

On the Mechanism of Temporal Interpretation of *Will*-Sentences*

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1. Introduction

This paper aims to clarify the mechanism of temporal interpretation of sentences containing *will* (henceforth *will*-sentences) that appear as independent clauses. *Will*-sentences receive a number of interpretations, as in (1):¹

- (1) a. I will be back before six. <Volition>
 b. It will rain tomorrow. <Future>
 c. That'll be the postman. <Predictability>
 d. Oil will float on water. <Propensity/Characteristic Behavior>

In (1a), *will* is usually regarded as expressing volition, and thus taken as a dynamic modal. When interpreted as expressing the future, as shown in (1b), *will* is taken either as a future tense marker or auxiliary (e.g. Comrie (1985), Davidsen-Nielsen (1990), Declerck (1991, 2006), Hornstein (1990), Klein (1994), Reichenbach (1947), Wekker (1976)), or as an epistemic modal which represents prediction (e.g. Collins (2009), Harder (1996), Huddleston (1995), Huddleston and Pullum (2002), Klinge (2005), Lyons (1977), Nakau (1994), Palmer (1990), Quirk et al. (1985)). The *will* ('ll) in (1c) is regarded as an epistemic modal expressing predictability. In (1d), *will* is considered to express propensity or characteristic behavior, taken as a kind of dynamic modal.

In accounting for the fact that more than one interpretation is possible with a given modal, two approaches are prevailing. One is the monosemous approach (e.g. Groefsema (1995), Haegeman (1989), Klinge (1993, 2005), Papafragou (1998)), and the other is the polysemous approach (e.g. Halliday (1970), Leech (1987, 2004), Palmer (1990, 2001), Sawada (2006), Sweetser (1990)). Under the monosemous approach, *will* is a modal and has one core meaning. This core meaning interacts with other elements of a *will*-sentence and the context to give rise to a variety of

* This paper is dedicated to Professor Norio Yamada on the occasion of his retirement from the University of Tsukuba. I thank Yukio Hirose for his useful comments. I also thank James Andrew Elwood for improving my English and *TES* reviewers for suggesting stylistic errors. This work is supported by Grants-in-Aid for Scientific Research from the Japan Society for the Promotion of Science, Grant No. 19320070, Grant No. 19520414, and Grant No. 20520441.

¹ In this paper, such meanings as volition and predictability represented by *will*-sentences are not ascribed to *will* from the beginning, but considered to be derived as a result of interpreting the whole sentence. As shown later in the main text, *will* itself has its abstract core meaning, and a specific interpretive value of a *will*-sentence (e.g. volition, predictability) is determined as a result of the interaction between that abstract meaning and other factors (e.g. meanings of the other elements, the context) in the course of semantic and tense interpretation of the sentence.

pragmatic interpretations. Under the polysemous approach, *will* itself is associated with more than one semantic interpretation or meaning, including a future tense marker.

My approach is one which accommodates both approaches. It is based on a framework which combines the compositional theory of tense proposed by and developed in a series of Wada's studies (Wada (2001, 2009a, 2009b)) with a speaker-centered theory of modality. Within this framework, *will* is a modal auxiliary and has an abstract core meaning which will be reflected in the temporal structure of *will*-sentences in the process of interpretation. When a tense form, including a *will*-sentence, represents different temporal structures, their interpretive values are considered to be semantically different; when different interpretive values share one and the same temporal structure, they are pragmatic variants. Therefore, if the meaning of one specific *will* is associated with a different temporal structure from that of another *will*, then these two *will*'s can be in a polysemous relationship: The two *will*'s can be associated with two semantically different meanings.

The organization of this paper is as follows. Section 2 briefly outlines the speaker-centered theory of modality. In section 3, I will survey the main points of Wada's compositional tense theory. In section 4, I will clarify the mechanism of temporal interpretation of *will*-sentences within the framework based on the two theories. Section 5 will offer concluding remarks.

2. A Speaker-Centered Theory of Modality

A theory of modality which this paper is based on necessarily involves the commitment of the speaker in interpreting a verbalized utterance.² This is because the mental attitude (state) of a speaker, the speaker's modality, is necessarily involved in any utterance or verbal activity. This theory of modality therefore assumes that when uttered, a sentence is necessarily decomposed semantically into two domains, as shown in (2):

(2) Sentence (Utterance): Speaker's Attitude Domain + Proposition Domain^{3, 4}

² In this paper, the term "speaker" is used as a cover term to include "thinker" or "writer"; in the same way, the term "hearer" is used as a cover term to include "reader" or "guesser."

³ The term "speaker's attitude domain" in this paper was referred to as "modality domain" in Wada (2001). The main reason for this change is because, for example, dynamic modality belongs to the proposition domain, and one might be confused with the terms "modality domain" and "modality."

⁴ This semantic decomposition is basically related to Lyons's (1977) tripartite decomposition in the following manner: The speaker's attitude domain corresponds to both the neustic (e.g. 'I-say-so') and the tropic (e.g. 'it-is-so') domains, while the proposition domain corresponds to the phrastic ('propositional variable') domain.

Elements which belong to the speaker's attitude (SA) domain are modalities which represent the speaker's mental attitude toward persons and/or propositions holding at speech time (S). In other words, epistemic and deontic modality belong to the SA domain. On the other hand, elements which belong to the proposition (P) domain are modalities expressing the subject's internal property and/or state, commonly referred to as dynamic modality, as well as propositional content.

For a better understanding of these statements, consider the following:

- (3) a. John may come.
b. Mary can speak Japanese.

Suppose that sentence (3a) is interpreted as "there is a possibility that John will come." In this case, *may* reflects possibility modality, a speaker's mental attitude holding at S, and therefore belongs to the SA domain; 'John come' is an element to be described as propositional content, and therefore belongs to the P domain. Similarly, suppose that sentence (3b) is interpreted as "Mary has the ability to speak Japanese." In this case, 'Mary speak Japanese' constitutes propositional content, thus belonging to the P domain; since this *can* represents an ability (an internal state) of the subject, it by definition belongs to the P domain, too.

One major characteristic deriving naturally from this theory of modality is that even sentences which are not marked explicitly by modal auxiliaries and/or adverbs can convey a certain modality. Consider (4):

- (4) a. John may be a spy.
b. John is a spy.

In both sentences, the propositional content 'John be a spy' belongs to the P domain. In (4a), *may* represents a possibility modality and belongs to the SA domain. In (4b), by contrast, there is no element that marks modality explicitly. Because of hypothesis (2), however, sentence (4b) is regarded as conveying a certain mental attitude of the speaker. This type of mental attitude of the speaker is considered to be assertive modality or assertion, a kind of epistemic modality, because assertive modality is defined as follows:

- (5) Assertive modality is a mental attitude in which the speaker states the propositional content as a fact.

Assertive modality is located at the strongest pole of the scale of the speaker's

commitment to the truth of the proposition (cf. Lyons (1977:808-809)). This modality is unmarked, and therefore conveyed by non-modalized declarative sentences, the unmarked type of sentences.⁵ This is because when the speaker has no doubt about the truth of the propositional content that he or she is conveying to the addressee, he or she normally states it straightforwardly.⁶ Assertive modality semantically corresponds to “categorical (or modally unqualified) assertion” in Lyons’s (1977) terms, used to express “straightforward statements of fact.”

