too, for example, when people are wondering if she is really married. What sentence (4.13a) cannot receive is the reading that the entailed resultant state is holding 'at church,' since *kyokai* ('church') is the location of the wedding ceremony, not of the state of being married in normal contexts.

Thus far, I have shown that there are counterexamples to all three pieces of evidence typically adduced for the ambiguity approach. I conclude that there is no clear evidence to support the distinction between two meanings of *-te-i-*, *-te-i-$_1$* and *-te-i-$_2$*,[10] and that the different readings of *-te-i-* may correspond to a single meaning. This result is also consistent with the result discussed in Chapter 3, where the English perfect has only one meaning and its distinct readings, i.e. resultative and existential perfects in traditional classification, can derive from a single meaning pragmatically.

Before turning to the analysis of the meaning of *-te-i-*, one more observation must be noted. There is one clear difference between perfect uses of *-te-i-* and English perfects. That is, the perfect uses of *-te-i-* can co-occur with both 'definite past-time adverbs' and 'deictic past-time

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[10]Certain Japanese dialects in Uwajima and some western parts of Japan have two forms *-yo-ru* and *-to-ru* to express present progressive and perfect interpretations (see Kudo (1995); Kudo (2001) for detailed studies). They may be compared with the multiple interpretations of *-te-i-* (Shirai 1998). However, as Kinsui (1995) shows, the different meanings of those two forms do not correspond to the progressive/resultative or existential interpretations of *-te-i-* and therefore the existence of those two forms cannot be regarded as evidence for the ambiguity of the progressive/resultative or existential uses of *-te-i-*. For example, while *-yo-ru* only has a progressive interpretation, *-to-ru* has both progressive and perfect interpretations in many Western parts of Japan (Inoue 2001a; Kishie 2001; Murakami 2001).

adverbs' in present (non-past) tense as seen in sentences (4.15) - (4.17), while English exis-
tential or resultative present perfects cannot co-occur with any past-time adverb (Michaelis
1998:164-166).[11]

(4.15) *1972-nen-ni /kyonen   kanojo-wa kekkon-shi- -te-i- -ru.*
     1972-year-in /last year she-TOP   marriage-do -TE-I- NONPAST

     '%$_J$She has got married in 1972/last year. (She is married.)'

(4.16) *1972-nen-ni Jon Lenon-ga   kono hoteru-ni taizai-shi- -te-i- -ru.*
     1972-year-in John Lennon-NOM this hotel-LOC stay-DO   -TE-I- NONPAST

     '%$_J$John Lennon has stayed in this hotel in 1972.' ('This hotel is well-known for the

     fact that John Lennon has stayed.')

(4.17) *Kare-wa kesa   hashi- -tte-i- -ru.*
     He-TOP this morning run   -TE-I- NONPAST

     '%$_J$He has run this morning.' ('He is still tired.')

As seen in sentences (4.15) - (4.17) and in sentence (4.12), all present perfect readings of *-te-i-*
including entailed resultative perfect readings can co-occur with a past time adverbial phrase.

    The fact that *-te-i-* can co-occur with past time adverbials may suggest that this use of *-te-
i-*+non-past is simply a past tense. However, it has often been noted that the present perfect
can co-occur with past-time adverbials in many languages such as German (the German *Per-
fekt*) (Klein 2000; Löbner 2002), Dutch (Boogaart 1999), and French (*passé composé*) (Molendijk
et al. 2004). Therefore, the compatibility with past time adverbials does not mean that *-te-i-*
+non-past is a past tense, rather than a present perfect.

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[11]There are some exceptions in English too (McCoard 1978).

Another observation which has been made to distinguish past tenses from present perfects is that in some languages such as English and Dutch a simple past tense occurs in a narrative context and can be used to describe a sequence of events, i.e., a temporally ordered set of events, while a present perfect resists narrative contexts and does not easily describe such events (Partee 1984b; Boogaart 1999). Briefly, in a narrative context, after the first sentence of a narrative sequence establishes the initial temporal set up, the temporal information of each subsequent sentence can be interpreted relative to that of the preceding sentence *independently* of speech time ("bracketing of the speech point" in Sandström (1993). See also Nakhimovsky (1988); Boogaart (1999)). Present perfect forms in some languages can have such narrative uses, for example, the French *passé composé* and the German *Perfekt* (Boogaart 1999). On the other hand, the past tense has a narrative use in English, Dutch, French, and German regardless of whether their present perfect forms have the use or not (Löbner 2002; Molendijk *et al.* 2004). Therefore, present perfect forms either can or cannot have a narrative use, while a past tense usually has a narrative use.[12]

Now, like the Dutch and the English present perfects, and unlike the French *passé composé* and the German *perfekt*, the Japanese *-te-i-*+non-past is not appropriate to describe a sequence of events in narrative contexts as seen in discourse (4.18).

(4.18) *#Kinoo(-wa)   gakusei-ga   hitori kurasu-de shitsumon-shi- -te-i- -ru.*
        Yesterday-TOP students-NOM one class-LOC question-do -TE-I- NONPAST.

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[12]My brief explanation of the narrative use does not exclude the possibility of reverse-ordered events, although some past tenses, e.g. *passé simple* in French, cannot describe reverse-ordered events in narratives and only describe temporally ordered sequences of events.

Watashi-wa minna-ni   wakaru-youni   shinsetsu-ni kotae- -te-i- -ru.
I-TOP   everybody understand-in order to kindly   answer -TE-I- NONPAST.
Jugyo-ga   owa- -tte-i- -ru.   Tanaka-kun-ga   kenkyuu-shitsu-ni ki-   -te-i-
Class-NOM end -TE-I- NONPAST. Tanaka-Mr.-NOM office-to   come -TE-I-
-ru.
-NONPAST

'Yesterday one student asked a question in class. I answered (it) kindly so that every-one could understand. The class ended. Mr. Tanaka came to my office. (Intended)'

(4.19) *Kinoo(-wa)   gakusei-ga   hitori kurasu-de shitsumon-shi- -ta.   Watashi-wa*
         Yesterday-TOP students-NOM one   class-LOC question-do   PAST. I-TOP
       minna-ni   wakaru-youni   shinsetsu-ni kotae- -ta.   Jugyo-ga   owa- -ta.
       everybody understand-in order to kindly   answer PAST. Class-NOM end PAST.
       Tanaka-kun-ga   kenkyuu-shitsu-ni ki-   -ta.
       Tanaka-Mr.-NOM office-to   come PAST.

If (4.18) is a journal's description of the day's incidents and is intended to describe a sequence

of events, *-te-i-*+non-past sounds odd and should be replaced by the simple past tense *-ta* as

seen in (4.19). In (4.19) once the temporal information and the event of the student asking

a question is set up in the first sentence by *kinoo(-wa)* ('Yesterday(-TOP)'), the temporal in-

formation of each event is interpreted relative to the preceding sentence, but not relative to

speech time (the time of the writing in this case). If *-te-i-*+non-past tense was a past tense,

(4.18) should also be able to express a sequence of events.

Another criterion to test whether a present perfect form has a narrative use was proposed

in Boogaart (1999): If the present perfect form can occur in a when-clause that modifies a

past event in a main clause, the form has a narrative use. The French *passé composé* and the

German *Perfekt* pass this criterion and have a narrative use, while the English and the Dutch

present perfects do not pass it (Boogaart 1999; Löbner 2002; Molendijk *et al.* 2004). Because

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the present tense is the one that is incompatible with the function of *when*-clauses as Boogaart (1999) argues, while the criterion is valid to test the narrative uses of perfects in languages which have absolute tense systems, it cannot be used in languages which allow relative tenses in subordinate clauses such as Japanese. Sentence (4.20) shows, for example, that *-te-i-*+non-past have a past tense interpretation in a relative clause when the main clause is in the past tense.

(4.20) *Kinoo watashi-wa kooen-de aisukuriimu-o u- -tte-i- -ru oji-san-ni*
   Yesterday I-TOP park-LOC ice cream-ACC sell TE-I- -NONPAST gentleman-DAT
   a- -tta.
   meet PAST
   'I met a man who was selling ice creams in the park yesterday.'

Therefore, the Japanese *-te-i-*+non-past does not require a present tense interpretation when it occurs in when-clauses which modify the past event in the main clauses as seen in sentence (4.21).

(4.21) *Shingoo-ga sudeni kiiro-ni na- -tte-i- -ru toki totsuzen*
   Traffic light-NOM already yellow-DAT become -TE-I- -NONPAST when suddenly
   kare-ga tobidashi- -ta.
   he-NOM rush out PAST
   'When the traffic light had already turned to yellow, suddenly he rushed out.'

Sentence (4.21) sounds fine not because the present perfect use of *-te-i-*+non-past has the same narrative function as the past tense would have in main clauses, but because the Japanese relative tense system allows it to be interpreted relative to the past tense in a main clause independently of speech time. Because it is a present tense interpretation that makes the

when-clause test work as a criterion for the narrative use of the present perfect, we cannot use it as an independent criterion to test whether the Japanese non-past perfect form *-te-i-ru* can have a narrative use in main clauses when *-te-i-ru* does not have to have a present tense interpretation in subordinate clauses. However, speakers of Japanese, like speakers of English, have a clear intuition that *-te-i-ru* cannot be used to describe a temporally ordered sequence of events, irrespective of the difference between Japanese and English with respect to the behavior of past-time adverbials. Even though the present perfect use of *-te-i*-non-past can occur in subordinate *when*-clauses, it does not mean that *-te-i-ru* has a narrative use in main clauses, because the former use is due to the relative tense interpretation of the non-past tense in Japanese.[13] I conclude that there is no evidence that *-te-i*-+non-past is a past tense.

Finally, the oddity of the present perfect use of *-te-i-* to describe a sequence of events as seen in discourse (4.18) can be explained if present perfects express states introduced by the perfect that hold at present (e.g., at the time of writing a journal). States holding at present are irrelevant to the description of a sequence of events. Moreover, such states do not move reference time forward and the states introduced in (4.18) all share the same reference time (Partee 1984b). Hence, the inability of the sequence of perfect sentences to describe a series of events in (4.18).[14]

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[13]See Ogihara (1996) for more details on Japanese relative tenses and also Comrie (1985) for absolute and relative tense systems.

[14]This explanation for the inability of the present perfect to describe a sequence of events may in turn favor the view that the French *passé composé* and the German *Perfekt* have a past tense meaning as one of their meanings, and that this meaning is responsible for their narrative uses (Waugh 1987; Löbner 2002). However, the semantics of the perfect forms in French and German is beyond the scope of this thesis.

4.3 A unified analysis of *-te-i-*

This section presents a monosemous analysis of the meaning of *-te-i-*. Section 4.3.1 gives a brief sketch of my proposal. Section 4.3.2 describes the meaning of *-te-* as an imperfective morpheme with a MAX operator, assuming Portner's (1998) notion of *inertia worlds*, and Section 4.3.3 analyzes the meaning of *-i-* as a stativizer.

4.3.1 The function of *-te-i-*: preliminaries

I begin with a rough sketch of my analysis. Given the discussion in the previous section, the single meaning of *-te-i-* needs to provide two types of outputs, an incomplete event for progressive (and progressive perfect) readings and a complete event for perfect readings. This is achieved by making use of a part-whole relation between events. I propose that *-te-i-* consists of two morphemes: the imperfective operator *-te-* and the stativizer *-i-*. The imperfective operator *-te-* maps a class of eventualities which satisfy an eventuality description ϕ onto another class of eventualities, those eventualities that are (non-necessarily proper) subparts of the eventualities which satisfy ϕ (i.e. $ev' \leq ev$ when $\phi(ev)$. '$\leq$' is a subpart relation.). The stativizer *-i-*, then, maps those subeventualities onto a set of eventualities that satisfy an underspecified stative description ϕ' whose temporal trace overlaps with a reference time interval (i.e. $\phi'(s)$ and the state s overlaps a reference time.).

Take example (4.22):

(4.22) *Ken-ga   ie-o   tate- -te-i- -ru*
Ken-NOM house-ACC build -TE-I- -NONPAST

'Ken is building a house.' / 'Ken has built a house.'

(4.23) Ken-ga ie-o tate- (Ken-NOM house-ACC build-)

(4.23) is the sentence radical for sentence (4.22), which characterizes the base eventuality description. Because the output of *-te-* does not always have to be a proper subpart of the input eventuality described in the base eventuality description, there are two types of possible outputs of *-te-*, which lead to the contrast between progressive and perfect readings of *-te-i-*. First, when the subpart of the described eventuality is proper and therefore does not include the final part of the described eventuality, the event of Ken building of a house is not completed and sentence (4.22) receives a progressive reading. Secondly, when the subpart of the event is non-proper and equivalent to the whole event, Ken building of a house is completed and sentence (4.22) receives perfect readings.

Analyzing *-te-* as an imperfective marker is not consistent with the widely accepted view that *-te-* historically derives from a perfective marker[15] and it might not be obvious why *-te-i-* should be analyzed as two separate morphemes rather than one morpheme *-te-i-*. One evidence for separating *-te-* from *-i-* is that a topic marker *-wa* can be inserted between *-te-* and *-i-* (Ishikawa 1985; Hasegawa 1995), as seen in sentence (4.24).

(4.24) *Benkyoo-shi- -te- -wa -i- -ru.*
Study-DO-   TE- TOP -I- -NONPAST

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[15]*Te-* is often said to derive historically from the perfective marker *tsu*. However, most linguists agree that this hypothesis cannot explain modern uses of *-te-* (Hasegawa 1995; Igarashi and Gunji 1998; Ogihara 1998).

'I am studying.'

Furthermore, the eventuality denoted by the sentence radical which is followed by *-te-* and other aspectual verbs can be interpreted either as complete or incomplete depending on the context, as seen in sentences (4.25) and (4.26). This is easily explained if we analyze *-te-* as an imperfective operator.

(4.25) *I-kkai-bun-no*   *kusuri-o*   *juusu-ni*   *tokashi-*   *-te-mi-*   *-ta.*
       one-time-dose-GEN medicine-ACC juice-LOC melt-   -TE-see -PAST.

       '(I) tried melting one dose of the medicine in some juice. (But it didn't melt completely.

       / And it melted completely.)'

(4.26) *Reizooko-no*   *gyuunyuu-ga* *non-*   *-de-a-*   *-ru.*
       Refrigerator-GEN milk-NOM   drink- -TE-exist -NONPAST

       'The milk in the refrigerator has been drunk. (Some of it is left./It's gone.)'

The events of drinking the milk in the refrigerator and melting one dose of the medicine do not have to be interpreted as complete.[16] The vagueness of sentences (4.25) and (4.26) shows that *-te-* can function as an imperfective operator when followed by other aspectual verbs as well. Other aspectual verbs which can follow a main verb+*-te-* include *shima-* ('complete, end, put away') (*-te-shima-* 'finish -ing'), *ok-* ('leave, put') (*-te-ok-* 'leave V'), *ik-/k-* ('go/come') (*-te-ik-/-te-ku-* 'is going /getting to').[17] The aspectual interpretation of the output of *-te-* may not

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[16]The sequence of morphemes *-te-a-* (*-de-a-* in sentence (4.26)) is often claimed to constitute a resultative con-struction because of its non-aspectual function, e.g. its detransitivizing function (valency reduction) or the se-lectional restriction it imposes on its argument, *etc.* (Hasegawa 1995). Sentence (4.26) is an example of this use. There are also uses of *-te-a-* which preserve the object of the main verb marked by the accusative case (Soga 1983).

[17]All V1-*te*-V2 forms can be followed by *-te-i-* except for the ones whose outputs are stative, e.g., V1-*te-a-*

be vague in some of those aspectual verbs because their meaning may require an exclusively incomplete or exclusively complete interpretation of *-te-*'s output. For example, *-te-shima-* ('finish -ing') expresses the completion of the event described in the main verb (V1) and its arguments, and therefore, V1+*te-shima-* does not show any vagueness in terms of the aspectual interpretation of V1. V1+*te-ku-* ('come') also blocks the completion reading when V1 is a change of state verb as seen in sentence (4.27).

(4.27) *Terebi-ga   koware- te-ki-   -ta.*
      TV set-NOM break   TE-come PAST.

      'The TV set is halfway broken.' (Something is wrong with it but not completely broken.)

Finally, *-te-* can also be followed by other types of verbs such as *-te-mora/kure-* ('TE-receive') and *-te-age-/-ya-* ('TE-give') ('benefactive verbs') or *-te-hoshi-* ('TE-want'). They do not seem to have vague readings at first glance, but sentences (4.28) and (4.29) show that the output of *-te-* does not have to be complete. Here, the event of buying a house cannot be complete until Mr. Tanaka's daughter borrows money from a bank. Sentence (4.29) shows another example where the eventuality followed by *-te-*+ a verb of giving is not interpreted as complete.

(4.28) *Tanaka-san-wa musume-san-ni   ie-o   ka- -tte-age- -ru   soudesu.*
      Tanaka-Mr.-TOP daughter-Ms.-DAT house-ACC buy -TE-give -NONPAST hear

      'I hear that Mr. Tanaka will buy his daughter a house.' (Mr. Tanaka will pay only a down payment (say, one-fourth or fifth of the cost) and his daughter and her husband

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('exist') and V1-*te-hoshi-* ('want'). I do not discuss the semantics or syntax of those aspectual verbs or other verbs appearing as V2 in the V1-*te*-V2 in this thesis. See Matsumoto (1990); Hasegawa (1995); Nightingale (1999) for more detailed discussion.

will pay the loan for the rest of the money over the next twenty years.)

(4.29) *Kare-ga kinoo-no   shukudai-o   ya- -tte-kure- -ta   kedo, zenbu-wa ya- -te-i-*
        He-NOM yesterday-GEN homework-ACC do TE-give PAST but   all-TOP   do TE-I
        nai.
        -NEG

        'He did (some of) yesterday's homework for me, but he hasn't done it all. (I will have

        to do the rest.)'

Thus, many of *-te-* + other verbs show some aspectual vagueness regarding the eventuality

described by the verb + *-te* and its arguments, thus providing ample motivation to separate

-te- in *-te-i-* and analyze it as an imperfective operator whose output is vague.

4.3.2   The imperfective marker *-te-*

Maximality effect on the input

My preliminary proposals for the meanings of *-te-* and *-i-* do not constrain their input eventu-

ality descriptions. They can take either atelic or telic eventuality descriptions as input.

(4.30) *Ken-ga   hashi- -tte-i- -ru.*
        Ken-NOM run   -TE-I- -NONPAST
        'Ken is running.'

(4.31) *Fuji-san-ga   mie-   -te-i- -ru.*
        Mt.Fuji-NOM be-visible -TE-I- -NONPAST
        'Mr. Fuji is being visible.'

Sentence (4.1), repeated as (4.30), and sentence (4.31) show that *-te-i-* can modify atelic even-

tualities, e.g. activities or states, eventualities without any explicit endpoint. However, when

-te-i- takes a state as its input, there is a presupposition that the state is episodic. The input state cannot be interpreted as a generic statement,[18] or, said differently, the output of *-te-* cannot be a subpart of a generic state when the input eventuality description is a state.[19]

The following contrast shows that the described stative eventuality is understood as episodic when it occurs with *-te-i-*:

(4.32)   a.   *Sono jiinzu-wa oheso-ga   mie-   -te-i- -ru.*
             That jeans-TOP navel-NOM visible -TE-I- -NONPAST

             '(Your) navel is visible with that pair of jeans.' (A speaker is looking at an addressee's navel.)

             '*The navel is visible with that pair of jeans.' (A speaker is describing a pair of jeans at a store.)

         b.   *Sono jiinzu-wa oheso-ga   mie-   -ru.*
             That jeans-TOP navel-NOM visible -NONPAST

             'The navel is visible with that pair of jeans.' (A speaker is describing the pair of jeans at the store.)

The contrast is subtle, but in sentence (4.32a) the speaker has to see the exposed navel when uttering the sentence, i.e. there must be an actual occurrence of the state; a generic state that does not require somebody's navel being actually visible is not enough. Sentence

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[18]Generic sentences such as habitual and characterizing sentences are often considered to be stative (Krifka *et al.* 1995).)

[19]As described in Section 4.1, *-te-i-* can have habitual readings, which are considered to be generic and therefore unbounded. The input eventuality of *-te-i-* cannot be a state but must be an event, i.e. bounded, when it receives an habitual reading. Habitual interpretations with *-te-i-* are typically related to episodic event predicates such as *smoke* (Krifka *et al.* 1995). In addition, habitual readings of *-te-i-* assume the existence of actual occurrences of the event.

(4.32a) is impossible without the speaker seeing the navel. On the other hand, sentence (4.32b) can be a description of that pair of jeans without anyone trying it on and does not require the occurrence of the state of the navel being visible as long as the pair of jeans has the property of showing the navel.[20] This phenomenon is not unique to the progressive use of the Japanese -*te-i-*. English progressives can also take stative inputs when they are interpreted non-statively (Dowty 1979; Binnick 1991; Egg 2005), as seen in the following.

(4.33)   Mike is being silly.

Sentence (4.33) does not mean that Mike is a silly person in general but that Mike is acting silly (Egg 2005).

I propose to account for the contrast between sentences (4.32a) and (4.32b) as follows. When -*te-i-* takes atelic eventuality descriptions as input, a bounding operator is applied and the observed episodicity of sentence (4.32a) is the effect of that bounding operator. I propose that the semantics of -*te-* includes an operator to quantize its input eventuality if the input description is unbounded. Because the input state is bounded when followed by -*te-*, even though the final output state of -*te-i-* is unbounded, it cannot be interpreted as generic. The quantizing effect of -*te-* can be captured through the use of a maximality operator (MAX) (Koenig and Muansuwan 2000; Egg 2005), which is based on Krifka's (1998) notion of telicity, or more precisely, his definition of the initial and final parts of events. The MAX operator is defined as follows:

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[20]Similar observations have been made by Yamagata (1998).

Def. 4.1 *For all eventuality descriptions ϕ and eventualities ev,*

$$MAX(ev, \phi) \leftrightarrow \phi(ev) \wedge \forall ev'(ev < ev' \rightarrow \neg\phi(ev'))$$

In definition 4.1 '$<$' is a part-relation. '$a < b$' means 'a is a proper subpart of b.' The definition says that an eventuality ev is maximal with respect to the eventuality description ϕ if and only if ev satisfies ϕ and there is no ev' such that ev is a proper subpart of ev' and ev' satisfies ϕ. That is, the operator MAX takes any eventuality description ϕ and eventualities ev as its input and when ϕ is atelic and unbounded, i.e. a state or activity, ev is the maximal event which satisfies ϕ. When an eventuality description is bounded and telic, i.e. an accomplishment or achievement, the MAX operator is redundant and is the identity relation because any eventuality ev which satisfies ϕ is always maximal with respect to ϕ (Egg 2005).[21] Egg (2005) also adopts the MAX operator to account for English progressives with stative eventuality descriptions as input. The difference between *-te-i-* and English progressives is that the maximal event is an input to an imperfective operator in the case of *-te-i-* while it is an input to a progressive operator for English progressives. In both cases, an atelic eventuality is quantized by a MAX operator before being dequantized again by either an imperfective operator (*-te-*) or the English progressive operator PROG (Egg 2005). In what follows, I use ev to refer to an eventuality that satisfies $MAX(\phi)(ev)$.

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[21]The bounding effect of the MAX operator is similar to that of the PO operator, discussed in Galton (1984) and then Herweg (1991a); Herweg (1991b). The PO operator is named after the pofective marker in Russian. It maps a state onto a bounded phase of it, i.e. the maximum period during which it holds. The MAX operator differs from the PO operator in that its input can be any eventuality, whereas the PO operator only takes a state as its input. To be precise, it forms event-radicals out of propositions in Galton (1984:81) or state-radicals (predicate about times) in Herweg (1991a). See Galton (1984); Herweg (1991a); Herweg (1991b) for a detailed discussion.

Before discussing the function of *-te-* as an imperfective operator, I consider two possible arguments against my use of a MAX operator. Some linguists may rather assume that the relevant "atelic" verbs are ambiguous (McClure 1995; Murakami 2001) and propose that *-te-* can only take a telic predicate as its argument. For example, the stative verb *i-* ('exist, stay') or *a-* ('exist') can occur with the colloquial form of *-te-i-*, which is *-te-*, in Western parts of Japan.[22] Murakami (2001) regards the verb *i-* ('exist') in sentence (4.34) as an inchoative verb (*shutai-henka doushi* (subject change verb) (Kudo 1995)) expressing the change of state from the mother not being at home into the mother being at home. Sentence (4.35) is another example of a stative verb+-*te-i-*.

(4.34) *O-kaa-san-wa ie-ni   i-   -te-   -ru.*
        Mother-TOP   home-at exist -TE-I(colloquial)- -NONPAST
        'My mother is at home.'

(4.35) *Fuji-san-ga   mie-   -te-i- -ru.*
        Fuji-mountain-NOM be visible -TE-I- -NONPAST
        'Mt. Fuji can be seen.'

The problem with this argument is that there is no independent evidence for the ambiguity of atelic predicates in other contexts. When an atelic predicate occurs in a simple past tense, it is not ambiguous, as sentence (4.36) shows.[23]

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[22]The stative verbs *i-* and *a-* ('exist') occur with aspectual markers in very limited contexts, an issue that this thesis does not explore any further.

[23]Klein (1994) observes that the English utterance *Well, John was in the garden* can be used to answer the question *Do you know where John is?* when somebody is looking for John and to suggest to the addressee to look for John in the garden. Similarly it *may* be possible to utter sentence (4.36b) to suggest that Ken may still be at the station. However, it does not mean that the English sentence mentioned by Klein or sentence (4.36b) is semantically ambiguous. This is because asserting that a state held in the past does not exclude that it presently

(4.36)   a. *Ken-wa   go-fun-maeni   hashi- -tta.*
            Ken-TOP five-minutes-ago run   PAST

         'Ken ran five minutes ago. (You missed the competition.)'

         '*Ken started running five minutes ago. (He is still running.)'

         b. *Ken-wa   ku-ji-ni   eki-mae-ni   i-   -ta.*
            Ken-TOP nine-hour-at station-front-at exist- PAST.

         'Ken was at the station at 9 o'clock. '

         '*Ken started to be at the station at 9 o'clock. (He is still at the station)'

         c. *Kinoo   Fuji-san-ga   mie-   -ta.*
            Yesterday Fuji-mountain-NOM visible PAST

         'Mt. Fuji was visible yesterday.'

         '*Mt. Fuji became visible yesterday. (You can see it today.)'

Compare sentence (4.36) and the grammatical inchoative example (4.37):

(4.37)   *Ken-wa   kyonen   sensei-ni   na-   -tta.*
         Ken-TOP last year teacher-DAT become PAST.

         'Ken became a teacher last year. (He is a teacher now.)'

I conclude that it is indeed the MAX operator that first bounds the input to *-te-* when *-te-* takes an atelic eventuality as its input.

Another possible counterargument against the meaning of *-te-* as introducing a subpart of an event comes from Kindaichi's (1976a) fourth category verbs ("defective instantaneous verbs" in Ogihara (1998)). Kindaichi's (1976a) fourth category of verbs consists of a small set of verbs including *hiide-* ('excel'), *nonbendarari-to-s-* ('lead an idle life'), *bakage-* ('be silly'),

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holds (McDermott 1982).

arifure- ('be common'), and so on as well as *sobie-* ('soar/tower') and *maga-* ('bend'). *Maga-* ('bend') is considered to be ambiguous between a change of state verb (punctual verb) and a verb of the fourth category. It has been observed that a certain class of verbs only occurs with *-te-i-* but does not occur in the simple past tense in a main clause and also that they express a resultant state with *-te-i-* without entailing the existence of the event denoted by the verb and its arguments (Matsumoto 1996). Sentences (4.38) and (4.39) illustrate this observation.

(4.38) a. *Yama-ga   takaku sobie- -te-i- -ru.*
            Mountain-NOM high   soar- -TE-I- -NONPAST
            'The mountain soars high.'

        b. **Yama-ga   takaku sobie- -ta.*
            Mountain-NOM high   soar- -PAST

(4.39) a. *Michi-ga   maga- -tte-i- -ru.*
            road-NOM bend TE-I- -NONPAST
            'There is a curve in the road.'

        b. **Michi-ga   maga- -ta.*
            road-NOM bend PAST

The counterargument against the hypothesis that *-te-* introduces a subpart of an event is based on the supposed nonveridicality of those described events (which would explain that these events cannot be described by a sentence in the simple past tense).[24] The events of the mountain soaring high and the road bending do not seem veridical in sentences (4.38) and (4.39). But, since *-te-* introduces a subpart of an event, it asserts the existence of a subpart of a prior event. It would seem to follow that sentences (4.38a) and (4.39a) assert the existence of

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[24]See Talmy (2000) for a detailed discussion of nonveridical eventuality descriptions.

events that do not exist!

This counterargument is not cogent. First, some of those verbs are not always incompatible with a simple past tense, although they are typically used with *-te-i-*.

(4.40) *Kono machi-ni totsuzen   tsugitsugi-to   koosoo biru-ga   sobie- -mashita.*
      This town-in suddenly one after another tall   building-NOM soar   PAST(polite)

      'Suddenly tall buildings soared one after another in this town.'

(4.41) *Nonbendarari-to-si- -te-shima-   -tta.*
      Lead an idle life   TE-complete PAST

      'I've led an idle life.'

Japanese speakers accept sentence (4.40) as well as sentence (4.41), although sentence (4.40) does not sound perfect because of the unfamiliarity of the very infrequent verb *sobie-*. *Sobie-* ('soar/tower') almost always takes either mountains or tall buildings or towers as its argument and does not occur with any animate or moving argument (such as a bird), unlike the English translation 'soar/tower'.[25] Sentence (4.41) sounds fine with other aspectual verbs which entail the existence of the event denoted by the eventuality description. Because sentences (4.40) and (4.41) do entail the existence of the described events, there is no reason why *-te-i-* should not be analyzed as introducing a subpart of the event described in the sentence radical for those verbs, as seen in sentences (4.42) and (4.43).

(4.42) *Kono machi-ni-wa   mukashi-kara   koosoo biru-ga   sobie- -te-i- -ru.*
      This town-in-TOP long time ago-from tall   building-NOM soar   -TE-I- -NONPAST

      'Tall buildings have soared in this town since long time ago.'

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[25]In classical Japanese it can also occur with a human subject and means 'be tall'.

(4.43) *Nonbendarari-to-si- -te-i- -ru.*
      Lead an idle life   -TE-I- -NONPAST

      'I am leading an idle life.'

In the case of events of mountain soaring and road bending in sentences (4.38a) and (4.39a), the lack of veridicality of these descriptions can be explained if we assume a semantic shift, i.e. an end-point focus shift of V-*te-i-* (Lakoff 1987). The literal meaning of "bend" has an entailed resultative reading with *-te-i-*, i.e. its subjects have a curve. The focus may shift, though, onto the end point of the event, i.e. the resultant state, and sentence (4.39a), then, can be interpreted as simple stative sentences, rather than as resultative perfects. This would also explain uses of *na-* ('become, amount to, turn out') followed by *-te-i-*, which is sometimes considered to express the resultant state of a fictive change of state ('subjective-change expressions' in Matsumoto (1996)).

(4.44) *Iriguchi-ga   ni-kai-ni   na-   -tte-i- -ru.*
      entrance-NOM second floor-LOC become/turn out TE-I- -NONPAST

      'The entrance is on the second floor.'

Through the semantic shift, the event of the entrance turning out to be on the second floor is dismissed from the interpretation and sentence (4.44) has only the end-result stative meaning provided in the English translation.[26]

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[26] A full account on these phenomena is beyond the scope of this dissertation.

An Imperfective operator with a vague output

Let us now turn to the major function of *-te-* as an imperfective operator, i.e. its dequantiz-ing function as sketched in the previous section. I propose the following meaning for the morpheme *-te-*:

Def. 4.2 *The function of -te-:*

When ϕ is an eventuality description which is either a telic event description or an atelic event descrip-tion,

ϕ-te is true if and only if:

i. *there is an ev' such that $ev' \leq ev$, $\tau(ev') \prec r$ (r is a reference time interval) and*

ii. *ev satisfies $MAX(\phi)$ in all inertia worlds, i.e. in all worlds which are relevant to whether ev is completed and in which ev does not get interrupted.*

The notion *inertia worlds* as originally introduced in Dowty (1979), is refined in Portner (1998), using the ideas of modal base and ordering source proposed by Kratzer (1981). Ac-cording to Portner, the modal base is a baseline set of worlds relevant to the interpretation of the sentence. The modal base and ordering source for sentence (4.45i) are described in (4.45ii) and (4.45iii).

