

Context, Thought and Utterance: Where Context Meets Syntax (Un)expectedly

Ken-ichiro Shirai, Yoshiki Mori,
Naoki Yamazoe

1. Introduction

The aim of this paper is to demonstrate the intricate relationship between the language use and the internal system of language¹. To investigate this problem, we employ two recent theories; that is, the context theory proposed by Schlenker (see Schlenker (2003, 2004)) and the syntactic model of natural language, named "Dynamic Syntax", which has been developed by Kempson et al. (see, e.g., Kempson et al. (2001)). Specifically, we address ourselves to English and Japanese tenses, focusing on

1 We would like to thank Philippe Schlenker and Ruth Kempson for their interest in an earlier version of this paper. Schlenker kindly let us accessible to the published version of his paper, Schlenker (2004), and Kempson gave us comments on our draft, together with detailed discussion on fundamental issues about the formal treatment of the tense in natural language, based on the most updated version of Dynamic Syntax. However, in the present paper, we did not have enough time to think seriously upon her general comments, so we decided to take advantage of an adequate opportunity and reflect her invaluable insights on the tense there.

the fundamental distinction between them.

Typologically, the comparative study of the two languages is interesting, in that English is a typical head-initial language, while Japanese is a full-fledged head-final language. A surprising fact to be shown in the paper is that these syntactic properties of English and Japanese will turn out to account for the basic difference in their usage of tenses, given the Dynamic Syntax views of natural language *and* the grammatical notion of context of speech that has recently been proposed by Schlenker.

On the syntactic side, with languages like English the concept of tense is so much grammaticalized in the internal system of language that it is realized as (syntactic) *features*, as opposed to languages like Japanese, where the tense system is realized of its own as (morphological) *suffixes*. On the side of language use, according to Schlenker's theory of context, with languages like English "shifted contexts" in the sense of Schlenker (2004) may not be allowed in ordinary discourses, while this is not the case with languages like Japanese, where the manipulation of context is much more dynamic and flexible than in English. To borrow some term in the philosophical literature (see Kaplan (1989)), Kaplan's 'monsters' are everywhere in Japanese, whereas in English they are kept penned up in the restricted sphere, as it were.

Hence context and syntax meet with each other in natural language. At first sight, from the traditional standpoints of language use and system, one might find our conclusion, if correct, rather surprising. But this result is just as it should be, from our dynamic views of syntax and context.

The outline of this paper is organized as follows. In section 2, we discuss, in brief, the relation of the tense and the context of speech in natural language. This section only intends to provide preliminaries for discussion in the subsequent sections.

In section 3, we expound Schlenker's theory of context, focusing on his notion of "ramified contexts", i.e. the Context of

Thought and the Context of Utterance. In section 4, we develop his theory of context into Japanese, as well as English. In order to explicate the basic difference of English and Japanese on the tense system, we mainly discuss 'mismatch' of tense forms in the two languages. A crucial case is presented, where in English the past tense is used (as expected), but the corresponding tense form in Japanese may be non-past, the so-called "-*ru* form" of verbs (e.g. *tabe-ru*). We will show why this sort of mismatch emerges, depending on Schlenker's notion of "context shift". There is also an 'opposite' case on the part of English. Although in Japanese the past tense, or the so-called "-*ta* form" of verbs (e.g. *tabe-ta*) is used (as expected), the corresponding verb in English is marked with present form in some special speech acts, like *Here comes the bus!* We will account for peculiarities of such a special sort of English utterances, based on the 'inverse image' of Schlenker's ramified contexts; that is, the Context of Thought and the Context of Utterance are to be regressed into one and the same context.

In the next section, we turn our concern to syntactic aspects of natural language. In 5.1, we give an outline of the linguistic framework named "Dynamic Syntax" (henceforth, DS), mainly concerned with its basic views of natural language syntax. In DS, syntax is, in essence, a 'parser', and an utterance is parsed on strictly left-to-right basis of linguistic inputs (words). A novel idea of DS is that natural language syntax is in itself "underspecified", in the sense that partial syntactic structures are to be generated and grow incrementally, until the final, fixed syntactic structure is built up and no structural underspecification has been left in the representation. As opposed to formal languages in logic and mathematics, one of the most basic properties of natural language lies in the notion of underspecification, or to put it in more traditional terms, "context-dependency". This notion has hitherto been employed for *semantic* concept of underspecification in natural language;

that is, the interpretation of natural language utterance is highly context-dependent (see, e.g., the interpretation of pronouns). However, in the DS model of syntax, it is convincingly claimed that *syntax* also is underspecified in natural language, a radical departure of the notion of natural language syntax from the prevailing syntactic theories in linguistics.

Then, in 5.2, based on recent works in DS (Kempson et al. (2004), Kempson (2003)), we take up the application of DS framework to Japanese. The underspecified nature of natural language syntax reveals itself most vividly in Japanese, which has been typologically classified as the so-called "full pro-drop" language. In Japanese, depending on context, we may 'drop' subject and object terms quite easily and naturally; e.g., *Aisiteiru yo*. ('I love you.') Furthermore, in Japanese, grammatical roles of case marked terms are not always to be fixed at the very point of their appearance or processing in the sentence; see, e.g., *Taro ga muita ringo wo tabeta*. ('Taro/the person in question, etc. ate an apple that Taro/the person in question, etc. peeled.') The advantage of DS as a natural language syntax model does not lie merely in its genuine dynamics, but also in its *explanatory* power. That is, given the DS formalism of syntax, we can even account for the fact that Japanese should be a verb-final language, with some of the most basic characteristics of the language. We have not so far known any other syntactic model that has such an explanatory power, including the most recent model of generative grammars.

In 5.2, we also try to build a bridge over Schlenker's theory of context and the DS novel findings on the Japanese syntax; that is, the verb-final nature in Japanese is to be accounted for by the syntactic property of Japanese that the tense is realized as suffixes directly attached to verb morphemes. This will turn out to explain the fact that Kaplan's 'monsters' are everywhere in Japanese.

In section 6, we discuss some aspects of the English subjunc-

tive, comparing the distinction of indicative/subjunctive moods in English and Japanese. We suggest that the traditional account of English subjunctives, which has been based on the notion of possible worlds, should be replaced with a more dynamic context-based account, which takes advantage of Schlenker's presuppositional theory of grammatical features.

