

11 Tense and Aspect

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0 Introduction

This chapter is concerned with the semantics of tense and aspect in Japanese. The semantics of tense and aspect has been studied within various theoretical persuasions, and this chapter cannot possibly do justice to every previous research endeavor that concerns the semantics of tense and aspect in Japanese. What I hope to accomplish here is very modest in terms of scope. I restrict my attention to a very small number of issues that I consider to be theoretically important. Furthermore I discuss previous studies only if they are conducted in a formal semantic framework or are interpretable in formal semantic terms. But for the sake of readability, this chapter is written in such a way that the main argumentation can be followed by any linguist who is interested in the issues under discussion.¹

Before discussing specific issues and examples, I shall provide a general guideline for how the terms “tense” and “aspect” will be used in this chapter. I adopt Comrie’s (1976: 1–3) suggestion given in (1) as our guide.

- (1) Tense relates the time of the situation referred to to some other time, usually to the moment of speaking. Aspects are different ways of viewing the internal temporal constituency of a situation.

Note that according to (1) the semantic contribution of a tense may be determined in relation to the utterance time (= the moment of speaking) though this is not obligatory. The essential ingredient of a tense morpheme is that it is an external way of looking at some “event” or “situation.” Consider the examples in (2).

- (2) a. John built a house.
b. John will build a house.
c. John was building a house.
d. John will be building a house (when Mary arrives here next month).

(2a) is in the past tense, while (2b) is in the future tense. Despite the difference in tense form, both of them state that John does something that results in the coming about of a complete house. Let us refer to this information as the “propositional content” of (2a–b). A tense morpheme does not alter the propositional content of the sentence in question and simply locates it at an appropriate position on the time continuum. On the other hand, (2c–d) are progressive sentences. When a native speaker interprets (2c) or (2d), its “propositional content” is different from that involved in (2a) or (2b) in that it does not involve a complete house. The difference between (2a–b) and (2c–d) can be summarized in the following manner: both (2a) and (2b) entail that there will be a complete house built by John at some future time, whereas neither (2c) nor (2d) guarantees this outcome. In other words, a tense morpheme simply locates “the same thing” at different temporal positions, whereas an aspect morpheme such as the progressive changes the propositional content itself. For example, an aspect morpheme looks into the internal structure of the type of situation described by the main predicate and focuses on one particular aspect of the situation described by the predicate, say the beginning, the ending, or the middle.

Given the relatively liberal characterization of tense assumed here, Comrie (1985) distinguishes between absolute tense, which is speech-time oriented, and relative tense, which can relate to other contextually salient times. We adopt the latter for the purpose of this chapter. We will discuss two sets of data in this chapter: one involving the morphemes *-ru* and *-ta*, the other the morpheme *-te iru*.

1 The Morphemes *-ru* and *-ta*

The morphemes *-ru* (present) and *-ta* (past) in Japanese have been studied extensively in the literature. Japanese has no overt present tense morpheme as such, nor does it have a future tense morpheme suffixed to the verb. Japanese is similar to English, at least morphologically, in that it does not have an overt marker on the verb that indicates future time. However, English has the future auxiliary *will*, which is said to be a future tense morpheme. In Japanese, future-oriented interpretations are supplied by sentences in the simple present tense. When needed, explicit reference to future events is made in terms of future-oriented nouns like *tumori* “intention” and *yotei* “plan.” We shall take up a number of issues involving these two morphemes. To simplify our discussion and exposition, we will restrict our attention to the behavior of *-ta*. However, the points we will make about *-ta* will be equally valid for *-ru*.

1.1 The theoretical status of the morpheme *-ta*

It is controversial whether *-ta* is a tense morpheme or an aspect morpheme. As far as I know, three arguments (two of which are related) have been presented

in the literature for the view that this morpheme is an aspect morpheme, a perfect morpheme to be more specific. One major argument is that a tense morpheme is by definition a deictic expression, which *-ta* is not. A second major argument is that *-ta* has the following two uses: (i) to specify the temporal location of the relevant event or state (a “referential use”), or (ii) to existentially quantify over past times without specifying the location of the relevant event or state. A third view (which is related to the second view) is that *-ta* allegedly carries a result state meaning on a par with the English perfect, which is often regarded as an aspect morpheme. I will show that these three arguments are not strong enough to undermine the claim that *-ta* is a relative tense morpheme.

First, I discuss the view according to which *-ta* is not a tense morpheme because it is not a deictic expression. It is often assumed in the linguistics literature that any tense morpheme is a deictic expression in that its interpretation is made in relation to the temporal deictic center, namely the utterance time. This is not the only viable theory of tense; as mentioned above, Comrie characterizes tense in a slightly different way and distinguishes between absolute tense and relative tense. However, the idea that tense is speech-time oriented has a stronghold in linguistics. This is partly because Reichenbach’s theory of tense, which embodies the idea that tense is speech-time oriented, is popular among linguists. For example, Reichenbach’s theory is employed by Hornstein (1990) for English and by Ota (1972) for Japanese. According to Reichenbach, the meaning of each tense form is specified in terms of the relation among three temporal entities: S (for speech time), R (for reference time), and E (for event time). The semantic import of E and S is clear. E indicates the time (if there is such a time) at which the event described by the sentence takes place. S indicates the time at which the sentence in question is uttered. The interpretation of R is not immediately clear, but R distinguishes between the simple past and the past perfect in the following way. The simple past tense form in English is indicated by a representation of the form E, R_S (= E and R are simultaneous and S follows them), whereas the past perfect tense form is indicated by E_R_S .² The semantic import of R becomes clear when we consider examples like (3a–b).

- (3) a. Mary lived in Seattle.
 b. Mary had lived in Seattle.

Reichenbach’s proposal accounts for the difference between (3a) and (3b) in the following way. When a sentence is uttered in a normal situation, an assertion is made with regard to an interval that is “in focus.” For example, (3a) does not merely say that Mary lived in Seattle at some past time; rather, it asserts that Mary lived in Seattle during some specific past interval that is salient in the context in question. This salient interval is referred to as a “reference time” in Reichenbach’s framework. On this interpretation of Reichenbach’s system, (3b) is interpreted to mean that Mary’s living in Seattle is located entirely

before the salient time in question. This clarifies the intuitive difference between (3a) and (3b). Reichenbach's proposal can also account for the behavior of tense and aspect morphemes in verb complement clauses. Consider examples like (4a–b).

- (4) a. John found out that Mary lived in Seattle.
 b. John found out that Mary had lived in Seattle.

(4a) means that Mary's living in Seattle overlaps with the time of John's finding out this fact, whereas (4b) says that Mary's living in Seattle wholly precedes the time of John's finding this out. We can account for these facts correctly by adopting Reichenbach's proposal and his assumption that the reference time should be the same for all clauses that belong to the same sentence (referred to as the "permanence of the reference point").³

Reichenbach himself does not attempt to say how each tense or aspect morpheme that occurs in a sentence contributes compositionally to the overall interpretation of the sentence. However, we can extract such information from the graphical representations Reichenbach provides for various combinations of tense and aspect morphemes: the morpheme *-ed* indicates R_S, and the perfect (i.e. *have -ed*) indicates E_R.⁴ This means that *-ed* is a deictic expression whereas the perfect is not. Given the assumption that the former is a tense morpheme and the latter is not, we can say that Reichenbach's framework as interpreted here reinforces the popular idea that a tense morpheme is necessarily a deictic expression.