(4.45)   i.   At 10 o'clock, Ken was fixing a roof of his house.

ii.   M(w)={'Ken is in good physical condition', 'Ken knows how to fix a roof', 'Ken has all the tools and equipment he needs to fix the roof', 'It was raining slightly at

10 o'clock', 'Ken fixed one third of the damaged part of the roof at 10 o'clock', 'Ken

dealt with it in a right way at 10 o'clock',....}

    iii. O(w)={'Ken does not slip and fall down from the roof, and does not break his leg',

        'Ken does not get a sudden back pain', 'it does not start raining heavily', 'Ken does

        not get struck by a thunder', 'Ken does not have any appointment he is forgetting

        about',.....}

The modal base (4.45ii) and ordering source (4.45iii) constitute the *inertia worlds* for sentence

(4.45i), that is, Best(M, O, w) (Portner 1998). That is, *inertia worlds* satisfy all the facts (M)

pertaining to the make up of a given event described in the eventuality description and also

satisfy the best number of the conditions (O) under which the event does not get interrupted

among all possible worlds. I assume Portner's idea of *inertia worlds*, which is paraphrased

informally in Definition 4.2, worlds which are relevant to the completion without interruption

of the event ev.

    In definition 4.2, ev' is a subpart of an eventuality ev which satisfies $MAX(\phi)$ in *inertia*

worlds, but it is not necessarily a proper subpart of ev. Finally, the temporal trace of $ev'(=$

$\tau(ev'))$ must be included in that of ev ($= \tau(ev)$) and precede a reference time interval. I argue

that the temporal relation between reference time and utterance time is specified by the tense

that is suffixed to *-te-i-*. In the past tense reference time r precedes speech time n ($r \prec n$) while

in the non-past tense reference time r does not precedes n ($\neg r \prec n$).

Below I show the Discourse Representation Structure (DRS) for the meaning of *-te-* in definition 4.2.

$$\boxed{\begin{array}{c} ev', r \\ Impfv_{te}(ev', \lambda ev(MAX(ev, \phi))) \\ \tau(ev') \prec r \end{array}}$$

Figure 4.1: "ϕ-*te-*"

In Figure 4.1, the MAX operator first quantizes ϕ when ϕ is a state or atelic description, so that the dequantizing function of *-te-* can take an event which satisfies $MAX(ev, \phi)$ in *inertia worlds* as its input. The dequantizing function of *-te-* is represented as *Impfv$_{te}$* in Figure 4.1. It is considered to be a kind of imperfective operator (*Impfv*) because it introduces a subpart ev' of ev. However, note that the output does not have to be a proper subpart of an eventuality and therefore the output can be equivalent to the entire input event. This may not necessarily be consistent with the understanding of imperfective markers by other linguists (Smith 1997). In order to avoid confusion with the latter type of imperfectives, I use the subscript "$_{te}$" for the imperfective operator associated with *-te-*.[27] Therefore, $Impfv_{te}(ev', \lambda ev(MAX(ev, \phi)))$ means that the imperfective operator *Impfv$_{te}$* takes an event description $\lambda ev(MAX(ev, \phi))$ as its input and outputs a (non-necessarily proper) subpart ev' of an eventuality ev'' which satisfies the eventuality description $\lambda ev(MAX(ev, \phi))$ in all inertia worlds. Thus, $\lambda ev(MAX(ev, \phi))$ does

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[27]See a similar use of an imperfective operator with a vague output in the analysis of Thai aspect in Koenig and Muansuwan (2000).

not output an eventuality in the DRS. The eventuality ev' introduced by *-te* is existentially closed by a tense operator, which is already assumed in Figure 4.1 for expository purposes.

It is also important to note that *Impfv$_{te}$* does not output an empty subpart of an eventuality ev''. I assume Krifka's event structure whose part relation is a join semi-lattice without bottom element, a hypothesis which excludes the possibility of an empty subpart of an eventuality (Krifka 1989; Krifka 1998).

This assumption explains the fact that the progressive use of Japanese *-te-i-* does not express the preliminary stage of an event as seen in sentences (4.46) and (4.47). Sentences (4.46) and (4.47) cannot be interpreted as the intended English translations, which I prefix with '*.'

(4.46) *Ken-wa   ie-o   tate- -te-i- ru*
        Ken-TOP house-ACC build -TE-I- -NONPAST
        '*Ken is building a house (soon).' (Ken has just started to look for land.)

(4.47) *Ken-wa   Tokyo-ni tochaku-shi- -te-i- -ru.*
        Ken-TOP Tokyo-in arrival-do   -TE-I- -NONPAST
        '*Ken is arriving in Tokyo (soon).' (Ken is on the way to Tokyo.)

Since the subpart of an event cannot be empty in Krifka's event structure, there has to be a nonempty subpart of the eventuality as the output of *-te-* that precedes a reference time interval (speech time in sentences (4.46) and (4.47)). This means that the event has to have started.

Readers may wonder why English present progressives can take the preliminary stage of an event as a proper subpart as seen in sentences (4.48) - (4.50) while the corresponding

Japanese progressive reading of *-te-i-* cannot in sentence (4.46) or (4.47), if the described part of an incomplete event must be properly included in the event in both English and Japanese progressive interpretations.

(4.48)   He is dying.

(4.49)   He is arriving at the airport.

(4.50)   He is building a house (soon).

I assume with Egg (2005) that when there is no proper subpart of the event as in (4.48) - (4.49) or when there is a contextual mismatch as in (4.50) or a mismatch between the adverbial modifying the described event and the progressive meaning,[28] the interpretation is coerced and the event's preparatory phase is added. The progressive then outputs the additional preparatory phase as its proper subpart. As Smith (1997) discusses, available coercions ('convention of use' (Smith 1997)) differ from language to language. Unlike the English progressive form, Japanese progressive readings of *-te-i-* do not allow this type of coercion. Note that the absence of coercion extends to future reference times. When *-te-i-*non-past occurs with future-time adverbials, it is simply interpreted as a future progressive or a future perfect, as seen in sentence (4.51), since the Japanese non-past tense can refer to future time intervals.

(4.51)   *Ashita-no   asa   Ken-wa   Tokyo-ni   tochaku-shi- -te-i- -ru.*
         Tomorrow-GEN morning Ken-TOP Tokyo-in arrival-do   -TE-I- -NONPAST
         'Ken will have arrived in Tokyo tomorrow morning.'

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[28] As Egg (2005) argues, coercion can occur even without an adverbial, i.e. it can be triggered pragmatically.

'*Ken will be arriving in Tokyo tomorrow morning. (He will be on his way to Tokyo

tomorrow morning.)'

Thus, unlike the English progressive sentences seen in sentences (4.48) - (4.50), neither punctual events nor future-time adverbials trigger coercions.

4.3.3   The stativizing function of *-i-*

Finally, *-i-* takes as its argument the event outputted by *-te-* as defined in definition 4.2, i.e. a subpart of the input eventuality of *-te-*, and maps it onto a state which overlaps with a reference time interval and whose category is underspecified. The category of the state needs to be pragmatically inferred from the occurrence of the output event of *-te-*. This stativizing function of *-i-* is equivalent to that of the English perfect discussed in Chapter 3 except that the input eventuality does not necessarily satisfy the base eventuality description in this case while in English perfects it has to. Therefore, we can extend definition 3.3 of the perfect state discussed in Chapter 3 to the function of *-i-* as follows:

Def. 4.3 *The function of -i-:*

- *-i- takes the output of -te-, i.e. ev', and maps it onto a state s which overlaps with r and whose category is a free variable.*

- *The value of the free variable has to be filled in by the addressee via inferences.*

$$\boxed{\begin{array}{c} s, ev', r \\[4pt] Impfv_{te}(ev', \lambda ev(MAX(ev, \phi))) \\ \tau(ev') \prec r \\ X(s) \\ \tau(s) \circ r \end{array}}$$

Figure 4.2: The DRS for "ϕ-te-i-"

The DRS in Figure 4.2 represents the meaning of *-te-i-*. The first line in Figure 4.2 lists the discourse referents which are introduced in the partial universe of discourse after existential closure. The second line and the third line show the meaning of ϕ-*te* where ϕ is an eventuality description followed by the morpheme *-te-*. The imperfective operator *-te-* ($Impfv_{te}$) takes an eventuality description ϕ, more precisely $\lambda ev(MAX(ev, \phi))$, and only introduces into the universe of discourse a subpart ev' of an eventuality that would satisfy ϕ. The fourth and fifth lines represent the meaning of *-i-*. The stativizer *-i-* receives the output ev' from ϕ-*te-* and maps it onto a state s whose category is underspecified and which overlaps with r. The underspecified category of the state s is given as a free property variable X (Kay and Zimmer 1978; Partee 1984a). The temporal relation between ev' and s is only encoded indirectly by the precedence relation between ev' and a reference time interval r and the overlapping relation between s and r. Therefore, s can either start before the occurrence of ev' or sometime after ev' ends, as long as s overlaps with r.

Such vagueness is needed because the output state of *-te-i-* can start after the occurrence

of an eventuality or before the eventuality ev', as seen in sentences (4.52) and (4.53).

(4.52) *Ken-wa hidoi kaze-o   hii-   -te-i- -ru.*
       Ken-TOP bad   cold-ACC catch -TE-I- -NONPAST.

       'Ken has caught a bad cold.'-(He is absent today.)

(4.53) *Kono hei-wa   san-kai taore- -te-i- -ru.*
       This fence-TOP 3-times fall-   -TE-I- -NONPAST

       'This fence has fallen three times.'–(It is fragile.)

Sentences (4.52) and (4.53) show that perfect readings of Japanese *-te-i-* behave like those of

the English perfect. Sentence (4.52) may implicate the state in parenthesis, although the state

does not start right after the event of Ken catching a cold. The state in (4.53), on the other

hand, most likely started before the event of the fence falling. Sentence (4.53) also illustrates

problems with defining the relation between a prior event and a state as a causal relation. As

in the case of the English perfect, the state introduced by *-i-* is not necessarily the consequent

state of the prior event. In (4.53) the state of the fence being fragile can be the cause of its

falling, not the consequence of it, an issue that has already been discussed in the analysis of

the English perfect in Chapter 3.

Following the analysis of the English perfect proposed in Chapter 3,[29] I propose that the

relationship between ev' and s introduced by *-te-i-* is such that the output state s is pragmat-

ically inferable from the occurrence of a subpart ev' of ev. The category of the state s ($X(s)$)

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[29]See also Nishiyama and Koenig (2004); Nishiyama and Koenig (2006).

which is the output of *-i-* is pragmatically inferred from the occurrence of a prior eventuality ev. The inferences and the inferential process used to interpret the English perfect can also apply to the output state of *-te-i-*.

4.4   The multiple interpretations of *-te-i-*

4.4.1   Progressive vs. perfect readings

As discussed above, the contrast between progressive and perfect readings of *-te-i-* derives from the fact that the output of *-te-* is vague as to whether the output ev' of *-te-* is a proper or non-proper subpart of the input eventuality. Progressive readings of *-te-i-* obtain when the output of the imperfective operator *-te-* is a proper subpart and does not include the final part of ev ($ev' < ev$), as seen in (4.54a). Perfect readings obtain when the output of the imperfective operator $Impfv_{te}$ is equivalent to the entire eventuality ev and *does* include the final part of ev ($ev' = ev$), as seen in (4.54b).

(4.54)   *Ken-ga   ie-o   tate- -te-i- ru*
         Ken-NOM house-ACC build -TE-I- -NONPAST

    a. $ev' < ev$: 'Ken is building a house.'

    b. $ev' = ev$: 'Ken has built a house.'

Note that certain events (punctual change of state events) exclude progressive readings as seen in sentence (4.55), because they do not have a nonempty proper subpart.

(4.55) *Neko-ga   shin- -de-i- -ru.*
        Cat-NOM die   -TE-I- -NONPAST

        'A cat is dead.'

        '*A cat is dying.'

Perfect readings which derive from *-te-i-* can either be entailed resultative perfect readings

or existential perfect readings as seen in sentence (4.56).

(4.56) *Yoko-wa   kono natsu   furansu-ni   i- -tte-i- -ru.*
        Yoko-TOP this summer France-LOC go -TE-I- -NONPAST

        'Yoko has gone to France this summer.' ('Yoko is in France now.')

        '%$_J$ Yoko has been to France this summer.' ('Yoko is not in France now.')

Both readings are possible because there does not have to be a direct temporal relationship

between the event ev' and the output state s introduced by *-i-* and because the output state s is

semantically underspecified as to its property. Therefore, *-te-i-* can introduce a state holding

at present which starts after the denoted event ends but is still related to the event, as in

existential perfect readings, as well as a state which starts when the denoted event ends and

whose category is entailed by a sentence radical, as in entailed resultative perfect readings.

In this way, the difference between progressive and perfect readings can be accounted for

without positing that *-te-i-* is ambiguous. The vagueness of the output of the imperfective op-

erator *-te-* leads to the contrast. Different perfect readings such as entailed resultative perfect

and existential perfect readings do not need to be accounted for by positing two meanings for

-te-i- either. Different perfect readings derive from the different interpretations of the under-

specified state outputted by *-i-*. Thus, the single monosemous meaning of *-te-i-* can receive both progressive and different perfect interpretations.

There is one important difference between Japanese and English progressives. That is, Japanese does not have a true progressive marker, i.e. a marker which only receives a progressive reading, while English has separate distinct forms for progressives and perfects. The Japanese perfect with *-te-i-* is, strictly speaking, the perfect of an imperfective; it corresponds to the English present progressive perfects except that *-te-i-* does not take a preliminary stage as a subpart of an event described in a sentence radical as already discussed. Therefore, sentences (4.57) and (4.58) have the English present progressive perfect interpretation, and sentence (4.59) has a resultative perfect reading.

(4.57) *Ken-ga   ichi-ji-kan   hashi- -tte-i- -ru.*
     Ken-NOM one-hour-for run-   -TE-I- -NONPAST
     'Ken has been running for an hour.'

(4.58) *Mi-kka-kan   ame-ga   fu- -tte-i- -ru.*
     three-day-for rain-NOM fall -TE-I- -NONPAST
     'It's been raining for three days.'

(4.59) *Neko-ga kinoo-kara   soko-de shin- -de-i- -ru.*
     Cat-NOM yesterday-since there-at die   -TE-I- -NONPAST
     'A cat has been dead there since yesterday.'

     '*A cat has been dying there since yesterday.' (The cat is severely ill.)

Thus far, I have focused on progressive and perfect readings of *-te-i-*. If *-te-i-* involves an imperfective operator, it should also have habitual readings because imperfective markers

express habituals crosslinguistically. For example, the French imperfective operator (*Imparfait*) has both progressive and habitual interpretations (de Swart 1998; de Swart and Verkuyl 1999; Verkuyl 1999) or the imperfective operator in Yukatek Maya also has habitual interpretations (Bohnemeyer 2002:260-268). This seems to be the case in Japanese too. Habitual readings are always available with *-te-i-* as long as the context allows it, as seen in sentences (4.60) (=(4.5)) - (4.62).

(4.60) *Ken-ga (mainichi) hashi- -tte-i- -ru.*
       Ken-NOM (every day) run- -TE-I- -NONPAST
       'Ken runs (everyday).'

(4.61) *Ken-wa daigaku-ni i- -tte-i- -ru.*
       Ken-TOP college-to go- -TE-I- -NONPAST
       'Ken attends college.'

(4.62) *(Saikin) hito-ga (yoku) shin- -de-i- -ru.*
       (Recently) person-NOM (often) die- TE-I- -NONPAST
       '(Recently) people (often) die.'

This is also captured by the semantics of *-te-i-*. The imperfective operator *-te-* outputs a subpart of an eventuality which satisfies an input eventuality description and maps it onto a state which is interpreted as an habitual state in this case.

One issue remains. The imperfective operator *Impfv*$_{te}$ does not necessarily require that the final output of *-te-i-* has a progressive interpretation when the described event is incomplete (i.e. when ev' is a proper subpart of ev). In other words, nothing precludes a perfect interpretation when the event is incomplete, as seen in the form *-te-*+other aspectual verbs (4.26) or in

other languages such as Thai (Koenig and Muansuwan 2000). I will address this issue shortly.

4.4.2 Pragmatic inferences lead to multiple interpretations

I have argued that the multiple interpretations of *-te-i-* can derive from the monosemous meanings of *-te-* and *-i-*. I have also argued, following the discussion of the English perfect in Chapter 3, that the category of the state introduced by *-i-* is semantically a free variable (X in Figure 4.2 and in (4.63)), whose value must be filled in by the addressee via inferences. The different interpretations of the state s come from the different kinds of inferences used to find the value of X.

(4.63) $X(s)$

As discussed, the presence of a free variable X is a semantic constraint imposed by *-i-*, but the value of X has to be specified via pragmatic inferences. The inferential process that leads to the assignment of a value to X parallels the inferential process discussed for the English perfect. That is, first, this inferential process is triggered by the presence of a free variable X introduced by the meaning of *-te-i-* via *the full specificity principle*. The value of a free variable needs to be filled in by an addressee via pragmatic inferences (Principle 1 in Section 3.3). At the same time, the value of the variable X is constrained by the *mutual inferability principle*, i.e. the value of the free variable must be mutually inferable by the conversational participants (Principle 2 in Section 3.3).

Take example (4.64).

(4.64) *Ken-wa   mizubooso-ni   kaka- -tte-i- -ru.*
       Ken-TOP chicken pox-DAT catch -TE-I- -NONPAST

    a. Ken has caught chicken pox. (He has chicken pox now.)

    b. Ken has caught chicken pox. (He is immune to chicken pox.)

(4.64) can be translated as the first-order calculus formula in (4.65). When the value of X is interpreted as in (4.66), it receives an entailed resultative perfect reading. When it is interpreted as in (4.67), it receives a conversationally implicated resultative perfect reading.

(4.65) $\exists ev' \exists s[\text{Ken\_catch\_chicken-pox}\ (ev') \wedge \tau(ev') \prec \text{now} \wedge \underline{X}(s) \circ \text{now}]$

(4.66) X=Ken has chicken pox.

(4.67) X=Ken is immune to chicken pox.

To obtain the value in (4.66), an entailment of the base eventuality and the default inference of *persistence* (McDermott 1982) are needed. Thus, a hearer interprets (4.64) as an entailed resultant state of Ken having chicken pox still persisting via the inference of *persistence*. On the other hand, the resultant state in (4.67) is contextually inferred based on the speaker and hearer's common knowledge about causal relations between events of catching chicken pox and the state of being immune to it.[30]

    In this way, the different perfect interpretations of *-te-i-* can derive from its single perfect meaning by obtaining the value of the free property variable via inferences.

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[30]This kind of inference can be captured as a commonsense entailment rule (Lascarides and Asher 1993) and will be discussed further in Chapter 5.

Finally, I will discuss how the value of X is interpreted as a progressive state in the progressive reading of *-te-i-*. As discussed earlier, the progressive readings of *-te-i-* can be obtained when the output of *-te-* is a proper subpart of the input event and does not include the final part of the event. However, this is not sufficient to explain how the progressive reading obtains. This is so because, first, the proper subpart ev' is not a state but a part of an event which has ended and cannot denote the state of an event being on-going, i.e. cannot be the value of X, and secondly, the state s would be an unspecified state without a value for X. In order to interpret the perfect state as the state of an event being on-going, an inference is needed, again.

In sentence (4.68) (=(4.22)) *-te-* takes an eventuality description *Ken-wa ie-o tate-* ('Ken-TOP house-ACC build-') as its input and outputs a proper subpart ev' of it. ev' is the part which Ken has already finished, but the entire event of Ken building a house is not complete. Then, *-i-* maps ev' onto the state s that overlaps reference time.

(4.68) *Ken-wa ie-o   tate te-i-ru*
        Ken-TOP house-ACC build TE-I-NONPAST
        'Ken is building a house.' (X=Ken is building a house.)

Now, my definition of *-te-i-* based on Portner's inertia worlds in Definition 4.2 and 4.3 does not exclude the possibility that the event is half complete and still remains unfinished, but typically it excludes the reading that Ken built half of a house and stopped building it for good. This is because inertia worlds must satisfy all the baseline set of facts pertaining to the make up of the event described in the eventuality description at reference time. If there is

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already a positive reason that the event will not be complete, for example, if Ken has given up completing the house and decided to leave it incomplete because he was not in good health, the base eventuality description cannot be satisfied in inertia worlds because the modal base for the inertia worlds is not satisfied at that point. The use of *-te-i-* is infelicitous in this case. If a proper subpart of the event has been completed, the hearer may infer that the rest of the event of Ken building a house will continue and therefore that the state s (the value of X) can be the on-going state of Ken building a house.

4.4.3   DRSs for multiple interpretations of *-te-i-*

I provide below DRSs for the various interpretations of *-te-i-*. Figure 4.3, Figure 4.4, and Figure 4.5 are the DRSs for sentences (4.69), (4.70), and (4.71), respectively.[31] Because these sentences are in the non-past tense (marked by *-ru*), the reference time interval r overlaps with or follows n (= utterance time 'now'), i.e. $\neg r \prec n$.

(4.69)   *Ken-ga   hashi- -tte-i- -ru.*
       Ken-NOM run   -TE-I- -NONPAST

       'Ken is running.'

(4.70)   *Ki-ga   taore- -te-i- -ru.*
       Ki-NOM fall   -TE-I- -NONPAST

       'A tree has fallen down (on the ground).'

(4.71)   *Ken-wa   ie-o   tate- -te-i- -ru.*
       Ken-TOP house-ACC build -TE-I- -NONPAST

---

[31]I use English words to represent Japanese eventuality descriptions for the sake of readability.

'Ken is building a house.'

'Ken has built a house.'

$$
\boxed{
\begin{array}{c}
s, ev', r, n \\
Impfv_{te}(ev', \lambda ev(MAX(ev, \lambda ev''Ken\_run(ev'')))) \\
\tau(ev') \prec r \\
X(s) \\
\tau(s) \circ r \\
\neg r \prec n
\end{array}
}
$$

Figure 4.3: *Ken-ga hashi- -tte-i- -ru* ('Ken is running/has run')

$$
\boxed{
\begin{array}{c}
s, ev', r, n \\
Impfv_{te}(ev', \lambda ev(MAX(ev, \lambda ev''Tree\_fall(ev''))) \\
\tau(ev') \prec r \\
X(s) \\
\tau(s) \circ r \\
\neg r \prec n
\end{array}
}
$$

Figure 4.4: *Ki-ga taore- -te-i- -ru* ('A tree has fallen down')

Because the subpart ev' need not be proper, Figure 4.3 and Figure 4.5 can either be the DRS for the progressive or the perfect reading of the corresponding sentences. Sentence (4.70) has only a perfect reading in normal contexts because the eventuality description denotes a punctual change of state[32] and does not therefore have proper subparts. All of them can

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[32]Many Japanese change of state verbs are considered to be punctual change of state verbs (Kindaichi 1976a; Kita 1999).

$$s, ev', r, n$$

$$Impfv_{te}(ev', \lambda ev(MAX(ev, \lambda ev'' Ken\_build\_a\_house(ev''))))$$
$$\tau(ev') \prec r$$
$$X(s)$$
$$\tau(s) \circ r$$
$$\neg r \prec n$$

Figure 4.5: *Ki-ga ie-o tate- -te-i- -ru* ('Ken is building/has built a house')

receive habitual readings as well, depending on contexts.

Finally, my analysis can extend to *-te-i-* sentences in the past tense. As shown in the DRS in Figure 4.6 for sentence (4.72), when *-te-i-* appears in the past, the reference time r precedes utterance time n ($r \prec n$). The sentence can receive any of the same readings of *-te-i-* we have seen, i.e. progressive, perfect, and habitual readings.

(4.72)   *Ken-ga   hashi- -tte-i- -ta.*
         Ken-NOM run   -TE-I- PAST

         'Ken was running.'/ 'Ken had run.'/ 'Ken used to run.'

The existence of a single DRS for all readings of these sentences reflects the monosemy of *-te-i-*.

$$
\boxed{
\begin{array}{c}
s, ev', r, n \\
Impfv_{te}(ev', \lambda ev((MAX)Ken\_run(ev)))) \\
\tau(ev') \prec r \\
X(s) \\
\tau(s) \circ r \\
r \prec n
\end{array}
}
$$

Figure 4.6: *Ken-ga hashi- -tte-i- -ta* ('Ken was running/had run/used to run.')

4.5 Summary

This chapter has discussed the multiple interpretations of the Japanese aspectual marker -*te-i-*. Whereas *-te-i-* has traditionally been regarded as ambiguous between a progressive or resultative interpretation and an existential interpretation, this chapter has shown that there is no clear evidence to support the claim that *-te-i-* is ambiguous. The co-occurrence restrictions of temporal or location adverbials with certain interpretation of *-te-i-* often cited in favor of its ambiguity turned out to be mere tendencies.

I extended the analysis of the English perfect proposed in Chapter 3 to describe the meaning of *-te-i-*. Both English perfect and the Japanese *-te-i-* introduce a prior eventuality and a perfect state whose property is semantically a free variable. Various interpretations of the perfect derive from the

underspecified category of the perfect state in both cases. The difference between them is

that the prior eventuality introduced by the perfect satisfies the base eventuality description in English while it does not have to in the case of the Japanese *-te-i-*. This difference allows *-te-i-* to receive both progressive and perfect readings.

My unified analysis of the meaning of *-te-i-* uses the notion of *inertia worlds* (Dowty 1979; Portner 1998) and part-whole relations between events (Krifka 1998), and is inspired by Koenig and Muansuwan's analysis of the Thai aspectual system (Koenig and Muansuwan 2000). It shows that the multiple interpretations of *-te-i-* can arise from the unambiguous meanings of the morphemes *-te-* and *-i-*, because of the vague output of the imperfective operator *-te-* as well as the underspecified output of the stativizer *-i-*.

Some of my findings give fresh typological insights into similar phenomena in other languages. Despite their differences, progressives and perfects can form a natural semantic class and can be expressed by a single stativizer form, assuming the stativizer takes as input the vague output of some imperfective marker.

Chapter 5

The Perfect in Context

5.1 Introduction

Previous chapters have argued that the semantics of the perfect triggers pragmatic inferences, because the perfect introduces a state whose category is semantically a free variable. Now, the question arises as to what rules speakers may or must use to draw the relevant pragmatic inferences or whether such inferences are plausibly drawn by addressees. This chapter discusses the types of inference rules speakers use to interpret the perfect through a corpus study of over 600 English perfect examples and over 1000 Japanese perfect examples from a diverse range of genres (newspapers, discussions, conversations, and narrative texts). The results of this study show that the required inferences belong to one of only a few inference patterns and are easy enough to be plausibly drawn. This chapter then discusses what functions the

perfect has in discourse and shows that the use of the perfect helps the coherence of texts.

5.2 English present perfects in discourse

Recent inferential theories of the English present perfect

Some scholars have argued that the perfect is related to the topic of the discourse (Portner 2003; Borillo *et al.* 2004) (see Section 2.3.3). Portner (2003) proposes that part of the meaning of the perfect consists in a presupposition that sentences that include a verb in the perfect are answers to the discourse topic, which he regards as a question. Borillo *et al.* (2004) propose that the French perfect creates an Elaboration structure in which the utterance situation or writing context provides a topic which sentences containing a perfect elaborate on.

Chapter 3 proposes that the perfect introduces into a Discourse Representation Structure (DRS) a sub-eventuality ev' of the eventuality ev, whose temporal trace precedes reference time r (speech time n for present perfects) ($\tau(ev') \prec r$), and a perfect state s, whose temporal trace overlaps reference time r ($\tau(s) \circ r$) and whose category is inferable from the occurrence of ev'.

One of the main innovations of this analysis is the claim that the category of the perfect state s is semantically a free variable (X in Figure 3.1), which must be filled in by the addressee (Kay and Zimmer 1978; Partee 1984a; Bach 1994).

The pragmatic process through which the value of X is determined is constrained by two

principles, the full specificity principle and the mutual inferability principle. Together, these principles in trigger Gricean inferences via the Minimization and Maximization principles of Levinson (2000) (I-Principle) (See Chapter 3).

Despite its success in accounting for *all* uses of the English present perfect without resorting to ambiguity, this proposal, like Portner's and Borillo *et al.*'s, does not provide any details on the rules addressees might use to derive the value of X; nor do they provide corpus evidence of the plausibility of the inferential process they claim hearers or readers of sentences containing a perfect must engage in. The following sections present the results of an English and Japanese corpus study that provide such evidence.

5.2.1 English corpus data

I collected sample data pseudo-randomly from various genres, two newspapers of the same date (July 1st 1996), the first two discussion articles of the same month of the year (July 1996) in CQ Researcher Online (http://library2.cqpress.com/cqresearcher), conversation data from the Switchboard Corpus (Graff *et al.* 1998:files sw2001 through sw2019.txt), and narrative data from Netlibrary (http://www.netlibrary.com/) (two novels, one biography).[1] I examined the interpretations of all present perfect examples including those that occurred in embedded clauses in the corpora. Non-finite forms of the perfect, e.g. the perfect following modal auxiliaries or *to* were excluded from analysis, as well as the idiomatic expression *'ve got to*.

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[1]See Nishiyama and Koenig (2006).

All examples were first classified into the four labels for perfect uses, i.e. whether they correspond to an entailed resultative perfect, a continuative perfect, a non-entailed (or conversationally implicated) resultative perfect, or a non-resultative perfect interpretation. For the last two types, when the perfect had a non-entailed resultative interpretation, i.e. when the resultant state of a prior eventuality was conversationally implicated, not entailed, it was categorized as an implicated resultative perfect; when no resultant state of a prior eventuality was implicated nor entailed, it was categorized as a non-resultative perfect.[2] There were cases where a perfect example could be either interpreted as an instance of one category or another, e.g. an entailed resultative or continuative perfect, depending on how the Aktionsart of the main verb was analyzed. Such examples were categorized as 'Others'.

Table 5.1 shows the percentages of entailed resultative, continuative, non-resultative, and implicated resultative perfect readings in each corpus.

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[2]Non-resultative perfects (and even implicated resultative perfects) may often be categorized as existential perfects in traditional terminology. However, because the notion of an existential state is not clear, I use the label non-resultative perfect uses instead (see Section 2.3.2 and 3.4). Examples for each category will be discussed shortly.

Table 5.1: Numbers and Percentages of entailed, continuative, non-resultative, and resultative perfect examples in various corpora

	Entailed resultative	Continuative	non-resultative	Implicated resultative	Others	Total
A Newspaper 1	24	22	0	13	2	61
B Newspaper 2	64	68	6	13	0	151
C Discussion	86	52	8	7	2	155
D Conversation	32	38	10	20	0	100
E Narrative	46	59	9	23	1	138
Total	252 (41.65%)	239 (39.50%)	33 (5.46%)	76 (12.56%)	5[1] (0.83%)	605 (100%)

[1] 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.
[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!*

As seen in Table 5.1, the vast majority of all examples (81.82%) are either entailed resultative perfects or continuative perfects.[3] Most of the other examples are non-resultative or

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[3]Percentage includes four examples from the Others category in Table 5.1 which were either entailed or continuative perfects.

implicated resultative perfects (18.02%).

5.2.2 Default inference patterns in English

I then determined for each perfect example in my corpus which inference rules addressees must have used, were they to successfully determine the category of the perfect state which the perfect introduces in discourse. I isolated three major classes of inference patterns from the data.

Type (i) *Entailed or continuative perfects* For this most frequent class of examples, readers need draw only trivial inferences in order to find the value of X. The state either described or entailed by the base eventuality persists until the present. To derive X, readers need only apply the presumption of *persistence* default rule. The persistence default rule is based on the inference of persistence, i.e. that a state continues to hold until it ceases to hold (McDermott 1982) and therefore the default rule in (5.1) says that if the temporal trace of a state s overlaps t and if t precedes t', the temporal trace of s normally overlaps t' ($>$ means 'nonmonotonically/defeasibly entail' Pelletier and Asher (1997)).