In section 7, we make concluding remarks, together with our brief comments on the relation between speech and thought in general. This paper contains an appendix, which shows the correspondence between our tense system and Reichenbach's system with his famous notions of the "speech time", the "reference time" and the "event time" in discourse. We hope it will help the reader understand our new system, though we believe that his traditional system on the tense is not adequate for linguistic purposes in natural language..

2. Tense and Context: Tense as Anaphora

First of all, to investigate the tense in natural language, why should we take up the concept of context? The answer is that the tense is *anaphoric* in nature. This is one of the most basic findings on the tense in natural language, the so-called "temporal anaphora" (see, among others, a pioneer work by Partee (1984)). Partee notices that we may think of several uses of the (past) tense, which correspond to those of pronouns, i.e. "nominal anaphora". See, for example, the following sentences in English:

- (1) I didn't turn off the stove.
- (2) Mary had a party last night and John got drunk.
- (3) Whenever Mary telephoned, John was asleep.
- (4) If Mary telephoned on a Friday, it was (always) John that answered.

In sentence (1), uttered while driving down a freeway after she had left home, the past tense is used to refer to an (intended)

particular time not introduced by previous linguistic context, thus corresponding to the "deictic" use of pronouns. In sentence (2), a time is explicitly specified in the first clause, and the past tense in the second clause is most naturally co-referring to the nearly same time (of interval), thus corresponding to the "coreferential" use of pronouns. The use of the past tense in the main clause in sentence (3) corresponds to the so-called "bound variable" reading of pronouns; see, e.g., *Every woman believes that she is not happy*. Examples like sentence (4) correspond to the famous "donkey sentence" in the formal semantics literature on pronouns (see, among others, Geach (1962), Kamp (1984))².

These remarks are just linguistic classics today; pronouns are anaphora in nominal domains, and tenses are anaphora in event domains. But if we want to go further and make clear what a particular time is actually referred to by the past tense in examples like sentence (1), we do need the theory of context in discourse, just as we want to specify the reading of (deictic) pronouns. Temporal, as well as nominal, anaphora is a discourse phenomenon, and any kind of discourse analysis requires, among its most basic ingredients, some notion of context. Furthermore, if we want to distinguish the uses of past tense in (1) and (2), we have to make clear what is the (non) linguistic context. It will easily be noticed that some sort of "salience" in discourse is concerned there; that is, we may say that it is triggered by the previous utterance in (2), while it is basically up to the speaker's mind or thought in (1). But what are the context of utterance and the context of thought, and their relation or interaction? We believe that Schlenker's theory of ramified contexts gives us significant hints to the above issues.

2 In this paper, we do not discuss those types of temporal anaphora corresponding to the sentences (3) and (4). It is out of the scope of the paper.

3. Schlenker's Context Theory: Thought and Utterance in Context

3.1 Indexicals and Kaplan's 'Monsters'

Before we go on to present Schlenker's theory of context at some length, we make brief remarks on philosophical and linguistic motivations for his theory; that is, with what intention he is proposing his theory of context. The root of issues goes back to Frege, when he invented the term of "Sense". We do not intend to recapitulate the long history of discussion on this profound notion in philosophy and formal semantics. First, we point out that indexicals in natural language give a serious challenge to the Fregean Sense, as has been convincingly clarified by Kaplan (see, e.g., Kaplan (1978/1979)). Then, we outline Kaplan's solution for the meaning of indexicals, and moreover, why it is *not* adequate in general, as Schlenker shows empirically in a number of natural languages (Schlenker (2003)).

Look at the following examples, which were coined by Kaplan:

(5) I am here now.

(6) Necessarily I am here now.

It may be said that the proposition expressed in (5) is analytically true; that is, it is not a contingent fact that the speaker (Ken) exists in the location of utterance (say, Ken's office in Chukyo University) at the time of utterance (say, May 1, 2004), as long as Ken actually utters (5) in his office on May 1, 2004. By contrast, the proposition expressed in (6) is far from being true; it is not necessary at all that Ken should be in his office on May 1, 2004; he might be somewhere else on that day.

The above examples indicate that indexical expressions like *I*, *here*, and *now* behave distinguishing way; that is, their denotations are to be *directly* picked out from the context of speech, without the mediation of a Fregean Sense. Kaplan calls this principle the "Direct Reference" thesis. To give a solution for the

meaning of indexicals, together with more ordinary linguistic expressions, Kaplan finally reaches the conclusion that meanings of linguistic expressions in general are to be provided with two steps, that is, through his notions of "Character" and "Content". His theory of meanings makes a fundamental departure from the more traditional formal theory, where linguistic meanings are formalized with one step, as a function from the points of reference (including possible worlds, moments of time, the speaker, the location of utterance, etc.) to their denotations; see Montague's formal pragmatics (Montague (1968/1974, 1970/1974), which tries to develop the possible worlds semantics into natural language pragmatics, as well.

So far, so good. But Kaplan goes further and touches on empirical aspects of natural language. Schlenker points out in Schlenker (2003, p. 29) that as a corollary of his theory of indexicals, Kaplan insists that the value of an indexical cannot be affected by the logical operators in whose scope it may appear. Schlenker calls this corollary of Kaplan's theory the "Fixity Thesis", which makes indexicals 'scopeless'; that is, there are not any operators in natural language that could be defined as shifting the context of evaluation of indexicals. Schlenker also points out that although Kaplan grants that such operators are logically conceivable, he calls them 'monsters' because they contradict his thesis, and that he claims (optimistically) that his monsters do not and could not exist in natural language (ibid., pp. 29-30).

Schlenker challenges Kaplan's (optimistic) views on indexicals, and gives empirical evidence that Kaplan's monsters do dwell in natural language, focusing on attitude operators. To give one example, consider the following attitude report in Amharic (ibid., p. 31):

- (7) Situation to be reported: John says: 'I am a hero'.
 a. *Amharic* (lit.): John_i says that I_i am a hero.
 b. *English*: John_i says that he_i is a hero / *John_i says

that I_i am a hero.

Although the English 1st person pronoun is well-behaved according to the Kaplan's thesis mentioned above, its Amharic counterpart isn't. The Amharic 1st person pronoun may refer to the agent of a reported speech act, rather than that of an actual speech act, i.e. the speaker of utterance, which contradicts the Fixity Thesis. Schlenker shows in the paper a number of similar counter-examples to Kaplan's speculation on indexicals in natural language, taking up many (unrelated) languages in the world, among which even English is included (e.g. English adverbial phrases like *two days ago*).