My claim that non-modalized declarative sentences convey assertive modality is supported by the following sentence:

(6) * Clark Kent is Superman, but then again he is not. (McDowell (1991:319))

By uttering the first conjunct, the speaker states as a fact that Clark Kent is Superman, but by uttering the second conjunct, he or she denies its truth. This leads to a contradiction; sentence (6) is unacceptable (cf. McDowell (1991)).

Let us next consider another type of modality which plays a crucial role, namely predictive modality. I define it in (7), which is similar to Dancygier’s (1998:45) “making the prediction on some sound epistemic basis.”

(7) Predictive modality is a mental attitude in which the speaker forecasts on a reasoned basis.

The term “forecast” means “calculate or estimate something conjecturally” (cf. also Close (1977:131)): The term “on a reasoned basis” indicates “on the basis of observation, experience, scientific reason or something like that” (cf. The Free Online Dictionary by Farlex). Note that in this theory of modality, predictive modality or prediction can be made not only about the future but also about the present or the past (this idea is similar to that of Leech (1987, 2004)).⁷ As we will

⁵ While a great number of linguists do not regard non-modalized sentences as conveying modality, some take the same position as, or a similar position to, the one adopted in this paper. For example, Herslund (2005:42) classifies as neutral modality the modality represented by categorical sentences, sentences that do not contain any modal auxiliary or adverb.

⁶ The assertive modality adopted in this paper corresponds to the notion of “assertive point” adopted in Speech Act Theory (e.g. Searle (1979), Searle and Vanderveken (1985), McDowell (1991)). Assertive point is one type of illocutionary point, and is a superordinate notion covering assertive illocutionary forces such as assertion, report, complaining, reminding, informing, and the like. Note, however, that prediction, an assertive illocutionary force in Speech Act Theory, is taken as predictive modality in the theory of modality adopted in this paper. Therefore, the notions of assertion and prediction in my sense correspond roughly to Boyd and Thorne’s (1969) “statement” and “prediction,” respectively. Note, in passing, that in McDowell (1991), sentences containing modal auxiliaries like *must* and *may* are considered to convey quasi-assertion.

⁷ Many linguists (e.g. Bybee and Pagliuca (1987), Coates (1983), Declerck (1991, 2006))

see in section 4, this modality is an epistemic modality which is associated with *will* in constructing a temporal structure of a *will*-sentence.

3. A Compositional Theory of Tense

Let us now turn to the compositional theory of tense proposed in Wada (2001) and developed afterwards (e.g. Wada (2009a, 2009b)). The reason for adopting this theory is mainly twofold. First, several English tense phenomena have already been analyzed based on it.⁸ Second, this tense theory provides an interpretive model in which the commitment of the speaker is indispensable in interpreting the temporal value of a given tense form, including temporal relations, aspectual value, and specification of the position of the time at or during which a situation (such as an action, event, state of affairs) holds or occurs, and in this sense has a great affinity for the speaker-centered theory of modality adopted in section 2. In what follows, I will outline the core parts of the tense theory.

3.1. Tense Structure Level and Tense Interpretation Level

First of all, this tense theory assumes two levels in the field of tense, the tense-structure (TS) level and the tense-interpretation (TI) level. The TS level is concerned with a general or schematic semantic structure of a tense form, which is called “tense structure.” The TI level is an interface in which tense-structure information interacts with information from semantic, pragmatic and syntactic factors other than tense-structure information to reach a final temporal value in a particular linguistic environment. The semantic structure on this level is called “temporal structure.”

To illustrate this, consider, for example, a past tense form like the one in (8):

(8) Bruce danced with Mary yesterday.

The speaker chooses the past tense form *danced* because its tense structure is appropriate in order to convey to the hearer that the event of Bruce’s dancing with Mary occurred in the past. The hearer identifies the temporal value of that past tense form by considering characteristics of the linguistic environment (including factors other than tense structure) in which it appears. More specifically, the hearer,

regard the notion of prediction as equal to “future (tense)” or “the speaker’s assertion that a proposition will be true in the future,” which I do not follow.

⁸ For example, Wada (2001) deals with a variety of issues concerning English present and past perfects, co-occurrence of English tense forms with temporal adverbials, comparisons between *will* and *be going to*, and tense phenomena in English indirect speech; Wada (2009a) makes comparisons between *be going to* and present progressives with future time reference; and Wada (2009b) analyzes tense phenomena of perception verb complements in English and Japanese.

on the basis of the tense-structure information of the past tense form *danced*, constructs its temporal structure in his/her mind by taking into consideration such factors as syntactic properties of independent clauses and the presence of the temporal adverbial *yesterday*, and finally reaches the temporal value in which Bruce's dancing with Mary occurred at a particular time in the past, i.e. yesterday.

3.2. *Absolute Tense Component and Relative Tense Component*

Next, let me briefly describe two tense components contributing to tense structure: an A(bsolute tense)-component and an R(elative tense)-component. The tense-structure information associated with the A-component is represented by a tense morpheme that changes according to person, number, and mood (A-morpheme); the tense-structure information associated with the R-component is represented by a verb stem and, if any, a tense morpheme that does not change according to person, number, and mood (R-morpheme).

For a better understanding of these notions, consider (9):

(9) a. plays/played

b. burning/burn

(10) a. [R play] + [A -s] / [R play] + [A -ed]

b. [R burn + -ing] + [A] / [R burn + \emptyset] + [A]

The English present and past tense morphemes (represented by *-s* and *-ed* respectively), as shown in (9a), are by definition A-morphemes.⁹ The present participle marker *-ing* and the bare infinitive marker \emptyset , as exemplified in (9b), are by definition R-morphemes. In this theory, a non-finite marker is taken as a kind of tense morpheme in that it can represent a non-deictic temporal relation. (10a) and (10b) are semantic decompositions of (9a) and (9b) in terms of the two tense components. As is clear from (10), the two finite forms in English contain elements contributing to tense structure in both the A- and the R-component, while English non-finite forms contain such elements only in the R-component.

⁹ In present-day English, it is usually the case that verb forms other than the third-person singular form in the indicative present tense do not show any verbal inflection explicitly. However, considering the fact that the third-person singular form in the indicative present tense shows such an inflection explicitly, I assume that such notions as tense, person, number, and mood are reflected even in verb forms that do not show verbal inflections explicitly. Thus, for example, in *I play tennis*, *play* is regarded as the first-person singular form in the indicative present tense; similarly, in *I played tennis*, *played* is regarded as the first-person singular form in the indicative past tense. Note that irregular conjugation verbs are also decomposed into an A-morpheme and verb stem at the TS level, as in:

(i) went: [R go] + [A -ed]

3.3. Tense Structure and Temporal Structure

I turn now to a description of tense and temporal structures of tense forms. Let me start by considering finite forms. The tense-structure information represented by an A-morpheme (associated with the A-component) is a time-sphere, a grammatical time-span whose value is determined based on its positional relationship to the speaker's temporal viewpoint (V_{SPK}). The speaker's temporal viewpoint is a pivot for grammatical time, and serves as a base for the speaker to choose a tense form (this corresponds to Janssen's (1996) "vantage point"). The past tense morpheme *-ed* represents a time-sphere excluding or prior to the speaker's temporal viewpoint, while the present tense morpheme *-s* represents a time-sphere including the speaker's temporal viewpoint. These time-spheres are referred to as the past time-sphere and the present time-sphere, respectively.