(5.1) $\forall s \forall t \forall t'((\tau(s) \circ t \wedge t \prec t') > \tau(s) \circ t')$

Sentences (5.2) and (5.3) are examples of continuative perfect readings and the value of X can be interpreted as the same as the state described in the base eventuality description, i.e. the state of his being a member of her household and the state of the U.S. keeping 5,000 troops

in Saudi-provided housing, as indicated in parenthesis, respectively. In order to get to the fully specified interpretations, all readers need is to infer that the states described in the main eventuality description and introduced as a prior subeventuality by the perfect still persist at present.

(5.2)   ..., he **has been** a member of her household ever since. (X=He is a member of her household.) (Cather 1996:p.24)

(5.3)   Since the war ended, the U.S. **has kept** 5,000 troops in Saudi-provided housing, ... (X=The U.S. keeps 5,000 troops in Saudi-provided housing.) (Graff (1995-1997): *Wall Street Journal, 07,01,1996*)

Sentences (5.4) and (5.5) below illustrate entailed resultative perfect readings and the value of X is interpreted as the state entailed by the main eventuality, i.e. the state of Yeltsin's health being a major issue and the state of a few tribes having a foothold, respectively. That is, in example (5.4) the state of x (=Yeltsin's health) being y (=a major issue) is entailed by the occurrence of x becoming y. In example (5.5), if x manages to do y, x does y. Therefore, if x (=a few tribes) manages to establish a foothold, then x establishes a foothold. If x establishes a foothold, then x has a foothold. So the state of x having a foothold is also entailed by the occurrence of X managing to establish a foothold.[4]

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[4]There may be more entailments possible from the occurrence of the main eventualities in (5.4) and (5.5). For example, the event of Yeltsin's health becoming a major issue can entail the resultant state of someone's health being a major issue or Yeltsin's health being an issue, and the event of a few tribes managing to establish a foothold can entail the resultant state of one tribe having a foothold. These inferences could also be drawn out of context but are not inferable in their contexts. For example, the author is not talking about anyone's health

(5.4)   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*)

(5.5)   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, July 12)

Here again, all readers need to do is to infer that the entailed states still persist at present via the same inference of persistence. It is notable that for such a vast majority of perfect examples (81.82%) the required inference is only a very simple default inference and because this default inference is simple, readers can interpret the perfect sentences in this category almost automatically and without thinking.

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 complement of performative or epistemic verbs such as *say*, *promise*, or *see* presently holds

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but Russian presidential election in (5.4) nor talking about one particular tribe but lists the tribes which have a foothold.

or is likely to hold in the future, as seen in (5.6) and (5.7). Sentences (5.6) and (5.7) suggest that Sumitomo's losses from Mr. Hamanaka's trading stand at $1.8 billion and that there is likely to be a ban on all tobacco advertising if the Labor Party wins the election, as indicated in parenthesis.

(5.6)   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*)

(5.7)   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 (5.6) rely on the default rule that if somebody says something, it is (typically) true. Similarly, to infer the value of X, readers of (5.7) rely on the default rule that if somebody promises something, it is likely to become true. Because sentences (5.6) and (5.7) are reports of the speech acts of saying and promising, both rules are based on the sincerity conditions associated with those speech acts (Searle 1969; Searle and Vanderveken 1985) and reflect our expectations that speakers (the subjects of the reported speech act sentences in (5.6) and (5.7)) are sincere when they speak. That is, if x says, asserts, testifies, or conjectures that p, then x believes that p is true if x is sincere; assuming x knows what she is talking about (i.e. x is trustworthy), then p is true, based on our cultural model

of knowledge (Sweetser 1987). If p is true, the state whose category is p holds (Ismail 2001). Similarly, If x promises that x will do p, x intends to do p if x is sincere. Then x will likely do p. If it is likely that p in the future, the state of p being likely in the future holds if x is trustworthy. The rules based on the sincerity conditions can be described as follows ($>$ means 'nonmonotonically/defeasibly entail' Pelletier and Asher (1997)).

(5.8) $\forall x \forall p(say(x, p) \wedge Trustworthy(x) > p)$

(5.9) $\forall x \forall p(promise(x, p) \wedge Trustworthy(x) > likely(p)$

Rule (5.8) means that if x says p and x is trustworthy, normally p is true. Rule (5.9) says that if x promises p and x is trustworthy, normally p is likely to be true. x is *Sumitomo* in (5.6) and *Britain's opposition Labor Party* in (5.7), respectively. Relying on such rules, readers can easily infer that what Sumitomo says is true in (5.6) or that what the Labor Party promised is likely to become true if they win in (5.7). Because this type of example introduces a perfect state together with the source of that information, i.e. Sumitomo's claim in (5.6) or Britain's opposition Labor Party's promise in (5.7), I call it 'evidential use.'[5] Among perfect examples in my corpora, 8.43% belong to this 'evidential use' type.[6]

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[5]The term 'evidential' is often used in a much broader sense to refer to expressions that qualify the information conveyed by the sentence, e.g., 'maybe' or 'surely' as well as for expressions marking the source of the qualification (Chafe 1986; Wiebe 1990).

[6]Inoue (1975); Anderson (1982) and others discuss evidential aspects of the English perfect or *-te-i-* perfect in a different sense. Their examples are equivalent to a subset of Type III in my category, namely, the base eventuality serves as evidence for the perfect state currently holding.

Subtype (ii-b) *Topic negotiation.* Speakers sometimes use a perfect at the beginning of a conversation to set up a topic. I call this use a 'topic negotiation' use and 2.81% of examples belong to this use. Conversations (5.10) - (5.11) are examples of such uses from the Switchboard Corpus.

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

(5.11) 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 pre-condition for having a conversation on her chosen topic is satisfied, by asking, e.g., 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 that if she wants to know whether the addressee knows something (and thus can talk about it), she probably wants to talk about it.

(5.12) $\forall x \forall y (ask\_addressee\_whether\_know\ (x, y) > want\_talk\ (x, y))$

Rule (5.12) says if x asks addressees whether they know about y, normally x wants to talk about y. x does so by asking whether they have an experience of y (as in (5.10)) or whether

they have seen y (as in (5.11)), and so on.[7]

In (5.11) the addressee (B) accepts the topic by saying that he has had the experience of watching the movie and therefore knows something about it and can talk about it. Importantly, the perfect in examples (5.10) and (5.11) is used 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 Portner (2003) and Borillo *et al.* (2004) who claim that the use of a perfect form presumes the existence of a shared topic in the context.

Of course one might argue that the perfect putative presupposition that there is a mutually agreed topic for the current conversation may be accommodated in examples such as (5.10) and (5.11). This possibility is 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 an addressee does not know that the speaker has a daughter and hears that the speaker's daughter is getting married, then 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 (5.11).

(5.13)   i. B: Probably one of the best things about it was the scenery and, uh, I thought the

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[7]This is a simplification. One additional inference is needed:

   i. $\forall x \forall y (ask\_addressee\_whether\_experience/see/hear, etc. \, (x, y) > ask\_addressee\_whether\_know(x, y))$

If x asks whether the addressee has an experience of doing, seeing, hearing (any experience involving) y, x is asking the addressee whether he knows something about y.

story was pretty good, too. I, I think Kevin Costner did a really good job with it.

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

iii. B: No. I haven't.

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

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

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

vii. 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.)

viii. A: Well, I lived in Omaha for five,

ix. B: Oh. (Graff *et al.* 1998:sw2010.txt)

In (5.13) participant A uses the perfect a few other times to shift a topic. By uttering *Have you ever lived in that part of the country?* in (5.13ii) and *Have you ever visited it?* in (5.13iv), the speaker suggests that she now wishes to discuss the region in which *Dances with Wolves* was filmed (see the rule in footnote 6.). The repeated use of the perfect to introduce or shift topic 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 did not know each other and who could chat about whatever they wanted, even though a topic was suggested by the research team that culled the Switchboard Corpus. The fact that there is less mutual ground among strangers and the fact that no shared situational information could provide a topic make 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 (5.10) - (5.13) would render the notion of presupposition vacuous in that it is hard to imagine what unsatisfied presupposition would not be able to be accommodated, if those in examples (5.10) - (5.13) are.

Finally, examples such as (5.10) and (5.11) are particularly problematic for Portner (2003) who takes the view that topics are questions and that sentences whose main verbs are in the perfect form provide answers to these questions, as seen in (5.14) (see Section 2.3.3). In that view, for example, the perfect sentence in (2.93), repeated as (5.14b), provides an answer to the question in (5.14a) (Portner 2003).

(5.14)   a. We need to get an explanation of George Eliot's style. Who can we ask?

        b. Mary has read *Middlemarch*.

(5.15)   a. Has Mary read *Middlemarch*?

        b. I don't think so.

However, when sentences in the perfect are interrogative, as seen in (5.15), they cannot provide answers to a question such as in (5.14a). Interrogative sentences do not make an assertion. Since the perfects in (5.10) and (5.11) occur in interrogative clauses, sentences (5.10) and (5.11) cannot provide an answer to questions. Therefore, the use of the perfect in these examples cannot be explained by the view that sentences whose main verbs are in the perfect provide answers to questions which are topics.

Type (iii) *Commonsense entailment.*   Speakers and authors sometimes use the perfect to indicate that the occurrence of an event provides evidence or an explanation for the truth of a claim she 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 (5.16) the event introduced by the perfect sentence (that the U.S. Air Force flew an average of 1,500 missions a month) supports and provides evidence for the assertion conveyed by the first sentence. The value of X in this case corresponds to the assertion in the first sentence, i.e. Iraq still keeps U.S. forces busy. The fact that the U.S. forces flew so many missions serves as proof that they were busy.

(5.16)   Iraq still keeps U.S. forces busy, too (=X). U.S. Air Force fighter jets **have flown** an average of 1,500 missions a month over southern Iraq since 1992, in an effort to make sure Iraq doesn't violate a no-fly zone or attack its Shiite population. (Graff (1995-1997): *Wall Street Journal, 07,01,1996*)

In order to find the value of X in example (5.16), readers need to make use of a rather specific commonsense entailment rule such as (5.17).

(5.17) $\forall x \forall y (fly\_1, 500\_missions\_a\_month\_over\,(y, x) > keep\_busy(x, y))$

Rule (5.17) says that if y flies 1,500 missions a month over x, normally it is the case that x keeps y busy.[8]

(5.18) is a similar example.

(5.18) 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, the value of X for the main clause in the first sentence corresponds to the assertion in the second sentence, i.e. many (candidates) merely reflect his (Gephardt's) priorities. Gephardt's playing a key role in recruiting candidates explains that many congressional candidates reflect his priorities. Readers infer the value of X, using another rather specific common sense entailment rule, the one stated in (5.19).

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

---

[8]This rule is more specific than is plausible. The relevant rule is much more likely to involve the notion of a large number (any activity that is done a lot during a time period keeps somebody busy). Nothing substantial hinges on the particular commonsense rule that I posit for expository purposes, as long as one such rule is plausibly shared by speech participants.

Rule (5.19) means that if x play a key role in recruiting y, y normally reflects x's priorities. Although rule (5.17) very specific compared to rule (5.19), I do not worry about generalizing those commonsense entailment rules. The point is that in order to understand perfect sentences of this type, the addressee must use commonsense knowledge and commonsense entailment rules as seen in rules (5.17) and (5.19).[9]

One more example is seen in paragraph (5.20).

(5.20)   .., you can go around the world in 80 channels (=X). I may not be able to get Turner Classic Movies, or TV Land, or FX on my local Time Warner system, but 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," on which darkly clad intellectuals gesticulate expressively while smoking cigarettes. (Graff (1995-1997): *Wall Street Journal, 07,01,1996*)

In (5.20) the first sentence corresponds to the value of X for perfect clauses in the following sentence. Curling up on a couch and watching international programs are proofs that you can go around the world in 80 channels.

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[9]One possible counterargument against my analysis of this class of examples might be that it seems implausible that people must learn commonsense rules to interpret perfect sentences. However, addressees must use this type of commonsense entailment rules not only to interpret perfect sentences, but also to understand narrative texts, e.g. the temporal relation between events or the antecedent of a pronoun, as Lascarides and Asher (1993), Asher and Lascarides (2003) and others have argued.

Because the value of X is interpreted via commonsense knowledge, i.e. commonsense entailment rules, I call this type of use 'commonsense entailment use'. 4.63% of all examples belong to this type.

There are two differences which distinguish Type (i-ii) and Type (iii). First, the entailment rules used in Type (iii), such as those in rules (5.17) or (5.19) above, are much more specific than the kinds of rules used in Type (i) and Type (ii). Second, in Type (i) and Type (ii) the value of X is implicitly introduced in the discourse, while in Type (iii) it can be found in the surrounding text, either before or after the sentence containing the perfect, as shown in discourses (5.16) and (5.18) above. In (5.16) the first sentence's state description corresponds to the value of X for the second sentence, which contains the perfect. In discourse (5.18) the value of X for the perfect in the first sentence is provided by the state description found in the second sentence.

It is striking that the value of X for the overwhelming majority of present perfect examples we have looked at so far 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 only general default rules to assign a value to X. It means that in most cases readers can find the value of X to interpret a perfect sentence without any difficulty and without "thinking," thanks to those very general default inference rules.

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Only a small number of examples (4.63%), such as examples (5.16) and (5.18), require specific commonsense knowledge rules. Table 5.2 summarizes the types of rules used to determine the value of X in our sample. Type (i) in Table 5.2 corresponds to entailed resultative and continuative perfect readings in traditional labels in Table 5.1 above. Implicated resultative or non-resultative perfect readings in Table 5.1 are either Type (ii-a or b) or Type (iii) in Table 5.2, based on the inference patterns they require.

Table 5.2: Perfects of Type (i) - (iii)

Type	(i)	(ii) Speech Act/Epistemic		(iii)	Others
	Persistence	(ii-a)	(ii-b)	Common sense	
		Evidential Use	Topic negotiation		
A, B Newspaper	180	21	0	9	2
		Non-R:1, IR:20[a]		Non-R:4, IR:5	Non-R:1, IR:1
C Discussion	140	5	0	6	4
		Non-R:0, IR:5		Non-R:4, IR:2	Non-R:3
D Conversation	70	7	13	8	2
		Non-R:2, IR:5	Non-R:0, IR:13	Non-R:3, IR:5	Non-R:2
E Narrative	105	18	4	5	6
		Non-R:2, IR:16	Non-R:2, IR:2	Non-R:2, IR:3	Non-R:4, IR:2
Total	495	51	17	28	14
	(81.82%)	(8.43%)	(2.81%)	(4.63%)	(2.31%)

[a] 'Non-R:1' and 'IR:20' indicate the numbers of non-resultative perfect readings and implicated resultative perfect readings, respectively.

5.2.3 Discourse functions of the English present perfect

The previous section has shown that readers or addressees use only a few types of inference patterns to interpret perfect sentences. This section investigates what discourse functions each of those different types of perfect uses has, in other words, the effect of introducing an implicit value of X in discourse or finding the value of X in the surrounding text. It, then, shows how the use of the perfect helps discourse coherence.

X helps coherence: Type (i) - (ii-a,b)

Lascarides and Asher (1993) and Asher and Lascarides (2003) argue in their Segmented Discourse Representation Theory (SDRT) that a coherent text includes a discourse relation (or a rhetorical structure) which helps establish the temporal or anaphoric relation between clauses. We can illustrate the discourse function of the perfect, following the approach to discourse coherence developed in SDRT (Asher and 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 π_i is a label for the DRS of an utterance or clause as seen in Figure 5.1) and is nonmonotonically inferred from the information content of utterances, discourse contexts, and world knowledge.

Discourse relations relating two utterances can be established via default inferences based
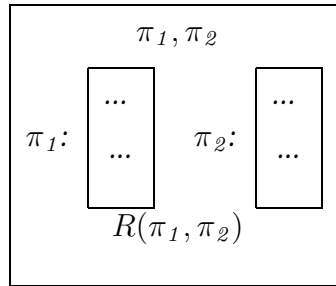
Figure 5.1: Discourse Relation between two utterances in SDRS

on the speech participants' commonsense knowledge of the relationship between eventualities which are introduced by the utterances. More generally, whenever an utterance introduces an eventuality into discourse, a new discourse relation can be introduced between it and a surrounding utterance, on the basis of commonsense knowledge of the relationship between the introduced eventuality and the eventuality included in the surrounding utterance. Therefore, when a perfect sentence introduces a perfect state, additional discourse relations between DRSs can be formed on the basis of the relations between the perfect states described by sentences containing perfect forms and eventualities described in the surrounding text.

The presence of the perfect state (X(s)) introduced in the perfect in Type (i) and (ii) can give rise to additional discourse relations between the relevant DRSs because the DRS containing the perfect can make use of the perfect state as well as the prior eventuality to form discourse relations with its surrounding DRS. A discourse relation based on the relation between the perfect state (X(s)) and another eventuality in discourse helps discourse coherence because

(i) two clauses or utterances need to be in at least one relation to be coherent, and (ii) multiplying the number of possible discourse relations also helps the coherence of the discourse through the *Maximal Discourse Coherence Principle (MDC)* of Asher and Lascarides (2003) that ranks discourses as more coherent the more consistent discourse relations between discourse segments they support.[10]

Type (i)   Consider examples from Type (i).

(5.21)   a. Alexandra took him in, and he **has been** a member of her household ever since.

(X=he is a member of Alexandra's household.) (=(5.2))

b. He is too old to work in the fields, but he hitches and unhitches the work-teams and looks after the health of the stock. (Cather 1996:p.24)

In (5.21a) the value of X for the perfect clause is 'he_be_a_member_of_Alexandra's_household' via an inference of persistence (Chapter 3). The DRSs for the clauses (5.21a) and (5.21b) can form an *Elaboration* relation via the Elaboration rule in (5.22) because the state of his being too old to work in the fields, of his hitching and unhitching the work-teams and of his looking after the health of the stock is a part of (or temporally included in) the state of his being a member of Alexandra's household (=X) (which can be represented as *Part-of*(ev', ev) where

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[10]The version of SDRT presented in Asher and 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 this thesis, the mapping between eventuality relations and discourse segments relations will be slightly more complex. Since this technical issue is of not relevant to this thesis, I will not discuss it any further.

ev' is the state of his being too old..., while ev is the state of his being a member of Alexandra's household) (Asher and Lascarides 2003).

(5.22)   Elaboration Rule

$\forall \alpha \forall \beta \forall P \forall P' \forall ev \forall ev'((P(ev, \alpha) \wedge P'(ev', \beta) \wedge \textit{Part-of}(ev', ev)) > \textit{Elaboration}(\alpha, \beta))$ (In this and subsequent rules, α and β are DRSs, P, P' are eventuality descriptions, ev and ev' are eventualities. The predicate *Part-of* describes a part-of relation between eventualities.)

The elaboration rule in (5.22) says that if the eventuality descriptions P and P' are true of ev and ev' in DRSs α and β and if P and P' in two DRSs α and β, describe eventualities ev and ev' such that one is part of the other, there is an elaboration relation between these two DRSs α and β.[11]

Since the state of his being too old to work in the fields, the habitual state of his hitching and unhitching the work-teams and looking after the health of the stock are all temporally included in the state of his being in Alexandra's household (=X), sentence (5.21b) can elaborate sentence (5.21a). If there was only a prior eventuality introduced, i.e. the past state of his being in Alexandra's household, the state could not have a part-of relation with the state described in (5.21b).Without the perfect state, an elaboration relation cannot be established

---

[11]The inference rules are stated somewhat informally for ease of presentation and, thus, differ slightly from those found in Asher and Lascarides (2003). Nothing substantial hinges on these simplifications. I also add to the set of discourse relations that Asher and Lascarides (2003) discuss, see my *Evidence* relation below.

between the two sentences.[12]

In discourse (5.23) below, the prior eventuality ev_2 for sentence (5.23b) is also a part of (and temporally included in) the prior eventuality ev_1 for sentence (5.23a), assuming that the base eventuality ev for (5.23a) is the generic state of the Havasupai Indians' custom. Those eventualities ev_2 and ev_1 also temporally overlap. When two eventualities are in a part-of relation, the segments describing those two eventualities form a *Elaboration* relation, as shown in the Elaboration Rule (5.22). When two eventualities overlap and when one of them is a state, the DRSs containing those eventualities also form a *Background* relation (see Asher and Lascarides (2003)). As a consequence, the DRSs for (5.23a) and (5.23b) can form both a *Elaboration* relation and a *Background* relation.

(5.23) a. For centuries, the Havasupai Indians of northwest Arizona **have performed** the ram dance to conduct the spirits of their dead relatives to the next world. (X=The Havasupai Indians of Northwest Arizona usually perform the ram dance to conduct the spirits of their dead relatives to the next world.)

   b. But today the sacred ceremony **has become** more than just a funeral rite. (X'= Today the sacred ceremony is more than just a funeral rite.) (Cooper 1996, July 12)

In addition, given the perfect state for (5.23a), the DRSs for (5.23) can also form a *Contrast* relation, as marked by the discourse marker *but*. Default world knowledge leads us to infer

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[12]It should be noted that either a continuative or non-continuative interpretation is possible for the perfect sentence in (5.21a) until the value of X is determined, even though a continuative reading may be common in the given context.

that if the Havasupai Indians (usually) perform y to conduct the spirits of their dead relatives to the next world (=the value of X, a habitual state), y is a funeral rite. However, the value of X' introduced in the second DRS π_2, i.e. '$y\_be\_more\_than\_a\_funeral\_rite$' via entailment and an inference of persistence, goes against the expectation that y is just a funeral rite based on the value of X in the first DRS π_1. Therefore, *Contrast* (π_1, π_2) holds. Figure 5.2.3 shows the SDRS for discourse (5.23). π_1 and π_2 are labels for the DRSs corresponding to the first and second sentences of (5.23), respectively. The eventualities on the basis of which each discourse relation is established are also indicated as subscripts in the labels for the DRSs, e.g. in *Contrast*(π_{s_1}, π_{s_2}), π_{s_1} means a DRS which contains the eventuality s_1.[13]

Type (ii-a)　In type (ii-a), the perfect introduces $X(s)$ with the source of the information of the existence of that state X. The surrounding sentence and a perfect sentence in Type (ii-a) can also form a discourse relation based on the relation between the perfect state and the eventuality introduced in the surrounding sentence. In discourse (5.24), the perfect state ($X(s)$) introduced by the second sentence corresponds to the complement of the speech act verb *say*, as discussed in Section 5.2.2. The DRSs for the first sentence and the second sentence form a *Result* relation based on the causal relation between the event introduced in the first sentence and the perfect state introduced by the second perfect sentence, as seen in (5.25).

(5.24)　Mr. Hamanaka spent billions of dollars in an effort to force the price of copper ever

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[13]The SDRSs shown in this chapter are simplified and do not show that the prior eventuality introduced by the English perfect is a subpart of the base eventuality for expository purposes. See Chapter 3.

$$\boxed{\begin{array}{l} \pi_1, \pi_2 \\[2ex] \pi_1: \boxed{\begin{array}{c} ev_1, s_1, n \\[1ex] H.I.\_perform\_R.D(ev_1) \\ \tau(ev_1) \prec n \\ X(s_1) \\ \tau(s_1) \circ n \end{array}} \\[6ex] \pi_2: \boxed{\begin{array}{c} ev_2, s_2, n \\[1ex] R.D\_become\_more\_than\_funeral\_rite(ev_2) \\ \tau(ev_2) \prec n \\ X'(s_2) \\ \tau(s_2) \circ n \end{array}} \\[4ex] \textit{Background } (\pi_{ev_1}, \pi_{ev_2}), \\ \textit{Elaboration}(\pi_{ev_1}, \pi_{ev_2}), \\ \textit{Contrast}(\pi_{s_1}, \pi_{s_2}) \end{array}}$$
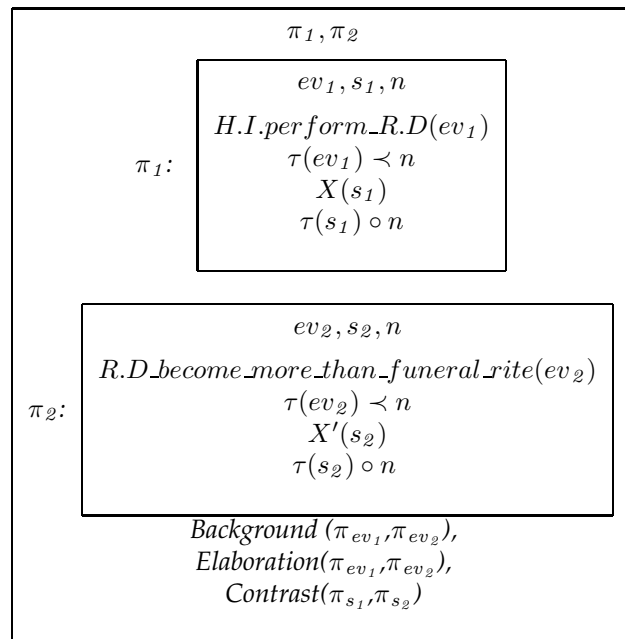
$X = \text{H.I.\_perform\_R.D\_to\_conduct\_the\_dead\_to\_next\_word}$
$X' = \text{R.D\_be\_more\_than\_funeral\_rite}$

Figure 5.2: SDRS for (5.23)

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).

(5.25) $\forall x \forall y \forall n \forall ev_1 \forall ev_2 (spend(x, n, ev_1) \wedge loss\_stand\_at(y, n, ev_2) > cause(ev_1, ev_2))$ (ev_1 and

ev_2 are eventualities.)

Rule (5.25) above says that if ev is the eventuality of x spending n amounts of dollars and if

ev_2 is the eventuality of y's loss standing at n amounts of dollars, normally eventuality ev_1

caused ev_2.

(5.26)   Result Rule

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

(α and β are DRSs, P, P' are eventuality descriptions, ev is an eventuality)

The result rule in (5.26) says that if the eventuality descriptions P and P' are true of ev and ev'

in DRSs α and β and if there is a causal relation between ev and ev', then β and α can form a

Result relation.

In discourse (5.24) via rules (5.25) and (5.26) the event of Mr. Hamanaka spending billions

of dollars in the first sentence and the state of Sumitomo's loss standing at 1.8 billion (X(s))

are causally related and the discourse segments that describe them are in a *Result* relation.

Figure 5.3 shows that the SDRS for discourse (5.24) including the event and the perfect state

($X(s)$) in a causal relation forms a *Result* relation.

$$\begin{array}{|l|}
\hline
\pi_1, \pi_2 \\
\hline
\pi_1: \quad \begin{array}{|c|}
\hline
e_1, n \\
Mr.H.\_spend\_billions\_of\_dollars(e_1) \\
\tau(e_1) \prec n \\
\hline
\end{array} \\[4mm]
\pi_2: \quad \begin{array}{|c|}
\hline
e_2, s, n \\
S\_say\_S's\_loss\_stand\_at\_\$1.8\_billion(e_2) \\
\tau(e_2) \prec n \\
X(s) \\
\tau(s) \circ n \\
\hline
\end{array} \\[4mm]
\quad\quad Result(\pi_{e_1}, \pi_s) \\
\hline
\end{array}$$

$X = S's\_loss\_stand\_at\_\$1.8\_billion$
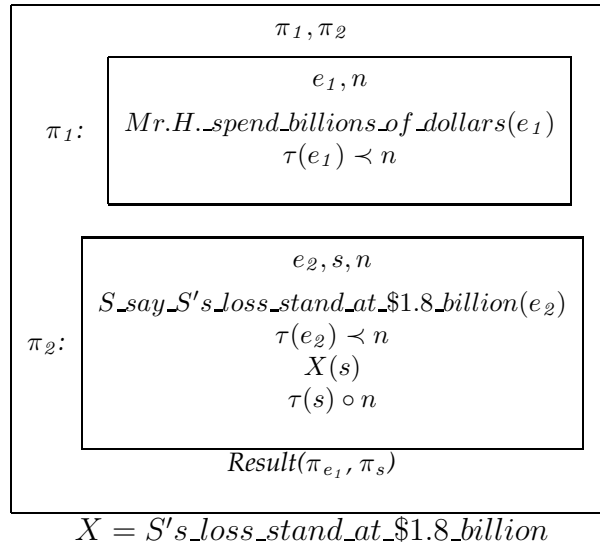
Figure 5.3: SDRS for (5.24)

Again, the present perfect plays a critical role in facilitating the inference of a *Result* relation. The *Result* relation is not between what Sumitomo said and Mr. Hamanaka's spending, but between the *fact* that Sumitomo is reporting and Mr. Hamanaka's spending, i.e. between the perfect state whose category is implicated by the second sentence and the content of the first sentence in (5.24). Inferring the category of the perfect state is thus a prerequisite to the establishment of the relevant discourse relation and the need to infer a category for the perfect state triggers this inference in a way a past tense form would not have.

Type (ii-b) The interrogative sentence and its answer pair in Type (ii-b), which are used to negotiate a topic, can also form a discourse relation at the level of speech acts. That is, the

question and answer pair in (5.27) and (5.28) can be considered to form a *Topic Negotiation Question-Answer Pair* relation (Topic-Nego-QAP) at a speech act level.

(5.27) a. **Have** you **done** a lot of camping recently? (X=I want to talk about camping.)

   b. No, I haven't been camping since I was about sixteen. (Graff *et al.* 1998:sw2009.txt)

(5.28) a. **Have** you **seen** DANCING WITH WOLVES? (X=I want to talk about this movie.)

   b. Yeah. I've seen that, , that's, uh, that was a really good movie. (Graff *et al.* 1998:sw2010.txt)

(5.29) $\forall x \forall y \forall p(ask\_whether\_experienced(x,y,p) > ask\_whether\_know(x,y,p))$

First, rule (5.29) says (somewhat informally) if x asks addressees whether y has experienced p, normally x is asking whether y knows about p. As discussed before, if x asks whether y knows about p, it can be defeasibly inferred that x wants to talk about p, as seen in rule (5.30) below. Then, the question and the answer pair form a Topic-Nego-QAP via rule (5.31). Q and A in rule (5.31) are considered to be conversational events as defined in Poesio and Traum (1997) or goal related speech acts as defined in Asher and Lascarides (2003). If Q is a conversational event of x expressing her desire to talk about p (indirectly expressed through the perfect form, here) and A is a conversational event of y informing whether he wants to talk about p, then one can defeasibly infer that Q and A form a Topic-Negotiation-Question-Answer-Pair.

(5.30) $\forall x \forall y \forall p \, ask\_whether\_know(x,y,p) > want\_to\_talk\_about(x,p)$

(5.31) $\forall x \forall y \forall p \forall Q \forall A(express\,(Q,x,y,\,want\_to\_talk\_about\,(x,p)) \wedge$

$inform\_whether\ (A, y, x, want\_to\_talk\_about(y, p))$

$> Topic - Nego - QAP(Q, A))$

Figure 5.4 represents a simplified SDRS for the dialogue in (5.28). Please note that in this
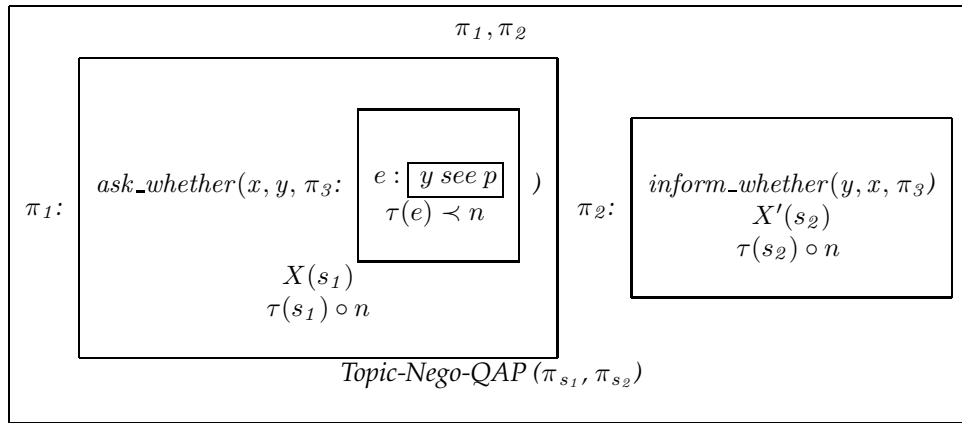
$$X = x\_want\_to\_talk\_about\_p$$
$$X' = y\_want(or\ not\_want)\_to\_talk\_about\_p$$

Figure 5.4: SDRS for (5.28) (tentative)

type of negotiation uses of the English perfect, the perfect state can be outside the scope of

a question. For example, the question in (5.32a) can be followed by the answers B or B′ in

(5.32b).