3.2 Context of Thought and Context of Utterance

In Schlenker (2003), he challenges Kaplan's theory of linguistic meanings, one of the most influential works in the philosophy of language and (formal) semantics, with lengthy discussion and illustration, as it should be if one tries to fight against a profound theory well-established in the literature. However, his theory of ramified contexts has not been presented there, but in his later paper, Schlenker (2004), "Context of Thought and Context of Utterance: A Note on Free Indirect Discourse and the Historical Present". Although also in Schlenker (2003) he makes remarks in a footnote that the notion of the term "context" will be extended to cover contexts of thought as well as contexts of speech (ibid., p. 29), he has not yet been explicit on his concept of "ramified contexts", which is clearly employed in Schlenker (2004), for the purpose of taking into accounts such a special sort of discourses as the so-called "Free Indirect Discourse" and the Historical Present in English, the former of which is to be found in the style of literary works.

As the most basic claim in Schlenker (2004), he proposes that the grammatical notion of context of speech should be ramified into the *Context of Thought* and the *Context of Utterance*. Roughly, the Context of Thought (θ) is defined as "the point at

which a thought originates"; it includes "a thinker, a time of thought and a world of thought" (ibid., p. 279). On the other hand, the Context of Utterance (ν) is defined as "the point at which the thought is expressed"; it includes "a speaker, a hearer, a time of utterance and a world of utterance" (ibid., p. 279). Although he does not make it clear in his short paper, we believe that his notion of the term "point" in the above quoted definition is rather abstract, more closely connected to the so-called "points of view" or "perspectives". Hence, we believe that Schlenker intends with his ramified contexts to propose that two different, though related, points of view are to be 'running' in parallel in discourse or written text.

It might be the case that our interpretation of his vague definition of "ramified contexts" does not exactly match with his own intents, but it would *not* hinge upon what we try to insist in this paper. Anyway, in the paper below, we are going to discuss with our interpretation of his notion of ramified contexts. The crucial point is that with Schlenker, we believe, two different, though related, concepts of context should be involved in the generation and understanding of discourse or text, with respect to which linguistic expressions are to be evaluated in systematic ways, which will be clarified in the subsequent discussion.

Schlenker further claims that there is a 'division of labor' between θ and ν . That is, pronouns and tenses (at least in English) are evaluated with respect to ν , in the sense that ν *constraints* their use, whereas all other indexicals (e.g. *here*, *now* and other demonstratives) are evaluated with respect to θ , in the sense that such indexical expressions are given their *intended* referents in the context of thought.

Let us consider first his latter claim on indexical expressions (except pronouns and tenses) in English. For a rather clear illustration, take the expression "here", and suppose the following situation. Arriving in Amsterdam, Ken took a taxi to get to the

hotel, and in the taxi he utters: "I once lived here". In this situation, what *here* refers to is not surely the actual location of utterance; he never means that he once 'lived' in the taxi! The intended referent by the speaker resides in his thought. Probably, he is intending to mean that he once lived in the city of Amsterdam, or more vaguely, in some part located in the Netherlands. With more 'imagination', we might think other way. Getting or 'landing' to some spot in Amsterdam (maybe, by a UFO), the speaker (maybe, an alien) utters: "I once lived here". Then, *here* in his(?) utterance may be interpreted even to designate somewhere on the planet of Earth. Hence the intended location referred to by *here* is only to be specified with the Context of Thought. There are some special cases in English, where *here* exactly designates the location of utterance, like *Here comes the bus!*, which we will discuss later in 4.4.

As for his first claim that pronouns and tenses in English are to be evaluated with respect to the Context of Utterance, rather than the Context of Thought, things would become much more complicated. First of all, we do not believe that his claim on tenses applies to languages like Japanese. Indeed, we will show in section 4 that the usage of Japanese and English tenses does differ on that point.

Let us consider first English pronouns, with the following famous example, due to Kaplan, which is discussed by Schlenker to illustrate Kaplan's theory of indexicals (Schlenker (2003, p. 34)):

- (8) 'If I see, reflected in a window, the image of a man whose pants appear to be on fire, my behavior is sensitive to whether I think, 'His pants are on fire', or 'My pants are on fire', though the object of thought may be the same'.

Here, in (8), with "the object of thought" is meant by Kaplan the proposition expressed; that is, Kaplan's pants are on fire. Although in the above situation 'his pants are on fire' and 'my pants are on fire' express (externally) the same proposition

about the world, their 'cognitive significance', to employ the term used in Schlenker (2003), is not the same. That is, in the 1st person case it is asserted that the *speaker's* pants are on fire, while in the 3rd person case it is indicated that *the person who is pointed at* is in that unfortunate situation. Therefore, the two cases do not represent (internally) the same thought; indeed, the speaker, Kaplan, would take different (immediate) 'actions' in the two situations. However, in English reported speech acts, they get expressed with one and the same utterance, as follows:

(9) Kaplan_i says that his_i pants are on fire.

The above example suggests that pronouns in English are to be evaluated with respect to the Context of Utterance, rather than the Context of Thought. With respect to the Context of Thought, the pronoun in (9) is ambiguous; it may designate various 'descriptions', depending upon the speaker's thought in context. Among these descriptions, "the speaker" himself and "the pointed person reflected in the window" are two natural candidates.

Now let us turn to tenses in English. For illustration, consider the following situation. Watching a picture of himself, which was taken thirty years ago, Ken utters:

(10) a. I was young (then).

b. *I am young (then).

In this scenario, where Ken is recalling to his memory a past scene described in the picture, the present tense could not be used in English, even though his thought *is* situated in that scene. The utterance (10b) is simply infelicitous for proper use of the (present) tense in English. Here, the context of utterance requires the past tense, though the speaker is free to be 'back' to a past scene in the context of thought.

Therefore, in English, the usage of tenses is *constrained* with respect to the way of *articulating* an utterance in context, irrespectively of the speaker's intention in the context of thought. A native speaker of English knows this constraint on tenses or

their grammaticalized 'convention' of use. If someone, supposedly a non-native of English, should use (10b) instead of (10a), in the above situation, it would reveal that this one has not learned the proper use of tenses in English.