The tense-structure information represented by a verb stem (associated with the R-component) is an event time (E), a time point or period at or during which the relevant part of a situation holds or occurs. In the case of finite verbs, only the verb stem is related to the R-component, and there is no R-morpheme, namely an element which explicitly expresses a relation between the event time and another time notion (cf. (10a)). An event time is connected to a time-sphere in a subordinate way in that the R-component is subordinate to the A-component; an event time occurs or holds in a time-sphere.

From these observations, the tense structures of English two finite forms, present and past tense forms, are schematically represented as follows:

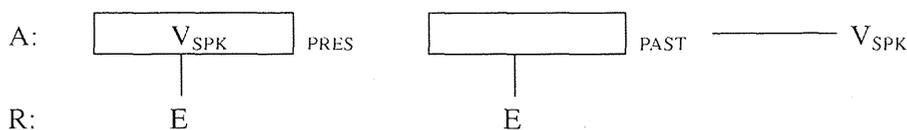


Fig. 1: (i) Tense Structure of Present Tense Form (ii) Tense Structure of Past Tense Form

A stands for the A-component; R for the R-component; a rectangle with subscript PRES for a present time-sphere; and a rectangle with subscript PAST for a past time-sphere. A horizontal line represents subsequence and a vertical line or comma indicates simultaneity or inclusion.

As a first step of tense interpretation of these two finite forms, the starting point for the calculation of their temporal values must be set on the time line. In the default case, this starting point is speech time (S). The reason for this is as follows: The speaker's consciousness (C_{SPK}), a part of the brain activated when uttering, thinking or cognizing something, is by definition always existent at S, and

the consciousness and deictic viewpoint of one and the same speaker share the same time and space in the default case. Therefore, in the default case, the speaker's temporal viewpoint (a kind of deictic viewpoint) fuses or combines with his/her consciousness and thus is situated on S. In this way, the past and the present time-spheres correspond to the past and the non-past time-areas (conceptual or real time-spans), respectively.

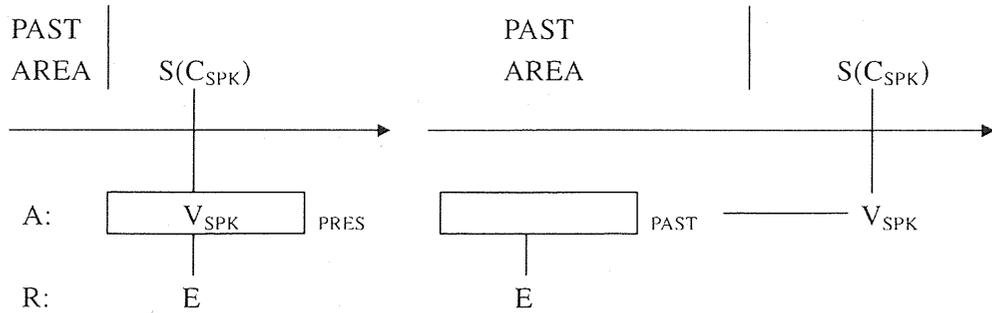


Fig.2: (i) Temporal Structure of Present Tense Form (Default Case) (ii) Temporal Structure of Past Tense Form (Default Case)

The temporal structures of the present and past tense forms in Figure 2 are their default ones. This correspondence between the time-spheres and time-areas is supported by the following paradigm.

- (11) a. Toru {loves/*loved} Yoko now. (Present Time Reference)
- b. The train {leaves/*left} at 5:30 tomorrow. (Future Time Reference)
- c. She {*plays/played} the flute yesterday. (Past Time Reference)

As is clear from (11), present tense forms can refer to both the present and the future time-areas, but cannot refer to the past time-area (except for the historical present case); past tense forms refer only to the past time-area (except for the subjunctive case).

The present and past tense forms can express temporal structures other than the default ones. For example, the present tense form of the historical present, as in *Germany invades Poland in 1939*, requires the speaker's temporal viewpoint to fuse with a time point in the past time-area, as shown in Figure 3 below. The temporal structure schematized in Figure 3 is one that the present tense form can represent. Note that in this tense theory, if a tense form has different temporal structures (on the TI level), it is polysemous in terms of temporal meaning.

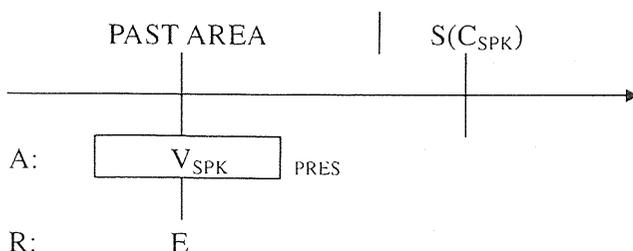


Fig. 3: Temporal Structure of Present Tense Form
(Historical Present Case)

Let us next consider non-finite forms. As we saw above, each English non-finite form has its own R-morpheme, and the tense-structure information represented by an R-morpheme is a grammatical time relation between an event time and a time of orientation, namely an evaluation time whose position will on the TI level be determined based on characteristics of the relevant linguistic environment.

Here, we consider, as a sample case, bare infinitives which appear in the complement position of the modal *will*. In my theory, the time-relational value of the bare infinitive marker \emptyset is unspecified (Wada (2001:Ch.2, 2006); cf. also Duffley (1992)). In other words, a bare infinitive can represent all of the three possible time relations between an event time and time of orientation on the TI level according to the linguistic environment in which it appears.

In the complement position of modals, I follow Duffley (1992) to assume that the event time of a bare infinitive is simultaneous with or posterior to the event time of the modal as time of orientation. To be more specific, in the case of stative situations (situations described by stative verbs or habitual/generic situations), the relation between the two times is that of either simultaneity or posteriority, while in the case of non-stative situations (single situations described by non-stative verbs), the time relation is that of posteriority. This assumption is motivated in the following manner. A modal is generally assumed to represent potentiality and therefore construct a potential world extant at the time expressed by that modal and continuing thereafter. In this world, when the infinitive represents a stative situation, which has homogeneous properties, it is possible either that the situation in question already exists at the time of the modal or that it will exist at a later time; when the infinitive represents a non-stative situation, which has heterogeneous properties, it must be the case that it will occur later than the time of the modal because a heterogeneous situation takes time to occur.

Consider (12) for example:

- (12) a. Toru may come.
 b. Yoko may be in her room.

In (12a), because of the properties of the non-stative situation described by *come*, the time of coming is posterior to the time of *may*; in (12b), because of the properties of the stative situation described by *be in her room*, the time of being in her room is either simultaneous with or posterior to the time of *may*.

3.4. Other Explanatory Devices

Before closing this section, we need to see two more explanatory devices. The first device is the following hypothesis.

- (13) Auxiliary as well as lexical verbs can express their own event times.¹⁰

Under this hypothesis, sentence (12a), for example, contains two event times, the event time of the modal auxiliary *may* as well as that of the lexical verb *come*.

The second device is the notion of temporal focus. This notion is defined as a focus located on (part of) an event time in the temporal structure of a tense form when the speaker pays special attention to it.

4. An Analysis of Will-Sentences

4.1. Outline of Temporal Interpretation of Will-Sentences

Having surveyed what is necessary for analyzing the mechanism of temporal interpretation of *will*-sentences, we can start a concrete analysis thereof. I will take up the following six as interpretive values of *will*-sentences (I am not considering (14) as an exhaustive list, though).