(5.32)   a. A: **Have** you **seen** DANCING WITH WOLVES? (from (5.28)) (X=I want to talk
about the movie Dances with Wolves.).

      b. B: No, but I've heard that it is very interesting.

      B′: Yes, it's very interesting.

Both positive and negative answers in (5.32b) are compatible with the state of the addressee wanting to talk about the movie.

Although this thesis cannot fully discuss discourse relations between speech acts, we can at least say that the choice of a perfect form in uses of Type (ii-b) facilitates the establishment of a Topic-Negotiation-QAP relation between the question and answer by introducing the perfect state and triggering the inference rule in (5.31).

Finding X helps establish a discourse relation: Type (iii)

In Type (iii), the value of X is found in its surrounding text and is equivalent to what is stated before or after the sentence containing the perfect, as discussed in Section 5.2.2. The perfect here triggers a search for the value of X and the retrieval of a commonsense rule in which X is a crucial premise that is needed to establish the discourse relation between the sentence that contains the perfect and the sentence that contains the state description that is the value of X.

For example, as seen in the above, the use of the perfect in discourse (5.16), which is repeated as (5.33), triggers the search for the value of X and the retrieval of rule (5.17), which is repeated as (5.34), that is used to find the value of X.

(5.33)   Iraq still keeps U.S. forces busy, too (=X). U.S. Air Force fighter jets **have flown** an average of 1,500 missions a month over southern Iraq since 1992, in an effort to make sure Iraq doesn't violate a no-fly zone or attack its Shiite population. (Graff (1995-

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1997): *Wall Street Journal, 07,01,1996*) (=(5.16))

(5.34) $\forall x \forall y (fly\_1, 500\_missions\_a\_month\_over (y, x) > keep\_busy(x, y))$ (=(5.17))

The use of the perfect *have flown* in the second sentence in (5.33) facilitates the establishment of a discourse relation between the two sentences in (5.33), because of the discourse coherence rule in (5.35).

(5.35)   Evidence Rule

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

The Evidence Rule in (5.35) says that if the eventuality descriptions P and P' are true of ev and ev' in DRSs α and β and one can defeasibly infer $P'(ev')$ from $P(ev)$, then α is evidence for β. 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 $P'(ev')$ from $P(ev)$, i.e. rule (5.34), the perfect in (5.33) helps trigger the rule in (5.35) on which the coherence of the discourse in (5.33) partly rests. The SDRS for (5.33) is shown in Figure 5.5.

5.2.4   Summary

Since Reichenbach (1947), studies of the perfect have recognized the role of the English perfect in discourses. But few studies have looked at a large data set of perfect examples. This section has so far tried to assess anew the role that the English perfect plays in discourse by

$$\boxed{\begin{array}{c}
\pi_1, \pi_2 \\[4pt]
\pi_1: \boxed{\begin{array}{c}
s_1, n \\
\textit{Iraq\_still\_keep\_U.S.\_forces\_busy}\,(s_1) \\
\tau(s_1) \circ n
\end{array}} \\[6pt]
\pi_2: \boxed{\begin{array}{c}
ev_2, s_2, n \\
\textit{Air\_Force\_fly\_1,500\_missions\_over\_Iraq}(ev_2) \\
\tau(ev_2) \prec n \\
X(s_2) \\
\tau(s_2) \circ n
\end{array}} \\[4pt]
\textit{Evidence}\,(\pi_{s_1}, \pi_{ev_2})
\end{array}}$$

$X =$ Iraq_still_keep_U.S._forces_busy
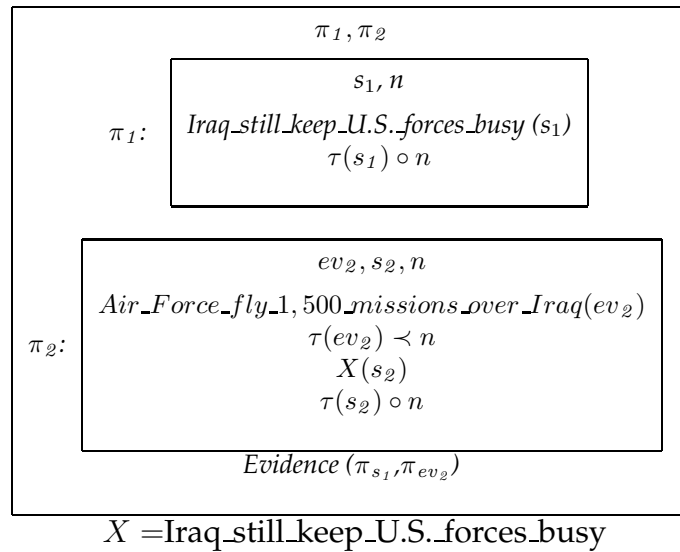
Figure 5.5: SDRS for (5.16)

examining the kinds of interpretations 605 present perfect examples receive and the inferences readers and hearers need to make to arrive at these interpretations. Several preliminary conclusions result from this examination. First, 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 or shift topic. Second, the overwhelming majority of present perfects are continuative or entailed resultative perfects whose understanding only requires trivial inferences on the part of hearers. Third, the remaining examples fall into a few inference patterns that either use general default rules or easily accessible commonsense rules. The overall picture that emerges from my 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.

Determining the nature of the perfect state is not the end of the story. I have further shown that Present perfects serve further "perlocutionary" functions in texts and conversations. The perfect uses in Type (i) and (iia) serve to introduce the value of X in discourse, although Type (iia) further qualify this introduction, by mentioning the source of the information regarding this state. The existence of the value of X implicitly introduced in discourse helps the sentence including it form a discourse relation with other sentences and help the coherence of the discourse. The perfect use in Type (iib) is used to negotiate topics in conversation, implicating what a speaker wants to talk about as a value of X. Finally, the perfect use in Type (iii) serves to establish discourse coherence. The process of searching for the value of X triggered by the perfect partly coincides with and therefore facilitates the process of the establishment of a discourse relation. Table 5.3 summarizes these various uses and other differences among the different kinds of inferences addressees must perform when interpreting present perfects.

Table 5.3: Inference types and discourse functions of English present perfects

| | Type (i) | Type (ii) | | Type (iii) |
		(a) Evidential	(b) Topic Negotiation	Commonsense
General inference	+	+	+	-
Value X 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 primary discourse relation

5.3 Japanese *-te-i-* nonpast perfect in discourse

This section now examines the uses of the Japanese perfect *-te-i-*+nonpast to determine if the results from the previous section extend to other perfect operators. As discussed in Chapter 4, the English and the Japanese present perfect forms have similar meanings, but differ in one important respect, namely Japanese *-te-i-*+nonpast (*-ru*/*-masu*) forms can receive both progressive and perfect interpretations while the English perfect has only perfect readings. Despite this difference, the Japanese *-te-i-*+nonpast examples we collected have the same discourse functions that our English present perfect examples had. This section discusses similarities and differences between the English and Japanese data and also discusses the inference patterns needed to interpret *-te-i-* examples as well as the discourse functions of the use of *-te-i-*.

5.3.1 Japanese corpus data

This corpus study first collected *-te-i-*+nonpast examples pseudo-randomly from two Japanese newspapers *Nihon Keizai Shinbun, 07,01, 1994* and *Dow Jones Telerate/Kyodo News Service, 06, 30, 1995* (Graff and Wu 1995), discussion articles from Aozora Bunko (www.aozora.gr.jp), conversations (Ohori 1993), and narratives from three novels (Ooe 1959; Nitta 1973; Murakami 1985). The examples include both progressive readings and perfect readings, as well as ones occurring in subordinate clauses or in relative clauses or in adjectival phrases modifying a noun phrase. The data also include the form *-te-*+nonpast, which often occurs as a colloquial form

of *-te-i-*+nonpast in conversation.

The data were classified based on the traditional progressive and perfect interpretation categories, as seen in Table 5.4.[14] The progressive uses, the habitual uses, and the continuative perfect readings of *-te-i-*+nonpast are not oftentimes distinguishable without temporal adverbial phrases when the main eventuality is incomplete and interpreted to be on-going (see Chapter 4). When *-te-i-*+nonpast occurs with temporal adverbials describing the lower bound of a state holding such as *irai*, *kara* ('since') or with temporal adverbials referring to the state holding in the past such as *zuutto* ('all this time'), it is categorized as a continuative perfect use (or progressive perfect use). Otherwise, it is categorized as a progressive use. Habitual uses are included in progressive uses. The data also include futurate readings of *-te-i-ru* (nonpast), as Table 5.4 does not distinguish between present and future uses.

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[14]For each perfect use label, see Section 5.2.1.

Table 5.4: The numbers and percentages of different uses of *-te-i-*+nonpast

	Progressive	Entailed-Result	Continuative	Implicated Result	Non-Result	Total
Newspaper NK[1]	77	96	9	39	0	221
Newspaper Dow[2]	46	105	4	71	0	226
Conversation[3]	40	79	4	6	1	130
Discussion[4]	150	85	0	14	0	249
Narrative[5]	200	156	1	3	0	360
Total	513	521	18	133	1	1186
(%)	(43.25%)	(43.93%)	(1.52%)	(11.21%)	(0.09%)	(100%)

[1] *Nihon Kezai Shimbun, 07, 01, 1994*. (Graff and Wu 1995).
[2] *Dow Jones Telerate/Kyodo News Service, 06, 30, 1995*. (Graff and Wu 1995).
[3] Ohori (1993).
[4] Suzuki (1997); Takahashi (1997).
[5] Ooe (1959); Nitta (1973); Murakami (1985).

5.3.2   Inference patterns in Japanese

The examples were then classified based on the type of inference patterns discussed in Section 5.2.2, as seen in Table 5.5. Progressive, entailed-resultative, and continuative uses constitute 88.95% of all *-te-i-*+nonpast examples. Progressive uses are included in the data because, as discussed in Chapter 4, the semantics of *-te-i-* is not the same as the semantics of the English progressive. Since it is equivalent to a perfect of an imperfective; *-te-i-* requires an inference of

persistence even when it receives a progressive interpretation while the English progressive does not.[15] Therefore, all those three uses, progressive, entailed resultative, and continuative uses, can be interpreted via the same and simple inference, i.e. an inference of persistence (Chapter 3, Chapter 4, and Section 5.2.2).[16]

The rest of the examples turn out to belong to only one type of inference pattern, i.e. speech act/evidential uses (Type ii-a), which constitute 10.96% of the examples. There is no speech act/topic negotiation use (Type ii-b) and commonsense entailment use (Type iii) in my corpus.

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[15]Although progressive uses and entailed resultative uses of *-te-i-* are both categorized under Type (i), the inference in progressive uses of *-te-i-* differs from that of entailed resultative uses. The state which continues via an inference of persistence in entailed resultative uses of *-te-i-* is entailed by an occurrence of the base eventuality. On the other hand, the state which is inferred to continue in progressive uses in the state of the event being on-going. See Chapter 4 for the semantics of *-te-i-*.

[16]If progressive uses of *-te-i-* are excluded from the data, Type (i) uses still constitute a vast majority of the data, as Type (i) uses would still constitute 80.53% of perfect uses while Type (ii) would then constitute 19.31% of perfect uses.

Table 5.5: Inference patterns for *-te-i-*+nonpast

	Type (i)	Type (ii)		Type (iii)	Others	Total
	Persistence	a. Evidential	b. Topic Nego			
Newpaper	337	110	0	0	0	447
Conversation	125	4	0	0	1	130
Discussion	235	14	0	0	0	249
Narrative	358	2	0	0	0	360
Total	1055	130	0	0	1	1186
(%)	(88.95%)	(10.96%)	(0%)	(0%)	(0.09%)	(100%)

Type (i): Progressives, entailed resultative perfects and continuative perfects. As discussed in Chapter 4, the progressive and continuative (progressive perfect) readings of *-te-i-* can obtain via an inference of persistence. Sentence (5.36) is an example of progressive uses, while sentence (5.37) is an example of continuative uses.

(5.36) *Sono muko-niwa   miwatasu-kagiri-no   ringo-bayashi-ga   tsuzui   -te-i-*
   That over-in-TOP as far as the eye can reach-GEN apples-trees-NOM continue -TE-I-
   ru. (Murakami 1985:61)
   NONPAST
   'As far as the eye can reach a grove of apple trees continues over there.' (X=A grove of apple trees continues.)

(5.37) *Mou-   nannen-mo   kore-o   tsuka -tte-i- ru. (Ooe 1959:26)*
   Already years-as long as this-ACC use   -TE-I- NONPAST

'I have been using this for years now.' (X=I'm using this.)

Sentences (5.38) and (5.39) are examples of entailed resultative perfect readings. Sentence (5.38) expresses that the state entailed by the event of two towns being divided by a mountain holds. Sentence (5.39) describes that the entailed state of the addressee getting to know something persists. Unlike the English passive or English verb *know*, the Japanese passive or Japanese *shi-* ('(get to) know') are not stative but denote changes of state. The Japanese verb *shi-* ('get to know') behaves more like the English verb *learn*.

(5.38) *Ano futatsu-no machi-wa aida-o   yama-niyotte hedate rare- -te-i-*
        That two-GEN town-TOP between-ACC mountain-by divide PASS- -TE-I-
        ru (Nitta 1973:26)
        NONPAST

        'Those two towns are divided by a mountain.' (X=Those two towns are divided.)

(5.39) *Kimi-mo shi-   -tte-   ru. (Ohori 1993:RK.data-22)*
        You-too know- -TE-I- NONPAST

        'You know it too.' (X=You know it.)

In order for addressees to interpret this type of uses of *-te-i-*, they only need to draw a very simple default inference, i.e. an inference of persistence. Compared to the English data discussed in previous sections, even more uses of *-te-i-*+nonpast, i.e. 88.95%, can be interpreted via this very simple inference.

Type (ii-a): Speech act/Epistemic-evidential uses. Type (ii-a) uses seem a fairly common use of Japanese *-te-i-*, especially in newspaper contexts. Examples (5.40) and (5.41) exemplify this evidential use.

(5.40) *Bei-seifu-wa*   *genjo-dewa*   *'nichi-bei- seifu   chotatsu*
         US-government-TOP current situation-in-TOP 'Japan-U.S.- government trading
         kyotei-ni ihan-su   ru'   to   mi-   -te-i- ru.
         rules-DAT violation-DO NONPAST' COMP judge/regard -TE-I- NONPAST
         'U.S. government has judged/regarded that "it (Japan's free trading) violates WTO
         rules."' (X=Japan's trading violates WTO rules.)

(5.41) *Kensetsu-sho-de-wa*   *'kyuju-yo-nendo-no yosan- seiritsu-ga   okure ta*
         Construction-ministry-in-TOP '94-year-GEN   budget- approval-NOM delay- PAST
         tame,   shinki kouji-no   hattyuu-ga deki naka tta'   to   setsumei-shi
         because, new   construction-GEN order-NOM can not   PAST' COMP explanation-DO
         -te-i-   ru.
         -TE-I- NONPAST
         'The ministry of Construction has explained that "because the 1994 budget approval
         was delayed, (we) could not order new constructions."' (X= It is true that because
         1994 budget approval was delayed, the Ministry of Construction could not order new
         construction.) (Graff and Wu (1995): *Nihon Kezai Shimbun, 07, 01, 1994*)

In discourses (5.40) and (5.41) the author conveys to the reader that the complements of the

epistemic verbs *setsumei-su* ('explain') and *mi-* ('judge/regard') is true. I assume that the same

rules based on speech acts' sincerity conditions discussed for the evidential uses of the English

present perfect in Section 5.2.2 are used in Japanese.

That is, to infer the value of X, readers of sentence (5.40) rely on the default rule that

if somebody judges something, it is (normally) true. Similarly, readers of (5.41) rely on the

default rule that if somebody explains something, it is (normally) true. Rule (5.42) means if x

judges or explains p and x knows what she is talking about (x is trustworthy), normally p is

true.

(5.42) $\forall x \forall p(judge/explain(x,p) \wedge Trustworthy(x) > true(p))$

This type of uses includes examples containing epistemic or speech act verbs such as *bunseki-su-* ('analyze'), *yoshoku-su-* ('predict'), *kento-su-* ('consider'), *shiteki-su-* ('point out'), *iu* ('say') and so on. Of *-te-i-*+nonpast examples that came from newspapers, 24.6% fall in this type so we can say that it is quite frequent in newspapers. Of all examples of *-te-i-*+nonpast, 10.96% belong to this type. The percentage of Type (i) and Type (ii-a) uses of *-te-i-*+nonpast amounts to 99.91% of all examples of *-te-i-*+nonpast I have collected. Addressees or readers do not need to go through a difficult inference to interpret *-te-i-* sentences in more than 99% of its uses. In almost all cases, readers only need apply very general default inference rules, i.e. either an inference of persistence or an inference based on the sincerity conditions associated with speech acts.

Type (ii-b): Topic negotiation uses.   There is no example of Type (ii-b) found in my corpus. There are several possible reasons why there is no Type (ii-b) use of *-te-i-*. First, because of the vagueness of the meaning of *-te-i-*+nonpast, asking about someone's past experience with doing something out of the blue is easily misinterpreted as a progressive or habitual question, asking about a current on-going state. This is so because it is also possible to start a conversation or a new topic by asking about the addressee's progressive state or habitual state using *-te-i-* as seen in (5.43). Since I categorized the uses of *-te-i-* based on types of inferences needed to find the category of the perfect state, examples like (5.43) would be categorized

as Type (i) even it is used to start a conversation, because the inference used to interpret the sentence is an inference of persistence.

(5.43) *Tokorode   suugaku-no shukudai   ya- -tte-   ru?*
        By the way math-GEN homework DO -TE-(I)- NONPAST
        'By the way, are you doing the math homework?

Because topic negotiation uses of perfects occur at the beginning of conversation to set up a new topic, i.e. without much contextual clues, if both progressive/habitual and 'experiential' (i.e. asking about an addressee's past experience) interpretations were possible to set up a new topic, the interpretations with less inferential steps needed would tend to be preferred, that is progressive/habitual interpretations. While only an inference of persistence is required in progressive/habitual interpretations, two steps are required in topic negotiation uses, as shown in (5.29) and (5.30), repeated as (5.44a) and (5.44b).

(5.44) a. $\forall x \forall y \forall p(ask\_whether\_experienced \ (x, y, p) > ask\_whether\_know \ (x, y, p))$

        b. $\forall x \forall y \forall p(ask\_whether\_know(x, y, p) > want\_to\_talk\_about(x, p))$

In progressive/habitual interpretations, the category of the perfect state is inferred as the progressive state of the base eventuality via an inference of persistence. In topic negotiation uses if the speaker asks whether an addressee experienced something, the speaker is normally asking whether the addressee knows it via the rule in (5.44a). If the speaker asks whether the addressee knows something, the speaker wants to talk about the topic. Finally, the category of the perfect state is inferred as the state that the speaker wants to talk about it via the second

rule in (5.44b). When one reading is reachable through simpler inferences, the other may not be available out of the blue at the start of a new conversation.

Thirdly, this may be especially true since Japanese has another form *koto-ga aru* to ask about someone's past experience, which is not vague as *-te-i-* forms would be, as shown in (5.45).

(5.45)   *Panda-no   akachan-o mi-   ta-   koto-ga   arimasu-ka*
         Panda-GEN baby-ACC look at- PAST COMP-NOM exist(polite)-Q
         'Have you looked at a baby panda?'

Therefore, while the English present perfect can be used to ask about someone's past experience to ascertain the person's pre-epistemic condition for having a conversation, the Japanese perfect *-te-i-*+nonpast tends to be avoided in this context.

When speakers ask about someone's knowledge about something using the verb *shi-* ('know (get to know)'), perfect uses of *-te-i-*+nonpast forms occur in topic negotiation contexts. Because the verb *shi-* ('know (get to know)') is a change of state verb in Japanese, *shi-* ('know') +*-te-i-* always has a perfect reading and therefore is not vague between a progressive and perfect reading. (5.46) is an example.

(5.46)   a.   *A: Kore shi-   -tte-   ru?*
             This know -TE-(I)- NONPAST
          A: 'Do you know this?' (X=You know this. $X(s)$ is in the scope of a question.)

      b.   *B: Shiru-wake   nai   yo*
            Know-reason NEG PRTCL
         B: 'I don't know.'

c. *C: Minna   shi-   -tte-   ru   tte. (Ohori 1993:RK.data-04)*
   Everyone know- -TE-(I) NONPAST COMP/PRTCL

   C: 'Everyone knows it.' (*X*=Everyone knows it.)

In discourse (5.46) speaker A asks whether the addressees know some stuff she is showing to them, which can implicate that she wants to talk about this via the same rule used in Type (ii-b) for the English present perfect in (5.44b). The second speaker B does not show any interest in the topic. The third speaker, speaker C, accepts the topic, by saying that everyone knows it. After speaker C's acceptance, speaker A starts talking about the topic. These utterances as well as the progressive example in (5.43) clearly have the function of negotiating a new topic in discourse. However, they are categorized as Type (i) uses based on the inferences required to interpret them. The category of the state introduced by *-te-i-*, the state of addressees knowing something, is entailed in the sentence in (5.46). The needed inference is an inference of persistence that the entailed state persists.

To conclude, although *-te-i-* can occur in topic negotiation contexts, no example of Type (ii-b) was found in the corpora.

Type (iii): Commonsense entailment type. Another difference between the Japanese and English data is that there is no commonsense entailment use (Type (iii)) found in the *-te-i-* +nonpast examples I collected. Because even in the English data Type (iii) examples are very few (only 4.63%), it is not necessarily surprising that there happens to be no example of Type (iii) in my Japanese corpus. However, it does not mean that there is no Type (iii) use of *-te-i-*.

Discourse (5.47a-c) shows a commonsense entailment type example of *-te-i-*+nonpast.

(5.47)   a. *... Kanri-nin-no A-san-wa hannin-ja   arimasen.*
             ... Manager-GEN A-Mr.-TOP culprit-COP+TOP COP-NEG.

             'Manager A is not the culprit.'

      b. *Doushite kanri-nin-ga   muzai   nanda?*
             Why   manager-NOM innocent COP

             'Why is the manager innocent?'

      c. *... shohan-mo   yara nai youna misu-o   ya-* **-tte-i-** *ru*
             .. first time criminal-too do NEG like   mistake-ACC do -TE-I- NONPAST
             deshou.[17]
             TAG

             '... (the criminal) has made a basic mistake which only those who have never com-
             mitted a crime would make, right?' (Context: The manager has a prior criminal
             record and is knowledgeable about how to commit a crime.) (X=The manager is
             not the culprit.)

Sentence (5.47b), which contains *-te-i-*, is evidence for what is claimed (the value of X). In the omitted context, the speaker admits that the manager knows a lot about crimes. Therefore, the event of the criminal making a basic mistake, which only those who have never committed a crime would make, is evidence that the culprit is not the manager.

(5.48) $\forall x \forall y (make\_basic\_mistake\ (x) \wedge be\_experienced/knowledgeable(y)) > \neg x = y)$

    Example (5.47) is a case where readers require more specific commonsense entailment rules to infer the value of X, e.g. the rule in (5.48). The use of *-te-i-* in (5.47) sounds totally natural in Japanese, although that kind of use does not seem as frequent as in English, according

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[17]Yura (1985:122) partly cited in Kudo (1995:143).

to my corpus study.

5.3.3 Discourse functions of the Japanese nonpast *-te-i-* perfect

Except for Type (ii-b) Topic Negotiation uses, all the inference patterns in the English present perfects are also found in the Japanese nonpast *-te-i-* perfects either in or outside the corpora this thesis has looked at. The discourse functions of the Japanese nonpast *-te-i-* perfect also parallel those of the English present perfect. The introduction of a perfect state plays a role in establishing discourse coherence in Japanese, like in English.

X **helps discourse coherence: Type (i) - Type (iia).** In Type (i) and Type (ii-a), clauses in the perfect can have discourse relations with surrounding clauses, based on the introduced value of X. For example the DRSs for the first and the second sentence in (5.49) (an example of Type (i) use) form a *Narration* relation and a *Result* relation, because of the relationship between the events described in the two sentences (the change in Japanese manufacturers' ability to take orders for commercial satellites and the increased rarity of NASDA satellites). In addition, a *Background* relation can be established between the perfect state introduced in (5.49a) (there is currently no way for Japanese manufacturers to take orders for commercial satellites) and the overlapping event described in the second clause. Figure 5.6 is a simplified SDRS for (5.49).

(5.49) a. *Nihon-no eisei-meekaa-wa,* . . . *jitsuyou-eisei-juchuu-no*
Japanese satellite-manufacturer-TOP . . . commercial-satellite-taking order-GEN
michi-o jijitsu-jou tozasare- te-i- ru.
way-ACC virtually close-cause- TE-I- NONPAST

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'Japanese satellite manufacturers' ability to take orders for commercial satellites has been virtually shut down.' (X=There is no way for Japanese manufacturers to get orders for commercial satellites.)

b.   *...NASDA-no   eisei-seisaku-wa...,   kazusukunai*
   ...NASDA-GEN satellite-production-TOP..., rare
   uchou-kanren-gijutsu-o   chikuseki-suru-ba-to
   space-related-technology-ACC accumulation-DO-place-DAT
   na-ru. (Graff and *Wu (1995): Nihon Kezai Shimbun, 07, 01, 1994)*
   become-NONPAST

   'Making a NASDA (research) satellite (will) become a rare opportunity (for Mitsubishi Electronic) to build up space-related technology.'
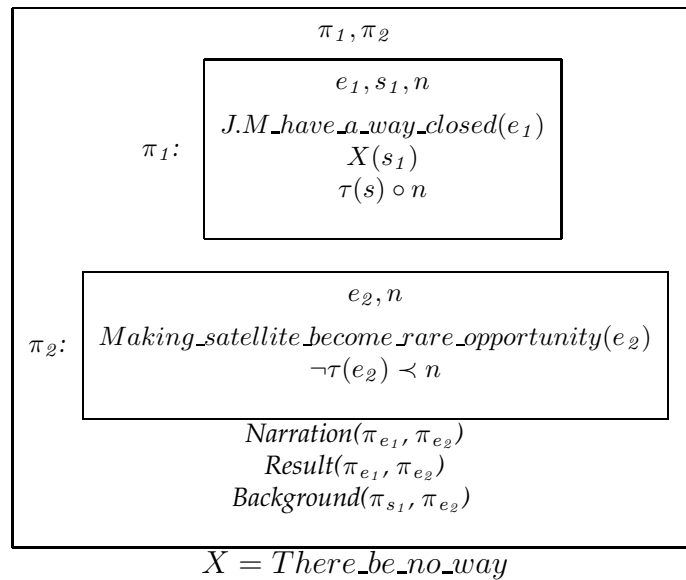
Figure 5.6: The SDRS for (5.49)

In (5.50) (an example of Type (ii-a) use), the DRSs for the first and the second sentences form an *Explanation* relation, because of the causal relation that can be inferred between the

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eventuality described in the first sentence (consumption is not rising), and the perfect state

described in the second sentence (two factors are negatively affecting that consumption).

(5.50) a. *Kojin-shouhi-wa*   …*moriagari-ni kake*,
        Individual-consumption-TOP ….upsurge-in lack
        '(The total amount of) consumption by individuals is not rising up, and

  b. *dou-shiten-de-wa*   '…*futatsu-no mainasu youin-ga*   *hibii- -te-i- ru'*
      that-branch-in-TOP '…two   minus   factors-NOM affect- TE-I- NONPAST'
      to   shi-   -te-i- ru.
      COMP regard- TE-I- NONPAST.
      'the branch (Bank of Japan) has considered that there are two factors that neg-
      atively affect (that consumption).' (X=Two factors are negatively affecting (that
      consumption).) (Graff and Wu (1995): *Dow Jones Telerate/Kyodo News Service, 06,
      30, 1995*).

(5.51) Explanation Rule

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

(α and β are DRSs for the first segment and the second segment in discourse, respec-

tively.)

The explanation rule in (5.51) says that if the eventuality descriptions P and P' are true of ev

and ev' in DRSs α and β and if ev' in β (the second segment) causes ev in α (the first segment),

then α and β can form an *Explanation* relation.

Figure 5.7 is a simplified SDRS for (5.50).

Finding X helps establishing discourse relations: Type (iii). In discourse (5.52) a clause

containing *-te-i-* (whose DRS is labelled as π_2) constitutes evidence for what is claimed (the

$$\boxed{\begin{array}{c} \pi_1, \pi_2 \\[4pt] \pi_1: \boxed{\begin{array}{c} s_1, n \\ Individual\_consumption\_not\_being\_rising(s_1) \\ \tau(s_1) \prec n \end{array}} \\[20pt] \pi_2: \boxed{\begin{array}{c} e_2, s_2, n \\ Branch\_regard\_two\_minus\_factors\_be\_affecting(e_2) \\ X(s_2) \\ \tau(s_2) \circ n \end{array}} \\[4pt] Explanation(\pi_{s_1}, \pi_{s_2}) \end{array}}$$

$X =$two_minus_factors_be_affecting
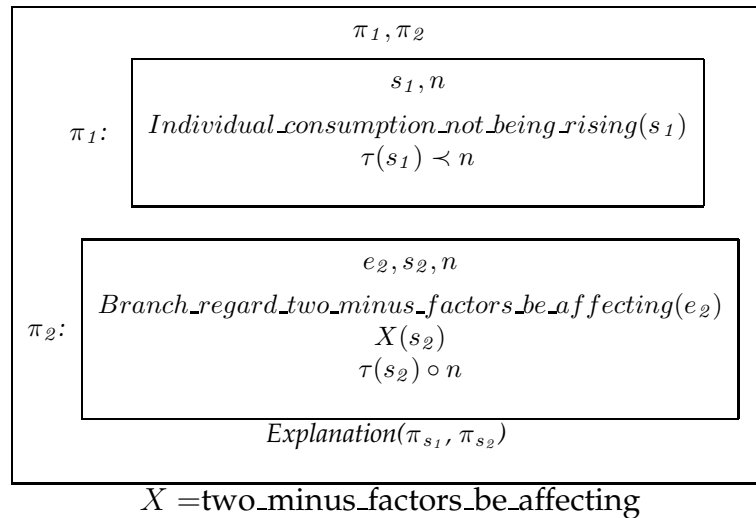
Figure 5.7: The SDRS for (5.50)

value of X). The value of X is already stated in the preceding context in (5.52a). The omitted

context states that the manager has a good knowledge of crimes (in parenthesis in the transla-

tion). Therefore, the event of the criminal making a basic mistake which only those who have

never committed a crime would make serves as evidence that the manager is not the culprit.

(5.52) a. *... Kanri-nin-no   A-san-wa   hannin-ja   arimasen.*
        ... Manager-GEN A-Mr.-TOP culprit-COP+TOP NEG.

  'Manager Mr. A is not the culprit.'

  b. *... shohan-mo   yara nai youna misu-o   ya- **-tte-i-** ru   deshou.*
      .. first time criminal-too do NEG like   mistake-ACC do -TE-I- NONPAST TAG

  '... (the criminal) has made a basic mistake which even those who have never com-
  mitted a crime would make, right?' (Context: The manager has a prior criminal
  record and is knowledgeable about how to commit a crime.) (X= The manager is

not the culprit.)

The presence of $X(s)$ in clause (5.52b) triggers the search for the value of X and retrieval of the commonsense rule in (5.48), repeated as (5.53), The rule in (5.53) facilitates the establishment of an *Evidence* relation between the segment π_1 and the segment π_2 which contains *-te-i-* via the Evidence Rule in (5.35). Figure 5.8 shows the SDRS for discourse (5.52).