On the basis of the above discussion about English, it is often claimed that the morpheme *-ta* in Japanese is an aspect morpheme rather than a tense morpheme because it is a nondeictic temporal morpheme. Let us look at the examples in (5).

- (5) a. Taroo-wa [Hanako-ga hon-o yon-da] to it-ta.
 Taroo-Top Hanako-Nom book-Acc read-Past that say-Past
 "Taro said that Hanako had read a/the book."
 b. Taroo-wa [terebi-o mi-ta ato-de] benkyoo-suru.
 Taroo-Top TV-Acc watch-Past after-at study-Pres
 "Taro will study after watching TV."

(5a) contains a verb complement clause, and the time of Hanako's reading the book is understood to be located before the time of Taro's saying, thanks to the morpheme *-ta* in the verb complement clause. It does not suffice to say that the time of Hanako's reading a book is located earlier than the utterance time because this time *must* be located before Taro's saying. The same is true of (5b), which involves a temporal adverbial clause. The time of Taro's watching TV is understood to be located in the past in relation to the time of his studying because of the morpheme *-ta* in the temporal adverbial clause. Examples like (5a–b) indicate that *-ta* is not a deictic expression in that its interpretation is

not necessarily determined in relation to the utterance time, the temporal deictic center. Instead, *-ta* locates an event or state in relation to the time indicated by a tense that locally c-commands it. For those who assume that a tense morpheme is by definition a deictic expression, *-ta* is clearly not a tense. To the extent that the point with respect to which its semantic contribution is determined is not necessarily the utterance time, *-ta* resembles the English perfect (see Ogihara 1987).⁵ Thus, if we go along with those who claim that the English perfect is an aspect morpheme and not a tense morpheme, *-ta* is an aspect morpheme.

On the other hand, if we follow Comrie's (1976) suggestion presented in (1), the above Japanese data suggest that *-ta* is a relative tense morpheme. This viewpoint was defended by Soga (1983), K. Matsumoto (1985), and others. Ogihara (1996) executes it in a formal semantic framework and shows that a system in which a sentence denotes a property, and in which the semantics of verbs like *say* (or *iu* "say" in Japanese) is understood in terms of the subject's self-ascription of properties (attitude *de se* in the sense of D. Lewis 1979), accounts for the behavior of tense morphemes in Japanese and English.⁶ Thus, according to Comrie's suggestion and Ogihara's semantic account, the morpheme *-ta* is clearly a tense morpheme although it is a relative one unlike *-ed* in English. I believe that this settles the issue raised above concerning the status of the morpheme *-ta*. If *-ta* is regarded as an aspect morpheme just because it is not speech-time oriented, the controversy here is merely a matter of terminology. However, since the term "aspect" is used more commonly for a different meaning characterized as in (1), I think it is much less confusing to use the term "relative tense" for *-ta* and reserve the term "aspect" for such concepts as progressive and inchoative.

Let us now turn to a second major argument for the ambiguity of *-ta*. M. Nakau (1976) and Teramura (1978) (among others) claim that *-ta* is ambiguous between a preterit (*kako*) interpretation and a perfective (*kanryoo*) interpretation. This is a very common view among the researchers of tense and aspect in Japanese. When a sentence with *-ta* is used for a preterit interpretation, it accompanies an adverbial that refers to a definite past interval (e.g. *kinoo* "yesterday"). This adverbial restricts the temporal location of the event or state in question. This resembles the view that tense is a referential expression (e.g. Enç 1987). On the other hand, when a sentence with *-ta* is used for a perfective interpretation, no such adverbial restricts the temporal location of the relevant event or state. In this case, this sentence is interpreted to mean that there was a past time at which a relevant event or state obtained with no specification as to when it obtained. Some relevant examples are given in (6a–b).

- (6) a. Taroo-wa kinoo hon-o yonda.
 Taro-Top yesterday book-Acc read-Past
 "Taro read the book yesterday."
 b. Taroo-wa hon-o yonda.
 Taro-Top book-Acc read-Past
 "Taro has read the book."

However, it is arguable that adverbials that refer to definite past intervals merely restrict the quantificational force associated with *-ta*. For example, it is arguable that the semantic difference between (6a) and (6b) stems from the presence or absence of the adverb *kinoo* “yesterday” and that the morpheme *-ta* has a constant meaning in (6a) and in (6b). This is suggested by the translations (7a–b) of (6a–b).

- (7) a. $\exists t[t \text{ is earlier than now} \wedge \text{Taro reads the book at } t \wedge t \text{ is located within yesterday}]$
 b. $\exists t[t \text{ is earlier than now} \wedge \text{Taro reads the book at } t]$

Therefore, the presence and absence of such adverbials does not substantiate the view that *-ta* is ambiguous between a preterit interpretation and a perfective interpretation. See Ogihara (1996: 16–17) for some relevant discussion.

Lastly, let us discuss a third major reason that *-ta* is regarded as an aspect morpheme. The claim is that it has an aspectual interpretation in the narrow sense of the term as defined in (1). To be more concrete, it is claimed to have a result state interpretation. Let us first consider some English examples that involve the perfect.

- (8) a. John lost his passport.
 b. John has lost his passport.

(8a) simply says that an event of John’s losing his passport took place in the past relative to the utterance time. On the other hand, (8b) requires for its truth that the passport that John lost have not turned up. One way of understanding this fact is that (8b) contains as part of its truth condition the continuation of a state that results from John’s losing his passport, namely the state of John’s not having his passport. This claim about the semantics of the perfect has been presented in the literature (e.g. Parsons 1990, Kamp and Reyle 1993).⁷

As mentioned above in connection with the second argument for the ambiguity of *-ta*, M. Nakau (1976), Teramura (1978), and others claim that *-ta* can receive a perfective (*kanryoo*) interpretation. In view of the result state analysis of the English perfect, this claim about *-ta* is subject to a different semantic analysis. That is, it is arguable that *-ta* can receive a result state interpretation on a par with the English perfect. One piece of evidence for this position is that the same type of adverbial occurs in English sentences in the perfect and Japanese sentences in the *-ta* form. Consider examples (9a–d).

- (9) a. Taro has already read the book.
 b. Taroo-wa moo hon-o yonda.
 Taro-Top already book-Acc read-Past
 “Taro has already read the book.”
 c. Taro is already here.
 d. Taroo-wa moo koko-ni iru.
 Taro-Top already here be-Pres
 “Taro is here already.”