3.3 Shiftable Contexts

In Schlenker (2004), he points out that in *ordinary* discourses the Context of Thought (θ) and the Context of Utterance (ν) are identical with each other (i.e. $\theta = \nu$, in his notation), and that both are taken to be the "actual context", C^3 , that is, the physical context in which the speech act is taking place (ibid., p. 299); hence, in his notation, $C = \theta$ and $C = \nu$ ⁴.

However, in a special sort of English discourses, the above correspondence could break down. Schlenker gives two cases in the paper; that is, the so-called "Free Indirect Discourse" and the Historical Present in English. In Free Indirect Discourse (henceforth, FID), he insists in the paper (ibid., p. 280), the Context of Utterance is the actual context, but the Context of Thought is taken to be located somewhere else; hence, in his notation, $C = \nu$ and $C \neq \theta$. Thus, in FID, he remarks that quite literally, not just metaphorically, "another person's thoughts are articulated through the speaker's mouth" (ibid., p. 280).

3 For notation of the "actual context", Schlenker is using c in his paper, but we prefer to use C because it is more readable.

4 Schlenker is not explicit with these notations. His notations of ' $C = \theta$ ' and ' $C = \nu$ ' will be interpreted more formerly that the relevant factors for θ or ν are to be "properly embedded" into the actual context C , in the DRT sense (cf. Kamp (1984)). Notice that from $C \neq \theta$ and $C \neq \nu$, it may or may not be case that $\theta = \nu$, according to his notation, though it does follow from $C = \theta$ and $C = \nu$ that $\theta = \nu$. That is, his notation of ' $\theta = \nu$ ' only means, in our interpretation, that the two contextual perspectives, i.e. θ and ν , are to be *consistent* with each other. Hence, to avoid possible misunderstanding, it will be more advisable to employ some different symbol than the mere equation '=' for the relation between θ and ν . See the discussion in 4.2 with "a pair of (parallel) shifts of θ and ν ", and also the discussion in section 6 with English subjunctives.

As an example of FID, given by Schlenker (ibid., p. 280), look at the following passage in a literary work (Lawrence, *Women in Love*, p. 185, London, Heinemann 1971):

(11) Tomorrow was Monday, Monday, the beginning of another school week!

In (11), the thought expressed should not be attributed to the narrator, but to one of his characters in the novel, since it would be ungrammatical in the ordinary discourse of English. Schlenker insists that in examples like (11) the character's perspective serves as the Context of Thought, with respect to which the indexical *tomorrow* is evaluated. The repetition of the word *Monday* clearly indicates that (11) is not an ordinary discourse. But it is *not* the same as an ordinary quotation, either. Even though *tomorrow* is not evaluated from the narrator's perspective, the past tense in the utterance remains to be evaluated with respect to the actual context. If both *tomorrow* and the past tense were evaluated with respect to the same context, the utterance would result in a contradiction, which is contrary to the fact. This is the point where FID differs from an ordinary quotation.

Thus, Schlenker draws a conclusion that FID must be evaluated with respect to *two* (different) contexts, rather than one; that is, the Context of Utterance and the Context of Thought, which diverge in FID. Although the narrator is 'shifting' the context of thought to that of the relevant character, he is still *articulating* his utterance in accordance with the actual context. Hence, in FID, examples like (11) are not rendered ungrammatical, observing the general constraint in English on the usage of (past) tense. He points out (ibid., p. 283) that FID behaves as a mix of direct and of indirect discourse, in that tenses and pronouns take the form that they would have in an (indirect) attitude report, while every other indexical expression behaves as in direct discourse.

Hence Schlenker's theory of context is *dynamic*, in the sense

that it allows for "shiftable contexts", that is, those contexts that do *not* correspond to the actual context. In FID, the Context of Thought (θ) is shifted from the actual context (C), whereas the Context of Utterance (ν) isn't. Here, one might wonder if there would be the opposite pattern in English. According to Schlenker, the answer is positive.

In the Historical Present in English (henceforth, HP), he supposes, ν is shifted from C, whereas θ isn't. In HP, θ is not shifted from C, because the assertion is attributed to the actual speaker, not to someone else. But ν is taken to be shifted from C, in that the time coordinate of ν is set somewhere in the relevant past, not corresponding to the actual time of utterance. His supposition will nicely explain why, in HP, one gets the impression that the (actual) speaker is 'present' at the (past) scene she is describing. This is the very reason that in HP the present tense may be employed, though the described event is actually located in the past.

For illustration, look at the following example given by Schlenker in the paper (*ibid.*, p. 281):

- (12) Fifty eight years ago to this day, on January 22, 1944, just as the Americans are about to invade Europe, the Germans attack Vercors.

As he observes, if "fifty eight years ago" and the present tense in (12) were evaluated with respect to the same context, its assertion would result in a contradiction. But in the discourse of HP, sentence (12) is felicitous. Assuming that the time of ν is shifted and is set on January 22, 1944, fifty-eight years before the actual time of utterance, Schlenker gives an account for this fact.

In the HP discourse, the Context of Thought corresponds to the actual context. In this respect, HP is not different from the ordinary discourse of English. Hence, in HP, indexical expressions occurring in the sentence, except the (present) tense, remain to be evaluated with respect to a non-shifted context of

thought, as is usual in English. The peculiarity of HP is that the Context of Utterance, unlike English ordinary discourses, is shifted from the actual context, in the sense that *only* its time coordinate is shifted into the past. That is, the temporal point of reference for the Context of Utterance is located in the past, which results in licensing the present tense in HP. This yields the impression that the speaker (or the narrator) is directly 'witnessing' the relevant (past) scene. The counterpart form of past tense would be perfectly grammatical with HP examples, but it would not produce the impression of 'vividness', which is exactly the effect of employing HP in English.

It might seem to be strange that English pronouns in HP, unlike the (present) tense, should be evaluated with respect to the actual context. Although Schlenker is not explicit on it, in his theory of shiftable contexts it is not required that every contextual aspect ought to be shifted in some way or other, together with the shifted context. Hence it is not unnatural to suppose that in HP only its time coordinate is shifted into the past. Indeed, the peculiarity of HP as a style of English discourse is identified exactly with the evaluation of the (present) tense.