(5.53) $\forall x \forall y (make\_basic\_mistake\,(x) \wedge be\_experienced/knowledgeable)(y) > \neg x = y)$ (=(5.48))

$$
\begin{array}{|l|}
\hline
\pi_1, \pi_2 \\
\hline
\pi_1: \begin{array}{|c|}
\hline
s_1, n \\
\hline
Manager\_A\_be\_not\_culprit(s_1) \\
\tau(s_1) \circ n \\
\hline
\end{array} \\
\\
\pi_2: \begin{array}{|c|}
\hline
e_2, s_2, n \\
\hline
Culprit\_make\_basic\_mistake(e_2) \\
\tau(e_2) \prec n \\
X(s_2) \\
\tau(s_2) \circ n \\
\hline
\end{array} \\
Evidence\,(\pi_{s_1}, \pi_{e_2}) \\
\hline
X = Manager\_A\_be\_not\_culprit \\
\hline
\end{array}
$$

Figure 5.8: The simplified SDRS for (5.52)
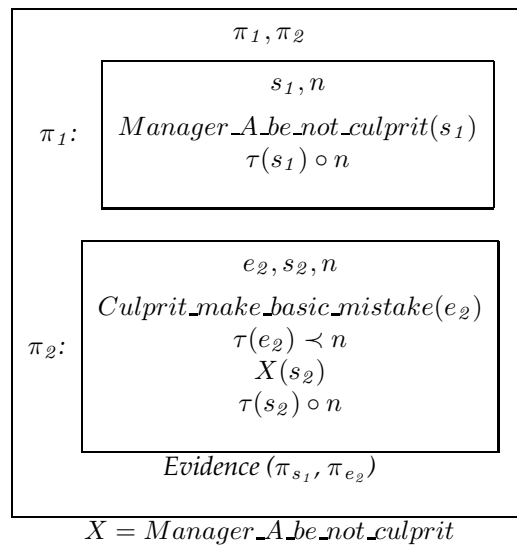
5.3.4 Summary of the Japanese corpus study

The Japanese data have shown that the same inference patterns or rules used to interpret the unspecified category of the perfect state in English are also operative in Japanese. It has

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also shown that the interpretation of Japanese *-te-i-*+nonpast relies even more on very simple default inference rules. Although Type (iii) uses were not found in the corpus this section discussed and seems less frequent in Japanese than in English, I have shown that such uses are also possible for *-te-i-*. Because the Japanese nonpast *-te-i-* perfect itself covers more interpretations than the English present perfect, i.e. because it covers both English progressive and perfect uses, it possibly leads speakers to avoid uses that rely on more context-dependent or commonsense-dependent inferences. Type (ii-b) uses were also not found in the corpus, but I have shown that the inferences used to form Topic Negotiation Question and Answer Pairs in English are possible in Japanese although they are not required to interpret isolated Japanese nonpast *-te-i-* perfect sentences.

Table 5.6: Inference types and discourse functions of Japanese nonpast *-te-i-* perfects

	Type (i)	Type (ii) (a) Evidential	Type (iii) Commonsense
General inference	+	+	-
Value X is in the surrounding text	-	-	+
Perfect state	is introduced implicitly	is introduced with qualification	already present in discourse
Discourse Function	To add discourse relations in discourse (including Topic-Nego QAP)		To help establish primary discourse relation

Table 5.6 summarizes the possible inference types and discourse functions of Japanese nonpast *-te-i-* perfects. Despite differences in the semantics of the English perfect and the

Japanese *-te-i-* perfect, the Japanese *-te-i-* nonpast perfect also helps discourse coherence by adding or helping establishing a discourse relation by introducing the value of X.

5.4 Summary

This chapter has shown that interpreting perfect sentences, i.e. finding the value of X, can be achieved through very general default inference rules both in English and Japanese. Corpus studies of both languages have shown that almost 90% of the English present perfects and more than 99% of Japanese *-te-i-* nonpast perfects are interpreted via an inference of persistence or default speech-act rules. It means that even if the category of the perfect state is underspecified and the only constraint on the category is a pragmatic constraint of mutual inferability, addressees actually find the value of X quite easily, making use of those default rules, probably almost without thinking in most cases.

Regardless of the difference in semantics between the English present perfect and the Japanese *-te-i-* nonpast perfect, the inference types and default inference rules were similar in the two languages, except for some explainable difference in the frequency of each type. Because the process of interpreting the unspecified category of the perfect state is governed by the same pragmatic principles in both languages, it is expected that speakers of both languages make use of the same inference patterns and the same default rules in interpreting the perfect.

This chapter has also suggested that the use of the perfect helps discourse coherence in two

ways. First, the presence of the perfect state helps discourse coherence by adding or helping establish discourse relations between utterances/segments and secondly, searching the value of X can trigger inferences which are also used to establish discourse relations.

I expect these results to extend to corresponding aspectual markers in other languages, but crosslinguistic research on aspectual markers whose semantics correspond to the English perfect or Japanese *-te-i-* is beyond the focus of this thesis.

Chapter 6

The Present Perfect and The Past Tense

6.1   Introduction

One important point in my discussion of the English and the Japanese perfect in Chapters 2 - 5 that I have not yet discussed is that the present perfect must be distinguishable from the past tense. However, because both the present perfect and the past tense introduce a past eventuality, they often seem interchangeable. This makes distinguishing the two difficult.

For example, while it is argued that one characteristic of the perfect is that it introduces a perfect state, it is also possible for a past tense description of an event to imply a resultant state as seen in sentence (6.1).

(6.1)   I already ate.

Sentence (6.1) can imply a resultant state of the event of eating, i.e. that the speaker is not

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hungry. Although many have observed that the uses of the past tense and the present perfect often overlap, there has been little attempt to explain exactly why the past tense is preferred in one context and the perfect is preferred in another.

Previous chapters have discussed the semantics and pragmatics of the present perfect in English and Japanese. I have argued that the difference between the present perfect and the past tense is that only the perfect introduces a perfect state and triggers an inference regarding the nature of this state. The goal of this chapter is to compare the uses of the present perfect with those of the past tense and explain the differences and similarities in their uses based on this difference in semantics.

This chapter first investigates the Japanese past tense marker *-ta* and discusses its difference from the perfect marker *-te-i-*. Previous studies have not clearly demonstrated whether *-ta* has really *only* a past tense meaning or whether it is ambiguous between a past tense and a present perfect. Because some of the uses of *-ta* correspond to those of the English present perfect, it has sometimes been considered ambiguous between a present perfect marker and a past tense marker. Based on the semantics of the perfect presented in Chapter 3, I show that the past tense and the present perfect can be distinguished and that the Japanese marker *-ta* is not a present perfect marker, but a past tense marker. Similarities between the uses of the Japanese past tense and the English present perfect are argued to follow from distributional differences between the past tense and the present or non-past perfect sentences between the two languages, and do not require positing separate (language specific) meanings for the

Japanese (or English) past tense or assuming any ambiguity in the Japanese marker *-ta*.

Secondly, this chapter investigates reference time and its updates. Since Reichenbach (1947), one crucial difference between past tense and present perfect sentences has been considered to reside in the relation between the past eventualities they introduce and reference time. It is also often believed that the past tense moves reference time forward but the present perfect does not (Partee 1984b). Previous chapters in this thesis use reference time constantly, too. However, what reference time is or why reference time moves forward has never been clearly explained in the Reichenbachian tradition nor in this thesis. Although the discussion may be exploratory in nature, I discuss the notions of reference time and reference time update and redefine them conceptually. I also compare them with the notion of time progression discussed in Ismail (2001), which has been implemented in the Semantic Network Processing System (SNePS) system, and discuss the difference between reference time updates in discourse and in the mind of an agent acting in time.

Finally, armed with redefined notions of reference time and reference time updates as well as the semantics of the perfect and the past tense, I explain the difference between the present perfect and the past tense.

6.2 The Japanese past tense *-ta*

Most scholars agree that the Japanese marker *-ta* is a past tense. However, while some argue that *-ta* has only a past tense meaning when it occurs in a main clause (Kaneko 1995; Ogi-

hara 1999),[1] others consider it to be ambiguous between a present perfect marker and a past tense marker (Teramura 1984; Ogihara 1998), while others argue that it also has some modal meanings (Kudo 1995).

Previous historical linguistic studies often claim that the past tense use of *-ta* originates from the present perfect marker *-ta* (Suzuki 1992; Kinsui 1995). In many contexts the nonpast perfect *te-i-ru* is replaceable with *-ta*, and *-ta* is sometimes the only appropriate or natural form in Japanese for translating sentences in which the present perfect would be used in English.

For example, sentence (6.2) uses *-ta* to describe the current state that results from loosing a key which might suggest that *-ta* expresses a present perfect meaning. In contrast, *-ta* only marks a past tense in sentence (6.3).

(6.2) *Kagi-o   nakushi -ta.*
       Key-ACC loose   PAST
       'I've lost my key. (I don't have it now.)'

(6.3) *Kyonen   kyoto-ni i -tta. Totemo yoi   tenki   de,   tanoshi-ka -tta.*
       Last year Kyoto-to go PAST. Very   good weather COP, happy   PAST
       'I went to Kyoto last year. The weather was very good and I had a very good time.'

In sentences (6.4) and (6.5) below, the stative eventuality still continues until the present and *-ta* cannot be replaced with the nonpast perfect form *te-i-ru* because the verb *a-* ('exist') and the adjective *aoi* ('blue') cannot co-occur with *te-i-*.

(6.4) *Saifu-ga   koko-ni a-   -tta.*
       wallet-NOM here   exist PAST

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[1] As I noted in Chapter 1, *-ta* has a relative tense meaning when it occurs in a subordinate clause.

'My wallet is here. (I've found it. It is here.)'

(6.5) *Chikyuu-wa aoka- -tta.*
        earth-TOP   blue PAST
        'The earth is blue.' (I've discovered it.)

Those who reduce both perfect and past tense interpretations of *-ta* to a single meaning, that of a past tense marker, argue that the described state can presently hold in sentence (6.4) via inferences (Kaneko 1995), but they do not explain why the same inferences are often not available in English if the functions of past tenses are common across languages. English past tense sentences such as (6.6) and (6.7) would not be normally used in the contexts in which sentences (6.4) and (6.5) are, because they often trigger the opposite inference as seen in parenthesis in example (6.6) or by the need to cancel this opposite inference in the second sentence in example (6.7).

(6.6)   My wallet was here. (It is not here anymore. I don't know where it is now.)

(6.7)   The earth was blue. It still is.

Because of the existence of examples such as (6.4) - (6.5), some linguists also argue that *-ta* can have a modal meaning and indicates 'surprise' or 'discovery' (Kudo 1995).

On the other hand, linguists who assume *-ta* is ambiguous between a present perfect and a past tense would not be able to explain the following contrast between the nonpast perfect *te-i-*+nonpast and *-ta*.

(6.8)   a. *Saifu-ga   ochi- ta.*
            wallet-NOM fall- PAST

'A wallet fell.' (The speaker saw the wallet fall.)

b. *Saifu-ga   ochi- te-i-   -ru.*
  wallet-NOM fall   IMPFV-PERF NONPAST

'A wallet has fallen.' (The speaker did not see the wallet fall.)

These two forms, *-ta* and the nonpast perfect form *-te-i-*+nonpast, are used in different contexts, as the parentheses in (6.8)a-b indicate.[2]

The following subsections first argue that *-ta* is a past tense marker and then explains how the differences between the uses of *-ta* and *-te-i-* derive from the semantic difference between past tenses and perfects. It then explains why the English past tense and the Japanese past tense *-ta* lead to different inference patterns.[3]

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[2]This observation is first discussed in Inoue (2001c). I will discuss it again in Section 6.4.

[3]This chapter does not deal with idiomatic uses of *-ta* such as in (i), its use in adjectival relative clauses and conditional in (ii) or subjunctive clauses in (iii).

 i. *Doi-   -ta, doi-   -ta.*
  get out of the way- TA, get out of the way- -TA
  'Get out of my way.'

 ii. *Ano megane-o   kake-ta   josei-ga   miryokuteki desu.*
  That glasses-ACC put on-TA woman-NOM attractive   COP NONPAST
  'That woman with a pair of glasses is attractive.

 iii. *Daigaku-ni   i-   tta to   shimasu.*
  University-to go- TA COMP assume
  'Provide that you went to college.'

The use of *-ta* in sentence (i) is limited to a few contexts and sometimes considered to exemplify a particle that differs from the past tense *-ta* (Teramura 1984). In sentence (ii), *-ta* modifies a noun and expresses that a noun is in an entailed resultant state of the eventuality described in the verb followed by *-ta*. In sentence (iii) *-ta* is used in a conditional clause. This thesis will not deal with the use of *-ta* in a subordinate clause or Japanese relative tense phenomena (Ogihara 1996). It seems that all these uses of *-ta* are clearly distinct from the past tense/perfect uses of *-ta*, on which this chapter focuses.

6.2.1   Evidence that *-ta* is past tense

This thesis has already provided an analysis of the semantics of the perfect in Chapters 3 and 4. This section makes use of this analysis and shows that *-ta* is not a present perfect.

This thesis has been assuming a broadly Reichenbachian analysis of the semantics of the past tense as well as the semantics of the perfect, in using notions such as event time, reference time and speech time. In particular, it assumes Muskens's (1995) sense of reference time in the sense that in the past tense the temporal trace of an input eventuality description overlaps with reference time r and reference time r precedes utterance time.[4,5] When sentences are eventive, reference time is updated when events are introduced. When they are stative, there is no update of reference time by the introduction of a state per se.

Given these assumptions and the discussion in Chapters 3 and 4, there are three major differences between past tenses and present perfects. First, past tenses introduce a prior eventuality but not an additional state, while present perfects introduce both a prior eventuality and a perfect state. Secondly, the perfect's semantic content triggers pragmatic inferences, while the simple past tense does not. This is because the perfect underspecifies the category of the perfect state, while the past tense does not include such a free variable (Chapter 2 and 3). Thirdly, while perfect sentences do not update reference time since they are stative, past

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[4]There are some differences between Muskens (1995) and this thesis as to the notion of reference time and how to update reference time in the perfect.

[5]Utterance time roughly corresponds to S (speech time) in a Reichenbachian tradition in non-narrative oral conversations (Reichenbach 1947). However, it could be a writing time in a journal or a time reflecting some subjective time from some character's or narrator's point of view in written narrative texts, e.g. *narrative-now point* in Almeida (1987); Almeida (1995). I use the term 'utterance time' for ease of discussion.

tense sentences update reference time when the base eventuality is eventive.

If -*ta* is a present perfect, it should first introduce a state. Chapter 2 has discussed several criteria to test the stativity of perfect sentences: (i) the ability to co-occur with present-time adverbs, (ii) the compatibility of the eventive base eventuality description with the present tense, (iii) the temporal interpretation of the sentence that contains a perfect when it co-occurs with *when*-clauses and (iv) the ability to co-occur with *seem to*. However, these tests, devised for English, cannot necessarily apply to sentences that contain -*ta*.

Ta seems to pass the first test at first glance. Take examples (6.9) - (6.10).

(6.9)   *Ima   saifu-o   nakushi- ta.*
        Now wallet-ACC loose-   TA
        '(?)I've lot my wallet now.'[6]

(6.10) *Ima   saifu-ga   koko-ni a-   tta.*
        Now wallet-NOM here   exist- TA
        '(?)My wallet is (has been) here now.'

However, in sentences (6.9) - (6.10) the present-time adverb *ima* ('now') does not really modify the state but the base eventuality. In sentence (6.9) if the event of the speaker loosing his/her wallet happened a few hours or days ago, the present-time adverb *ima* ('now') could not be used any more even if the entailed resultant state (the speaker's wallet missing) still holds. If the present time adverb modified the perfect state, the time of the base eventuality should not affect the occurrence of the adverb *ima* ('now'). The present-time adverb *ima* ('now') is used

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[6]I prefix the translations with '?' in parenthesis here because this translation assumes that *ta* is a present perfect, although the translations are fine as one of the possible interpretations of those sentences.

to convey the meaning 'just now' or 'just a moment ago'. It modifies the base eventuality which happened just now (a moment ago). When the speaker sees a wallet right in front of him, uttering sentence (6.10) also sounds very odd because of the presence of *ima* ('now'). A very common interpretation of (6.10) is that the state of the speaker's wallet being here held a moment ago but does not hold at present. It means that *-ta* does not introduce a state presently holding that *ima* ('now') can modify. It only introduces a state which held a moment ago, which *ima* ('just now') can modify. *Ima* ('now') cannot be interpreted as modifying a conversationally implicated perfect state in sentence (6.10) either. If the state of the wallet being here held yesterday, for example, sentence (6.10) cannot be used. This is true of sentence (6.11) below too. Again, the time of the base eventuality's occurrence should not affect the modification of a perfect state by *ima* ('now').

(6.11) *Ima saifu-ga   koko-ni a-   tta noni,   miatara- nai.*
        Now wallet-NOM here   exist- TA though, find-   NEG
        'My wallet was here just now, but I can't find it any more.'

As *ima* ('now') could not be used to test the stativity of *te-i-* in Chapter 4, it seems that whether *-ta* can co-occur with *ima* ('now') cannot be used to test whether a state holds at utterance time in *-ta* sentences because of the wider coverage of its meaning, compared to English *now*.[7] The fact that *-ta-* sentences with *ima* ('now') cannot describe a state holding at

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[7]If *ima* ('now') is replaced with another Japanese present-time adverb *genzai* ('now') in examples (6.9) - (6.11), those examples are simply not acceptable. However, *genzai* ('now') can also co-occur with *-ta* in some contexts, as seen in (i).

    i. *Genzai san-zenman   okane-ga   tamarimashi- -ta*
       now   3-hundred thousand money-NOM be saved-   -TA

present does suggest that *-ta* does not introduce a perfect state.

The second and the third criteria, i.e. the compatibility of English perfects with the present tense and the interpretation of *when*-constructions, cannot be applied to *-ta*. The compatibility of the English perfect with the present tense was used to show that the perfect is stative in Chapter 2. However, because the hypothesis that *-ta* is a present perfect marker assumes that *-ta* is a portmanteau morpheme consisting of a present tense and a perfect marker, the co-occurrence between the perfect and the present tense is automatically satisfied when this view is accepted, making this test inapplicable to *-ta*.

The third criterion is the interpretation of the main clause when modified by a *when*-clause; more specifically, when the eventuality described in the main clause is stative, it starts earlier than the one in a *when*-clause, as seen in (2.63), repeated in (6.12).

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

(6.13)   *Watashi-ga tsuk   -u   toki Keiko-wa kesshin-shi- ta*
         I-NOM   arrive- NONPAST when Keiko-TOP decision-DO- -TA
         *Keiko has made her decision when I arrive.

However, in order to test the temporal order between the two eventualities, the test presupposed that the two clauses should be in the same tense. Because the only tense available in putative present perfect uses of *-ta* is the present tense, the time of the events in a *when-* clause has to be also in the present (i.e. in the nonpast) as seen in (6.13). But eventive clauses are not

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'#*J* Now I saved three hundred thousands yen.'

Sentence (i) is possible if the speaker saved the amount of money recently, not ten years ago. I will not discuss the subtle semantic difference between *ima* and *genzai* here.

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compatible with the present tense in general, as discussed in Chapter 2. Therefore, the third criterion cannot be used. The fourth test *seem to* cannot be used, either, as Japanese does not have the corresponding construction.

There is another criterion to test that a sentence is stative. The adverb *still* expresses that a state continues despite its expected cessation and therefore can modify a temporary state, as discussed in Chapter 2. The corresponding Japanese word is *mada* ('still') which also co-occurs with stative sentences in its temporal meaning and conveys the expected cessation of a state, as seen in sentences (6.14) - (6.15).[8]

(6.14) *Joya-no   kane-ga   mada kikoe-   ru.*
        New Year's Eve-GEN bell-NOM still   be audible- NONPAST
        'You can still hear the bell of New Year's Eve.'

(6.15) *Mada kao-ga   aoi.*
        Still   face-NOM pale
        'You still look pale.'

However, the temporal meaning of *mada* ('still') cannot co-occur with *-ta* when the base eventuality is eventive, while it is fine when the perfect form *te-i-* modifies an eventive base eventuality, as seen in sentences (6.16) -(6.17).

(6.16) *Mada gakusei-shou-o   nakushi- *-ta/-te-i-ru.*
        Still   student-ID-ACC loose-   *-TA/-IMPFV-PERF-NONPAST
        ' I have lost my student ID and it is still missing. (I have not applied for a new ID.)'

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[8]Like English *still*, the Japanese adverb *mada* ('still') has some non-temporal uses such as 'more,' 'besides'.

(6.17) *Mousugu gakko-ga   hajimaru-noni, Ken-wa   mada umi-ni   i-*
        Soon   school-NOM start-but,   Ken-TOP still   America-to go
        *ta/tte-i-ru.
        *-TA /-IMPFV-PERF-NONPAST

        '%*ᴊ*School starts soon, but Ken has still gone to the sea.'

(6.18) *Ken-wa mada neko-ni esa-dake   ya-   *ta/tte-i-ru.*
        Ken   still   cat-DAT feed-only give- TA/IMPFV-PERF-NONPAST

        'Ken has still only FED the cat.'

Although English *still* does not welcome present perfect sentences unless the presupposition

that the same state previously held is satisfied (Section 2.3.2), Japanese *mada* ('still') can co-

occur with the nonpast perfect form *te-i-ru*. It is neutral as to whether the same state as the

perfect state held prior to reference time or not.[9] In sentence (6.17), the Japanese perfect is

acceptable with the temporal reading of *mada* ('still'), while the English translation is only

acceptable with a concessive reading of *still*. Sentence (6.18) corresponds to the English ex-

ample (2.88) cited from Michaelis (1998), which is acceptable with a temporal reading of *still*.

In none of those cases *mada* ('still') is compatible with *-ta*. The purported perfect meaning of

-ta should be able to co-occur with the temporal meaning of *mada* ('still'), since the perfect is

a stativizer, but it cannot. I conclude that *-ta* does not seem to have a stativizing function.

There is another view other than the view that *-ta* is ambiguous between a past tense

and a present perfect marker. Kudo (1995) among others claims that *-ta* is a portmanteau

morpheme combining a perfective and a tense marker. This does not seem to be correct since

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[9]In the case of the English present perfect, the base eventuality is understood to be newly asserted and there-
fore it is difficult for it to satisfy the presupposition that the state held prior to reference time. See Chapter 3 for
more details.

-ta can follow the progressive use of *te-i-* and describe an on-going activity, as seen in sentence (6.19).

(6.19)   *Watashi-ga ie-ni   tsui-ta   toki,   kare-wa shukudai-o   shi- te-i-   ta.*
         I-NOM   home-to arrive-TA when, he-NOM homework-ACC DO- IMPFV-PERF- TA.
         'When I arrived at home, he was doing his homework.'

If *-ta* had a perfective meaning, sentence (6.19) would not receive a progressive reading. The past tense marker *-ta* like its English counterpart (de Swart 1998) is transparent when it comes to the perfectivity of its input eventuality.

    Thus, it may be concluded that *-ta* does not have a present perfect meaning and only marks past tense in a main clause.

6.2.2   Inference patterns in the Japanese and English past tense

Invited vs. uninvited inferences

The previous section has argued that the Japanese marker *-ta* is a past tense marker. It follows that perfect-like interpretations of *-ta* sentences are mere pragmatic effects. I assume, along with Kaneko (1995), that those interpretations result from non-semantically triggered inferences.

    While the perfect has a built-in inference trigger, i.e. an underspecified free variable for the category of the perfect state, the past tense does not. Still, past tenses with stative eventuality descriptions usually implicate that the state does not hold any more, as seen in example (6.20)

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below. In sentence (6.20) the inference that the speaker does not love the hearer any more is cancelled in the second sentence. Then, what triggers the inference in the past tense? How is it triggered?

(6.20)   I loved you. I still do.

More importantly, the inferences triggered by past sentences seem to have different patterns in English and Japanese. Consider examples (6.21) - (6.23).

(6.21)   ??Today was a holiday. It still is. (The speaker has just got up in the morning.)

(6.22)   *Kyou-wa   yasumi-da-   tta.*
         Today-TOP holiday-COP- -PAST
         'Lit. Today was a holiday.' (It is a holiday today.)

(6.23)   *(Saifu-ga)   a-   tta.*
         (Wallet-NOM) exist- PAST
         'Lit. (My wallet) existed.' (The speaker has just found the wallet and is telling someone who is looking for it together.)

The past tense in the first sentence in (6.21) implicates that it is not a holiday anymore and the second sentence cancels the implication. It may be acceptable if it is uttered when the day is almost over, say, in the evening, while it sounds odd if it is uttered when the speaker first wakes up in the morning. However, the corresponding Japanese sentence (6.22) is fine in either context. It does not imply that it is not a holiday anymore, and can have the interpretation that the state of today being a holiday holds. Example (6.23) can be used when the speaker has found a wallet and it can receive the interpretation that the state of a wallet

existing in the past still holds at present. The expression roughly corresponds to the English present perfect expression 'I've got it.' It does not imply that the speaker's wallet does not exist anymore, although the English literal translation, which is in the past tense, does. In both examples (6.22) and (6.23), the inference that the state does not hold any more does not seem to be triggered in Japanese even though the sentence is in the past tense. Therefore it does not even have to be canceled, unlike the English example in (6.21). Such a difference between the inferences drawn from the English and Japanese past tense is puzzling, since it seems unlikely that the way people infer or choose one inference over another differs across languages.

The examples given so far show that there is a contrast in the inferences drawn from the English and Japanese past tense. That is, English stative sentences in the past tense often implicate that the state described in the past does not hold at present, while in Japanese they do not. Klein (1994) discusses an example in which there seems to be no contrast. The English sentence (6.25) can be used to answer the question (6.24) and to suggest that the addressee look for John in the garden.

(6.24)   Do you know where John is?

(6.25)   Well, John was in the garden.

In such cases, it seems that the hearer can infer that the state described in the past still holds at present via the inference of persistence and therefore that the same inference seen in the Japanese sentence (6.23) is also available in English. Indeed, the same inference, i.e. an in-

ference of persistence, is always available when a state is introduced in the past, unless it contradicts the discourse context. However, it does not mean that it is an *invited* inference. The state of John being in the garden holding at present can be inferred from utterance (6.25). However, it does not seem that the state is really implicated by the utterance in the way that the state of the speaker's wallet being here is implicated by the Japanese utterance in (6.23) or the corresponding perfect sentence *Well, John has been in the garden*. The implication of John being in the garden seems weaker in Klein's example, i.e. something like 'I don't know, but it is possible that John is still in the garden,' rather than 'John is in the garden.'[10] In contrast, the Japanese utterance (6.23) does not merely implicate that *it is possible* that the speaker's wallet is still here, but implicates that the speaker's wallet *is* here. For example, it sounds redundant and therefore very odd when (6.22) and (6.23) are followed by the utterance *soshite mada (ima-mo) yasumi da* ('and is still a holiday') or *soshite mada aru* ('and it still does') in those contexts, respectively. In that sense, the inference that John is in the garden is not an invited inference in utterance (6.25).[11]

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[10]Actually, the implicature that John may be in the garden is relatively strong in this particular context. This is because the question in (6.24) is asking about a current state and the answer to the question is supposed to provide some information relevant to the question.

[11]Question (i) is also understood to be asking Yoko's current name, unless the addressee changed her name. This use of the past tense is common in such contexts in Japanese as seen in (ii).

    i. What was your name again?
       — My name is Yoko.
    ii. *Go-chuumon-wa nan- deshi- ta   ka.*
        HON-order-TOP what- COP- PAST Q
        'What was your order?'

Thus, what differs crosslinguistically is not what inferences are possible, but what inferences are preferred, i.e. constitute default inference patterns. It is what inference patterns are most common which seem to distinguish between the English and the Japanese past tenses or to distinguish the past tense from the perfect, not what inferences are possible. A possible inference from an utterance is not necessarily intended as a default inference and a state inferable from the utterance is not always implicated by the utterance. The question, then, is how can default inference patterns differ across languages? This can be explained in neo-Gricean terms if we take a closer look at the tense and aspect systems of English and Japanese.

Default inferences of the Japanese and English past tenses

There are two conflicting types of inferences observed in stative past sentences. The first one is that the described state in the past does not hold any more at present as seen in (6.20), while the second one is that the described state in the past does hold at present as seen in (6.23), repeated here as (6.26) and (6.27), respectively.

(6.26)   I loved you.

(6.27)   *(Saifu-ga)   a-   tta.*
         (Wallet-NOM) exist- PAST

         'Lit. (My wallet) existed.' (The speaker has just found the wallet and is telling someone who is looking for it with her.)

The first one arises when the hearer assumes that the speaker follows Gricean Maxim of Quantity 1: 'make your contribution as informative as is required.' Assuming the Maxim,

the hearer does not infer anything more than what the speaker said, for example, he does not infer that a state in the past still holds at present, or he may further infer that a state in the past does not hold at present because if it did, she would say so, when a language has a way to express it. In English the speaker could use a present perfect form to express that a state that held in the past still holds at present. However, she did not use it. Therefore, the hearer can infer that the state does not hold any more. This is called a Q-based implicature in Horn (1984); Horn (2001).

The second type of inferences arises when the hearer assumes that the speaker follows Gricean Maxim of Quantity 2: 'do not make your contribution more than required.' Assuming the speaker follows this maxim, the hearer adds more information to what the speaker said. For example, in sentence (6.22) if today was a holiday, it is a holiday till the end of the day. Therefore, the state described in the past tense still holds at present. Sentence (6.23) is another example of this kind of inference. As discussed in Chapter 3, these particular interpretations obtain via the inference of persistence. This kind of inferences is triggered by Gricean Quantity Maxim 2, and correspond to R-based or I-implicatures, as discussed in Chapter 3.

In the case of the perfect in English and Japanese, the first type of inferences, i.e. Q-Implicatures, is basically suppressed by the explicit introduction of a perfect state whose category is unspecified. By introducing a perfect state and a free variable, perfect sentences require the addressee to look for a specific value for the category of the perfect state, a value that is mutually inferable. In contrast, the past tense does not introduce the information that

would suppress Q-inferences or trigger an inferential process to find the value of a free variable. Therefore, both Q-implicatures and I-implicatures are semantically untriggered and both are pragmatically possible. According to Levinson (2000), there is a hierarchy between Q- and I-implicatures. Q-implicatures have priority over I-implicatures when both are possible. If this is correct, in order for an utterance to carry an I-implicature, Q-implicatures have to be unavailable or blocked.

Sentences (6.28) and (6.29) below are typical examples of Q-implicatures. In (6.28) the first sentence has a lower bounding meaning, namely, as long as the speaker has two daughters, the utterance is true even if s/he has more daughters as seen in the following sentence in (6.28), because the second sentence entails the first sentence. The same is true of (6.29). If he ate all apples, then he ate some apples. This relationship orders the two propositions. When such an order is available, choosing the lower member leads to a Q-implicature.

(6.28) I have two daughters. In fact, I have three.

(6.29) He ate some apples. In fact, he ate all of them.

This relationship also holds between sentences in the present perfect and the past tense. A present perfect sentence entails a corresponding past sentence, as seen in (6.30) and (6.31). The first present perfect sentence on the left side of the arrow entails the second past tense sentence on the right hand side. In (6.30), if the speaker has been in school, then s/he was in school. In (6.31), if Ken has fallen down, then Ken fell down.

(6.30) I have been in school. → I was in school.

(6.31)   Ken has fallen down. → Ken fell down.

The present perfect can, thus, form another scalar pair with the past tense, i.e. we have <the past, the present perfect>.[12,13]

Going back to Japanese sentences (6.22) and (6.23) above, they do not seem to Q-Implicate, e.g. 'I don't know if today is still a holiday' or 'My wallet is not here anymore.' On the other hand, the speaker I-implicates that the perfect state holds at present. This can be explained if the relevant scalar pair < past, present perfect > that would motivate a Q-implicature is not available for those examples. And it is not!

There are two reasons why the scalar pair in (6.34) is not available in Japanese. First, as mentioned in Chapter 4, the Japanese perfect marker *te-i-* does not co-occur with some predicates. The scalar pair in (6.34) is not available for those predicates. Secondly, the Japanese counterpart of the present perfect, *-te-i-ru*, is in fact a nonpast imperfective perfect and therefore does not entail a corresponding past sentence because of its aspectual and temporal vagueness. Therefore, the scalar pair is not available even for the predicates which co-occur

---

[12]One may think of the present tense as the other member of the scale, i.e. <the past, the present>. This might explain example (6.20). However, this pair is more like a nonce scale in the sense of Hirschberg (1991), i.e. a pair that is contextually constructed, since a stative sentence in the present tense does not always entail the corresponding stative sentence in the past, as seen in (6.32) and (6.33).