Since the adverb *already* occurs with the present perfect, the fact that its Japanese equivalent *moo* “already” can occur with the *-ta* form of a verb seems to indicate that *-ta* and the perfect have some meaning in common.⁸ Note that (9c–d) are stative sentences in the simple present tense and contain *already* and *moo*. This strongly suggests that *already* or *moo* can make reference to states. For example, (9c) asserts that the state of Taro’s being here obtains now and that this is unexpectedly early. Thus, given the assumption that the English perfect is used to indicate a result state, we seem to be justified in claiming that *already* (or *moo*) has the same role to play in sentences like (9a–b). For example, (9a) means that the state of Taro’s having read the book obtains now and this is unexpectedly early.

On the other hand, we also find many differences between the *-ta* form in Japanese and the past tense form in English. For one thing, when a present perfect sentence in English is negated, *yet* can occur in it, as shown in (10a). However, as indicated by (10b), its Japanese counterpart cannot occur with *mada* “yet.” The contrast between (10c) and (10d) also argues against assigning the same meaning to the morpheme *-ta* and the English perfect.

- (10) a. Taro has not seen the movie yet.
 b. *Taroo-wa mada sono eega-o minakat-ta.
 Taro-Top yet that movie-Acc see-Neg-Past
 Intended: “Taro has not seen the movie yet.”
 c. Taro has visited Hanako three times since the beginning of this year.
 d. ??Taroo-wa kotosi-no hazime kara san-kai Hanako-o
 Taro-Top this-year-Gen beginning from three-times Hanako-Acc
 tazuneta.
 visit-Past
 Intended: “Taro has visited Hanako three times since the beginning of this year.”

Note that in order to convey what one might refer to as a “result state” interpretation, one must use the *-te iru* form of the verb in question (in the present tense) as shown in (11).

- (11) a. Taroo-wa mada sono eega-o mi-te i-nai.
 Taro-Top yet that movie-Acc see-Te iru-Neg-Pres
 “Taro has not seen the movie yet.”
 b. Taroo-wa kotosi-no hazime kara san-kai Hanako-o
 Taro-Top this-year-Gen beginning from three-times Hanako-Acc
 tazune-te iru.
 visit-Te iru-Pres
 “Taro has visited Hanako three times since the beginning of this year.”

On the basis of the examples like the ones above, Ogihara (1996) concludes that *-ta* in Japanese is a “relative tense” morpheme. The similarity between the

English perfect and *-ta* discussed above can be accounted for if we assume that the Japanese *-ta* construction allows for the possibility that there is no contextually salient past interval that restricts the quantificational force of the morpheme. When this happens, its interpretation is quite similar to some uses of the English perfect.⁹

Let me caution the reader, however, that the above account of the semantics of the *-ta* form is far from uncontroversial. One strong piece of evidence that some occurrences of this morpheme convey an “aspectual meaning” comes from data involving relative clauses. Consider the examples in (12).

- (12) a. Taroo-wa [soko-no nuke-ta oke]-o mot-te iru.
 Taro-Top bottom-Gen miss-Past pail-Acc have-Pres
 “Taro has a pail that has no bottom.”
 b. Taroo-wa [ai-ta mado]-kara nigedasu tumori-da.
 Taro-Top open (iv.)-past window from escape-intend-Past
 “Taro intends to escape from an open window.”

In both (12a) and (12b), the morpheme *-ta* indicates a current state rather than a previous event in relation to the matrix clause time. Thus, (12a–b) seem to indicate that *-ta* can produce an aspectual interpretation in relative clauses. The relative tense theory assumed here cannot deal with examples like (12a–b). How to explain an apparent aspectual use of *-ta* remains a problem for future research.^{10,11}

1.2 Some problems with the “relative tense theory”

As mentioned in 1.1, Soga (1983), K. Matsumoto (1985), and Ogihara (1996) argue that Japanese has a relative tense system. To put it simply, this proposal suggests that every tense morpheme is interpreted in relation to the tense that locally c-commands it.¹² If this theory is on the right track, every embedded occurrence of the morpheme *-ta* indicates anteriority over the time indicated by the tense in the higher clause. However, there are some examples that indicate that this is not always the case. Let us discuss some such examples. Tadasu Hattori (personal communication) pointed out examples like (13a), whereas Soga (1983), Kudo (1995), and others discussed examples like (13b).

- (13) a. Taroo-wa zibun-ga gan-dat-ta to sitte i-ta.
 Taro-Top self-Nom cancer-be-Past that know-Past
 “Taro knew that he had cancer.”
 b. Taroo-wa Tokyo-ni i-ta toki, apaato-ni sundei-ta.
 Taro-Top Tokyo-at be-Past when apartment-at live-Past
 “When Taro was in Tokyo, he lived in an apartment.”

(13a) involves a verb complement clause that contains a past tense morpheme. Despite the fact that the matrix clause is in the past tense, some native speakers claim that it can receive an interpretation in which the time of his having cancer is simultaneous with the time of his knowing it.¹³ On the other hand, (13b) concerns a temporal adverbial clause with a stative verb headed by *toki* “when.” It is generally assumed that a temporal adverbial clause is subordinate to the matrix clause. Since the *toki*-clause is in the past tense, it is expected that the entire period of Taro’s being in Tokyo precedes the time of his living in an apartment. However, (13b) can only have a simultaneous interpretation as indicated by the English gloss. This is unexpected under the relative tense theory.

One possible account of the data in (13) is that the embedded clause is somehow moved in the syntax and is interpreted independently of the matrix clause tense. It is important to notice that in both (13a) and (13b), the alleged embedded clause is presupposed to be true. If the verb *sitte-iru* “know” is replaced by *sinzi-te iru* “believe” as in (14), no simultaneous interpretation is obtained.¹⁴

- (14) #Taroo-wa zibun-ga gan-dat-ta to sinzi-te i-ta.
 Taro-Top self-Nom cancer-be-Past that believe-Past
 Intended: “Taro believed that he had cancer.”

Given this special semantic property of the clauses in question, I do not think we should give up the idea that Japanese is a relative tense language. The fact that clauses that are presupposed to be true behave differently should be explained in terms of the special property of true propositions. In the case of (13a), we could say that the verb complement clause is in fact an NP of the form “the fact that S” and could be scoped out on a par with regular NPs. As for (13b), since *toki* is a noun which literally means “time,” it is arguable that the *toki*-clause is an NP that is scoped out of the matrix clause. If this is the case, *toki* “when” simply indicates that the two propositions overlap in time. A. Nakamura (1994) suggests a solution along these lines.

2 The Morpheme *-te iru*

As mentioned in earlier sections, we follow Comrie regarding the distinction between tense and aspect. Japanese has many aspect morphemes, each of which has a unique meaning associated with it. We shall discuss only one representative example here: the morpheme *-te iru*.

The modern study of the aspect morpheme *-te iru* starts with H. Kindaichi’s (1950) work.¹⁵ Kindaichi classifies verbs into four groups: stative verbs, durative verbs, instantaneous verbs, and the fourth verbal category. They are exemplified by the sentences in (15).