- (14) a. Volitional Future
 b. Predictive Future
 c. Simple Future
 d. Predictability/Predictive Present
 e. Propensity/Characteristic Behavior
 f. Order

As noted above, while *will*-sentences with different temporal structures are taken as

¹⁰ Other studies of English tenses based on this hypothesis are, for example, Janssen (1996) and Nakau (1994). My theory owes much especially to the latter in this respect.

expressing different semantic interpretations, *will*-sentences which have different interpretations, but share one and the same temporal structure, express pragmatically different ones. On this basis, I will show, from section 4.2 on, that interpretive values (14a-e) are semantically different interpretations because their temporal structures are different, whereas (14f) is a pragmatic variant of (14b) because the temporal structures of the two cases are the same. Before going further, however, I will provide a general outline of temporal interpretation of *will*-sentences.

Let me start by considering the abstract core meaning of *will*.

(15) Abstract Core Meaning of *Will*: High Probability of Occurrence/Existence

This meaning of *will* is defined based on Palmer's statement that *will* "indicates what is a reasonable conclusion" (Palmer (1990:57-58)); what is reasonably concluded is very likely to occur or hold.

Within my framework, *will* is a present tense form and therefore has the tense structure represented by Figure 1(i) above, while the tense structure of a bare infinitive is unspecified. At the TI level, the temporal structure of *will*-sentences reflects both of the tense structures of *will* and a bare infinitive. In the course of tense interpretation, a given *will*-sentence is interpreted as expressing one of the six interpretations in (14) after the calculation of the meanings of *will* and other elements (including the bare infinitive) under the influence of the linguistic environment in which the sentence occurs. In this way, the type of temporal structure of *will*-sentences is determined. The abstract core meaning of *will* shown in (15) is reflected in each of the determined temporal structures in some way or other, but the *will*'s associated with these temporal structures can be interpreted as expressing specific meanings ascribed to themselves (e.g. volition, predictability) in the course of temporal calculation; if these specific meanings are semantically different, they are in a polysemous relationship with one another.

Since this paper considers *will*-sentences in the present tense form which appear as independent clauses and do not serve as historical presents, the *will* has the default temporal structure in Figure 2(i) above. The speaker's temporal viewpoint, included in the tense structure of *will* as finite form, is located on speech time because of the fusion of the speaker's temporal viewpoint and consciousness, and therefore the event time of *will* holds or occurs in the non-past time area, namely the present or future time area. However, by virtue of the definition of modality stated in section 2, this event time of *will* must hold at speech time. The temporal value that a *will*-sentence expresses depends crucially on the situation type of the bare infinitive, for the bare infinitive, appearing in the complement position of *will* after

its combination with the latter, indicates either simultaneity or posteriority in relation to the event time of *will* as the time of orientation according to the situation type it describes (stative vs. non-stative situations). For the sake of convenience, I will refer to the event time of *will* as E_1 and that of the bare infinitive as E_2 from now on. Note that what type of temporal structure a *will*-sentence represents depends not only on the infinitive's situation type, but also on the controllability of the infinitive's situation, the person type of the subject, and time adverbials.

4.2. Volitional Future

Let me now analyze the mechanism of each interpretation in (14) one by one. I will begin with the case of volitional future. Observe (16):

- (16) a. I will be back before six. (Huddleston and Pullum (2002:192))
 b. I WILL solve this problem. (Huddleston and Pullum (2002:193))
 c. I will write tomorrow. (Klinge (2005:174))

In each example in (16), the situation described by the bare infinitive is that of a controllable type, and the subject is first-person; a volitional interpretation is naturally obtained. In the process of tense interpretation of these *will*-sentences, the notion of volition is ascribed to *will* and thus this *will* is taken as expressing dynamic modality. Because dynamic modality expresses the internal property or state of condition of the subject holding at speech time (in the case of present tense) and volition is part of a human's present state of mind (Leech (2004:62)), E_1 (the event time of *will*) is interpreted as simultaneous with speech time. Since volition means something like "a decision to pursue a plan in mind," the situation described by the bare infinitive is naturally taken as coming in the future relative to the time at which the volition occurred. Moreover, the existence of the future-time adverbs *before six* and *tomorrow* in (16a, c) and the non-stative situations described by the bare infinitives in (16b, c) helps us to reach a posterior relationship of E_2 (the event time of the bare infinitive) to E_1 . Therefore, the *will*-sentences in (16) are instances of volitional future. That a subject referent has a will to pursue an infinitive's situation means that the situation is very likely to occur. This is comparable to Jaszczolt's (2009:59) statement that "strong intentionality results in strong probability." Therefore, *will*-sentences of volitional future reflect the abstract meaning of *will* stated in (15).

Based on these observations, the temporal structure of *will*-sentences of volitional future is schematically represented as follows:¹¹

¹¹ As to the volitional interpretation in the sense of this paper, Leech (1987, 2004) divides it

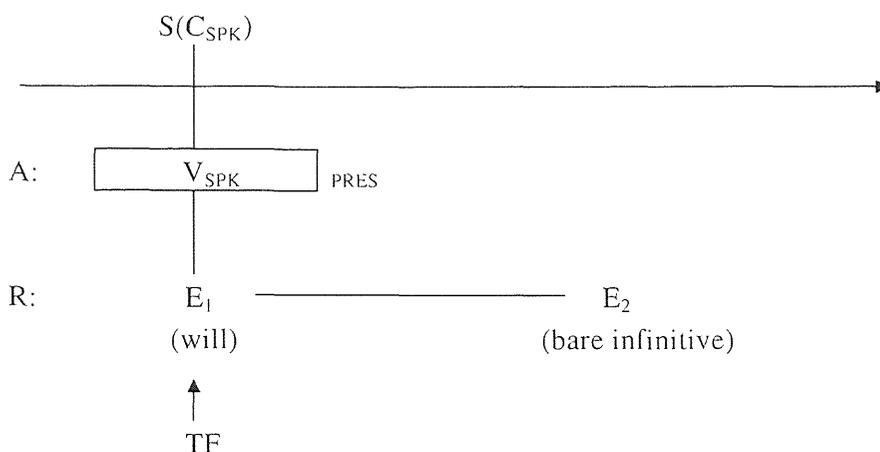


Fig.4: Temporal Structure of *Will*-Sentences of Volitional Future

The reason why the temporal focus (TF) is put on E_1 is that the *will* in this type of sentence is related with the notion of volition; E_1 is viewed as more important than E_2 (associated with the infinitive's situation) in that the occurrence of the infinitive's situation is subject to the presence of the volition. This property of volition is also supported by the fact that volitional *will* can be stressed, as shown by (16b).