(6.32)   I love you. ↛ I loved you.
(6.33)   I am in school. ↛ I was in school.

[13]This scalar pair is available even to some languages which lack continuative readings of the perfect, e.g. German. This would also explain Q-implicatures in German past tense stative sentences. However, in order to explain the inference patterns in each language, the entire tense and aspect system of the language as well as the precise meaning of the perfect marker must be studied.

with *te-i-*.

(6.34)   < past, present perfect>

(6.35)   < past, – >

The first reason explains why many Japanese stative past sentences do not carry Q-implicatures. Those predicates which cannot co-occur with the perfect form *te-i-* include *a(r)-* ('exist'), -*da* (copula) when it has an inanimate subject, adjectival predicate such as *aoi* ('blue'), or *yoi* ('good'). Because they lack a present perfect form, using the past tense with those predicates cannot carry a Q-implicature that requires the availability of a perfect form. Because Q-implicatures require the existence of the other member of the scalar pair, Q-implicatures are not available in sentences whose predicates cannot occur in the present perfect. Since Q-implicatures are not available, the Japanese past tense marker -*ta* can receive the I-implicated interpretation that the past state still continues at present for those predicates, as seen in Japanese sentences (6.36), (6.38), and (6.40).[14] Each sentence is given a literal translation. The more idiomatic English translations are given in (6.37), (6.39), and (6.41).

(6.36)   *Anata-to ohanashi- deki-   -te hontou-ni yoka -tta.*
         You-with talk-   be able- -TE really   good- PAST
         '(Lit.) I was very glad that I could talk with you.'

(6.37)   'I am very glad that I can talk with you.'

(6.38)   *Seikai-wa   A deshi- ta.*
         right answer-TOP A COP- PAST

---

[14]Similar examples are discussed in Teramura (1984); Kinsui (1998); Inoue (2001c); Inoue (2001b).

'(Lit.) The correct answer was A.'

(6.39)   'The correct answer is A.'

(6.40)   *Gomeiwaku-o kake-te   sumimasen-deshi- ta.*
         trouble-ACC cause-TE sorry-COP   PAST
         '(Lit.) I was sorry for causing trouble for you.'

(6.41)   I am really sorry for causing you trouble.

In contrast to Japanese, the English present perfect is compatible with all predicates and the English past tense therefore always invites the relevant Q-inference. As a consequence, even if it is clear from the context that the state still holds at present, when speakers want to refer to both the past and the present state, they do not use the past tense in English. Japanese sentence (6.36) can be used when the speaker starts talking with the hearer. In English, the present tense sentence (6.37) seems more appropriate in this context. The English literal translation in (6.36) may be used more appropriately in English when closing a conversation, after speech participants have talked for a while, or when the speaker and hearer have argued and the speaker was glad in the beginning but not any more, because English past stative sentences tend to Q-implicate that the state does not hold any more. Japanese sentence (6.38) is often used when the speaker wants to give an answer to a question after discussing a question and making hearers puzzle. Again in English sentence (6.39) sounds more common unless both asking a question and answering it are past events and the speaker is reviewing the results of past quiz sessions. Japanese sentence (6.40) conveys that the speaker feels sorry at the moment of the utterance; its English translation conveys the speaker's past regret.

Although some predicates can co-occur with the form *-te-i-*, they still do not carry Q-implicatures when they occur in the past. This can be explained by the second reason I just mentioned, i.e. the vagueness of the aspectual and temporal meaning of *te-i-ru*.

Some stative verbs such as *mie-* ('be visible'), *kikoe-* ('be audible'), *omo-* ('think') etc. can co-occur with the perfect form *te-i-*, but the relevant Q-implicature, e.g. that the state of being visible does not hold any more, does not arise when they occur in the past tense, as seen in sentence (6.42).

(6.42) *Mie-   ta.*
         Be visible- PAST
         'It was visible.' (or 'I can see it.' Looking at a star with a telescope.)

Sentence (6.42) does not have the implicature that it is not visible anymore unless a contrast between a past time and a present time is explicitly evoked by adding some past adverbial phrase to which the contrastive topic marker *-wa* has typically been suffixed, as seen in (6.43), or by adding some durational adverbial, as seen in (6.44).

(6.43) *Sakki-wa   mie-   ta.*
         While ago-TOP be visible- PAST
         'It was visible a while ago.' (But I'm not sure about now.)[15]

(6.44) *Isshun   mie-   ta.*
          for a moment be visible- PAST
         'It was visible for a moment.'

---

[15]See Teramura (1984) for the contrastive use of the topic marker *-wa*.

Because the base eventuality introduced by a sentence containing *te-i-* can be either in-complete or complete, *te-i-* sentences do not entail corresponding sentences in the past tense. There is no consistent entailment relation between a *te-i-* sentence and the past tense sentence, as seen in pair (6.45) below. Because *-te-i-* sentences can receive a progressive reading, they do not always entail the corresponding sentence in the past tense.

(6.45)   Shosetsu-o kai- te-i- ru. ↛ Shosetsu-o kai- ta.

   Novel-ACC write- TE-I- nonpast. novel-ACC write- PAST

   I am writing or have written a novel. ↛ I wrote a novel.

Only when the main eventuality is a punctual change of state, does the entailment appear to go through, as seen in (6.46a)

(6.46)   Kare-ga shin- de-i- ru. → Kare-ga shin- da.

   He-NOM die- IMPFV-PERF- nonpast. He-NOM die- PAST

   a. He is dead. → He died.

   b. He is/will be dead.↛ He died.

However, even in this case, because the form *te-i-ru* is temporally vague, i.e. is a non-past perfect, it can receive futurate perfect readings and therefore cannot entail strictly that the base eventuality took place in the past, as seen in (6.46b). In conclusion, there is no the entailment relation between *te-i-* sentences and corresponding past tense sentences and <*-ta*, *-te-i-*nonpast> do not form a scalar pair on their own. It follows that the Japanese past tense

will not typically trigger Q-implicatures, unlike the corresponding English tenses, even when a stative verb has both a *te-i-* and *-ta* form. As a consequence, even though the Japanese *-ta* does not trigger the same inference pattern as the English past tense, it does not follow that the semantics of the Japanese *-ta* should be distinguished from that of the English past tense. This section maintains the result from Section 6.2.1, i.e. *-ta* is a past tense marker and does not have a present perfect meaning, and argues that differences in the English and Japanese tense and aspect systems lead to the different default inferences triggered by using the past tense form. In other words, what kind of tense and aspect system the past tense is a part of, not just the semantics of the past tense, are critical to what kind of default inferences are triggered by using it.

6.3   Reference time in the past tense and the present perfect

In Section 6.2.1 I have discussed the difference between the past tense and the present perfect in terms of stativity and distinguished the Japanese *-ta* as a past tense marker from the present perfect on that basis. However, the past tense and the present perfect also differ in how the base eventuality they introduce relates to reference time. This thesis has been assuming a broadly Reichenbachian semantics of tense and perfect markers: The temporal trace of the base eventuality is equal to, or included in reference time when the verb is in the past tense, but precedes it when it is in the present perfect. There are two claimed consequences of this difference in how the base eventuality relates to reference time: i) the past tense is anaphoric,

ii) past eventive sentences move reference time forward, but present perfect sentences do not (McCawley 1971; Partee 1973; Partee 1984b; Webber 1988). The questions, then, are in what sense the past tense is anaphoric while the perfect is not and how it moves reference time forward. In order to answer those questions, this section first investigates the notions of reference time and how reference time is updated.

6.3.1   What is a reference time?

Chapter 3 and 4 have adopted Partee's (1984b) or Muskens's (1995) view of reference time over Kamp and Reyle's (1993) or van Eijck and Kamp's (1997) standard DRT analysis of reference time. According to the former view, reference time is updated to a time interval that is 'just after' the introduced event. In contrast, in Kamp and Reyle (1993) and van Eijck and Kamp (1997), the event is always introduced after reference time and itself serves as the new value of reference time for the next event. Although this thesis shares Muskens's (1995) view that reference time is updated to an interval that is 'just after' the introduced event and that a new event is introduced at reference time, Muskens' view is not without problems. First, Muskens's view does not explain the anaphoric nature of the past tense. Secondly, neither Muskens's view nor the standard DRT's view explains why discourses can describe events that are not temporally ordered. This section's approach to reference time and reference time update solves both problems.

I first discuss problems with the standard DRT's system of reference time updates. Sec-

ondly, I outline another approach to reference time update which solves these problems, and compares it with Muskens (1995)'s view. I, then, discuss temporal progression for an acting, artificial agent which has been implemented in the Semantic Network Processing System (SNePS). Finally, I show that the approach to reference time I advocate correctly explains the difference between the past tense and the present perfect.

Reference time updates in standard DRT

In Kamp and Reyle (1993), van Eijck and Kamp (1997) and Nelken and Francez (1997) an event is introduced after reference time and the newly introduced event becomes the new reference time for the next event. This update is realized by the condition: $Rpt := \alpha$ where α is either a time or an event and is already in the DRS in Kamp and Reyle (1993) or $r:=\alpha$ where α is the temporal trace of an introduced event in van Eijck and Kamp's (1997) version. Figure 6.1 and Figure 6.2 show how reference time is updated when a new event is introduced as in (6.47). As seen in Figure 6.2, the $Rpt := e$ condition has been eliminated and the new equation resets the value of Rpt to the second event, e'. ($<$ and $\subseteq$ represent precedence and inclusion relations, respectively.)

(6.47)   A man entered the White Hart. Bill served him a beer.

In Kamp and Reyle, introducing a new event after reference time moves reference time forward as a result of the fact that the newly introduced event now serves as the value of reference time for the next event. The last introduced event functions as reference time in that the

$$
\boxed{
\begin{array}{c}
n\ e\ t\ x\ y \\[4pt]
e \subseteq t \\
t < n \\
man(x) \\
the\ White\ Hart(y) \\
e : \boxed{x\ enter\ y} \\
Rpt := e
\end{array}
}
$$
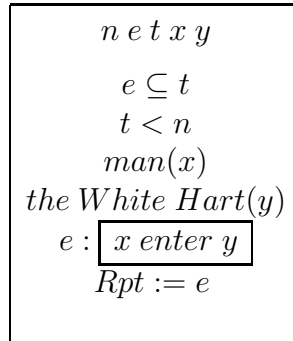
Figure 6.1: Kamp and Reyle's reference time
(Modified from Kamp and Reyle (1993:525))
A man entered the White Hart.

$$
\boxed{
\begin{array}{c}
n\ e\ t\ x\ y\ t'\ e'\ z\ r\ u \\[4pt]
e \subseteq t \\
t < n \\
man(x) \\
the\ White\ Hart(y) \\
e : \boxed{x\ enter\ y} \\
e \subseteq t' \\
t' < n \\
e < e' \\
Bill(z) \\
beer(r) \\
u = x \\
e' : \boxed{z\ serve\ u\ r} \\
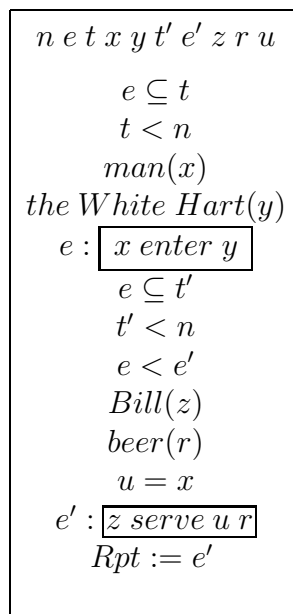Rpt := e'
\end{array}
}
$$

Figure 6.2: Kamp and Reyle's reference time update
(Modified from Kamp and Reyle (1993:527))
A man entered the White Hart. Bill served him a beer.

new event is introduced after it. This account of reference time models many discourses, because in many cases two events cannot co-occur within the same interval and the two events must therefore follow one another. For example, the same agent cannot be engaged in two different events at the same time, say, Ken brushing his teeth and Ken eating breakfast. This account of reference time may also explain the observation that tense is anaphoric in nature (McCawley 1971; Partee 1973; Partee 1984b; Hinrichs 1986; Webber 1988), since an event described in the past tense must find a preceding event that serves as its reference time.

There are some problems with this analysis, though. First, although the temporal trace of a state is supposed to include reference time, i.e. the temporal trace of the last event, a state does not always overlap with the preceding event, as seen in the discourse in (6.48).

(6.48)   Jameson entered the room, shut the door carefully and switched off the light. It was pitch-dark around him because the Venetian blinds were closed. (Hinrichs 1986:68)

The state of the room being dark does not overlap with the preceding events in (6.48).

Secondly, this analysis of reference time only captures temporally sequential readings of events described in the past tense. But, there are cases in which the two events do not have to follow one another, as seen in discourse (6.49) or an event described in the past tense is located before the latest updated reference time, as seen in (6.50).

(6.49)   a. Guy experienced a lovely evening last night.

b. He had a fantastic meal.

c. He ate salmon.

d. He devoured lots of cheese.

e. He won a dancing competition. (Lascarides and Asher 1993)

(6.50)   Max fell. John pushed him.

The default interpretation of the narrative discourse (6.49) is not one of a temporally ordered sequence of events. The event in (6.49b) overlaps the event in the first sentence (6.49), the events in (6.49c) and (6.49d) both overlap (6.49b), and (6.49e) follows (6.49b). In discourse (6.50), the event of John pushing him is often understood to have occurred before the event of Max falling.

Thirdly, in standard DRT, there is no reference time for discourse initial sentences. In Figure 6.1, the discourse initial sentence *A man entered the White Hart* does not have a reference time. Assuming that the anaphoric nature of tenses is related to using reference time to locate an event in time, this view cannot explain the function of tense in a discourse initial sentence.

The first problem in (6.48), i.e. the fact that some states do not overlap with preceding events, can be explained if we take the view that reference time is updated to a time interval which is located 'just after' an event (Partee 1984b; Hinrichs 1986; Dowty 1986; Muskens 1995). For example, a state can overlap with the preceding event, but it does not have to, as long as the state holds 'just after' the preceding event. Such an analysis can account for both cases where a state overlaps or cases where a state does not overlap with the preceding event (as in discourse (6.48)).

The second and third problems illustrated in discourse (6.49) and (6.50) can be explained if a new event can also be introduced at previously updated reference time intervals as well as in contextually chosen reference time intervals as in the view I will propose in the next subsection.

Reference time updates: What refers to what?

In this thesis, along with Partee (1984b), Hinrichs (1986), Dowty (1986), Muskens (1995) and others, an event in the past tense is assumed to introduce a new reference time that is located "just after" the original reference time which includes the temporal trace of the event. However, there are some differences between the view advocated in this thesis and the views in Partee (1984), Hinrichs (1986) and Muskens (1995). First, I outline my proposal and then discuss the differences.

The notion of reference time adopted in this thesis, following Hinrichs (1986) and Muskens (1995), is something like a *pointer* which indicates a location in time in the discourse and serves to appropriately introduce a new eventuality.[16] Groenendijk *et al.* (1996) call such a variable a *peg*. Pegs behave as temporal addresses in discourse. When a context in discourse is updated, a new peg or pointer is introduced to indicate the time interval of the updated context in discourse.

Here, I distinguish this notion of reference time as a pointer from the notion of reference

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[16]Hinrichs (1986); Muskens (1995) base their notion of reference time on the idea of a conversational score in Lewis's (1979) sense.

time as pegs, i.e. possible values of reference time. I will call the former a *reference time variable* and the latter a *reference time value* or simply a *reference time*. I also use RT to represent reference time variables and r or r_i to represent reference time values.

A reference time variable is introduced as a free variable by tenses and aspects such as the past tense and the perfect as seen in (6.51).[17]

(6.51)   a.   The Past: $\tau(e) \subseteq RT$ or $\tau(s) \circ RT$, $RT \prec n$

   b.   The Perfect: $\tau(ev) \prec RT$

(6.51) a-b show part of the semantics of the past tense and the perfect this thesis has been assuming, respectively. RT represents a reference time variable. For example, RT includes the temporal trace of the base eventuality when the base eventuality is an event e or overlaps with it when it is a state s and precedes utterance time n in (6.51a), while the temporal trace of the base eventuality ev precedes RT in (6.51b). Once RT is introduced as a free variable, it triggers a search ($RT =?$), given the full specificity principle (Section 3.3). The value of the variable has to be found by the addressee. Here, the value is not a property, but a time interval. Addressees look for the right time interval r, i.e. a temporal location that can fill in the value of the reference time variable for a new eventuality. I keep this reference time variable RT as a pointer to locate the last introduced eventuality in discourse, but not the most recent eventuality in a story line, as seen in Figure 6.3. Assuming that the events in (6.52) occurred in the order of the sentences, for example, Figure 6.3 is a simplified DRS showing

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[17]Reference time variables in Muskens (1985) are not free variables as I will discuss later.

how the introduction of an event updates reference time. Following Partee (1984b), $r \lesssim r'$ means 'r' is just after r.' RT is a *reference time variable* which is introduced by the past tense. r_i is a possible *reference time (value)*. (6.53) also shows how each event in (6.52) finds a reference time (the value of RT) and updates it, assuming all reference time r_i precedes utterance time. $RT =?$ is inserted here to emphasize the fact that RT is a free variable which triggers a search for its value.

(6.52)   Ken got up (e). He ate breakfast (e'). He went to school (e'').

(6.53) $\tau(e) \subseteq r_0, \tau(e) \lesssim r_1$

$\tau(e') \subseteq r_1, \tau(e') \lesssim r_2$

$\tau(e'') \supseteq RT, RT =?, RT = r_2, \tau(e'') \lesssim r_3$

Let me now describe in more detail the use of reference time variable and reference time updates in discourse. First, tenses as well as some aspect markers introduce the variable RT.[18] Tenses also constrain where the addressee can find the reference time value in discourse, as seen in (6.54a-b).[19] The reference time variable (RT) must, then, be assigned a value that constitutes the time interval (reference time r) at which the eventuality described in a certain tense is introduced.

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[18]To avoid the multiplication of predicative conditions of the form $RT_n = r$, I assume that each time a sentence (or clause) is processed, the predicative condition *RT = ?* *replaces* the condition of the form *RT = r* that was the result of finding the value for the free variable *RT* introduced by the previous sentence (clause).

[19]Tense is not necessarily the only factor constraining the temporal location of the reference time interval. Temporal adverbials can constrain it too. The point is that whenever a free variable is introduced by a finite clause it should be possible for the addressee to find its value. Therefore, when tense is not available in a language, the addressee should still be able to find the value for the reference time variable introduced by aspect markers, as seen in languages which lack tenses, such as Thai or Chinese. I will not discuss this issue in any more detail here.

$$
\boxed{
\begin{array}{c}
e, e', e'', n, RT, r_0, r_1, r_2, r_3 \\[4pt]
(r_0 \prec n) \\
Ken\_get\_up(e) \\
\tau(e) \subseteq r_0 \\
\tau(e) \lesssim r_1 \\
r_1 \prec n \\
Ken\_eat\_breakfast(e') \\
\tau(ev') \subseteq r_1 \\
\tau(e') \lesssim r_2 \\
r_2 \prec n \\
Ken\_go\_to\_school(e'') \\
\tau(ev'') \subseteq RT \\
RT = r_2 \\
\tau(e'') \lesssim r_3 \\
r_3 \prec n
\end{array}
}
$$

Figure 6.3: Time reference updates

(6.54)   a. The past: $RT \prec n$

          b. The present: $RT \circ n$

A reference time variable refers to the (more or less) definite and specific time interval where an eventuality is to be introduced in the discourse. In the past tense, its value is found in the past (i.e. it precedes utterance time n in (6.54a)), while in the present tense, it is found in the present (i.e. it overlaps with n in (6.54b)).[20] The "anaphoric" nature of the eventuality

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[20]Again using the term 'utterance time' is a simplification. The time interval which RT precedes in the past tense or overlaps in the present may not necessarily be the time when an utterance is made. Several studies on deixis discuss how a deictic *now*, which corresponds to utterance time n, can be established in various written (or even oral) texts (Almeida 1987; Almeida 1995; Segal 1995; Zubin and Hewitt 1995). Since this issue is beyond

described in the past tense is due to the fact that the addressee has to find a particular temporal interval already introduced in discourse or contextually available where the eventuality is to be introduced. In contrast, the addressee does not have to find a specific temporal location where the eventuality described in the present perfect should be introduced as long as it temporally precedes reference time. Reference time does not include the temporal trace of the base eventuality introduced by the present perfect, as shown in (6.51b). As discussed in Chapter 3, the temporal trace of a perfect state overlaps with reference time in this case, while the base eventuality just precedes reference time. Because reference time for a present perfect sentence always coincides with utterance time since it is in the present tense, as shown in (6.54b), the addressee does not have to look for a reference time interval even for the perfect state in the case of the present perfect.

Second, whenever a new event described in the past tense is introduced at a contextually or textually available reference time, a new reference time is introduced 'just after' the event. The new reference time serves as one of the possible values of the reference time variable for the next introduction of an event. Introducing an event creates a new reference time 'just after' the event, which is available for the introduction of the next event and at the same time it updates the context for the next new event.

Information in discourse is, in fact, updated whenever any new entity or condition is introduced in the discourse, including a state, an event, and so on. Whenever an event/state is

the scope of my dissertation, I will not discuss it any further.

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introduced (and evaluated), there is an update and a newly updated context emerges so that the next event is to be introduced in this updated context. However, there is a difference between contextual updates induced by the introduction of an event and those induced by the introduction of a state or other new entities. When the newly introduced entity is an event, since an event is bounded, the updated context must include the occurrence of the event. Therefore, the introduction of an event introduces a reference time that is just after the temporal trace of the event and that serves as one of possible reference times where a new event can be introduced. On the other hand, when a state is introduced, it is not bounded, it is sufficient that it just 'holds' at the moment when it is introduced. Therefore, the introduction of a state updates the information in the context without introducing a new reference time interval or shifting reference time.

Third, it must be noted that 'just after' the event means after the event and before any other event relevant to the discourse, following Partee (1984b). In discourse (6.55) 'just after' the event of Ken washing his face may include 10 minutes later, but may or may not include 2 hours later, depending on when the next relevant event (Ken going to school) occurred.

(6.55) Ken got up and washed his face. He had a slight fever. But he went to school.

In a discourse like (6.56) below, 'just after' the event of Ken installing Linux may include several days after the event, for example, the interval during which Linux did not recognize Ken's modem or when Ken did not have time to use it, and so on.

(6.56) Ken installed Linux on his computer, connected to the internet, and downloaded sev-

eral Linux programs.

Muskens (1995) defines the notion 'just after' ($\lesssim$) as in (6.57).

(6.57) $t_1 \lesssim t_2$ abbreviates

$t_1 < t_2 \wedge \neg \exists t_3 (t_1 < t_3 < t_2)$ ('$<$' is a precedence relation). (Muskens 1995)

I revise (6.57) as (6.58) and define how a reference time is updated as in (6.59).

(6.58) (Revised) $t_1 \lesssim t_2$ abbreviates: $t_1 < t_2 \wedge \neg \exists t_3 (t_1 < t_3 < t_2 \wedge \exists e (e \subseteq t_3))$ where e is an

event relevant to the discourse.

(6.59) When a new event e is introduced in discourse, a new time interval t' is introduced

such that $t \lesssim t'$ and such that t is the temporal trace of the event e.

t' is one of possible temporal locations (possible reference time values) for new events

introduced following e in discourse or the reference time value for the next event in

temporally ordered sequences of events.

In definition (6.57) if t_2 is located just after t_1, t_1 precedes t_2 and there is no t_3 between t_1

and t_2, while in definition (6.58) there is additional restriction on t_3, that is, there is no event

which is relevant to the discourse and whose temporal trace is included in t_3. The updated

reference time t_2 continues until the next relevant event is introduced in the discourse. Note

that the condition of introducing a reference time t in (6.59) does not have to consider updates

later than the introduction of e in discourse. Therefore, it is possible that there is t_3, i.e. an

event relevant to the discourse introduced between $t_1 < t_2$ provided it is inserted later in the

discourse.

In discourse (6.56) above, reference time is updated first by the event of Ken installing Linux, then, by the event of his connecting to the internet, and, finally, by the event of downloading several programs. If another event is introduced in discourse before the event of Ken downloading programs by a sentence following discourse (6.56), e.g. the event of Ken accessing a Linux server, it can select the same reference time that the event of Ken downloading programs did, i.e. a time interval just after Ken connecting to the internet. It, then, inserts a new reference time interval 'just after' the event of accessing a Linux server within that reference time interval and the event of Ken downloading programs is understood to be located in the new inserted reference time. Note that the set of possible reference time intervals for events need not form a strict, total order. This is because of the difference between a story time in discourse and in real time. Story time as constructed by the addressee in the course of discourse can include a time interval that is inserted within an already introduced reference time interval by the addressee even after the story time moves forward.

Temporal anaphora

As just discussed, this thesis assumes that tense and aspect markers introduce a reference time variable to locate an eventuality in time and the value of that variable is where the eventuality should be located in discourse. The anaphoric nature of tenses is due to the fact that the addressee has to search for a value of the reference time variable in discourse or deictically in

the utterance context so that reference time either includes or overlaps with the eventuality described, just like she would have to search for the antecedent of a pronoun. This view, however, differs from previous views on reference time.

One of the differences is that in Kamp and Reyle's (1993) view reference time is not always required and sometimes has to be obviated to introduce a new event described in a certain tense, while I assume that any tensed sentence introduces a reference time variable and therefore requires a reference time interval to locate the base eventuality in time. In standard DRT, when an event is introduced at the very beginning of a discourse, no reference time is required, as seen in Figure 6.1 above. There is no reference time for the discourse initial sentence *A man entered the White Hart*.

In fact, Kamp and Reyle (1993) admit that this is one simplification in their algorithm for constructing DRSs. In a real discourse, a discourse initial sentence requires a reference time from the discourse context (context of the utterance), as they discuss, citing Partee (1973)'s example (6.60).

(6.60)   I did not turn off the stove.

Without a reference time for discourse initial sentences, sentence (6.60) would be always false as long as the speaker turned off the stove once in the past, even though (6.60) can felicitously describe a situation in which the speaker did not turn off the stove at a particular time. In this thesis' view of reference time, reference time for discourse initial eventualities is found in the utterance context.

$$\boxed{\begin{array}{c} n\ x\ r_0 \\[2pt] \textit{John (x)} \\[4pt] \boxed{\begin{array}{c} e_1,\ r_1 \\[2pt] e_1 \subseteq r_0 \quad r_1 < e_1 \\[2pt] e_1 : \boxed{phone(x)} \end{array}} \ \Rightarrow\ \boxed{\begin{array}{c} e_2 \\[2pt] e_2 \subseteq r_1 \\[2pt] e_2 : \boxed{light\_up\ (x)} \end{array}} \end{array}}$$
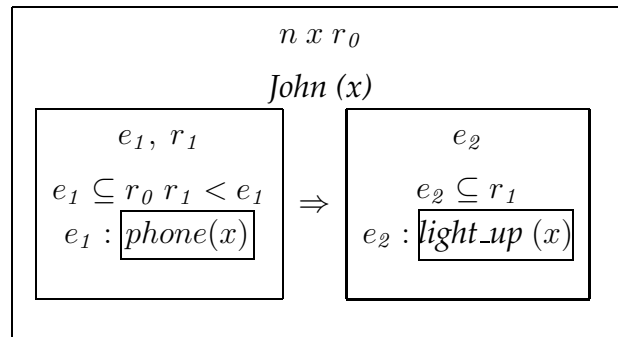
Figure 6.4: Partee's style of DRS for (6.61)
Before John makes a phone call, he always lights up a cigarette.

Some scholars argue against this view because, as Partee (1984b) points out, a generic clause modified by a *before-* phrase would receive the wrong interpretation (Nelken and Francez 1997; Carlson and Spejewski 1997), as (6.61) shows.

(6.61) Before John makes a phone call, he always lights up a cigarette.

Always in sentence (6.61) triggers a DRS-splitting conditional like an *if*-clause or *every*. In Figure 6.4, the time of the event of John making a phone call is included in reference time r_0 ($e_1 \subseteq r_0$) and reference time r_1 includes the time of the event of John lighting up a cigarette, which precedes the event of John making a phone call because of the temporal connective *before* ($r_1 < e_1$ and $e_2 \subseteq r_1$; $<$ represents the precedence relation here.). Because both the reference time r_1 for the main clause and the event e_1 introduced by the subordinate *before-* clause are universally quantified over in Figure 6.4, the assumption that a reference time is always required to introduce a new event in discourse leads to the interpretation that John is

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lighting a cigarette at all times preceding each phone call (r_1).

These scholars concludes from such examples that reference time is not necessarily required for the introduction of a new eventuality. However, example (6.61) is a generic (or habitual) sentence, which are typically considered to describe a state holding at present and therefore only a reference time interval for the generic state(s) is required, not for each occurrence of habitual events. Although I cannot explain in detail here how (6.61) introduces a generic state (or generic states if each clause introduces one), I can at least say that each occurrence of habitual events need not be located at a particular reference time interval. Reference time is not needed either to represent the temporal relation of the events in the main clause and subordinate clause, because the temporal relation between the events is simply described by the temporal conjunction *before*. Reference time is only required to locate the generic state(s) in time. The sentence in (6.61) contains event descriptions, but does not have to locate each occurrence of the described events in time. This is true regardless of the kind of conjunction involved, *before*, *whenever*, *after* or the temporal relations between the event descriptions in the main and subordinate clauses. Sentence (6.61), therefore, requires only one reference time to locate the generic state(s) in time and the value of reference time is found in the utterance context, i.e. speech time 'now,' in this case. Therefore, the assumption that a reference time for a main eventuality is found in the context of utterance or in the preceding discourse without causing the problem Partee (1984b) mentions.

Another and more striking difference between the view advocated in this thesis and pre-

vious views is that in both Muskens (1995) and standard DRT (Kamp and Reyle 1993), a new event is always introduced in a time interval after a most recent eventuality in a story line and there is no search for the value of the reference time variable. In contrast, in the view advocated in this thesis a new event can be introduced in any preceding reference time interval and the value of reference time variable has to be found by the addressee.

In Kamp and Reyle (1993)'s DRS in Figure 6.1 - 6.2, there is only one value for a reference time variable available at any point in discourse, which is the time of the most recently introduced event. Events are always interpreted as a temporally ordered sequence because a new event is always introduced in the time interval which is located just after the last introduced event.

Muskens (1995) also assumes that there is always only one current reference time where a new event is evaluated. Muskens, along with Groenendijk and Stokhof (1991) and others, considers the meaning of a text as the binary relation consisting of all tuples $< i, j >$, where i and j are states that the reader of the text may be in before and after interpreting the text, respectively. I call these states *contextual states*, following Muskens (1995). Those contextual states can be viewed as assignment functions. In his view, an event is always evaluated with respect to a *current reference time* r, whose value is assigned by the input state i. Reference time for the introduction of a new event is always the reference time in the input state. There is no search for reference time triggered by the past tense and no anaphoric aspect to tenses, assuming that the search for the value of an unspecified free variable constitutes the anaphoricity of

tense. Such a view, clearly, cannot account for the anaphoric nature of tenses.

In contrast, as seen in Figure 6.3, the reference time variable in the analysis of reference time I propose triggers a search for its value. There are as many possible reference time values which can be referred to by a reference time variable as there are events in the DRS, so that a new event can be introduced into any of those reference times, depending on its temporal relationship with the previously introduced events. In particular, either an earlier reference time interval or the most recent reference time interval can be selected as reference time of a new event. This allows for more flexible interpretations of sequences of past event descriptions, which need not always be interpreted as temporally ordered sequences of events.

For example, after reading the first sentence in (6.62) (=(6.50)), the content of the reader's understanding as well as her deictic center (Segal 1995; Zubin and Hewitt 1995) may correspond to where the event of Max falling is just introduced. However, it does not mean that the addressee has to introduce the event of John pushing him there in the story line, i.e. after Max's fall. She can locate the event of John pushing him before Max falling within a preceding reference time interval, regardless of where in the discourse the eventive sentence the addressee just processed is.