- (15) a. Taroo-wa Tokyo-ni iru. (stative verb)
Taro-Top Tokyo-at be-Pres
“Taro is in Tokyo.”
- b. Taroo-wa ima ki-o taosi-te iru. (durative verb)
Taro-Top now tree-Acc fell-Te iru-Pres
“Taro is now pushing down/felling a tree.”
- c. Taroo-wa (ima asokode) taore-te iru. (instantaneous verb)
Taro-Top now over-there fall-Te iru-Pres
“Having fallen down, Taro is now lying over there.”
- d. Yama-ga takaku sobie-te
Mountain-Nom tall become-high-Te
iru. (the fourth verbal category)
iru-Pres
“A mountain stands tall.”

Kindaichi uses the morpheme *-te iru* as a diagnostic to obtain this classification. Roughly speaking, Kindaichi's criteria can be described as follows. A stative verb cannot occur in the *-te iru* form. A durative verb can occur in the *-te iru* form for an ongoing process interpretation. When an adverbial that indicates the current time (e.g. *ima* “now”) occurs with a durative verb in the *-te iru* form, this is the only interpretation the resulting sentence receives.¹⁶ An instantaneous verb occurs in the *-te iru* form (with an optional current-time-oriented adverbial) to indicate that the result state of the event described by the sentence obtains now. Verbs that belong to the fourth verbal category behave in a rather unexpected way in that they normally occur only in the *-te iru* form and do not seem to have a compositional semantic structure. (15d) simply means that the mountain stands tall and therefore appears to describe a current state. We might expect that this interpretation is obtained by the result state meaning of the verb *sobieru* indicated by the morpheme *-te iru*. By “computing backwards” so to speak, we expect that *sobieru* means “become tall.” However, this hypothesis is not empirically supported because the verb *sobieru* must be used in the *-te iru* form as shown by the unacceptability of (16).

- (16) *Yama-ga kyonen sobie-ta.
mountain-Nom last year become-tall-Past
Intended interpretation: “A mountain was formed last year.”

Thus, Kindaichi posits a separate verb class (or sentence class) for this type of verb.

An important fact not clearly stated in Kindaichi's work is that most (perhaps all) sentences in the *-te iru* form are ambiguous between two interpretations. Ambiguity is found even with “instantaneous” verbs which do not produce progressive interpretations. Fujii (1966) points out that there is an important difference between “normal” result state interpretations and what he calls “experiential” interpretations. Consider the examples in (17).

- (17) a. Taroo-wa 1970-nen ni kekkonsi-te iru.
 Taro-Top 1970-year in marry-Te iru-Pres
 "Taro has the experience of having gotten married in 1970."
 b. Taroo-wa kyonen itido hugu-o tabe-te iru.
 Taro-Top last-year once globefish-Acc eat-Te iru-Pres
 "Taro has the experience of having eaten globefish once last year."

What is interesting about the examples in (17) is that this type of interpretation can be obtained with either an instantaneous verb (e.g. (17a)) or a durative verb (e.g. (17b)). Also worthy of note is the fact that each sentence in (17) contains an adverbial indicating a past interval, as opposed to examples like (15b–c) which contain a current-time-oriented adverbial. Ogihara (in press) takes this fact seriously and proposes the following classification of the interpretations associated with the *V-te iru* form.

(18)	<i>Verb class</i>	<i>"Current situation"</i>	<i>"Experiential"</i>
	Durative verbs	Progressive	Experiential
	Instantaneous verbs	(Concrete) result state	Experiential

(18) represents the idea that progressive interpretations and (concrete) result state interpretations should be grouped together as opposed to experiential interpretations. This classification is based upon the distribution of co-occurring adverbials and leads us to expect that some semantic property is shared by progressive interpretations associated with durative verbs and (concrete) result state interpretations associated with instantaneous verbs. It appears at first that the difference between them is so clear that it is not possible to bring out a property common to these two "interpretations." The difference can be described as in (19a–b).

- (19) a. *Durative sentence ϕ* : For any interval t , *ima ϕ -te iru* (where *ima* means now) is true at t only if *ϕ -te simatta* (finish doing ϕ) is false at t .
 b. *Instantaneous sentence ϕ* : For any interval t , *ima ϕ -te iru* (where *ima* means now) is true at t only if *ϕ -te simatta* (finish doing ϕ) is true at t .

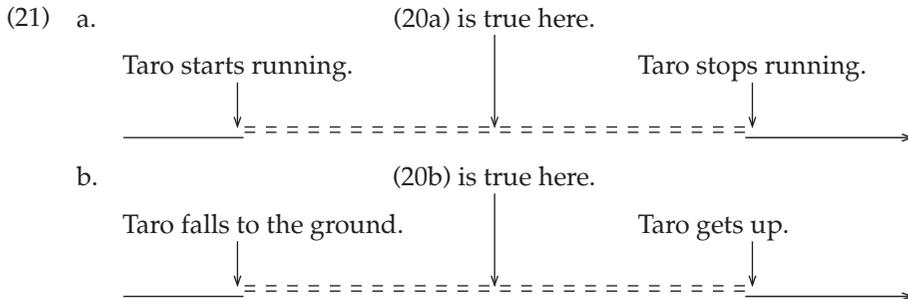
If (19a–b) are on the right track, we must concede that *-te iru* and a tenseless sentence interact in different ways in the two cases.

On the other hand, the fact that the same type of adverbial (i.e. current-time-oriented adverbials) can be used to indicate both of these "interpretations" shows that they should be captured in a similar way. It is more intuitive to deal with examples like (20a) and (20b) in the same way because a naïve native speaker would be unable to distinguish the two "uses" of *-te iru*.¹⁷

- (20) a. Taroo-wa ima hasit-te iru.
 Taro-Top now run-Te iru-Pres
 "Taro is now running."

- b. Taroo-wa ima taore-te iru.
 Taro-Top now fall-Te iru-Pres
 "Taro is now lying on the ground (as a result of having fallen down)."

To do justice to the distribution of temporal adverbials and the native speaker's intuitions, Ogihara (in press) proposes that by modifying the lexical semantics of so-called "instantaneous sentences," a unified analysis of the *-te iru* form (or put more accurately, the morpheme *-iru*) becomes possible. Essentially, the idea is that the information that concerns the result state of an instantaneous event sentence is assumed to be part of its lexical meaning. For example, if Taro falls to the ground at 7:00 and lies there until 7:05, then *Taroo-wa taoreru*, which is the tenseless sentence involved in (20b), is said to be true both at 7:00 and "at" the interval that starts at 7:00 and ends at 7:05. By adopting this proposal about the semantics of so-called "instantaneous sentences," we can now say simply that ϕ -*te iru* is true at some time t iff there is an eventuality e at t such that e is a proper portion of another eventuality e' that is an eventuality that is characterized by ϕ .¹⁸ This provides a solution to the compositionality problem that the *-te iru* form poses. For example, we can now say that (20a) is true at t iff there is an eventuality at t that could be extended to an eventuality of Taro's running; similarly, (20b) is true at some t iff there is an eventuality at t that could be extended to an eventuality of Taro's falling. This is illustrated in (21a–b).