Schlenker, however, does notice that his supposition that pronouns in HP are to be interpreted with respect to the actual context would imply the existence of 'improper' contexts. Look at the following variant of the preceding example (12), which is also given in his paper (*ibid.*, p. 298):

- (13) Fifty eight years ago to this day, on January 22, 1944,
just the Americans *are* about to invade Europe, the Ger-
mans *attack* Vercors. *My grandfather tries to escape* ...

With the above example, his reasoning for improper contexts is as follows. For the present tense to be licensed in (13), the time coordinate for the Context of Utterance should be shifted from the actual time of utterance and is set on the relevant past moment of time, i.e. January 22, 1944. Since, given his supposition, the pronoun "my" should be evaluated as usual, denoting the

actual speaker of utterance, *and* since it may well be the case that the speaker was not yet born in 1944, it must follow that the context of utterance may be an improper one; that is, a context whose agent does not exist at the time of the context.

But Schlenker says in the paper (*ibid.*, p. 298), "How worrisome is this?" He insists that this result is just as it should be. We completely agree with him on this point, because the effect of (13) is precisely to give the impression, like other HP examples, that the scene taking place on January 22, 1944 is vividly present to the speaker as if she were attending it. The point is that the literary effect of HP obtained through (13) can arise only if the context of utterance is taken to be an improper one; although the speaker does not really exist in the scene, she *is* witnessing it.

To summarize, the basic points of Schlenker's Context Theory are given below:

- (i) The traditional notion of context of speech is ramified into the Context of Thought (θ) and the Context of Utterance (ν).
- (ii) In the (English) ordinary discourse, θ and ν are matched with each other, and both of them correspond to the actual context (C); hence, $C = \theta$ and $C = \nu$, in his notation.
- (iii) However, in principle, either of θ and ν may be shifted from C, the *dynamic* views of context in his theory.
- (iv) In Free Indirect Discourse in English, θ is shifted from C ($C \neq \theta$), in the sense that another person's thought is articulated by the speaker (to be more correct, by the narrator). However, ν is not shifted and coincides with C ($C = \nu$). Hence pronouns and tenses remain to be evaluated with respect to the actual context.
- (v) In the Historical Present in English, ν is shifted from C ($C \neq \nu$), in the sense that (only) its time coordinate is shifted to the past temporal point where the event is

described. However, θ is not shifted and coincides with C ($C = \theta$). Hence indexicals but the (present) tense remain to be evaluated with respect to the actual context. This will imply that 'improper' contexts of utterance may be allowed, but this result is just as it should be; that is, the effect of 'vividness' in the Historical Present.

4. Tenses in English and Japanese: Their 'Mismatch'

4.1 Crucial Examples

Now we go on to discuss the tense system in English and Japanese, focusing on their basic difference, where the simple correspondence of their tense forms fails in the two languages.

For crucial examples in English and Japanese, consider English utterances given in (10), which are reproduced in (14) below, and 'candidates' for their counterparts in Japanese, which are given in (15)⁵.

(14) [Situation: watching a picture of himself, which was taken thirty years ago, Ken utters at t :]

a. I was young (then).

b. *I am young (then).

(15) [Situation: the same as in (14)]

a. Wakakatta na.

young-was

b. Wakai na.

young-am

5 With the Japanese sentences given in (15), we will not provide their translation in English, since the subtle differences in their connotations cannot be expressed in the plain English. Neither can we give a literal annotation to the Japanese particle *-na*, which is among the sentence-final particles in Japanese, representing some (informational) attitudes of the speaker toward the propositional content of the sentence. But without such a particle, the discussion in point would not be affected; it is merely added here to make our intended interpretation more clear.

- c. Anokoro, (watasi mo mada) wakakatta.
 then I also still young-was
 d. ?Anokoro, (watasi mo mada) wakai.
 then I also still young-am

Before proceeding to the comparison of (14) and (15), we have to present the formal analysis of (14a) and (14b) à la Schlenker (2004). The outline of their formulation is given below:

- (16) $C = \theta = \nu$ (i.e. an ordinary discourse in English)
- a. sp (the 'speaker' of utterance) = the agent of $\nu = \text{Ken}$
 - b. $self$ (the 'self' of thought) = the agent of $\theta = \text{Ken}$
 - c. $sp = self$
 - d. st = the (speech) time of $\nu = t$
 - e. rt = the (reference) time of $\theta = then$ (deictic reference)
 - f. rt is the time which is roughly thirty years before sp .
 - g. (14a) is weird iff (i) $self$ is not sp , or (ii) the time of θ (rt) is not before the time of ν (st).
 - h. (14b) is weird iff (i) $self$ is not sp , or (ii) the time of θ (rt) is before the time of ν (st).
 - i. Therefore, (14a) is felicitous, but (14b) isn't (presupposition failure on the tense).
 - j. (14a) is true iff sp is young at the time of θ (rt) in the world of θ .

Several remarks should be in order. First of all, in Schlenker's Context Theory with ramified contexts, two sorts of 'agent' of context are to be posited; that is, the agent of ν and the agent of θ . The former corresponds to the so-called "speaker" of utterance, and the latter is regarded as the "self" of thought, i.e. the agent to whom the thought is attributed. Here, in (14), they coincide with each other, since it is not a reported discourse. Likewise, the time of context is ramified into two; that is, the time of ν and the time of θ . The former corresponds to the so-called "speech time", and, with the above example, the latter is regarded as the so-called "reference time" in

Reichenbach's tense system⁶. In the situation described, the time of θ is roughly thirty years before the time of ν , since the speaker is (deictically) referring to a past scene described in the picture, which was taken thirty years ago.

In Schlenker's theory of pronouns and tenses in English, the grammatical features on person, gender and tense are analyzed as "presupposition". The English 1st person pronoun, for example, fails to denote unless it refers to the speaker of utterance. That is, it is *presupposed*, not asserted, with the (proper) use of the pronoun "I" that its denotation is the speaker of utterance; otherwise, the utterance would be 'weird' (presupposition failure), rather than being simply false. The tense features in English, also, are given a presuppositional account. The *past* feature presupposes that it refers to the time which is before the time of utterance. If its reference time should not be before the time of utterance, the utterance would be 'weird' (presupposition failure on the past tense). The present feature presupposes, on the other hand, that it refers to the time which is *not* before the time of utterance. If its reference time should be before the time of utterance, the utterance would be 'weird' (presupposition failure on the present tense). Thus, the fact that (14b) is not a felicitous utterance in English can be explained, as shown in (16i). Notice that it is not simply false. With the usual explanation based on the logico-linguistic notion of "presupposition", the truth-condition is provided with an utterance only if all of its presuppositions are satisfied. Incidentally, (16j) shows the truth-condition for (14a) à la Schlenker.