(6.62) Max fell. John pushed him.

For example, first the addressee may pick r_1 as the reference time of the event of Max falling and introduce a new reference time r_2 just after it. Then, the addressee may choose as reference time for the event of John pushing Max (e_2) in the second sentence, r_1, r_2 or r_0, as seen in

(6.63). r_0 is the reference time which is located before r_1 and may be picked contextually. The choice of r_1 may lead to a reading in which the two events e_1 and e_2 overlap or e_2 precedes e_1. In the latter case e_2 introduces another reference time r_3 just after e_2 within r_1 and the reference time for e_1 may be reinterpreted as r_3. The choice of r_2 leads to an interpretation in which the events are temporally ordered (the default reading for (6.64)). The choice of r_0 would lead to a reading in which the events occurred in the reverse order in which they were presented.

(6.63) Max fell (e_1). John pushed him (e_2).

   possible Reading 1: $e_1 \subseteq r_1, e_1 \lesssim r_2, e_2 \subseteq RT \; RT = r_1, e_2 \lesssim r_3$

   Possible Reading 2: $e_1 \subseteq r_1, e_1 \lesssim r_2, e_2 \subseteq RT, RT = r_2, e_2 \lesssim r_3$

   Possible Reading 3: $e_1 \subseteq r_1, e_1 \lesssim r_2, e_2 \subseteq RT, RT = r_0, r_0 \prec r_1 \; e_2 \lesssim r_3$

(6.64) John and Max were at the edge of a cliff. Max felt a sharp blow to the back of his neck. Max fell. John pushed him. Max rolled over the edge of the cliff. (Asher and Lascarides 2003)

The analysis of reference time I propose is flexible enough to model the fact that when we process a sequence of sentences, reference time for a newly introduced event does not have to coincide with the time just after the event described in the sentence which we most recently processed. We can construct a chronicle out of a set of events which are not necessarily presented in temporal order.

Kamp and Reyle (1993) also admit that there are cases in which a set of events are not

temporally ordered even in past narrative contexts, as seen in discourse (6.50) above and discourse (6.65) (= (6.49)).

(6.65)   a. Guy experienced a lovely evening last night.

b. He had a fantastic meal.

c. He ate salmon.

d. He devoured lots of cheese.

e. He won a dancing competition. (Lascarides and Asher 1993)

In discourse (6.65) a more complex discourse structure is involved. (6.65b) elaborates (6.65a); the event of Guy having a fantastic meal is part of experiencing a lovely evening and the former is temporally included in the latter (Asher and Lascarides 2003). If there is only one reference time interval at a time in the discourse and a new event has to be introduced there as in Muskens's view or after that as in the standard DRT view, this interpretation would not be available. Although I will not discuss in detail (6.65) here, the point is that all reference times including preceding ones are still in the DRS and available for a new event to be located in, which gives us the required flexibility to interpret the discourse. Which reference time we choose for each newly introduced event is decided on the basis of commonsense knowledge about the relationship between/among eventualities (cf. the commonsense knowledge entailment rules discussed in Chapter 5 or in Lascarides and Asher (1993); Asher and Lascarides (2003)) and/or the existence of some other clues such as temporal adverbials.

Time progression for a human addressee vs. an artificial agent

The advantage of my analysis of reference time and reference time updates discussed in this section over previous ones such as the ones in Muskens (1995), Partee (1984b), or a standard DRT (Kamp and Reyle 1993) is that my analysis allows more flexible temporal interaction between temporal succession and sentential succession than previous views allow. This advantage is more clearly seen when we look at the notion of reference time from another perspective, namely, temporal reasoning performed by an acting artificial agent.

The notions of reference time variable, reference time, and reference time updates I just discussed can be compared to those discussed in Almeida (1987), Almeida (1995), Ismail (2001), which have been implemented in the Semantic Network Processing System (SNePS). In their theories, reference time intervals are temporal perspectives from which a cognitive agent Cassie views a situation. The progression of reference time is modeled by a variable NOW.

Cassie's subjective sense of temporal progression is similar to reference time updates in Muskens (1995) and in this thesis, as opposed to those in a standard DRT in the following sense. Almeida (1987) tries to explain how conversational participants, i.e., human addressees, infer the time progression or temporal order of events in oral and written discourse and update reference time when they listen to or read it. NOW moves forward when a new event is introduced at NOW in a written narrative discourse Cassie is reading (a narrative NOW-point) in Almeida (1987) or NOW moves whenever Cassie becomes aware of a change in the

environment where Cassie is acting or reasoning in Ismail (2001). In particular, Ismail (2001) discusses how time progression can be conceived by the acting agent Cassie, who can only perceive states and changes in states from her perspective as humans do as acting subjective agents. (6.66) is the algorithm to move NOW. It moves when there is a change in Cassie's environment, i.e. in her beliefs.

(6.66) **Algorithm** move_NOW

    1. Pick some $t \in \tau$, such that $t \notin \Psi(\tau)$.

    2. $\beta \leftarrow \beta \cup {}^*\text{NOW} \prec t$.

    3. NOW $\leftarrow t$.

$\Psi(\tau)$ represents the temporal intervals that Cassie conceives of. In step 1 whenever NOW moves, it moves to a new term (t) and in step 2 the new term, a new present (t), enters into Cassie's consciousness. *NOW denotes the term pointed by NOW and precedes the new present t in step 2. A change in the value of NOW (step 3) is always associated with a change in Cassie's state of mind (i.e. a set of Cassie's beliefs β) in step 2.

The updated value of NOW, thus, reflects the time after the last change of Cassie's environment in her belief system, or the updated situation from Cassie's perspective. This update of NOW is analogous to the way Muskens (1995) or this thesis defines reference time updates, as opposed to the way reference time updates in a standard DRT (Kamp and Reyle 1993). Cassie's NOW corresponds to reference times. Reference time in discourse is updated when there is an event. An event in discourse corresponds to a change for Cassie. The updated

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value of reference time is the time interval that follows the introduction of an event and corresponds to a new term t in (6.66). Changes in Cassie's state of mind correspond to updates in the context in discourse. Thus, a new reference time and a new term t are both introduced after an event or a change. In contrast, as discussed in Section 6.3.1, in a standard DRT reference time is the temporal interval of the most recent event and a new event is introduced just after the reference time (Kamp and Reyle 1993; van Eijck and Kamp 1997).

However, reader's or hearer's understanding of time in discourse, which Muskens (1995) or this thesis aims to explain, clearly differs from Cassie's understanding of time changes as an acting agent, which Ismail (2001) aims to discuss. First, reference time and its updates can be conceived objectively when the addressees read or listen to written or oral discourse, while an acting agent subjectively perceives or believes temporal progressions, i.e. NOW updates, based on her getting aware of changes in her environment (or her own experiences).

Reference time update in reading or hearing discourse adds only one more possible attachment site (reference time value) for the next new sentence, but the addressee has to find the right value for a reference time variable from all possible values including the most recently updated reference time and any prior reference times to locate the newly introduced event in time. The anaphoric nature of tenses derives from this requirement. On the other hand, an acting agent Cassie is always in NOW. She does not have to search the value of the variable NOW, because any new change, i.e. the existence of a new state, is always gets noticed by her within a real present-time NOW (and leads to NOW moving forward).

Secondly, the duration time or the vagueness of reference time in terms of granularity is rarely an issue in discourse because, although reasoning takes time, reference time does not move in discourse during reasoning. In the case of Cassie, the duration of NOW is sometimes an issue, because she has to reason and make a decision about her next action and NOW should not shift during her reasoning. As Ismail (2001) discusses, because the persistence of a certain state normally has its life time (McDermott 1982), the duration time of NOW should be comparable to the typical duration of a state. For example, suppose that, as Ismail (2001) describes, Cassie's job is to transfer boxes from one side of a street into a store on the other side and that she can only cross the street when she comes to believe that the walk-light is on. She is looking towards the walk-light. It is on. She comes to believe that it is on. She can cross the street. Her battery is half-full and it is enough for one trip. She decides to go. There is a time lapse between her perceiving the walk-light on and her deciding to go. Even though she is still in the same NOW in her mind, the walk-light may not be on any more (Ismail 2001). Thus, Cassie's NOW may expire and therefore move without her recognizing any change, while reference time in discourse does not move unless a new event is explicitly introduced.

It is interesting to note that in terms of introducing a new event in discourse Muskens's system is more similar to the acting agent's subjective understanding of temporal progression than to our understanding of time in written or oral texts when reading or listening to them if my view is correct. In the same way that Cassie does not have to find the value for NOW, in Muskens (1995) the addressee does not have to fill in the value of a reference time variable

because it is always given by the input state as the unique value of the previous reference time. In the same way that a change for Cassie always occurs in NOW, a new event is always to be located in the most recent reference time in Muskens's view. Note that if NOW represents a narrative-*now-point* for a reading Cassie, not NOW for an acting Cassie, a new event may not necessarily be introduced in the most recent time as discussed in Almeida (1987); Almeida (1995); Ismail (2001).

6.3.2 Reference time in the past tense and the perfect

This subsection now returns to the two questions raised at the beginning of this section (Section 6.3), i.e. i) in what sense the past tense is anaphoric while the perfect is not, and ii) how the past tense moves reference time forward.

The past tense is anaphoric in that the reference time variable introduced by a past tense sentence refers to a particular time interval (the value of the reference time variable) where a past eventuality is introduced and the value of this reference time variable has to be found by the addressee to interpret the sentence. On the other hand, the perfect is not anaphoric in that the temporal location of the past eventuality introduced by the present perfect does not *have to be found*. The reference time variable introduced by a present perfect sentence does not refer to the time interval where a past eventuality is introduced. The past eventuality introduced by the present perfect is, therefore, loosely located as preceding a reference time. The reference time variable in the perfect refers to the time interval which overlaps with the

temporal trace of the perfect state. Therefore, the base eventuality described in the perfect is loosely localized, while the base eventuality described in the past tense is more strictly localized through the assignment of a value to the reference time variable.

Ignoring the differences between the English present perfect and the Japanese present perfect discussed in Chapter 3 and 4, Figures 6.5 (a) and (b) show the difference between the past tense and the present perfect in both languages. The reference time variable RT introduced

(a) the past tense

$$
\begin{array}{|l|}
\hline
e, RT, r_0, r_1, n \\
\hline
\tau(e) \subseteq RT \\
RT \prec n \\
RT = r_0 \\
\tau(e) \lesssim r_1 \\
\hline
\end{array}
$$

(b) the present perfect

$$
\begin{array}{|l|}
\hline
e, s, RT, n \\
\hline
\tau(e) \prec RT \\
\tau(s) \circ RT \\
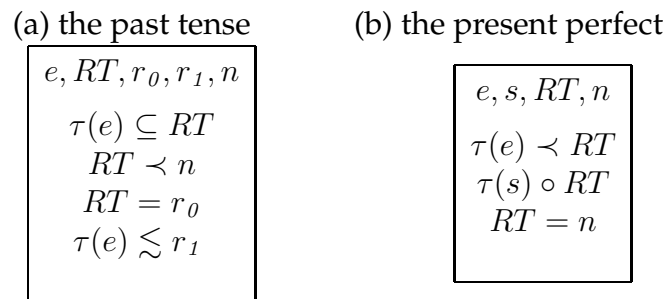RT = n \\
\hline
\end{array}
$$

Figure 6.5: Event and reference time in the past tense vs. the present perfect

by the past tense in Figure 6.5 (a) includes the temporal trace of the base eventuality's occurrence, while the reference time variable RT introduced by the present perfect in Figure 6.5 (b) does not have to refer to the time of the base eventuality's occurrence but refers to the time interval which overlaps with the perfect state s, which is utterance time in the present perfect.

The relations between the past event and reference time in the past tense and the present perfect are shown below.

(6.67)   a. The Past: $\tau(e) \subseteq RT$ or $\tau(s) \circ RT$

b. The Present Perfect: $\tau(ev) \prec RT$

As a consequence, the temporal location where the base eventuality in the perfect occurred *does not need* to be known or found so precisely by the addressees or readers as long as the eventuality precedes reference time. The addressee must find the value of reference time in the perfect too, but that value overlaps with the perfect state and does not include the base eventuality. Note that it does not mean that the time interval or the discourse context in which an eventuality described in the perfect occurs *must not* be known nor found. There is no constraint on whether the base eventuality in the perfect is understood to have occurred at a specific or definite time. Therefore, the time of the base eventuality's occurrence can be unidentifiable and unspecific as the Indefinite Past theory of the perfect has observed (Mc-Coard 1978),[21] it can also be identifiable and specific. Hence, definite time adverbials can modify the base eventuality and specify the time of its occurrence both in English and Japanese perfects as they can in past tense sentences because the base eventuality in the perfect *can* also be located at a specific time (See Section 2.3.1 and Section 4.2 for details.) In contrast, an eventuality in the past tense *must* always be introduced at a certain reference time which addressees should be able to determine.

Because the reference time variable is a free variable, its value can be found in any part of the previous discourse in narrative texts or in the speech situation as long as it satisfies the constraints imposed by tenses or other expressions. However, this anaphoric (and deictic)

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[21]The Indefinite Past theory, following Reichenbach's analysis of the perfect, claims that the time of the base eventuality's occurrence can be any time prior to reference time in the perfect while the time of the event in the past tense is definite. See McCoard (1978) for more details.

nature of tenses is not exactly the same as that of nominal anaphora. In nominal anaphora, the value of a variable, i.e. the antecedent of a pronoun, normally has to be a particular entity which is identifiable and expressed linguistically in the discourse. The value of a reference time variable, on the other hand, is a time interval within which an event is understood to occur, which can be very vague. It can be very small or large.

For example, Partee (1984b) points out that reference time for a past sentence could be potentially the whole past. Partee (1984b)'s example is sentence (6.68).

(6.68)   Who killed Julius Caesar?

Partee (1984b) discusses that because sentence (6.68) is a question about a once-only past event and the addressee does not have to know when it happened to answer the question, identifying reference time is irrelevant once the event happened. I do not think it is totally irrelevant nor can the reference time interval be potentially the whole past. In her example, most speakers and hearers are likely to know that Julius Caesar has been dead for about 2000 years and those 2000 years will therefore typically be excluded from the reference time interval for (6.68). But, it is true that the reference time interval can be very broad and the time interval starting from a certain time up to just before utterance time, as long as it is the right time interval to interpret the sentence.

For example, reference time for the answer to the question in (6.69) can be any time within the time interval starting from some reasonable time the addressee can start putting the garbage outside and ending just before utterance time.

(6.69)   a. Did you put the garbage outside?

   b. –Yes, I did.

In my neighborhood, for example, people start putting their garbage outside on the day be-fore it is collected on Wednesday, i.e. Tuesday. If the discourse in (6.69) occurred on this Wednesday morning, a reference time for (6.69b) can be the entire time interval starting from Tuesday morning and ending just before utterance time.

Reference time and real time differ in that reference time is only updated when an event is described in discourse whereas real clock time constantly progresses regardless of how a human perceives the progression. A reference time interval *continues* until it is updated by an event occurrence's description. Therefore, if there is no relevant event introduced in the discourse, it is possible that the reference time for an event in the past tense covers the time interval starting at a certain time up to just before utterance time.

Constraints on the choice of reference time other than those given by predicative condi-tions in DRSs are not attributed to the reference time update system itself, but to the discourse relations or structures and/or other factors such as temporal adverbials, as mentioned before. The temporal relation between/among eventualities can be marked by temporal adverbials or be determined on the basis of inferences such as commonsense inference rules or other clues. Eventualities in stativized sentences, for example, can receive temporal sequential readings without reference time updating. Reference time is required to overlap with the temporal trace of states in stativized sentences, as seen in the following discourse in (6.70).

(6.70) a. My grandmother used to bake the most wonderful pies on Saturdays.

   b. First, she went to the orchard on Shady Lane early in the morning.

   c. She used to then pick a basket each of apples and peaches.

   d. Next, she would go into the kitchen and shoo everyone else away.

   e. After that, about 4 o'clock, an irresistible aroma wafted through the entire house.

   (Carlson and Spejewski 1997)

Each sentence in discourse (6.70) is interpreted as a generic sentence but each occurrence of habitual events in each sentence from (b) to (e) is understood to follow each occurrence of habitual events in the preceding sentence, because the temporal relation among those habitual events are clearly marked by the adverbials *first*, *then*, *next* and *after that* and correspond to the typical scenario of picking fruits and baking fruit pies.

Determining the temporal relation among the set of described eventualities has nothing to do with locating them with respect to a reference time interval. Reference time is only needed in stativized sentences to locate the recurrent occurrences of the base eventualities as past generic (habitual) *states* as overlapping with reference time, even if the temporal relation among those base eventualities can be determined via other clues.

Another example is (6.71). Although there may be a temporal sequential reading between the events of curling up and watching in (6.71), reference time update is not needed to derive that sequential reading.

(6.71) 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 ...

(*Wall Street Journal 7.1. 1996*, Graff (1995-1997))

The temporal relationships among eventualities described in the perfect, thus, can be determined on the basis of the relationship between eventualities through commonsense inference (e.g. curling up on a couch and watching a soap ...) in the case of (6.71), through the interpretation of adverbials, or through some other clues. Both the eventualities share the same reference time, which is roughly the author's writing time (subjective present time) in (6.71), and both the eventualities described in the perfect are interpreted as preceding that reference time.

To summarize, the value of the reference time variable locates the base eventuality described in the perfect quite loosely as preceding it. Because reference time does not include the base eventuality but overlaps with the perfect state, the temporal location of the base eventuality does not have to be as identifiable and specific as an event described in the past tense whose temporal trace is included in reference time. The addressee needs to fill in the value of the reference time variable, but not the time interval where the base eventuality described in the perfect occurs, which just precedes reference time. In contrast, the reference time variable locates the eventuality described in the past tense more strictly in time by referring to the reference time interval where the eventuality occurs. This is why the past tense is often considered anaphoric but not the perfect. Because reference time includes or overlaps with the temporal trace of the eventuality and because the value for the reference time variable

needs to be filled in by the addressee, the addressee should be able to specify the time of the eventuality described in the past tense to some degree. This contrast between the past tense and the present perfect leads to some subtle differences, as the next section shows.

6.4   The past tense and the present perfect once again

We have now two tools on the table to distinguish past tenses and present perfects: (i) whether an underspecified state is introduced, and, consequently whether inferences about a state that holds at utterance time are obligatory or optional, i.e. semantically or pragmatically triggered, and (ii) whether the past eventuality (the base eventuality) is located with respect to a reference time interval that includes or overlaps with it or not and, consequently, whether speakers and hearers need to locate a past event at a certain time and/or in a certain context in the past. These factors affect a speaker's decision to use a past tense or a present perfect. This section shows how this second factor can help explain very subtle differences between the uses of a past tense and a present perfect which have never been clearly discussed before.

Locatability of events: witnessing events.   First, the locatability of events in time can affect the preference for a past tense or a present perfect. In conversation, past tenses often receive interpretations very similar to present perfects. In fact, they are even preferred to present (or nonpast) perfects in some contexts, as seen in sentences (6.72a) and (6.73a) (=(6.8a)).[22]

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[22]Japanese examples are modified from Inoue (2001c).

(6.72) a. You dropped your wallet. (The speaker saw the addressee drop a wallet. It is on the floor. The speaker is trying to let him/her know about it.)

   b. You have dropped your wallet.

(6.73) a. *Saifu-ga*   ochi- ***mashita***   *yo.*
   Wallet-NOM fall- PAST(polite) PRTCL

   'A wallet fell.' (The speaker saw the addressee drop a wallet just now. The wallet is on the floor.)

   b. *Saifu-ga*   ochi- ***te-i-***   *masu*   *yo.*
   Wallet-NOM fall   IMPFV-PERF NONPAST(polite) PRTCL

   'A wallet has fallen.' (The speaker did not see the wallet fall. The wallet is on the floor.)

When the speaker sees the addressee drop his/her wallet, the past tense (a) is preferred both in English and Japanese. In English the present perfect is also possible, but some speakers of English report that it would convey politeness or formality. In Japanese the nonpast perfect sounds odd in that case. Because the past tense is preferred when the event is witnessed by the speaker, some scholars have argued that *ta-* has some modal functions, e.g. an evidential function. In fact, this evidential flavor is just an indirect effect of the differences in temporal relation between the base event and reference time in perfect and past sentences.

The preference for the past tense in the contexts in (6.72) -(6.73)a is due to the fact that a past event is included in the reference time interval when it is described in the past tense but must not be when it is described in the perfect. An event described in the past tense thus

requires the speaker and addressee to find a suitable reference time interval which includes the temporal trace of the event. It means that they have to find when the event described in the past tense occurred. On the other hand, the speaker and addressee do not have to find when the base eventuality occurred in the present perfect as long as it precedes reference time, i.e. *now*, and there is a perfect state holding *now*. The occurrence of the base eventuality is asserted but determining the time interval in which it occurred is not needed.

In sentences (6.72)a and (6.73)a, when the speaker saw the addressee drop his/her wallet right before the utterance, it is clear when the event happened. Even if the event did not occur right before the utterance, if the speaker saw it, it is often the case that both the speaker and the addressee know when it happened as will be discussed later. Because they can locate the time of the event's occurrence, they also know whether there is any possible change between the time interval of the event's occurrence and the utterance. If the speaker and addressee *mutually know* (in the sense of Clark (1992)) that no relevant change happened, i.e. that there is no relevant event intervening between the time of the event's occurrence and that of the current speech situation, the addressee can infer that the state entailed by the occurrence of the event, i.e. the fact that the wallet is on the floor, holds at speech time via an inference of persistence. She does so even though a past tense utterance does not trigger the inferential process semantically, unlike a present perfect sentence. In this case, the speaker does not need to use the present perfect to trigger the inference; the specific time of the event's occurrence is not unknown, nor can there be intervening changes and a need for an inference trigger to tell

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the addressee that the wallet is on the floor.

Similarly, when somebody asks the speaker to go out for dinner and when the speaker says (6.74) or the Japanese corresponding sentence (6.75), both the speaker and the addressee contextually know about when the event occurred, e.g. not yesterday nor in the morning, and also know that there is no possible relevant change between the event and the current situation. In this case, the past tense is enough to satisfy the speaker's intention of telling the addressee that s/he is full.

(6.74) I already ate.

(6.75) *Mou   tabe- ta.*
      Already eat- PAST
      'I already ate'

In contrast, because the present or nonpast perfect does not require the temporal anchoring of a past event in time and triggers an inference that a particular perfect state holds at reference time, it is preferred (i) when the speaker and/or addressee do not know or do not need to know when the past event occurred, (ii) when they do not know whether there are possible updates between the base eventuality and the present, and (iii) the speaker wants to imply that a perfect state that needs to be inferred from a past event's occurrence holds now. This is why the use of the present perfect in context (6.72)a is marked. The speaker and the addressee know when the past event occurred and they also know that there is no possible update after the event.

The use of the nonpast perfect in the corresponding context in (6.73a) sounds odd because the speaker knows that the event occurred just a moment ago. The use of *te-i-* (wrongly) gives the impression that she only knows about the state of the wallet but knows nothing about the time of the base eventuality's occurrence. Inoue (2001c) further observes that both the past tense and the nonpast perfect are possible when the speaker did not see the wallet drop if she knows that the addressee owns the wallet. This observation can be explained as follows. If the speaker knows that the wallet belongs to the addressee, the speaker and the addressee might be able to locate the time of the event, i.e. reference time in the case of the past tense, even if they did not see the event or both of them have no idea when it happened and how long it has been on the floor. As I noted before, the value of reference time can be very vague. If the speaker and addressee can find a reference time interval that is just precise enough to interpret the utterance correctly, the search for the value of a reference time variable is successful and the use of the past tense felicitous.

The need for more inferences: Loosing track of time. Another type of locatability issue that can affect the choice of a perfect over a past tense or vice versa is whether the speaker keeps track of time from the event's occurrence to utterance time. (6.76) and (6.77) are Japanese examples that illustrate the contrast between the past tense and the nonpast perfect:

(6.76)   a. *Sakana-ga koge -ta.*
              fish-NOM burn PAST
              'The fish got burned.' (The speaker was cooking the fish.)

Sakana-ga koge -te-i- ru.
fish-NOM burn IMPFV-PERF NONPAST

'The fish got burned.' (Someone else than the speaker was cooking.)

(6.77)   a. *Ofuro-no oyu-ga wai- -ta yo.*
            Bath-GEN hot water-NOM boil- PAST PRTCL

           'The (hot) water in the bath is ready.'

         b. *Ofuro-no oyu-ga wai- -te-i- -ru yo.*
            Bath-GEN hot water-NOM boil- IMPFV-PERF NONPAST PRTCL

           'The hot water in the bath is ready.' (The speaker did not turn on the boiler and does not know who did it.)

When the speaker does not know who turned on the oven or the boiler or did not see when the base eventuality happened, and just saw the resultant state, then a sentence whose verb is in the nonpast perfect sounds more natural than one in which the verb is in the past tense. Otherwise, the past tense may be preferred. This contrast between the past tense and the nonpast perfect in sentences (6.76) and (6.77) may be less clear than in example (6.73), but the tendency is the same.

When the speaker is the one who was cooking the fish and preparing the bath, it is often the case that she can locate the event in time and that she can assume that the hearer can also do that because she often knows whether he knows that she was cooking or preparing the bath. Then, the past tense is preferred, as seen in (6.76a) and (6.77a).

In contrast, when the speaker is not the one who was cooking the fish or preparing the bath and did not see the occurrence of the event, it is often the case that she cannot locate the

time of the event's occurrence. All she knows is that the state of the fish being burned or the bath being ready holds at present. Then, the use of the nonpast perfect is preferred because the relationship between the asserted past eventuality and the state which currently holds has to be inferred, as seen in (6.76b) and (6.77b). However, even if the speaker is the one who is responsible for cooking the fish and preparing the bath, sometimes she may forget to check it for a while after turning on the oven or the boiler, fail to keep track of what is going on and see the resultant state. In this context, the present perfect might be used because she cannot locate the time of the event's occurrence and the current state has to be associated with the event's occurrence via inferences.

The evidential effect of the Japanese past tense, i.e. the use of the past tense when the speaker has witnessed the event is, thus, explained by the relationship between an event and its reference time. The similar preference for the past tense when the speaker witnessed the event can also be seen in English, as the examples in (6.72) show.

News is new.　There is another class of examples in which the uses of the past tense and the present perfect seem to overlap. The English present perfect is sometimes used to express a recent past event or a past event which is new to the addressees, the so-called hot-news perfect (or perfect of recent past) (McCawley 1971; Comrie 1976), as seen in sentences (6.78a) (=(2.4)) - (6.79a).

(6.78)　a.　Malcolm X has just been/was just assassinated. (McCawley 1971)

b. Malcolm X was assassinated.

(6.79)   a. Byron White has (just) announced/just announced his retirement!   (Michaelis 1998)

b. Byron White announced his retirement!

This overlap in use can be explained as follows. In examples like these, the addressee is not usually expected to have any information about the situation of Malcolm X being assassinated in (6.78a) or the event of Byron White announcing his retirement; since they are new to him. Even the speaker may not know details about what happened, but only knows for sure that the eventuality has occurred and that its resultant state, Malcolm X being dead or Byron White's retirement being imminent, currently holds. The present perfect is used in such cases because it does not require finding a reference time interval that includes the base eventuality and therefore the addressees are not expected to figure out when the base eventuality occurred.

The vagueness of the Japanese perfect.   In Japanese, though, the past tense needs to be used in hot-news contexts. This is due to the vagueness of the meaning of *te-i-*. The present perfect *te-i-* does not express that the base event has *just* occurred as hot-news perfect uses in English do. When the Japanese adverb *chodo* ('just') occurs with *te-i-*, it can induce a progressive reading rather than a hot-news perfect reading, since the vagueness of *te-i-* allows either a progressive reading or a perfect reading, as seen in (6.80)).

(6.80) *Inukai shusho-ga   chodo ansatsu-sare-   te-i-   ru   toki,*
         Inukai Prime-Minister-NOM just   assassinate-PASS- IMPFV-PERF- NONPAST when,
         kare-wa nani-mo   shira-zu-ni   sake-o   non- de-i-   ta.
         he-TOP anything knowing-without sake-ACC drink IMPFV-PERF- PAST

         'When Prime Minister Inukai was being assassinated, he was drinking sake without knowing anything.'

Since the non-past perfect *te-i-* is vague between an incomplete and complete event reading, the perfect *te-i-* tends to be avoided to express recent, completed events in Japanese when the addressee is not presumed to know that the event was completed (and could thus wrongly infer it was not completed).

6.5 Summary

There are two factors which distinguish the present or nonpast perfect from the past tense. One is its stativity and the other the relationship between reference time and the eventualities they introduce. The present perfect stativizes the base eventuality description and locates the time of the perfect state introduced by the perfect as overlapping with a reference time interval and the time of the base eventuality as simply preceding that interval. In contrast, the past tense does not have a stativizing function and only introduces a base eventuality and just locates the time of the base eventuality with respect to a reference time interval.

    This chapter first discussed the effects of the first difference between the past tense and the perfect, taking the Japanese past tense *-ta* as an example. I showed that the Japanese marker

-ta is not a present perfect marker, but a past tense marker in main clauses, by showing it is not a stativizer

I also discussed why the Japanese and the English past tense differ in the inferences they invite when the base eventuality is stative. In Japanese, the past tense does not form a scalar pair with the present perfect *te-i-* and therefore does not trigger Q-implicatures. In English it does and the use of a past tense marker therefore triggers Q-implicatures.

This chapter then discussed the second difference between the past tense and the present perfect. In order to do so, I first redefined the notions of reference time variable, reference time value and reference time update, so that they can explain the anaphoric nature of tenses, the temporal interpretations of events described in a sequence of past tense sentences, and all uses of the past tense and the perfect. I also compared the reference time update system proposed in Muskens (1995) and in this chapter with the system of time progression for an artificial cognitive agent in the SNePS framework and discussed the difference between the understanding of discourse time by the addressee and the understanding of time progression by an acting agent. I argue that my newly defined system of reference time updates can better model *discourse* than a standard DRT approach(Kamp and Reyle (1993)) or Muskens'(1995) approach. Then, making use of those notions, this chapter explained differences and overlaps in use between the present perfect and the past tense that stem from differences in the temporal relation between the past event introduced by the past tense or perfect and a reference time interval.

Chapter 7

Conclusions

This thesis answered several, partially related, questions: (i) What is the meaning of the perfect markers found in English and Japanese and how does that meaning differ from that of past tense markers? (ii) What part of the uses of these perfect markers is due to their meaning and what part derives from (neo)-Gricean pragmatic processes? (iii) Why are perfect markers chosen over past tense markers to describe a past situation? (iv) How can a single morpheme in Japanese correspond both to the English progressive and the English perfect? By answering these questions, this thesis shed new light on the interface between semantics and pragmatics.

My answer to the first question was that the English and Japanese perfect markers introduce two eventualities, an eventuality which precedes reference time and a stative eventuality that overlaps with reference time and whose category is left semantically underspecified. By making use of underspecification, this thesis argued that the English and Japanese perfect

markers are both monosemous, contra much of the literature. Moreover, I claimed that the English and Japanese perfects differ from their corresponding past tenses in two respects: (i) pragmatic inferences on the state that results from a prior eventuality are *semantically* triggered in the case of perfect markers but not in the case of the past tense, and (ii) the prior eventuality does not have to be introduced at reference time in the perfect but it has to be in the past tense. These factors, I argued, affect the speaker's choice of the present perfect over the past tense. The study of the English past tense and Japanese past tense *-ta* also showed that default inferences are dependent on a language entire tense or aspect system.

My answer to the second question was that the various contextual interpretations of the perfect derive from its single monosemous meaning through pragmatic inferences that are triggered by the underspecification of its meaning. The constraints on possible interpretations are, therefore, not grammatical but are the by-products of a general mutual inferability requirement on Gricean pragmatic processes.

My answer to the third question was that the choice to use a perfect marker is governed by the desire to maximize discourse coherence. This is a case where a grammatical marker (not lexical items) helps discourse coherence. In establishing the coherence of texts or discourses in which English or Japanese perfects occur, addressees need only use a handful of distinct inference patterns, typically very general default rules, more rarely commonsense default inferences. I also showed that the various interpretations of the English perfect that have been recognized in the literature correspond to different types of inference patterns addressees

must use to fully specify the underspecified meaning of the perfect.