As for the distinction between "current situation" interpretations and "experiential" interpretations, Ogihara (in press) hypothesizes that the morpheme *-te* can bear the feature [+perfect] in some cases, and this is responsible for "experiential interpretations" associated with some sentences in the *-te iru* form. To put simply, a tenseless sentence of the form ϕ -*te* (where *-te* bears the feature [+perfect]) describes an experience associated with ϕ attributed to the denotation of the subject NP.¹⁹ Given the special provision about instantaneous sentences just given, we can say that the semantic role played by the morpheme *-iru* is constant. Put simply, ϕ -*te iru* is true at some time t iff there is a current eventuality that could be extended to an eventuality described by ϕ -*te* (ignoring tense). Ogihara (in press) suggests the possibility that the semantic difference between current situation interpretations and experiential interpretations of

-iru is characterized in terms of stage-level vs. individual-level predicates (Milsark 1974, Carlson 1977). That is, a sentence in the *-te iru* form that receives a current situation interpretation is claimed to involve a stage-level predicate, and one that receives an experiential interpretation an individual-level predicate. Matsuda (1997) confirms this hypothesis by presenting examples similar to the ones given in (22).

- (22) a. Taroo-ga ima ki-o taosi-te iru.
Taro-Nom now tree-Acc fell-Te iru-Pres
“Taro is now felling a tree.”
- b. Taroo-ga ima yooroppa-ni it-te iru.
Taro-Nom now Europe-to go-Te iru-Pres
“Taro is now in Europe (as a result of having gone there).”
- c. Taroo-ga imamade-ni hon-o zyussatu kai-te iru.
Taro-Nom till now-Dat book-Acc ten-as many as write-Te iru-Pres
“Taro is the one who has the experience of having written as many as ten books.”
- d. Taroo-ga kyonen yooroppa-ni itte iru.
Taro-Nom last year Europe-to go-Te iru-Pres
“Taro is the one who has the experience of having gone to Europe last year.”

Kuroda (1965a) observes that when a sentence contains a *ga*-marked NP and an individual-level predicate, the *ga*-marked NP must receive a focused interpretation. Note that (22a–b) are “neutral descriptive statements” in that they do not invoke focused interpretations of *ga*-marked NPs. On the other hand, in order to assign a coherent interpretation to (22c) or (22d), the *ga*-marked NP must be interpreted as focused as indicated by the English gloss. Given Kuroda’s generalization as a diagnostic, we can conclude that current situation interpretations of *-iru* (exemplified by (22a–b)) involve stage-level predicates, whereas experiential interpretations of *-iru* involve individual-level predicates. This in turn substantiates the classification of various readings of *-te iru* given in (18).

I believe that Ogihara’s (in press) proposal is descriptively adequate and also captures the native speaker’s intuition that the progressive interpretation of a durative sentence in the *-te iru* form and the result state interpretation of an instantaneous sentence in the *-te iru* form have something in common. However, the proposal leaves a few things to be desired. One is that the proposal does not say explicitly how the distinction between durative sentences and instantaneous sentences comes about; it simply posits different verb classes and distinguishes these classes by stating the semantic differences between them. As we shall see below, it is clear that the difference is not caused by the difference in temporal duration of the events in question. If so, what is it that is responsible for the difference between these two sentence classes? The proposal also falls short of a true explanation of the phenomenon in question

in that it posits a lexical difference between achievement sentences in English and “instantaneous sentences” in Japanese; achievements in English can describe preparatory stages but not result state stages of events, whereas instantaneous sentences in Japanese are exactly the opposite.

Okuda (1977) challenges Kindaichi’s proposal by pointing out that Kindaichi uses the wrong criterion to distinguish between durative verbs and instantaneous verbs. Okuda makes two points. One is that the distinction between durative verbs and instantaneous verbs should not be made in terms of the temporal duration of events. That is, a sentence that contains a so-called “instantaneous verb” does not describe an instantaneous event. It describes an event that takes time to complete. The other point, which is clearly related to the first, is that a “durative event sentence” involves an action of an individual, whereas an “instantaneous event sentence” involves a change that an individual undergoes. Okuda suggests that we should pay attention to argument structure when we study semantic properties of the *-te iru* construction. I reinterpret Okuda’s claim as follows: the semantic contribution of the *-te iru* form can be explicated in terms of assignment of a property to an entity denoted by the subject NP of the sentence in question. Let us look at examples (23a–b).

- (23) a. Taroo-wa ki-o taosi-te iru.
Taro-Top tree-Acc fell-Te iru-Pres
“Taro is now felling a tree.”
b. Ki-ga taore-te iru.
Tree-Nom fall-down-Te iru-Pres
“A tree is on the ground (as a result of having fallen).”

The striking difference between (23a) and (23b) can be accounted for in terms of the three principles given in (24).

- (24) a. In general, a sentence in the *-te iru* form is used to assign a property to the entity denoted by the subject NP and to nothing else. (This is implicit in Okuda’s remarks.)
b. An agentive entity can be assigned a property of “engaging in” the action named by the predicate (i.e. VP), whereas a nonagentive entity cannot.
c. An entity can be assigned a property of being in some state if its obtaining this state as soon as the event described by the sentence is part of the lexical meaning of the predicate.

Assuming (24a–c), we can explain a number of things that had to be stipulated in Ogihara’s (in press) proposal summarized above. Let us see how this account compares with the proposal put forth by Ogihara with regard to the difference between (23a) and (23b), which contain the transitive verb *taosu* “knock down/fell” and the intransitive verb *taoreru* “fall down,” respectively. In Ogihara’s

proposal, the difference between (23a) and (23b) is encoded in terms of types of events they involve. Roughly put, (23a) involves a process part, whereas (23b) involves a result state part. On the other hand, (24a–c) account for why verbs like *taosu* and *taoreru* interact with *-te iru* in different ways. In (23a) the subject NP *Taroo* bears an agentive thematic role. Thus, Taro can be understood to “engage in” an action named by the VP when the VP occurs in the *-te iru* form. This yields a progressive interpretation. On the other hand, *ki* “tree” occurs as the object NP, and this fact prevents (23a) from receiving a (concrete) result state interpretation associated with the tree. By contrast, the NP *ki* “tree” occurs as the subject in (23b) and can be assigned a property by the *-te iru* form. Since this NP has a thematic role associated with an undergoer, it can receive a result state interpretation.

However, (24b–c) raise the following questions: (i) why is it that an agentive subject NP cannot receive a concrete result state interpretation?; (ii) why is it that an undergoer subject NP cannot receive a process (= progressive) interpretation? The first question is easier to answer. When someone fells a tree, this person does not obtain any specific property over and above the property of having felled a tree, but the tree obtains the property of lying on the ground. Thus, a concrete result state reading that is associated with a current-time-oriented adverbial can only be attributed to an entity that obtains a specific property when the event in question is completed.²⁰ The other question is harder to answer. An event of a tree’s falling to the ground could be an extended event that takes a long time. However, the *-te iru* form is incapable of referring to the “process” associated with the event. This is presumably because when we talk about an ongoing process, we usually identify it in terms of the agent rather than by the undergoer. Thus, it makes sense to attribute a property associated with a process to an agent and not to an undergoer. At least in Japanese, this distinction is grammaticized to the extent that only agentive NPs can receive ongoing process interpretations. The fact that this asymmetry between agentive NPs and patient/undergoer NPs is not observed in English suggests that this is possibly a language-specific constraint valid in Japanese. However, the above reasoning seems convincing because it does not require that a sentence containing a transitive verb involve an event that lasts longer than the event associated with a sentence containing an intransitive verb.