In (15a-d), we are presenting (possible) candidates for utterances in Japanese to be made in the same situation as (14). Here,

6 As we show in the Appendix, however, the "reference time" in Reichenbach's system does not always match with the time of θ ; it will turn out to correspond to the temporal points of reference for [+actual θ] and [-actual ν] with English indicatives.

we are not supposing that they are the only candidates in Japanese, but we are simply assuming that they represent the typical 'patterns' in Japanese, which could be employed in the given situation. In our judgment, the fourth pattern of example (14d) sounds less natural than the others, but we do not believe that this pattern should be banned. Depending on the 'mood' of utterance, it will be possible to give more natural examples to the fourth pattern in Japanese. Consider, for example, the following utterance, which is to be interpreted in a 'factual', rather than 'eventual', mood:

- (15) d'. Anokoro, (watasi mo mada) tabako wo sutteinai.
 then I also yet tobacco ACC smoke-not
 (lit.) 'At that time, I do not smoke.'

For reasons of convenience in the subsequent discussion, we will first present our intuitions on the above four (representative) examples, which are summarized below:

(17) Intuitions:

- (i) The English (felicitous) example of (14a) corresponds, more neatly, to the Japanese version of (15c), rather than to (15a) or (15b).
- (ii) Both (15a) and (15b) bear some sort of marked connotations, and (15a) has a more 'sentimental' or 'self-oriented' connotation than (15b).
- (iii) Generally, the pattern of (15d) is less natural than the others, though it may not be banned.

In what follows, while we are developing our theory on the context and tense in Japanese, we will discuss the above intuitions and account for them.

4.2 Context Shift in Japanese

At the very end of the paper (Schlenker (2004, pp. 299-300)), Schlenker is suggesting that there would be those cases where the Context of Thought (θ) and the Context of Utterance (ν) are identical, but are both different from the actual context (C);

in his notation, $\theta = \nu$, but $C \neq \theta$ and $C \neq \nu$. He calls such cases "a *pair* of shifted contexts". However, he is not presenting a clear instance for them, simply commenting that some instances of quotations might be analyzed that way, in which the quotation is to be analyzed, not as the *mention* of some words in the actual context, but as the use of those same words in a different context of thought and of utterance, i.e. in a pair of shifted contexts.

We will show below that such cases do appear in Japanese, in *ordinary* discourses, not in quotation discourses. These cases corresponding to "a pair of shifted contexts" in Japanese are much more common and productive than in English. Under such circumstances, the speaker (or the narrator) may express her *own* thought from *consistent* points of view.

Now, let us take up the examples (15a-d) one by one. Consider first the pattern of (15c), which is to be formulated in our theory, as follows:

(18) Formulation and notation for the pattern of example (15c):

(i) $\theta = \nu$, $C = \theta$, $C = \nu$

(ii) [+actual θ , +actual ν]

There is nothing exciting about this pattern. Everything goes just like in English, because there is no mismatch among C , θ , ν . In our notation, both θ and ν are 'actual', in the sense that they are a non-shifted context and coincide with the actual context (C). It seems that this is the very reason that the English (14a) would be taken to be corresponding, most neatly, to the Japanese version of (15c), among the possible candidates given in (15).

In this pattern, ν coincides with C , and the time of ν , which is the temporal point of reference for the Context of Utterance, corresponds to that of C ; that is, the so-called "speech time" in discourse. θ also coincides with C , and the time of θ , which is the temporal point of reference for the Context of Thought,

corresponds to that of C; that is, the so-called "reference time" in discourse. Here in (15c), it is referring deictically to some past temporal point, which is located in the picture-situation; roughly, "thirty years ago". Thus, the past tense in sentence (15c) is licensed, since the time of θ is before the time of ν . Everything is the same as expected in English.

Examples like (15b) are to be formulated as follows:

(19) Formulation and notation for the pattern of example (15b):

(i) $\theta = \nu$, $C \neq \theta$, $C \neq \nu$

(ii) [-actual θ , -actual ν]

In this pattern, θ is not 'actual' in the sense that the time of θ is shifted to the temporal point of reference for the (salient) past context where the thought originates; here in (15b), roughly, "thirty years ago". Furthermore, ν is not 'actual' in the sense that it is shifted *simultaneously* along with the shift of θ ; that is, the time of ν is also shifted to the same temporal point of reference for that past context.

Hence the present tense in (15b) may be licensed, since the time of θ is *not* before the time of ν . Given a *pair* of simultaneous shifts, θ and ν turn out to match with each other; that is, $\theta = \nu$, in the notation of Schlenker (2004). Therefore, there is no 'tension' between the two contextual perspectives of θ and ν ; the speaker is making an utterance from the *consistent* perspectives, though they are a non-actual context of utterance and of thought.

Furthermore, in (15c), since the time of θ , which is taken to be the 'access point' of the thought, is shifted into the past where the thought originates, one may get some sort of marked connotations. That is, one feels like living in one's memory. Cognitively, we suppose, there would be some 'inertia' to let θ and ν consistent with each other, if possible, which allows ν to shift simultaneously together with θ . We call this tendency the "Law of Cognitive Inertia". Generally, the thought will 'lead' the

speech, while the speech will 'follow' the thought, in our everyday communication or processing of utterance. Thus, we believe that the non-past tense of the pattern (15c) in Japanese may be motivated, for cognitive and processing reasons.

Consequently, the *real* problem, rather, lies on the part of English; that is, why (14b) may not be allowed *at all* in English. As we will show later in the paper, the problem is *syntactic* in nature. As for languages like English, where the tense is realized as (syntactic) *features*, "context variables" in the sense of Schlenker (2003) may not be introduced with the tense, so 'free' in ordinary discourses, which results in restricting rather strictly their anchoring to temporal domains. This is not the case with languages like Japanese, where the tense system is realized of its own as (morphological) *suffixes*. We suppose that this is the very reason that "a pair of shifted contexts", which are employed in the above formulation of (15b), may not be allowed for English ordinary discourses so easily as in Japanese⁷.