Finally, my answer to the fourth question is that the Japanese perfect marker *-te-i-* is actually composed of two morphemes, an imperfective marker *-te-* and a stativizing perfect marker *-i-* so that its meaning is more similar to that of the English *progressive* perfect. The progressive and the perfect can form a natural semantic class in some languages, because they are both stativizers.

Having summarized this thesis' main contributions, I now summarize the results of each individual chapter.

The validity of a perfect state and its nature. Chapter 2 discussed problems with previous studies of the semantics of the perfect. First, I showed that there is no clear evidence that the distinct interpretations of the perfect correspond to separate meanings, contra scholars who claim that the perfect is ambiguous in English or Japanese. Second, I showed that purely temporal definitions of the meaning of the perfect cannot explain the various uses of the perfect or its stative nature. Third, I argued that there are problems with previous analysis of the nature of the state introduced by the perfect (the perfect state). One view holds that the perfect state is a state which temporally abuts on the temporal trace of the base eventuality, another is that it is a consequent state which results from the occurrence of the base eventuality, while yet another is that it is the logically permanent state that follows the occurrence of any event. I argue that none of these views can account for all interpretations of the perfect.

The English perfect. Chapter 3 proposed a unified semantics of the English perfect. My analysis modifies the standard DRT approach to the perfect (Kamp and Reyle 1993, de Swart 1998) and incorporates into the meaning of the perfect some semantic underspecification (Partee 1984a). The perfect introduces a base eventuality whose temporal trace precedes reference time and a perfect state whose temporal trace overlaps with reference time. The category of the perfect state is semantically a free variable whose value must be filled in by the addressee via inferences. This underspecification in the category of the perfect state triggers inferences that lead to the various distinct interpretations of the perfect. Because the base eventuality introduced by the perfect does not have to be maximal with respect to the base eventuality description, my analysis also explains why the English perfect can have both continuative and non-continuative perfect interpretations, unlike some other languages such as German or French.

Chapter 3 also shows how the semantics and the pragmatics of the perfect interact. The inferential process of interpreting the perfect is triggered by the existence of an underspecified free variable and the constraint on the range of the possible values is captured as the effect of a Gricean principle, mutual inferability. More generally, I argue that the inferential process through which the interpretation of the perfect is specified parallels Levinson's (2000) notion of I-implicature.

The Japanese perfect *te-i-.* Chapter 4 provides a monosemous analysis of the Japanese perfect *-te-i-*. The Japanese aspect marker *te-i-* has both progressive and perfect interpretations.

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This chapter combines the notion of part-whole relations between events (Krifka (1998)) with the analysis of the English perfect in chapter 3 and shows that progressive and perfect readings can derive from the monosemous meanings of the two morphemes that *te-i-* is made up of, the imperfective marker *te-* and the stativizer *i-*. The imperfective operator *-te-* takes eventualities (satisfying a particular description) preceding a reference time interval as inputs and output (non-necessarily proper) subparts of these eventualities. The stativizer *-i-* maps *-te-*'s output onto a state which overlaps with reference time and whose category is semantically underspecified just like the perfect state introduced by the English perfect. The vague output of the imperfective operator, i.e. it can be a proper or nonproper subpart of the base eventuality, leads to the contrast between progressive and perfect readings of *-te-i-*.

Inference rules and discourse functions.   Chapter 5 presents the results of two corpus studies of over 600 English present perfect examples and of over 1000 Japanese non-past perfect examples, which were collected from a diverse range of genres. It examines the inferences needed to interpret sentences in the perfect. These corpus studies not only validate the inferential models proposed in Chapter 3 and 4, but also bring out two further results.

First, inference rules which addressees must use to arrive at the interpretations of perfect sentences, were all based on one of the following principles: McDermott's (1983) default persistence principle, Searle's speech act conditions (Searle 1969), or commonsense entailment rules of the kind discussed in Lascarides and Asher (1993) and Asher and Lascarides (2003). Secondly, the use of the perfect helps discourse coherence by introducing an underspecified

perfect state and by evoking inference rules needed as premises to establish discourse relations between clauses (in a SDRT model, Asher and Lascarides 2003).

The perfect and the past tense.　Chapter 6 compared the uses of the present perfect and the past tense in English and Japanese and discussed differences in their use that result from their different meanings. Two factors were shown to be relevant: (i) the stativizing function of the perfect and (ii) the relationship between reference time and the base eventualities. I first showed that the Japanese marker *-ta* is not a present perfect marker, but a past tense marker in main clauses, because it does not introduce a state. I further demonstrated that differences in contextual interpretations between the Japanese and English past tenses can be explained in neo-Gricean terms and do not stem from a difference in meaning between the two past tense markers. Second, I argued that the anaphoric nature of the past tense, but not the present perfect, derives from the fact that base eventualities described in the past tense are introduced at reference time, while base eventualities described in the perfect are not. I then proposed to slightly modify Partee's (1984b) or Muskens's (1995) view of reference time. I adopted their proposal that the introduction of an event described in the past tense introduces a new reference time interval 'just after' the introduced event. But, I suggested that a new event is introduced at any preceding reference time, not necessarily the most recent reference time. I argued that this flexibility in where new events are introduced is needed to account for discourses in which sequences of event descriptions in the past tense do not correspond to ordered sequences of events.

Final remarks and future research.   This thesis provided a new, comprehensive, and monosemous analysis of the meanings of the English and Japanese perfects. It also proposed an inferential model via which the various interpretations of the English and Japanese perfect can arise. This model was tested through two corpus studies, which further revealed why a perfect form is chosen in discourse. More generally, this thesis identified how the semantics and the pragmatics of the perfect interact and why people prefer using the present perfect rather the past tense. But, although I discussed differences between the present perfect and the past tense, I did not conduct corpus studies of the contextual uses of the English or Japanese past tenses. Furthermore, despite the possible crosslinguistic implications suggested by the results of my study of the English and Japanese perfect markers, how or whether the results of this thesis actually generalize to other languages such as French, German, Spanish or Dutch, remains to be seen. In other words, a typology of perfect markers is still missing.

Bibliography

ALLEN, ROBERT LIVINGSTON. 1966. The Verb System of Present-Day American English. The
Hague; Paris: Mouton & Co.

ALMEIDA, MICHAEL J. 1987. Reasoning about the Temporal Structure of Narratives. University at Buffalo, the State University of New York. Ph.D Dissertation.

—— 1995. Time in narratives. Deixis in narrative: A cognitive science perspective, ed. by
Judith F. Duchan, Gail A. Bruder, and Lynne E. Hewitt, 159–189. Hillsdale: Lawrence
Erlbaum Associates, INC.

ANDERSON, LLOYD B. 1982. Evidentials, paths of change, and mental maps: Typologically
regular asymmetries. Evidentiality : the linguistic coding of epistemology, ed. by Wallace
Chafe and Johanna Nichols, 273–312. Norwood: Ablex.

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, EMMON. 1986. The algebra of events. Linguistics and Philosophy 9.5–16.

BACH, KENT. 1994. Conversational impliciture. Mind and Language 9.124–162.

BEAVER, DAVID. 2003. Always and only: Why not all focus-sensitive operators are alike. Natural Language Semantics 11.323–362.

BENNETT, MICHAEL, and BARBARA PARTEE. 1978. Toward the Logic of Tense and Aspect in English. Bloomington: Indiana University Linguistics Club.

BERTINETTO, PIER MARCO. 1994. Statives, progressives, and habituals: analogies and differences. Linguistics 32.391–423.

BINNICK, ROBERT I. 1991. Time and the Verb: A Guide to Tense and Aspect. New York: Oxford University Press.

BOHNEMEYER, JÜRGEN. 2002. The grammer of time reference in Yukatek Maya. Lincom: Lincom.

BONOMI, ANDREA. 1993. Only: Association with focus with event semantics. Natural Language Semantics 2.1–45.

BOOGAART, RONNY. 1999. Aspect and Temporal Ordering: A Contrastive Analysis of Dutch and English. The Hague: Holland Academic Graphics.

BORILLO, ANDRÉE, MYRIAM BRAS, ANNE LE DRAOULEC, LAURE VIEU, ARIE MOLENDIJK, HENRIËTTE DE SWART, HENK. J. VERKUYL, CO VET, and CARL VETTERS. 2004. Tense, connectives and discourse structure. Handbook of French Semantics, ed. by Henriëtte De Swart and Francis Corblin, 309–348. Stanford: CSLI Publications.

BRINTON, LAUREL J. 1987. The aspectual nature of states and habits. Folia Linguistica 21.195–214.

BRUGGER, GERHARD. 1998. Event time properties. The 21st Annual Penn Linguistics Colloquium, ed. by A. Dimitriadis, L. Siegel, C. Sure-Clark, and A. Williams, 51–63, University of Pennsylvania.

CARLSON, GREG N., and BEVERLY SPEJEWSKI. 1997. Generic passages. Natural Language Semantics 5.101–165.

CATHER, WILLA. 1996. O Pioneer! Raleigh: Alex Catalogue. (http://www.netlibrary. com/).

CHAFE, WALLACE. 1986. Evidentiality in english conversation and academic writing. Evidentiality: The linguistic coding of epistemology, ed. by Wallace Chafe and Johanna Nichols. Norwood: Ablex.

CLARK, HERBERT H. 1992. Arenas of Language Use. Chicago: The University of Chicago Press.

——, and CATHERINE R. MARSHALL. 1981. Definite reference and mutual knowledge. El-

ements of discourse understanding, ed. by Aravind K. Joshi, Bonnie Lynn Webber, and Ivan A. Sag, 10–63. Cambridge: Cambridge University Press.

COMRIE, BERNARD. 1976. Aspect. Cambridge: Cambridge University Press.

——. 1985. Tense. Cambridge: Cambridge Unviersity Press.

COOPER, MARY. 1996, July 12. Native Americans' future. The CQ researcher online. (http://library.cqpress.com/cqresearcher/cqresrre1996071200).

CURME, GEORGE OLIVER. 1935. Parts of speech and accidence. A grammar of the English language, v.2. Boston, New York [etc.]: D.C. Heath.

DAHL, ÖSTEN. 1985. Tense and Aspect Systems. New York: Basil Blackwell.

DE SWART, HENRIËTTE. 1998. Aspect shift and coercion. Natural Language and Linguistics Theory 16.347–385.

DE SWART, HENRIËTTE, and HENK VERKUYL. 1999. Tense and Aspect in Sentence and Discourse. Utrecht: ESSLLI.

DEPRAETERE, ILSE. 1995. On the necessity of distinguishing between (un)boundedness and (a)telicity. Linguistics and Philosophy 18.1–19.

——. 1998. On the resultative character of present perfect sentences. Journal of Pragmatics 29.597–613.

DOWTY, DAVID R. 1979. Word meaning and Montague grammar: the semantics of verbs and times in generative semantics and in Montague's PTQ. Dordrecht ; Boston: D. Reidel Pub. Co.

—— 1986. The effects of aspectual class on the temporal structure of discourse semantics or pragmatics. Linguistics and Philosophy 9.37–61.

EGG, MARKUS. 2005. Flexible Semantics for Reinterpretation Phenomena. Stanford: CSLI Publications.

ENGEL, DULCIE M, and MARIE-EVE A. RITZ. 2000. The use of the present perfect in Australian English. Australian Journal of Linguistics 20.119–140.

FUJII, TADASHI. 1966. Dooshi + te iru no imi. Kokugo Kenjyuushitsu 5.

GALTON, ANTONY. 1984. The logic of aspect: an axiomatic approach. The Clarendon library of logic and philosophy. Oxford New York: Clarendon Press; Oxford University Press.

GRAFF, DAVID. 1995-1997. North American News Text Corpus. Philadelphia: Linguistic Data Consortium, University of Pennsylvania.

——, ALEXANDRA CANAVAN, and GEORGE ZIPPERLEN. 1998. Switchboard-2 Phase 1. Philadelphia: Linguistic Data Consortium, University of Pennsylvania.

——, and ZHIBIAO WU. 1995. Japanese Business News Text. Philadelphia: Linguistic Data Consortium, University of Pennsylvania.

GRICE, PAUL. 1975. Logic and coversation. Syntax and semantics 3: Speech acts, ed. by Peter Cole and Jerry Morgan, 41–58. New York: Academic Press.

GROENENDIJK, JEROEN, and MARTIN STOKHOF. 1991. Dynamic predicate logic. Linguistics and Philosophy 14.39–100.

——, ——, and FRANK VELTMAN. 1996. Coreference and modality. The handbook of contemporary semantic theory, ed. by Shalom Lappin, 179–213. Oxford: Blackwell.

HASEGAWA, YOKO. 1995. A Study of Japanese Clause Linkage: the Connective TE in Japanese. Stanford: CSLI.

HENY, FRANK. 1982. Tense, aspect and time adverbials: Part ii. Linguistics and Philosophy 5.109–154.

HERWEG, MICHAEL. 1991a. A critical examination of two classical approaches to aspect. Journal of Semantics 8.363–402.

——. 1991b. Perfective and imperfective aspect and the theory of events and states. Linguistics 29.969–1010.

HINRICHS, ERHARD. 1986. Temporal anaphora in discourses of english. Linguistics and Philosophy 9.63–82.

HIRSCHBERG, JULIA. 1991. A Theory of Scalar Implicature. New York London: Garland Publishing, INC.

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.

—— 1985. Netalinguistic negation and pragmatic ambiguity. Language 61.121–174.

—— 2001. A Natural History of Negation. Stanford: CSLI Publications.

Iatridou, Sabine, Elena Anagnostopouou, and Roumyama Izvorski. 2003. Ovservations 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.

Igarashi, Yoshiyuki, and Takao Gunji. 1998. The temporal system in Japanese. Topics in constraint-based grammer of Japanese, ed. by Takao Gunji and Koichi Hashida, 81–97. Dordrecht ; Boston: Kluwer Academic Publishers.

Inoue, Fumiko. 2001a. Undookai-ga 'ariyoru''attoru' ni tsuite. Monbusho kagaku kenkyu-uhi 'hougen-no asupekuto, tensu, muudo taikei henka no sougouteki kenkyuu' report, ed. by Mayumi Kudo and et al, 51–59. Tokyo: Education Ministry.

Inoue, Kyoko. 1975. Studies in the Perfect. The University of Michigan. Ph.D Dissertation.

——. 1978. How many senses does the English present perfect have? Chicago Linguistic Society, volume 14, 167–178, Chicago. University of Chicago.

——. 1979. An analysis of the English present perfect. Linguistics 17.561–589.

INOUE, MASARU. 2001b. Chuugokugo, kankokugo tono hikaku-kara mita nihongo no tensu, asupekuto. Gekkan Gengo 30.26–31.

——. 2001c. Gendai nihongo no 'ta'. 'ta' no gengogaku, ed. by Tsukuba Gengo Bunka forum, 97–163. Tokyo: Hituzi Shobo.

ISHIKAWA, AKIRA. 1985. Complex predicates and lexical operations in Japanese. Stanford University. Ph.D Dissertation.

ISMAIL, HAYTHEM O. 2001. Reasoning and Acting in Time. State University of New York at Buffalo. Ph. D dissertation.

JACOBSEN, WESLEY M. 1991. The Transitive Structure of Events in Japanese. Studies in Japanese Linguistics. Tokyo: Kurosio Publishers.

JESPERSEN, OTTO. 1931. A Modern English Grammar on Historical Principles, volume Part IV: Syntax. Copenhagen: Einar Munksgaard.

KAMP, HANS, and UWE REYLE. 1993. From Discourse to Logic, Part 1, 2. Studies in Linguistics and Philosophy. Dordrecht: Kluwer Academic Press.

KANEKO, TORU. 1995. Gengo no Jikan Hyogen. Tokyo: Hituzi Syobo.

KAY, PAUL, and KARL ZIMMER. 1978. On the semantics of compounds and genitives in English. Sixth California Linguistics Association .

KINDAICHI, HARUHIKO. 1976a. Kokugo doshi no ichibunrui. Nihongo doshi no asupekuto, 5–26. Tokyo: Mugi Shobo. Originally Published in *Gengo Kenkyuu* 15, 1950.

——. 1976b. Nihongo doshi no tensu to asupekuto. Nihongo doshi no asupekuto, ed. by Haruhiko Kindaichi, 27–61. Tokyo: Mugi Shobo. Originally published in *Nagoya Daigaku Bungakubu Kenkyu Ronbunshu* X, 1955.

KINSUI, SATOSHI. 1995. Iwayuru "shinko-tai" ni-tsuite. Kokugogaku ronshuu: Tsukishima hiroshi hakushi koki kinen, ed. by Tsukishima Hiroshi Hakushi Koki Kinen-kai, 169–197. Tokyo: Kyuuko Shoin.

——. 1998. Iwayuru 'muudo no "ta"' ni tsuite. Tokyo daigaku kokugo kenkyuushitsu sousetsu hyaku shuunen kinen kokugo kenkyuu ronshuu, ed. by Tokyo daigaku Kokugo kenkyuushitsu sousetsu hyaku shuunen kinen Kokugo kenkyuu ronshuu henshuu iinkai, 170–185. Tokyo: Kyuuko shoin.

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, 113–135. Stanford: CSLI Publications.

KISHIE, SHINSUKE. 2001. Nishi nihonshohoogen asupekuto ni okeru yoru/toru ni tsuite. Monbusho kagaku kenkyuuhi 'hougen-no asupekuto, tensu, muudo taikei henka no sougouteki kenkyuu' report, ed. by Mayumi Kudo and et al.

KITA, SOTARO. 1999. Japanese enter/exit verbs without motion semantics. Studies in Language 23.307–330.

KLEIN, WOLFGANG. 1992. The present perfect puzzle. Language 68.525–552.

——. 1994. Time in Language. London: Routridge.

——. 2000. An analysis of the German perfekt. Language 76.358–382.

KOENIG, JEAN-PIERRE, and BEATE BENNDORF. 1998. Meaning and context: German aber and sondern. Discourse and cognition: bridging the gap, ed. by Jean-Pierre Koenig, 365–386. Stanford: CSLI publications.

KOENIG, JEAN-PIERRE, and NUTTANART MUANSUWAN. 2000. How to end without ever finishing: Thai semi-perfectivity. Journal of Semantics 17.147–184.

KRATZER, ANGELIKA. 1981. The notional category of modality. Words, worlds, and contexts: New approaches in word semantics, ed. by H.J.Eikmeyer and H. Reiser, 38–74. Berlin: Walter de Gruyter.

——. 2000. Building statives. Berkeley Linguistics Society .

KRIFKA, MANFRED. 1989. Nominal referece, temporal constitution and quantification in event semantics. Semantics and contextual expression, ed. by R. Bartsch, J. van Benthem, and P. van Ende Boas, 75–115. Dordrecht: Foris Publications.

——. 1998. The origins of telicity. Events and grammar, ed. by Susan Rothsein, 197–235. Dordrecht: Kluwer.

——, Francis Jeffry Pelletier, Gregory N. Carlson, Alice G.B. ter Meulen, Godehard Link, and Gennaro Chierchia. 1995. Genericity: an introduction. The generic book, ed. by Gregory N. Carlson and Francis Jeffry Pelletier, 1–124. Chicago: University of Chicago Press.

Kudo, Mayumi. 1995. Asupekuto, Tensu Taikei to Tekusuto: Gendai Nihongo no Jikan no Hyougen. Tokyo: Hituzi Syobo.

——. 2001. Monbusho kagaku kenkyuuhi 'hougen-no asupekuto, tensu, muudo taikei henka no sougouteki kenkyuu' report. Technical report, Education Ministry.

Lakoff, George. 1987. Women, Fire, and Dangerous Things. Chicago: The University of Chicago Press.

Lascarides, Alex, and Nicholas Asher. 1993. Temporal interpretation, discourse relations and commonsense entailment. Linguistics and Philosophy 16.437–493.

Levinson, Stephen C. 1983. Pragmatics. Cambridge: Cambridge University Press.

—— 2000. Presumptive Meanings: The Theory of Generalized Conversational Implicature. Cambridge: MIT press.

LEWIS, DAVID. 1979. Scorekeeping in a language game. Journal of Philosophical Logic 8.339–359.

LÖBNER, SEBASTIAN. 2002. Is the german perfekt a perfect perfect? The Sixth Annual Meeting of the Gesellshaft für Semantik, ed. by Graham Katz, Sabine Reinhart, and Philip Reuter, 255–273, University of Osnabrück.

MATSUMOTO, YO. 1990. On the syntax of Japanese 'intransitivizing' te aru construction: Nonlexical function changing. Chicago Linguistics Soceity, volume 26, 277–291, Chicago. University of Chicago.

——. 1996. Subjective-change expressions in Japanese and their cognitive and linguistics bases. Spaces worlds and grammar, ed. by Gilles Fauconnier and Eve Sweetser, 124–156. Chicago: University of Chicago Press.

MATSUSHITA, DAIZABURO. 1928. Hyojun Nihon bunpo. Tokyo: Kigensha. [chosha Matsushita Daizabur*o].

MCCAWLEY, JAMES D. 1971. Tense and time reference in English. Studies in linguistic semantics, ed. by C. J. Fillmore and D. T. Langendoen. New York: Holt, Rinehart, and Winston.

——. 1981. Notes on the English present perfect. Australian Journal of LInguistics 1.81–90.

MCCLURE, WILLIAM TSUYOSHI. 1995. Syntactic projections of the semantics of aspect. Hituzi Outstanding Linguistics Dissertation Series. Tokyo: Hituzi Syobo.

MCCOARD, ROBERT. 1978. The English Perfect: Tense Choice and Pragmatic Inferences. Amsterdam: North-Holland Publishing Company.

MCDERMOTT, DREW. 1982. A temporal logic for reasoning about processes and plans. Cognitive Science 6.101–155.

MICHAELIS, LAURA A. 1993. 'Continuity' within three scalar models: The polysemy of adverbial *Still*. Journal of Semantics 10.193–237.

—— 1994. The ambiguity of the English present perfect. Journal of Linguistics 30.111–157.

—— 1998. Aspectual grammar and past-time reference. Routledge studies in Germanic linguistics ; 4. London, New York: Routledge.

MITTWOCH, ANITA. 1988. Aspects of English aspect: On the interaction of perfect, progressive and durational phrases. Linguistics and Philosophy 11.203–254.

MOENS, MARC. 1987. Tense, Aspect and Temporal Reference. University of Edinburgh. Ph. Dissertation.

——, and MARK STEEDMAN. 1988. Temporal ontology and temporal reference. Computational Linguistics 14.15–28.

MOLENDIJK, ARIE, HENRIËTTE DE SWART, CARL VETTERS, ANDRÉE BORILLO, MYRIAM BRAS, ANNE LE DRAOULEC, LAURE VIEU, HENK J. VERKUYL, and CO VET. 2004. Mean-

ing and use of past tense in discourse. Handbook of French Semantics, ed. by Francis

Corblin and Henriëtte de?Swart, 271–308. Stanford: CSLI Publications.

MURAKAMI, HARUKI. 1985. Sekai-no owari-to haadoboirudo wandaarando. Tokyo: Shincho-sha.

MURAKAMI, KEIICHI. 2001. Kobe-shi to sono shuuhen chiiki ni okeru jakunen-sou no asu-pekuto ni tsuite. Hougen-no asupekuto, tensu, muudo taikei henka no soogou-teki kenkyu, ed. by Mayumi Kudo, 191–198.

MUSKENS, REINHARD. 1995. Tense and the logic of change. Lexical knowledge in the organization of language, ed. by Urs Egli, Peter E. Pause, Christoph Schwarze, Arnim von Stechow, and Götz Wienold, 147–183. Amsterdam: John Benjamins Publishing Company.

NAKHIMOVSKY, ALEXANDER. 1988. Aspect, aspectual class, and the temporal structure of narrative. Computational Linguistics 14.29–43.

NEDJALKOV, VLADIMIR P., and SERGEJ JE. JAXONTOV. 1988. The typology of resultative constructions. Typology of resultative constructions, ed. by Vladimir P. Nedjalkov. Amstermam, Philadelphia: John Benjamins Publishing Company.

NELKEN, RANI, and NISSIM FRANCEZ. 1997. Splitting the reference time: The analogy between nominal and temporal anaphora revisited. Journal of Semantics 14.369–416.

NIGHTINGALE, STEPHEN, 1999. Polysemy and Homonymy in Japanese Verbal Alternations. University of Edinburgh dissertation.

NISHIYAMA, ATSUKO. 2006. The meaning and interpretations of the Japanese aspectual marker *-te-i-*. Journal of Semantics 23.185–216.

——, and JEAN-PIERRE KOENIG. 2004. What is a perfect state? WCCFL 23, 595–606, University of California, Davis. Cascadilla Press.

——, and ——. 2006. The perfect in context: A corpus study. Penn Working Papers in Linguistics Vol.12..1: Proceedings of the 29th Annual Penn Linguistics Colloquium, ed. by Aviad Eilam, Tatjana Scheffler, and Joshua Tauberer, 265–278, University of Pennsylvania.

NITTA, JIRO. 1973. Koko-no Hito. Tokyo: Shincho-sha.

NYAN, THANH. 1998. Metalinguistic operators with reference to French. Berne: Peter Lang.

OGIHARA, TOSHIYUKI. 1996. Tense, attitudes, and scope. Studies in linguistics and philosophy ; v. 58. Dordrecht ; Boston: Kluwer Academic Publishers. by Toshiyuki Ogihara.

——. 1998. The ambiguity of the -te iru form in Japanese. Journal of East Asian Linguistics 7.87–120.

——. 1999. The semantics of tense and aspect in Japanese. The handbook of Japanese linguistics, ed. by Natsuko Tsujimura, 326–348. Blackwell.

OHORI, TOSHIO. 1993. Rikkyo-93. Bs archive. Tokyo: University of Tokyo.

OKUDA, YASUO. 1978. Asupekuto no kenkyuu o megutte (1), (2) (on the study of aspect). Kyoiku Kokugo 33–44, 14–27.

OOE, KENZABURO. 1959. Shisha-no ogori, Shiiku. Shincho-sha.

PARSONS, TERENCE. 1990. Events in the Semantics of English. Cambridge: The MIT Press.

PARTEE, BARBARA. 1973. Some structural analogies between tenses and pronouns in english. The Journal of Philosophy LXX.601–609.

——. 1984a. Compositionality. Varieties of formal semantics: Proceedings of the fourth Amsterdam colloquium, ed. by Frank Veltman, 281–311. Dordrecht: Foris Publications.

——. 1984b. Nominal and temporal anaphora. Linguistics and Philosophy 7.243–286.

PELLETIER, FRANCIS JEFFRY, and NICHOLAS ASHER. 1997. Generics and defaults. Handbook of logic and language, ed. by J. van Benthem and Alice G.B. ter Meulen, 1125–1177. Cambridge: The MIT Press.

POESIO, MASSIMO, and DAVID R. TRAUM. 1997. Conversational actions and discourse situations. Computational Intelligence 13.309–347.

PORTNER, PAUL. 1998. The progressive in modal semantics. Language 74.760–787.

——. 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 i. Linguistics and Philosophy 5.59–107.

SANDSTRÖM, GÖREL. 1993. When-Clauses and the Temporal Interpretation of Narrative Discourse. University of Umea. Ph. D dissertation.

SCHIFFRIN, DEBORAH. 1987. Discourse markers. New York: Cambridge University Press.

SEARLE, JOHN R. 1969. Speech Acts. Cambridge: Cambridge.

——, and DANIEL VANDERVEKEN. 1985. Foundations of Illocutionary Logic. Cambridge: Cambridge University Press.

SEGAL, ERWIN M. 1995. Narrative comprehension and the role of deictic shift theory. Deixis in narrative, ed. by Judith F. Duchan, Gail A. Bruder, and Lynne E. Hewitt, 3–17. Hillsdale: Lawrence Erlbaum Associates. INC.

SHAPIRO, STUART C., and THE SNePS IMPLIMENTATION GROUP. 1999. SNePS 2.5 user's mannual. Technical report, Department of Computer Science and Engineering, State University of New York at Buffalo.

SHAPIRO, STUART C., and WILLIAM J. RAPAPORT. 1992. The SNePS family. Computers and mathematics with applications 23.243–275.

SHIRAI, YASUHIRO. 1998. When the progressive and thre resultative meet imperfective aspect in Japanese, Chinese, Korean and English. Studies in Language .

——. 2000. The semantics of the Japanese imperfective -teiru: An integrative approach. Journal of Pragmatics 32.327–361.

SMITH, CARLOTA S. 1997. The parameter of aspect (second edition). Studies in linguistics and philosophy ; v. 43. Dordrecht ; Boston: Kluwer, 2nd edition.

SOGA, MATSUO. 1983. Tense and aspect in modern colloquial Japanese. Vancouver: University of British Columbia Press.

STEEDMAN, MARK. 2002. The Productions of Time: Temporality and Causality in Linguistic Semantics. University of Edinburgh. Manuscript.

SUZUKI, SHIROYASU. 1997. Media tai 'Watashi'. Tokyo: The Expanded Books - J engine/Voyager Japan Inc. (http://www.aozora.gr.jp/).

SUZUKI, YASUSHI. 1992. Kodai Nihongo Dooshi no Tensu to Asupekuto-Genji Monogatari no Bunseki. Tokyo: Hituzi Syobo.

SWEETSER, EVE E. 1987. The definition of lie. Cultural models in language and thought, ed. by Dorothy Hollland and Naomi Quinn, 43–66. Cambridge New York: Cambridge University Press.

TAKAHASHI, YUUJI. 1997. Ongaku-no Hanhouhouron josetsu. Tokyo: The Expanded Books
- J engine/Voyager Japan Inc. (http://www.aozora.gr.jp/).

TALMY, LEONARD. 2000. Toward a Cognitive Semantics. Cambridge: The MIT Press.

TER MEULEN, ALICE G.B. 1995. Representing Time in Natural Language: The Dynamic
Interpretation of Tense and Aspect. Cambridge: The MIT Press.

TERAMURA, HIDEO. 1984. Nihongo no Shintakusu to Imi (Syntax and Semantics in Japanese),
volume 2. Tokyo: Kuroshio Shuppan.

VAN EIJCK, JAN, and HANS KAMP. 1997. Representing discourse in context. Handbook
of logic and language, ed. by J. van Benthem and Alice G.B. ter Meulen, 179–237. Cam-
bridge: The MIT Press.

VENDLER, ZENO. 1957. Verbs and times. The Philosophical Review 66.143–160.

VERKUYL, H. J. 1999. Aspectual issues: Studies on time and quantity. CSLI lecture notes ; no.
98. Stanford: CSLI Publications.

VLACH, FRANK. 1981. The semantics of the progressive. Syntax and semantics vol 14: Tense
and aspect, ed. by Philip Tedeschi and Annie Zaenen, 271–291. New York: Academic
Press.

WAUGH, LINDA. 1987. Marking time with the passé composé: Toward a theory of the perfect.
Linguisticae Investigationes 11.1–47.

WEBBER, BONNIE LYNN. 1988. Tense as discourse anaphor. Computational Linguistics 14.61–73.

WIEBE, JANYCE M. 1990. Recognizing Subjective Sentences: A Computational Investigation of Narrative Text. The University at Buffalo, The State University of New York. Ph.D Disseration.

YAMAGATA, AYAKO. 1998. The stage-level/individual-level distinction: An analysis of *te-i-*. Japanese Korean linguistics, volume 8, 245–258. Stanford: CSLI Publications.

YURA, SABURO. 1985. Sousou koushinkyoku satsujin jiken. Tokyo: Shincho-sha.

ZUBIN, DAVID A., and LYNNE E. HEWITT. 1995. The deictic center: A theory of deixis in narrative. Deixis in narrative: Cognitive science perspective, ed. by Judith F. Duchan, Gail A. Bruder, and Lynne E. Hewitt, 129–155. Hillsdale: Lawrence Erlbaum Associates. INC.

ZWICKY, ARNOLD M., and JERROLD M. SADOCK. 1975. Ambiguity tests and how to fail them. Syntax and semantics, vol. 4, ed. by P. Kimball, 1–36. New York: Academic Press.