Since E_1 is associated with volition, a type of dynamic modality, it is, by definition, an element belonging to the proposition (P) domain. Since the infinitive's situation associated with E_2 is a propositional element, it belongs to the P domain, too. These suggest that there is no explicitly expressed element belonging to the speaker's attitude (SA) domain in *will*-sentences of volitional future, and therefore, this domain is occupied by the unmarked modality, assertive modality, for the reason stated in section 2. Thus, *will*-sentences of volitional future are semantically decomposed in the following manner:

(17) *Will*-Sentences of Volitional Future:

[_{SA} assertion] + [_P volition (E_1) + infinitive situation (E_2)]

4.3. Predictive Future

Let us next consider the case of predictive future. *Will*-sentences are interpreted as expressing predictive future when the speaker makes a prediction about the occurrence or existence of a future situation. By "prediction," I mean predictive modality, defined in (7) above. Because of this definition of prediction

into three types: intention (=intermediate volition), willingness (=weak volition), and insistence (=strong volition). Within the framework of this paper, these three interpretations are pragmatic variants of the volitional future that share the same temporal structure. Cf. also Coates (1983).

or predictive modality, it is based on the speaker's subjective judgment or evaluation;¹² the conjectural estimate of future situations is in nature subjective, even if on a reasoned basis. This suggests that the propositional content of *will*-sentences of predictive future must be the one which deserves the speaker's subjective judgment or evaluation. Put differently, *will*-sentences whose propositional content does not deserve the speaker's subjective judgment or evaluation are not interpreted as those of predictive future; they are interpreted as *will*-sentences of "simple future," which we will return to in the next sub-section. For this reason, I distinguish predictive future from simple future, although they are both usually subsumed under the term "simple/pure future" in the literature.

Now, consider (18):

- (18) a. She will beat him easily. (Huddleston and Pullum (2002:188))
 b. It will rain tomorrow.
 c. Tomorrow's weather will be cold and cloudy. (Klinge (2005:174))

From the fact that the subject is third-person in each sentence in (18) and the fact that the situation described by the bare infinitive is what human beings cannot control in (18b, c), we tend to regard the speaker of these sentences as making a prediction. In fact, the propositional content of these *will*-sentences deserves the speaker's subjective judgment or evaluation. Thus, in constructing the temporal structure of these *will*-sentences, *will* is viewed as representing prediction, a type of epistemic modality. Because epistemic modality expresses the degree of the speaker's commitment to the truth of the target situation at the time of judgment or evaluation, E_1 (the event time of *will*) is interpreted as simultaneous with speech time. From the fact that the infinitive's situation is usually viewed as a non-stative type in (18a, b) and a future time expression is extant in (18b, c), E_2 (the event time of the bare infinitive) is taken as posterior to E_1 . As a result, E_2 comes in the future time-area. Therefore, these *will*-sentences are instances of predictive future.

The definition of predictive modality in (7) enables us to say that the speaker (subjectively) views the predicted situation as very likely to occur or hold, for the situation forecast on a reasoned basis can be viewed as likely to occur or hold, and thus, such a situation is at least not incompatible with the notion of high probability of occurrence or existence.¹³ In this sense, we can say that *will*-sentences of

¹² This is compatible with Leech's (2004:56) statement that prediction is "something involving the speaker's judgment."

¹³ The degree of high probability of *will*-sentences of volitional future seems to be higher than that of *will*-sentences of predictive future. I assume that the notion of high probability covers some range of the higher degree on the probability scale. From this assumption, we can attribute

predictive future reflect the abstract meaning of *will* stated in (15).

Based on the observations made above, the temporal structure of *will*-sentences of predictive future is schematically represented as follows:

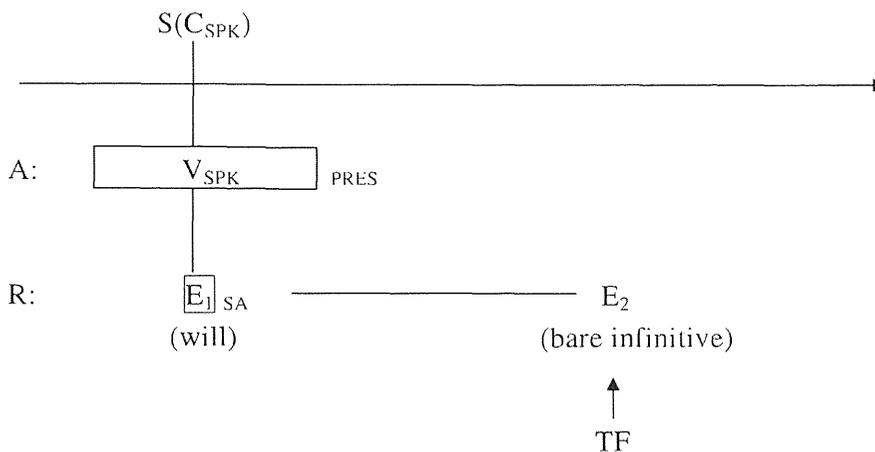


Fig.5: Temporal Structure of *Will*-Sentences of Predictive Future

In Figure 5, E_1 , enclosed in a square with subscript SA, indicates that the relevant situation belongs to the speaker's attitude (SA) domain; all the elements without an SA square belong to the proposition (P) domain.

To see the reason why the temporal focus (TF) is put on E_2 , let us first consider the semantic decomposition of *will*-sentences of predictive future.

(19) *Will*-Sentences of Predictive Future:

[_{SA} prediction (E_1)] + [_P infinitive situation (E_2)]

Since E_1 is associated with predictive modality, a type of epistemic modality, it is by definition an element belonging to the SA domain (see section 2). On the other hand, since E_2 is associated with the bare infinitive, a propositional element, it belongs to the P domain.

Now, the reason why the temporal focus is put on E_2 in Figure 5 is justified in the following manner. The target of focus is basically part of what is described by the speaker. Since prediction is a speaker's attitude element, it does not constitute what is described, propositional content. Thus, E_1 cannot be the target of temporal focus, and therefore, the temporal focus is directed to E_2 , the other possibility.

As is clear from Figures 4 and 5 above, the temporal structure of

such a difference in degree concerning high probability to factors like the notional difference between volition and prediction, as far as the degree of high probability of both notions is confined to that range.

will-sentences of predictive future is different from that of *will*-sentences of volitional future. Therefore, these two interpretations are semantically different.

4.4. *Simple Future*

Now, I will move to *will*-sentences of simple future. The term “simple future” in this paper corresponds to Close’s (1977:132) “statement of future fact.” As indicated at the beginning of the previous sub-section, *will*-sentences are interpreted as expressing simple future when the infinitive’s situation occurring or holding in the future does not deserve the speaker’s subjective judgment or evaluation. In other words, the propositional content of *will*-sentences of simple future is considered to occur or hold in the future as a matter of course and its occurrence or existence in the future is out of the “scope” of the speaker’s subjective involvement. Subsumed under this type of situation are cases of someone becoming a certain age and referring to calendar dates in the future.

We can provide a test to distinguish the propositional content of the simple-future interpretation from that of the predictive-future interpretation: If there is some doubt as to whether the propositional content of *will*-sentences itself will occur or become reality (e.g. whether it will rain tomorrow), then such a *will*-sentence is a predictive-future type; if not, it is a simple-future type.¹⁴

To illustrate the point, consider (20) for example:

- (20) a. He will be two tomorrow. (Huddleston and Pullum (2002:190))
 b. Tomorrow will be Sunday.
 c. There will be a public holiday on Friday. (Close (1977:132))

The subject referent’s becoming the age of two ((20a)), tomorrow’s being Sunday ((20b)), and a certain Friday being a public holiday ((20c)) all do not deserve the speaker’s subjective judgment or evaluation. These propositions are interpreted as future situations that occur or hold as a matter of course; there is no doubt as to whether they will be true in the future. It is only in these cases that I regard *will*-sentences as expressing simple future.