As mentioned above, one important point that Okuda makes is that the distinction between durative sentences and instantaneous sentences cannot be drawn in terms of the temporal duration of events in question. Consider examples in (25). (25a) and (25c) are “durative sentences,” whereas (25b) and (25d) are “instantaneous sentences.” Note that one and the same event can be described in terms of (25a) and (25b).²¹ It should also be noted that (25c) generally takes only a few hours to complete, whereas (25d) generally takes years, if it is understood that the paint came off naturally. Yet, the *-te iru* construction would yield a progressive interpretation with (25a) and (25c) but not with (25b) or (25d).

- (25) a. Taroo-wa doa-o ake-ta.
Taro-Top door-Acc open-Past
“Taro opened the door.”
- b. Doa-ga ai-ta.
door-Nom open-Past
“The door opened.”
- c. Taroo-wa kuruma-no penki-o hagasi-ta.
Taro-Top car-Gen paint-Acc remove-Past
“Taro removed his car’s paint.”
- d. Kuruma-no penki-ga hagare-ta.
car-Gen paint-Nom come-off-Past
“The car’s paint came off.”

Note also that so-called “instantaneous sentences” can occur with adverbials that indicate extended intervals as shown in (26a–b).

- (26) a. Ni-nen de ie-no penki-ga hagare-ta.
two-years in house-Gen paint-Nom come-off-Past
“The paint of the house came off in two years.”
- b. Hanako-wa iti-nen de gakkoo-ga iyaninat-ta.
Hanako-Top one-year in school-Nom get-tired-of-Past
“Hanako got tired of school in one year.”

Okuda’s argument is also persuasive when we realize that some sentences allow for both a progressive reading and a (concrete) result state reading as shown in (27).

- (27) Taroo-wa ima ki-ni nobot-te iru.
Taro-Top now tree-Dat climb-Te iru-Pres
“Taro is now climbing a tree”
or “Taro is up the tree (after having climbed it).”

Taro is clearly an active participant in the event described in (27), and this sentence can receive a progressive interpretation as expected. However, it can also receive a result state interpretation as shown in the English glosses. This shows that a result state interpretation is not inherently related to the instantaneous nature of the event. Since it is counterintuitive to posit two different verbs that surface as *noboru*, Okuda’s proposal suggests a way out of the dilemma that a Kindaichi-type proposal faces.

But how shall we translate Okuda’s insight into a compositional semantic theory? If the temporal trace of events associated with tenseless sentences does not predict the semantics of their *-te iru* counterparts, what does? One possibility is to propose a theory in which events and times play independent roles. In this theory, one can grant that an event of a tree’s falling to the ground is an extended event that takes time and claim at the same time that a sentence with a thematic subject that describes this event is true at the final

moment of this event (but not “at” the temporal trace of the entire event). I believe that this type of proposal enables us to resolve the apparent conflict between Kindaichi’s proposal and Okuda’s ideas. I shall sketch here the proposal I have in mind.²²

In this proposal, the following four predicate types are recognized in Japanese: stative predicates (e.g. *Tokyo-ni iru* “be in Tokyo”), accomplishment/activity predicates (e.g. *ie-o tateru* “build a house”), resultative predicates (e.g. *ki-o taosu* “fell/knock down a tree;” instantaneous verbs in Kindaichi’s terms), and accomplishment+resultative predicates (e.g. *ki-ni noboru* “climb a tree”). They can be defined as in (28).

- (28) a. *In general*: For any predicate ϕ , individual a , eventuality e , and interval t , if $\llbracket \phi \rrbracket(a)(e)(t) = 1$, then $t \subseteq \tau(e)$ (i.e. t is part of the temporal trace of e). Note: τ is the temporal trace function which applies to an eventuality and yields the interval that this event “occupies.”
- b. *Stative predicate* ϕ : For any individual a , eventuality e , and interval t , if $\llbracket \phi \rrbracket(a)(e)(t) = 1$, then for any $t' \subseteq t$ $\llbracket \phi \rrbracket(a)(e)(t') = 1$.
- c. *Accomplishment/Activity predicate* ϕ : For any individual a , eventuality e , and interval t , if $\llbracket \phi \rrbracket(a)(e)(t) = 1$, then for any $t \subset t'$ $\llbracket \phi \rrbracket(a)(e)(t') = 0$.
- d. *Resultative predicate* ϕ : For any individual a , eventuality e , and interval t , if $\llbracket \phi \rrbracket(a)(e)(t) = 1$, then there is a $t' \subseteq t$ such that $\llbracket \phi \rrbracket(a)(e)(t') = 1$ and for any t'' such that it overlaps with t' and $\llbracket \phi \rrbracket(a)(e)(t'') = 1$, t' is an initial subinterval of t'' .
- e. *Accomplishment+resultative predicate* ϕ : For any individual a , eventuality e , and interval t , if $\llbracket \phi \rrbracket(a)(e)(t) = 1$, then there is a $t' \subseteq t$ such that $\llbracket \phi \rrbracket(a)(e)(t') = 1$ and for any t'' such that it overlaps with t' and $\llbracket \phi \rrbracket(a)(e)(t'') = 1$, t' is either an initial subinterval of t'' or a final subinterval of t'' .

(28a) says that a time at which some sentence is true is part of the temporal trace of the event that it involves. This is a looser relation between events and times than is normally assumed in the literature. (28b) shows that a stative sentence has the subinterval property. (28c) takes care of accomplishments and activities. Although the difference between these two subclasses is important with regard to the imperfective paradox (Dowty 1979), they can be grouped together for the purpose of this proposal.²³ (28d) concerns resultative predicates, which correspond to instantaneous verbs in Kindaichi’s terminology. We now assume that they involve events that are possibly extensive but are characterized in terms of a particular interval (within the temporal trace of the eventuality in question) at which a relevant state starts to obtain. (28d) formalizes the idea that a resultative sentence is true with regard to an event e with respect to an interval t iff e is an eventuality that intuitively represents the entire resultant state associated with this sentence and t is an initial part of the temporal trace of e . (28e) takes care of an interesting class of predicates exemplified by (27) which can produce an ongoing process interpretation as

well as a (concrete) result state interpretation. The characteristic of this class of predicate is that the entity denoted by the subject is an agent that engages in an action and acquires a concrete property as a result of its own action.

Given the definition of various predicate classes in (28), the semantics of *-iru* can be given as in (29).

- (29) For any predicate ϕ , individual a , eventuality e , and interval t , $\llbracket \phi\text{-te iru} \rrbracket (a)(e)(t) = 1$ iff (i) there is a time $t' \supseteq t$ such that $\llbracket \phi\text{-te} \rrbracket (a)(e)(t') = 1$ or (ii) in a world that is reasonably close to the actual one there exist an eventuality $e' \supset e$ and an interval $t' \supset t$ such that $\llbracket \phi\text{-te} \rrbracket (a)(e')(t') = 1$.