Examples like (15a) are to be formulated as follows:

(20) Formulation and notation for the pattern of example

(15a):

(i) $\theta \neq \nu$, $C \neq \theta$, $C = \nu$

(ii) [-actual θ , +actual ν]

In this pattern, θ is shifted as in (19); hence θ is not 'actual'. However, unlike (19), ν is not shifted simultaneously along with the shift of θ . Hence ν is 'actual', and the thought is to be articulated with respect to the actual context C. Metaphorically, the speaker is looking 'into' a past scene from the current 'external' standpoint.

In this pattern, the time of ν coincides with that of C; that is,

7 English Past Perfect may be an exception for this generalization. However, as we point out in the Appendix, it is doubtful that Past Perfect would be reckoned as an ordinary discourse in English. See the discussion in the Appendix.

the so-called "speech time" in discourse, and the time of θ is shifted to the past access point where the thought originates. Hence the past tense in (15b) may be licensed, since the time of θ is before the time of ν . Notice that it is not the case with this pattern that $\theta = \nu$. Therefore, there is a 'tension' between the two contextual perspectives of θ and ν ; the speaker is *not* making an utterance from the consistent perspectives, since ν is 'actual' but θ isn't.

In (15a), just like (15b), the time of θ is shifted to the past access point where the thought originates. Thus, there arise special connotations, as well. However, unlike (15b), ν remains to be as it is; that is, it has to be evaluated in accordance with the actual context, in which the speaker is physically located in the utterance. This is the very reason, we suppose, that one feels that (15a) is more heavily loaded in interpretation, i.e. more 'informative', than (15b). The special connotation attributed to (15a) may be that the speaker is recalling to his memory more *deeply* than (15b).

Incidentally, it is an interesting fact in the Japanese Lexicon that there are two different forms representing one's memory; that is, to put them in Japanese characters, 「回顧する」 and 「懐古する」. The former is the 'weaker' form, annotated simply as "to look back upon the past", while the latter is the 'stronger' form, which may be annotated as "to cherish one's memory". Metaphorically speaking, if you want to cherish your memory, you'd better look into the past from 'outside', rather than from 'inside'. Our memories will come to be vivid, sometimes with deep emotion, when we are looking back upon the past that is quite distinct from the current situation.

Finally, the remaining pattern of (15d) is to be formulated as follows:

(21) Formulation and notation for the pattern of example (15d):

(i) $\theta \neq \nu$, $C = \theta$, $C \neq \nu$

(ii) [+actual θ , -actual ν]

In this pattern, θ is not shifted, as in (18); it is 'actual'. Thus, the thought remains to be evaluated with respect to the actual context C. The time of θ coincides with that of C; that is, the so-called "reference time" in discourse; here in (15d), roughly, "thirty years ago". However, ν is not 'actual' in the sense that the time coordinate of ν is shifted to that temporal point of reference. Hence the present tense may be licensed, since the time of θ is *not* before the time of ν . This pattern may be called something like '*Narrative Present*' in Japanese, though it is much more productive than the Historical Present in English.

Notice that it is not the case with this pattern that $\theta = \nu$, which results in some 'tension' between θ and ν , since θ is 'actual' but ν isn't. This may be some of the reasons for our intuitions that example (15d) is judged by most (if not all) native speakers of Japanese to be a bit strange, with the situation given in (15). However, as we mentioned before, example (15d) will not be bad, if its propositional content, i.e. 'Ken is young', is to be evaluated in the factual mood, instead of the eventual one. This property of the pattern (15d) in Japanese is just related to that of the Historical Present in English. The Historical Present is, as its name indicates, some 'factual' statement of past events.

4.3 "Present" and "Past" in Japanese and English

Traditionally, particularly in teaching Japanese to non-natives, the terms of "Present" (or "Non-past") and "Past" have been avoided. Instead, the terms of "-*ru* form" and "-*ta* form" of verbs are preferably employed, mainly because their usage does not generally correspond to English Present and Past, respectively. There have been a lot of works in the (traditional) Japanese linguistics addressing to this predicament in Japanese tenses. However, in our opinion, what have so far been missing would not be (more) suitable *terms* for Japanese tenses, but

rather their adequate *theory*.

In our theory, which is in part based on Schlenker's presuppositional account of the past and present (non-past) tenses, Japanese and English tenses have much in common. That is, in Japanese, as well as in English, the proper use of the past tense presupposes that the time of θ is before the time of ν , and with the present (non-past) tense it is presupposed that the time of θ is *not* before the time of ν . In our theory, their difference or 'mismatch' results from the distinct ways that the context of speech is to be manipulated in the two languages. Thus, it is based upon the typological distinction on the notion of *context*.

Japanese Present is [\pm actual], in the sense that the present tense may also be used in those cases where the time coordinate of ν is shifted into the past. It is "present", concerning with the non-actual, shifted context of utterance, not with the actual context of utterance. Furthermore, Japanese Present may be [-actual] even in *ordinary* discourses, as witnessed with the patterns given in (19) and (21). In these patterns, the temporal point of reference for the Context of Utterance is shifted to the (relevant) past access point where the thought originates.

Hence, Japanese Present is generally underspecified with the feature [\pm actual]. English Present, on the other hand, is usually [+actual]. Notice that the sentence (14b) in English may not be allowed in ordinary discourses. Only in such 'extraordinary' discourses as the Historical Present and so on, it may be [-actual]⁸.

The fact that there are two different patterns with [-actual Present] in Japanese will indicate that Japanese Present is, as it

8 In this paper, we will not touch upon the issues of what sorts of English discourses are considered to be 'extraordinary' ones with [-actual Present]. This problem is beyond the scope of the paper.

were, rather 'tense-less' in nature, compared with English Present. Indeed, in Japanese, the anchoring of the present tense to temporal domains is so 'free', depending heavily on the utterance situation, to the extent that it may be anchored even to future domains⁹. Thus, it would be more appropriate to use "Non-past", rather than "Present". However, the basic nature of the present tense is preserved in Japanese, as well; that is, it is presupposed with its proper use that the time of θ is *not* before the time of ν . In this respect, we may well use the term of "Japanese Present" without any uneasiness.