What is important here is that *will* in the simple-future case is interpreted not as representing prediction, let alone volition, but as representing a very schematic situation that virtually functions merely as a “placeholder” or a “waypoint” from which the infinitive’s situation is evaluated. The situation associated with this *will* is regarded as extremely semantically bleached. Thus, in the temporal structure of *will*-sentences of simple future, the event time of *will* functions solely as the time of

¹⁴ I thank Yukio Hirose for bringing this point to my attention.

orientation for the event time of the infinitive's situation. In my tense theory, this type of event time is called "orientational event time" or E^O . However, this *will* can be viewed as a "remnant" of an epistemic modal, because the simple-future interpretation can be counted as a special case of the predictive-future one in that the propositional content of the former, a future situation which does not deserve the speaker's subjective judgment or evaluation, is often difficult to distinguish from a future situation with a very low degree of subjectivity in the speaker's judgment or evaluation.¹⁵ This seems to be why these two interpretations are usually categorized into the same group in the literature, as we saw above. Therefore, E^O_1 , the orientational event time of this type of *will*-sentence, holds at speech time.

Which event time, then, is the temporal focus directed to? Because an orientational event time is associated with a virtually contentless or very schematic situation, it cannot be the target of focus because such a situation normally does not receive any attention. Therefore, the temporal focus is directed to E_2 , the event time of the bare infinitive. Future situations described by *will*-sentences of simple future are extremely likely to occur or hold because they are considered to occur or hold as a matter of course without the speaker's involvement. This type of *will*-sentence thus reflects the abstract meaning of *will* in (15).

From the observations made above, the temporal structure of *will*-sentences of simple future is schematized as follows:

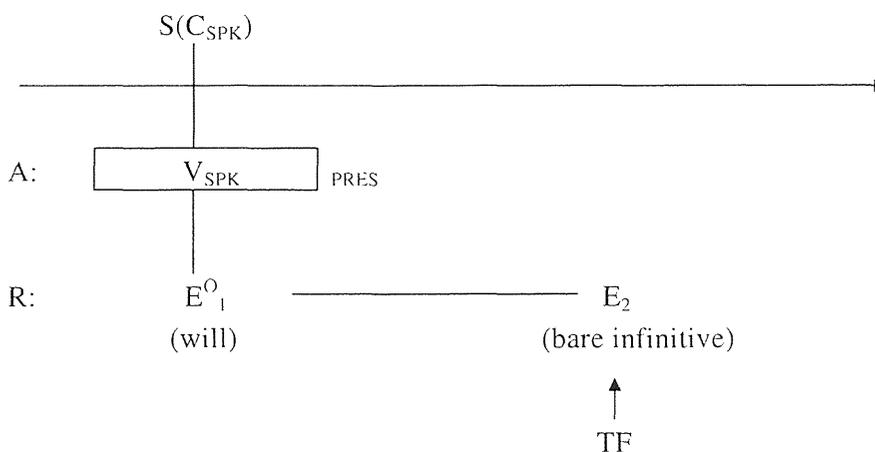


Fig.6: Temporal Structure of *Will*-Sentences of Simple Future

In Figure 6, the event time of *will* functions solely as time of orientation, and the *will* in question virtually does not express any specific mental attitude (state) of the

¹⁵ Simple future *will* in my sense thus corresponds to Collins's (2009:128) minimal degree of prediction or what Declerck (2006) calls "the least subjectified" case of prediction. However, what is to be emphasized is that such a notion is not due to a specific modality associated with *will* from the beginning, but is derived from the temporal structure of simple future *will*-sentences.

speaker. I therefore argue that this *will* is viewed not as belonging to the SA domain, but as part of what is described by the speaker, belonging to the P domain. Since *will*-sentences of simple future contain no explicit element belonging to the SA domain, the domain is occupied by the unmarked modality, assertive modality.

The semantic decomposition of *will*-sentences of simple future is schematized as follows:

(21) *Will*-Sentences of Simple Future:

[_{SA} assertion] + [_P < > (E^O_1) + infinitive situation (E_2)]

The symbol < > means “placeholder.” Since the temporal structure in Figure 6 is different from those in Figures 4 and 5, the simple-future interpretation is semantic.

My claim that in the simple-future interpretation the situation described by *will* is merely a placeholder or a waypoint is supported by the fact that the *will*-sentences in (20) above can be paraphrased as the sentences without *will* in (22) (cf. Huddleston and Pullum (2002:190), Collins (2009:128), among others).

- (22) a. He is two tomorrow. (Huddleston and Pullum (2002:190))
 b. Tomorrow is Sunday.
 c. There is a public holiday on Friday. (Close (1977:134))

In this connection, Close (1977:134) points out that the *will*-sentences express future events that will certainly occur, while the sentences without *will* express present certainty. The temporal structure-based analysis shown above can explain this point in the following manner. Both types of sentences convey assertion holding at speech time. However, since the *will*-sentences in (20) contain E^O_1 in their temporal structure, the semantic content associated with E_2 (posterior to E^O_1) is not a direct target of assertion holding at speech time, and futurity (E_2 coming later than E^O_1) is foregrounded in interpreting these *will*-sentences (note that E^O in essence cannot be foregrounded). On the other hand, since the sentences without *will* in (22) contain only one event time in their temporal structure and the semantic content associated with that event time is a direct target of assertion holding at speech time, presentness (E concurrent with S) is foregrounded in interpreting these sentences.

4.5. Predictability/Predictive Present

Let us next consider *will*-sentences of predictability or what I call predictive present. This interpretation is basically the same as the predictive-future

interpretation except that what is predicted holds in the present time.¹⁶ Consider:

- (23) a. [Knock on door] That will be the plumber. (Huddleston and Pullum (2002:188))
 b. That will be the milkman. (Klinge (2005:174))
 c. John will be in his office. (Palmer (1988:137))

In these *will*-sentences, the subjects are third-person, and the bare infinitives are taken as describing uncontrollable stative situations. Therefore, it is possible to interpret these sentences as indicating that, as Leech (2004:86) suggests, the speaker makes a prediction about a situation holding in the present time-area (recall that the bare infinitive following a modal can receive a simultaneous reading). For the compatibility between this type of *will*-sentence and the abstract meaning of *will* in (15), we have already seen in section 4.3 that *will*-sentences with predictive nuances reflect the latter.

On the basis of these observations, we can schematically represent the temporal structure of *will*-sentences of predictive present below.