I shall say a few words about why the condition (ii) is necessary. The relevant event we find in the actual world is not necessarily a complete one for two reasons. When the sentence is an accomplishment, it can involve the so-called imperfective paradox (Dowty 1979, etc.) as exemplified by (30a). On the other hand, when the sentence is a resultative sentence, it is possible that the event in question does not have a clear beginning as in (30b). That is, (30b) can be true in a situation where the wall has a hole, but this hole was there by design and was there as soon as the wall was built.

- (30) a. Taroo-wa ie-o tate-te ita-toki ni sin-da.
Taro-Top house-Acc build-Te iru-Past when at die-Past
"Taro died when he was building a house."
b. Kabe-ni ana-ga ai-te iru.
wall-Dat hole-Nom open-Te iru-Pres
"The wall has a hole."

(29) is essentially the same as the proposal in Ogihara (in press), which is based upon Landman (1992), except that it accounts for the differences among various sentence classes in terms of thematic properties of subject NPs. I shall now demonstrate this point.

What we want the theory to explain is why different subject NPs produce different aspectual properties of the entire sentence. Let us look at some relevant examples. As I discuss these examples, I will explain why they have the aspectual properties they do. Consider the examples in (31).

- (31) a. Taroo-wa ki-o taosi-te iru.
Taro-Top tree-Acc fell-Te iru-Pres
"Taro is felling a tree."
b. Ki-ga taore-te iru.
tree-Nom fall-Te iru-Pres
"A tree is lying on the ground."
c. Taroo-wa ki-ni nobot-te iru.
Taro-Top tree-Dat climb-Te iru-Pres
"Taro is now climbing a tree"
or "Taro is now up the tree having climbed it."

I assume that the three predicates used in (31a–c) translate as in (32a–c), respectively.

- (32) a. $\text{ki-o taosu} \Rightarrow \lambda x \lambda e \lambda t \exists y [\text{AGT}(x)(e)(t) \wedge \text{fell}(e) \wedge \text{tree}(y) \wedge \text{TH}(y)(e)]$
 b. $\text{taore} \Rightarrow \lambda x \lambda e \lambda t [\text{fall}(e) \wedge \text{TH}(x)(e)(t)]$
 c. $\text{ki-ni nobot} \Rightarrow \lambda x \lambda e \lambda t \exists y [\text{AGT-TH}(x)(e)(t) \wedge \text{climb}(e) \wedge \text{tree}(y) \wedge \text{LOC}(y)(e)]$

AGT stands for agent, TH for theme, LOC for locative, and AGT-TH for agentive theme. I use the label AGT-TH for an argument that is agentive but is also theme-like in that it undergoes some change as a result of its own action. The three types of predicates are distinguished in terms of different thematic roles, which are encoded as three-place relations involving individuals, events, and times. The constraints given in (33) show how this is done.

- (33) a. For any individual a , eventuality e , and interval t , if $\llbracket \text{AGT} \rrbracket(a)(e)(t) = 1$ then for any $t' \subseteq t$ $\llbracket \phi \rrbracket(a)(e)(t') = 0$.
 b. For any individual a , eventuality e , and interval t , if $\llbracket \text{TH} \rrbracket(a)(e)(t) = 1$ then there is a $t' \subseteq t$ such that $\llbracket \phi \rrbracket(a)(e)(t') = 1$ and for any t'' such that it overlaps with t' and $\llbracket \phi \rrbracket(a)(e)(t'') = 1$, t' is an initial subinterval of t'' .
 c. For any individual a , eventuality e , and interval t , if $\llbracket \text{AGT-TH} \rrbracket(a)(e)(t) = 1$ then there is a $t' \subseteq t$ such that $\llbracket \phi \rrbracket(a)(e)(t') = 1$ and for any t'' such that it overlaps with t' and $\llbracket \phi \rrbracket(a)(e)(t'') = 1$, t' is either an initial subinterval of t'' or a final subinterval of t'' .

With the stipulation that only the thematic role associated with the subject NP is time sensitive, one can account for the transitive-intransitive asymmetry observed in Japanese. To confirm that our proposal accounts for the most crucial data, let us discuss (31a–c).

- (34) a. *Taroo-wa ki-o taosi-te iru* is true at t in w iff there is an event e' and an interval $t' \supset t$ such that $\llbracket \lambda e \lambda t' \exists y [\text{AGT}(\text{Taro})(e)(t) \wedge \text{fell}(e) \wedge \text{tree}(y) \wedge \text{TH}(y)(e)] \rrbracket(e')(t') = 1$ in w or in a world that is reasonably close to w .
 b. *Ki-ga taore-te iru* is true at t in w iff there is an event e' and an interval $t' \supset t$ such that $\llbracket \lambda e \lambda t \exists x [\text{fall}(e) \wedge \text{tree}(x) \wedge \text{TH}(x)(e)(t)] \rrbracket(e')(t') = 1$ in w or in a world reasonably close to w .
 c. *Taroo-wa ki-ni nobot-te iru* is true at t in w iff there is an event e' and an interval $t' \supset t$ such that $\llbracket \lambda e \lambda t \exists y [\text{AGT-TH}(\text{Taro})(e)(t) \wedge \text{climb}(e) \wedge \text{tree}(y) \wedge \text{LOC}(y)(e)] \rrbracket(e')(t') = 1$ in w or in a world reasonably close to w .

(31a) receives an ongoing process interpretation because t' is an interval at which Taro is the agent of the felling event e' . This is understood to mean that Taro is in the process of felling a tree at t . Since the predicate TH does not have a temporal argument, it does not interact with the *-te iru* morpheme. As

a result, (31a) does not produce a result state interpretation. (31b) receives a (concrete) result state interpretation because t' is regarded as a time at which the tree in question is the theme of the falling event e' . This is understood to mean that the tree is lying on the ground at t . Finally, (31c) can receive two distinctive interpretations: an ongoing process interpretation and a result state interpretation. This is because t' can be a time at which Taro's climbing of a tree obtains but can also be an initial interval at which Taro's being at the top of the tree obtains.

I have not mentioned how "experiential" interpretations are accounted for in this system. Using Ogihara's (in press) idea, we can let *-te* manufacture a new predicate that behaves like a resultative predicate. I contend that the property denoted by the newly created predicate is one that denotes the most general result state indicated by the original predicate. For example, given the predicate *ie-o tateru* "build a house," *ie-o tate-te* denotes the property of having built a house. Then *-iru* simply shows that the individual denoted by the subject NP has the property of being part of such an eventuality. This is as desired. Although the details of this new proposal are yet to be worked out, I believe that this approach is on the right track.

McClure (1995) offers an alternative way of explaining the complex behavior of the morpheme *-te iru*. He argues that the semantics of the morpheme *-te iru* is accounted for in a unified manner if we posit a new ontological structure for various aspectual classes. Put roughly, the English progressive indicates that no final segment (as defined by McClure) of the eventuality in question is realized, whereas the *-te iru* construction in Japanese indicates that all final segments of the eventuality are realized. If I understand McClure's proposal correctly, it does not account for result state interpretations of *-te iru*. Consider example (35).

- (35) Taroo-wa ima yuka-ni taore-te iru.
 Taro-Top now floor-at fall-Te iru-Pres
 "Taro is now lying on the floor (after having fallen down)."

According to McClure's proposal, (35) is true iff Taro's falling obtained in the past (perhaps within a contextually salient past interval). However, (35) in fact requires that Taro be lying on the floor now thanks to the adverbial *ima* "now." I take this to mean that the existence of the result state in question is asserted by (35) and is not merely implicated. Thus, McClure's solution is not without problems.

3 Conclusion

This chapter discussed the semantics of tense and aspect with special reference to the morphemes *-ta* and *-te iru*. Two topics were covered in connection with the morpheme *-ta*. I first discussed the issue of whether *-ta* is a tense morpheme or an aspect morpheme. I concluded that it is a relative tense

morpheme in the sense of Comrie (1976) in that its interpretation is determined in relation to structurally higher tenses and not necessarily in relation to the utterance time. Although *-ta* conveys a resultant state meaning in some restricted circumstances (e.g. relative clauses), the argument for the view that *-ta* is a “relative tense morpheme” remains very strong. Second, I turned to some apparent problems for the claim that *-ta* is a relative tense morpheme. It was pointed out that *when*-clauses and factive verb complement clauses seem to be problematic for the claim that *-ta* is a relative tense morpheme. As a possible account, I suggested that the fact that the problematic constructions involve clauses that are presupposed to be true. In section 2, I turned to the morpheme *-te iru*. I discussed the problem of accounting for its ambiguity and presented some concrete proposals. Ogihara’s (in press) proposal was described in some detail, and its strengths and weaknesses were pointed out. It offers a compositional semantics for the *-te iru* form on the basis of a new analysis of the lexical meaning of so-called instantaneous sentences. But this proposal contains a stipulative and language specific claim about instantaneous sentences in Japanese. Adopting Okuda’s (1977, 1984) suggestion, I revised Ogihara’s (in press) proposal. This enables us to derive the asymmetry between agentive subjects and nonagentive subjects in *-te iru* sentences in a more principled manner.

Finally, let me say a few words about the direction of future research in tense and aspect. As for the research involving tense morphemes, the interpretation of *-ta* in relative clauses and some other subordinate clauses is not well understood and should be investigated in detail. As for aspect morphemes, in addition to *-te iru*, Japanese has many morphemes that have various specialized and subtle meanings, such as *-te aru*, *-te oku*, whose semantic properties are largely unexplored in formal semantics.^{24,25} Since these morphemes have interesting morphological and semantic properties, I hope that many interesting research results will be produced that will deal with these morphemes.

NOTES

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| <p>1 See Teramura and Inoue (1989) for a survey article on tense and aspect in Japanese.</p> <p>2 The present perfect in English is indicated by a representation of the form E_R, S.</p> <p>3 In colloquial speech, the permanence of the reference point is not always followed. For instance, (i) can be used to indicate that the time of</p> | <p>Bill’s buying a book precedes the time of John’s saying.</p> <p>(i) John said that Bill bought a book.</p> <p>However, the permanence of the reference time accounts for examples like (4a–b) which are characteristic of written discourse.</p> <p>4 To be more accurate and complete, the present tense indicates the</p> |
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- simultaneity of R and S, and the absence of the perfect indicates the simultaneity of E and R.
- 5 Ota (1972) draws a different conclusion from the observed difference between English and Japanese with regard to tense; he claims that Japanese has no reference time.
 - 6 This generalization requires the proviso that English has a sequence-of-tense rule whereas Japanese does not.
 - 7 See McCoard (1978) for a good overview of various proposals about the English perfect.
 - 8 But note that (9b) can be replaced by *Taroo-wa moo hon-o yonde iru* for approximately the same meaning.
 - 9 For an alternative analysis of embedded tense morphemes, see Mihara (1992).
 - 10 Kinsui (1994) discusses this type of example.
 - 11 M. Nakau (1976) discusses the behavior of tense and aspect morphemes in such constructions as conditionals, complements of perception verbs, etc.
 - 12 Tense morphemes that are embedded within NPs (e.g. relative clauses and noun complement clauses) are not exceptions to this generalization in that these NPs are subject to scoping on a par with "regular" NPs. See Ogihara (1996) for details.
 - 13 The judgment involved is subtle. According to my judgment, (13a) is only marginally acceptable on a simultaneous interpretation and would sound much better with a present tense in the complement clause. However, I concur that (13a) is more acceptable than (14) on a simultaneous reading.
 - 14 This only has a "shifted interpretation," in which the time of his having cancer precedes the time of his believing.
 - 15 Having been inspired by Kindaichi's work on *-te iru*, many other researchers worked on the same topic. See Fujii (1966), Okuda (1977), Soga (1983), K. Matsumoto (1985), Kinsui (1994), Kudo (1995), McClure (1995), and Shirai (in press) among others. See also Ota (1971) for a comparative study of Japanese and English with regard to aspectual properties of verbs and Jacobsen (1992) for a good English source for a survey of various issues and proposals made about aspectual properties of verbs in Japanese. See also Tsujimura (1996b) for a more concise overview.
 - 16 We shall see below what other interpretations it has when a different type of adverbial occurs in the sentence.
 - 17 Jacobsen (1992) observes that a sentence in the *-te iru* form always has the subinterval property. Jacobsen's observation is obtained as a consequence of the proposal made in Ogihara (in press) or the proposal made in this chapter.
 - 18 See below for a more definitive version of this generalization.
 - 19 When *-te* bears the feature [-perfect], ϕ -*te* has the same interpretation as ϕ .
 - 20 As mentioned above, any sentence in the *-te iru* form can receive an experiential interpretation, but this reading requires an overt or covert past-oriented adverbial as exemplified by (i).
- (i) Taroo-wa kyonen hei-o
Taro-Top last-year wall-Acc
taosi-te iru.
knock-down-Te iru-Pres
"Taro has the property of
having knocked down a wall
last year."

- As the English gloss shows, the interpretation associated with (i) can also be explained in terms of ascription of a property to the individual denoted by the subject NP, though this property is an extremely general one characterized by “having knocked down the wall.” This observation is made in Ogihara (in press) and can now be incorporated into the account underlying (24a–c).
- 21 If Taro opens the door in such a way that he is not visible to the speaker of (25b), this sentence is perfectly acceptable as a description of the situation in question.
- 22 See Takezawa (1991) for a syntactic proposal that incorporates Okuda’s suggestion.
- 23 The term “imperfective paradox” refers to the fact that when a telic sentence (i.e. achievement or accomplishment) is involved, the entailment relation indicated by (i) does not hold.
- (i) NP is VP-ing
⇒ NP will have VP-ed.
- For example, *John is building a house* does not entail *John will have built a house*.
- 24 For papers dealing with such aspect morphemes, see H. Kindaichi (1976b).
- 25 *-aru* literally means “be” (for non-animate beings), whereas *-oku* literally means “put” or “place.”