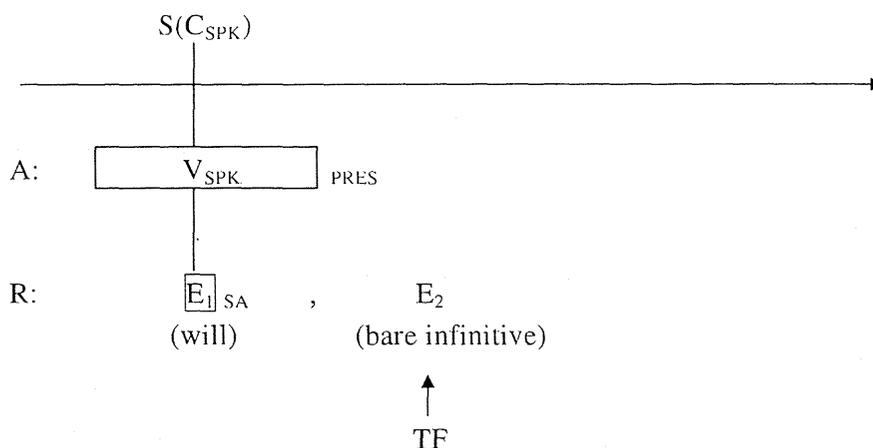


Fig.7: Temporal Structure of *Will*-Sentences of Predictive Present

Since the temporal structure in Figure 7 is different from any of the three temporal structures we have already seen, the predictive-present interpretation is semantic. The semantic decomposition of this type of *will*-sentence is as follows:

¹⁶ Supporting evidence for the view that not only predictive future *will* but also predictability/predictive present *will* can express epistemic modality is as follows: Both co-occur with the epistemic modal adverb *probably*; both can be followed by the perfect form or the progressive form. Volitional *will* does not show these grammatical phenomena. See Collins (2009:128-129) for details.

(24) *Will*-Sentences of Predictive Present:[_{SA} prediction (E₁)] + [_P infinitive situation (E₂)]4.6. *Propensity/Characteristic Behavior*

Now, I turn to the case of propensity or characteristic behavior. This interpretation is similar to the predictive-present one in that the infinitive's situation holds in the present time-area. In fact, Leech (1987, 2004) classifies both of them into the same category. However, one crucial difference between them is that while the infinitive's situation is unique/singular in the predictive-present interpretation, it consists of sub-situations of the same kind in the propensity/characteristic behavior interpretation. When the same kind of situation occurs or holds repeatedly, it comes to express a propensity/characteristic behavior of the subject referent involved in that situation.

Examples of *will*-sentences of propensity/characteristic behavior are (25):

- (25) a. Oil will float on water. (Huddleston and Pullum (2002:194))
 b. He'll go all day without eating. (Klinge (2005:174))
 c. Boys will be boys. (Lakoff (1970:848))

Leech (2004:86) states that a prediction made about a present situation can be extended to include general or habitual predictions (he calls this type of prediction "predictability"). He also states that *will*-sentences of propensity/characteristic behavior are paraphrasable by the following formula: Whenever x happens, it is predictable that y happens. Based on these statements, I conclude that this type of *will*-sentence indicates the speaker's prediction that if we try the same type of event repeatedly, we will see the same result repeatedly.^{17, 18} In constructing the temporal structure of these *will*-sentences, the notion of "being predictable," a kind

¹⁷ My view on propensity/characteristic behavior *will* is thus different from Palmer's (1988:136) view that habitual/characteristic *will*, the correspondent of propensity/characteristic behavior *will* in my terms, is a type of dynamic modality. In my analysis, habitual/characteristic overtones are not attributed to *will* itself, but derive from the infinitive's situation which consists of sub-situations of the same kind. This claim is supported by the fact that sentences without *will* can also receive the habitual/characteristic interpretation when the same situation's occurring or holding repeatedly leads to the same result (cf. Leech (1987, 2004)).

- (i) a. Oil floats on water. (Leech (2004:87))
 b. A kiss is still a kiss in Casablanca. But a kiss is not a kiss without your sigh.
 (cited from Bertie Higgins's 'Casablanca')

In these sentences, the relevant modality is assertion.

¹⁸ A similar explanation is suggested by Boyd and Thorne (1969:64-65) in terms of Speech Act Theory.

of prediction, is ascribed to the modal *will*, which by definition holds at speech time; the infinitive's situation, which is stative because it is a habitual or general one, can be interpreted as simultaneous with the time of prediction, as the formula above indicates. The view that *will* in *will*-sentences of propensity/characteristic behavior is associated with predictive modality can be supported by the fact that the *will* in question cannot be stressed, which is analogous to how *will* cannot be stressed in *will*-sentences of predictive future or present (cf. Leech (2004:86)). For this reason, the *will*-sentences under consideration also reflect the abstract meaning of *will* in (15). From these observations, the temporal structure of *will*-sentences of propensity/characteristic behavior is schematized in Figure 8:

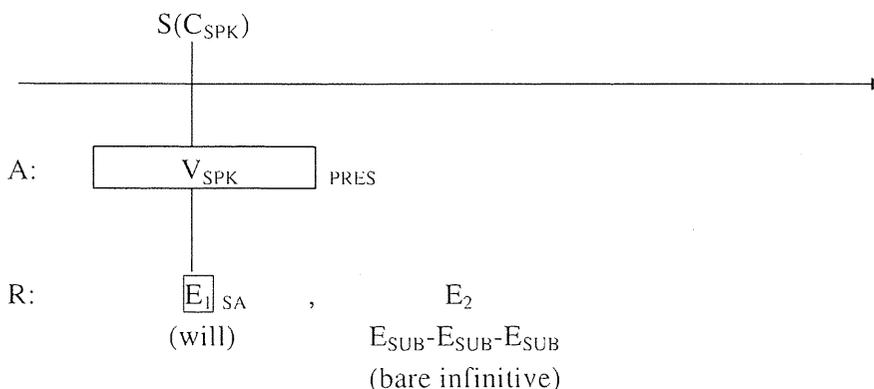


Fig.8: Temporal Structure of *Will*-Sentences of Propensity/
Characteristic Behavior

What is to be noted here is that this temporal structure does not contain temporal focus. First, for the reason we have seen already, the temporal focus is not directed toward E_1 . Second, the infinitive's situation (associated with E_2) consists of sub-situations (represented by E_{SUB}) of the same type which are not intended to be connected to specific times, so the infinitive's situation as a whole is indefinite; the temporal focus is not put on E_2 , either. Hence the lack of temporal focus. Since this temporal structure is different from any of the four aforementioned ones, this type of *will*-sentence receives an independent semantic interpretation.

This type of *will*-sentence is semantically decomposed as in (26):

(26) *Will*-Sentences of Propensity/Characteristic Behavior:

[_{SA} prediction (E_1)] + [_P infinitive situation consisting of sub-situations of the same type (E_2)]

temporal structure, express pragmatically different interpretations. The six interpretations of *will*-sentences considered in this paper are summed up in Table 1.

	Semantic Interpretation	Pragmatic Variant
1	Volitional Future	
2	Predictive Future	Order
3	Simple Future	
4	Predictability/Predictive Present	
5	Propensity/Characteristic Behavior	

Table 1: Semantic and Pragmatic Interpretations of *Will*-Sentences

The addressee is assumed to arrive at any of the five semantic interpretations as a result of utilizing one of the temporal interpretation processes shown in section 4. The temporal structure of each interpretation in some way reflects the abstract core meaning of *will* in (15). The speaker utters a sentence in the form *will* + infinitive assuming that the addressee will go through the semantic and temporal interpretation process to reach the finally-determined interpretive value that the speaker intends to convey. While *will* has its abstract core meaning, it can represent either volition (Volitional Future), prediction (Predictive Future, Predictive Present, Propensity/Characteristic Behavior, Order), or merely “placeholder” (Simple Future) in the semantic decomposition which is assumed to be pursued in the process of semantic and temporal interpretation of a given *will*-sentence. In this way, my analysis of *will*-sentences accommodates the monosemous and polysemous approaches mentioned in the Introduction.

REFERENCES

- Boyd, Julian and James P. Thorne (1969) “The Semantics of Modal Verbs,” *Journal of Linguistics* 5, 57-74.
- Bybee, Joan and William Pagliuca (1987) “The Evolution of Future Meaning,” *Papers from the 7th International Conference on Historical Linguistics*, ed. by Anna Giacalone Ramat, Onofrio Carruba and Giuliano Bernini, 109-122, John Benjamins, Amsterdam and Philadelphia.
- Close, Reginald A. (1977) “Some Observations on the Meaning and Function of Verb Phrases Having Future Reference,” *Studies in English Usage: The Resources of a Present-day English Corpus for Linguistic Analysis*, ed. by Wolf-Dietrich Bald and Robert Ilson, 125-156, Peter Lang, Frankfurt.
- Coates, Jennifer (1983) *The Semantics of the Modal Auxiliaries*, Croom Helm, London.
- Comrie, Bernard (1985) *Tense*, Cambridge University Press, Cambridge.
- Collins, Peter (2009) *Modals and Quasi-Modals in English*, Rodopi, Amsterdam.
- Davidson-Nielsen, Niels (1990) *Tense and Mood in English: A Comparison with Danish*, Mouton

de Gruyter, Berlin.

- Dancygier, Barbara (1998) *Conditionals and Prediction: Time, Knowledge and Causation in Conditional Constructions*, Cambridge University Press, Cambridge.
- Declerck, Renaat (1991) *Tense in English: Its Structure and Use in Discourse*, Routledge, London.
- Declerck, Renaat (in cooperation with Susan Reed and Bert Cappelle) (2006) *The Grammar of the English Verb Phrase Volume 1: The Grammar of the English Tense System*, Mouton de Gruyter, Berlin and New York.
- Duffley, Patrick (1992) *The English Infinitive*, Longman, London.
- Groefsema, Marjolein (1995) "Can, May, Must and Should: A Relevance Theoretic Account," *Journal of Linguistics* 31, 53-79.
- Haegeman, Lilliane (1989) "Be Going To and Will: A Pragmatic Account," *Journal of Linguistics* 25, 291-317.
- Halliday, Michael A. K. (1970) "Functional Diversity in Language as Seen from a Consideration of Modality and Mood in English," *Foundations of Language* 6, 322-361.
- Harder, Peter (1996) *Functional Semantics: A Theory of Meaning, Structure and Tense in English*, Mouton de Gruyter, Berlin.
- Herslund, Michael (2005) "Subjective and Objective Modality," *Modality: Studies in Form and Function*, ed. by Alex Klinge and Henrik Høeg Müller, 39-48, Equinox, London and Oakville.
- Hornstein, Norbert (1990) *As Time Goes by: Tense and Universal Grammar*, MIT Press, Cambridge, MA.
- Huddleston, Rodney (1995) "The Case against a Future Tense in English," *Studies in Language* 19, 399-446.
- Huddleston, Rodney and Geoffrey K. Pullum (2002) *The Cambridge Grammar of the English Language*, Cambridge University Press, Cambridge.
- Janssen, Theo A.J.M. (1996) "Tense in Reported Speech and its Frame of Reference," *Reported Speech*, ed. by Theo A.J.M. Janssen and Wim van der Wurff, 237-259, John Benjamins, Amsterdam and Philadelphia.
- Jaszczolt, Katarzyna M. (2009) *Representing Time: An Essay on Temporality as Modality*, Oxford University Press, Oxford.
- Klein, Wolfgang (1994) *Time in Language*, Routledge, London and New York.
- Klinge, Alex (1993) "The English Modal Auxiliaries: From Lexical Semantics to Utterance Interpretation," *Journal of Linguistics* 29, 315-357.
- Klinge, Alex (2005) "Where There Is a Will, There Is a Modal," *Modality: Studies in Form and Function*, ed. by Alex Klinge and Henrik Høeg Müller, 169-186, Equinox, London and Oakville.
- Lakoff, Robin (1970) "Tense and its Relation to Participants," *Language* 46, 833-849.
- Leech, Geoffrey (1987) *Meaning and the English Verb*, 2nd ed., Longman, London.
- Leech, Geoffrey (2004) *Meaning and the English Verb*, 3rd ed., Longman, London.

- Lyons, John (1977) *Semantics*, Two Volumes, Cambridge University Press, Cambridge.
- McDowell, Joyce P. (1991) "Quasi-Assertion," *Journal of Semantics* 8, 311-331.
- Nakau, Minoru (1994) *Ninchi Imiron no Genri* [Principles of Cognitive Semantics], Taishukan, Tokyo.
- Palmer, Frank R. (1988) *The English Verb*, 2nd ed., Longman, London and New York.
- Palmer, Frank R. (1990) *Modality and the English Modals*, 2nd ed., Longman, London.
- Palmer, Frank R. (2001) *Mood and Modality*, 2nd ed., Cambridge University Press, Cambridge.
- Papafragou, Anna (1998) "Interface and Word Meaning: The Case of Modal Auxiliaries," *Lingua* 105, 1-47.
- Quirk, Randolph, Sidney Greenbaum, Geoffrey Leech and Jan Svartvik (1985) *A Comprehensive Grammar of the English Language*, Longman, London.
- Reichenbach, Hans (1947) *Elements of Symbolic Logic*, Free Press, New York.
- Sawada, Harumi (2006) *Modariti* [Modality], Kaitakusha, Tokyo.
- Searle, John (1979) *Expression and Meaning: Studies in the Theory of Speech Acts*, Cambridge University Press, Cambridge.
- Searle, John and Daniel Vanderveken (1985) *Foundations of Illocutionary Logic*, Cambridge University Press, Cambridge.
- Sweetser, Eve (1990) *From Etymology to Pragmatics: Metaphorical and Cultural Aspects of Semantic Structure*, Cambridge University Press, Cambridge.
- Wada, Naoaki (2001) *Interpreting English Tenses: A Compositional Approach*, Kaitakusha, Tokyo.
- Wada, Naoaki (2006) "Teikei Doshi Hobu ni Shojiru Hi-teikei Doshi no Jiseikaishaku [Temporal Interpretation of Non-Finite Verbs in the Complement Position of Finite Verbs]," *Kotoba no Kizuna* [Bonds of Language] ed. by Yuji Ushiro, Kazuaki Ota, Satoshi Ota, Naohiro Takizawa, Shin-ichi Tanaka, Koichi Nishida and Eiji Yamada, 397-410, Kaitakusha, Tokyo.
- Wada, Naoaki (2009a) "The Present Progressive with Future Time Reference vs. *Be Going To*: Is Doc Brown Going Back to the Future Because He Is Going to Reconstruct it?" *English Linguistics* 26-1, 96-131.
- Wada Naoaki (2009b) "'Uchi' no Shiten/'Soto' no Shiten to Jiseigensho: Nichieigo Taisho Kenkyu [‘Inside’ Viewpoint/‘Outside’ Viewpoint and Tense Phenomena: A Contrastive Study of Japanese and English]," *'Uchi' to 'Soto' no Gengogaku* [The Linguistics of ‘Uchi’ and ‘Soto’: Inside and Outside], ed. by Atsuro Tsubomoto, Naoko Hayase and Naoaki Wada, 249-295, Kaitakusha, Tokyo.
- Wekker, Herman C. (1976) *The Expression of Future Time in Contemporary British English*, North-Holland, Amsterdam.

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