Incidentally, to support our conclusion, Japanese 'naïve' students, like those students the first author of this paper is teaching English at the university, often misuse sentences like (14b) so easily. Their reasoning would be as follows: the Japanese pattern of (15b) is very productive, and on the surface the English counterpart (14b) would 'nicely' correspond, word by word, to the Japanese (15b). Generally speaking, native speakers of Japanese are apt to make more mistakes with the usage of English Present, over-generating it to improper cases, than that of English Past.

Japanese Past may be [\pm actual], in the sense that the past tense may also be used in those cases where the temporal point of reference for the Context of Thought is shifted to the (relevant) past access point where the thought originates, but the temporal point of reference for the Context of Utterance remains to be as it is; hence it turns out that the time of θ is before the time of ν . Furthermore, Japanese Past may be [-actual] even in ordinary discourses. Consider the pattern of (19) again. We do not think that there is any reason that the utterance (15a) should be regarded as less natural, compared with

⁹ In this paper, we will not take up the temporal anaphora with anchoring to future domains. It is also beyond the scope of the paper.

the utterance (15b). In Japanese, the former type of utterances are as productive as the latter type of utterances. The only distinction between the two patterns is whether the "Law of Cognitive Inertia", mentioned before, is observed or not. But this law is not logical in nature, because it is pertaining to the concept of 'inertia'. Generally, the regulation or tendency based on some concept of inertia can be, and often is, violated¹⁰. Moreover, this violation in example (15a) is 'paid off' by its special connotations. Thus, in Japanese, there is an obvious sense in positing [-actual Past], even in ordinary discourses.

Special connotations with the Japanese pattern of (20) can be of various kinds, corresponding to the nature of those shifted contexts of thought. In this pattern, the time of θ is shifted to the past access point where the thought originates, though ν remains to coincide with the actual context. Then, on making an utterance, the speaker is forced to look 'back' into the past salient context of thought, from her current (actual) context of utterance.

In the traditional literature of Japanese linguistics, it has sometimes been claimed that the usage of the so-called "-*ta* form" of verbs are divided into two different cases; that is, the case of use as (past) tense and the case of use as "mood". However, the latter case may be corresponding to the pattern of (20) in our formulation of the Japanese past tense. Thus, in our theory, there is no distinction of tense/mood uses with the past tense morpheme *-ta*. The alleged distinction will stem from the fact that the context of speech may be manipulated differently,

10 It is notable that in the treatment of English Progressive, some notion of 'inertia' has been employed (see, e.g., Dowty (1979)). As it is well-known in linguistics, the supposed implication of English Progressive that events described in the progressive would be completed in due course, may be violated; see the following famous example (Landman 1992):

(i) Mary was crossing the street, when the truck hit her.

concerning the Japanese past tense. Hence, in our theory, two different sorts of *-ta* are not needed. Supposedly, due to the lack of an appropriate *dynamic* theory of context, there has so far been made confusion between (apparent) phenomena and their (theoretical) analyses, in the study of Japanese tenses.

As for English Past, one might wonder whether [-actual Past] would be posited. The answer will be positive, if we concern ourselves with English subjunctives, though they are not regarded as ordinary discourses in English. The crucial fact on English subjunctives is that the verb or the auxiliary verb does appear in the past form. Quite naturally, English subjunctives may be treated employing some concept of [-actual Past], though it is not 'Past' in the usual sense. We will discuss their treatment in section 6, as an instance of further application of our dynamic, context-based theory.

4.4 Cases for 'Regression' of Schlenker's Ramified Contexts

Before we turn our concern to the syntactic aspects of English and Japanese, let us consider the following utterance in English:

(22) Here comes the bus!

Traditionally, in the school grammar of English, it has been assumed, though implicitly, that utterances like (22), which usually appear in a colloquial style of English conversation, are treated as a 'special' use of the present tense in English. It is true that this use of English Present is *peculiar* in some sense, but there has been no account for this fact; that is, where this peculiar nature comes from.

As we mentioned in 3.2, in Schlenker's theory of ramified contexts, there is a 'division of labor' in the evaluation of indexical expressions. That is, pronouns and tenses in English are to be evaluated with respect to the Context of Utterance (ν), while other indexicals like *here* and *now* are to be evaluated with respect to the Context of Thought (θ). However, things are quite

different with the above example. The indexical *here* in (22) should be evaluated with ν as well, because it designates the (actual) location of utterance. Furthermore, the present tense in (22) should be evaluated with θ as well, because it is required, in Schlenker's presuppositional theory of the present tense, that the time of θ is *not* before the time of ν .

Thus, the peculiarity of example (22) is that the two sorts of contexts, i.e. the Context of Thought and the Context of Utterance, appear to be merged into the one. In such a special kind of speech acts, there is no differentiation between them, and these two aspects of context may be 'regressed' into the actual context, the physical context in which the speech act is taking place. Hence, *here* in (22) turns out to designate exactly the *actual* location of speech acts, and the present tense turns out to be identified with the *actual* time of speech acts. Therefore, examples like (22) suggest the existence of those cases where Schlenker's ramified contexts may be regressed into the one, though in a colloquial style of English.

The above supposition will be supported by the fact that in such a special sort of utterance the referent of indexicals and the interpretation of the present tense may be deviant from the usual case of utterance, only at the *same* time; their deviation cannot be independent of each other. Thus, in these English utterances, some indexical expressions like *here* and *there* are always employed as the trigger or 'indicator' of their (special) type of speech acts. Moreover, if the present tense should be replaced with the past tense, their 'colloquial' meanings or connotations would be lost.

Theoretically, the existence of regression of contexts of speech in English will give an additional support to Schlenker's idea of "ramified contexts". If the context of speech were not to be ramified into two sorts, it would be impossible at all to assume their regression into the one, thus giving no account for the peculiarity of utterances like (22) in English.

One might wonder here whether there would be cases for the regression of contexts of speech in Japanese. The Japanese version of utterance, which may be corresponding to the English utterance (22), is given below:

- (23) (Basu ga) kita!
 bus NOM came
 'Here comes the bus!'

However, example (23) is not a Japanese counterpart for the regression of contexts of speech in English. Notice that, in our theory of the Japanese tense, (23) belongs to the pattern of (20), where the time of θ is shifted to the past access point of thought, and ν is not shifted from the actual context; thus the past tense is licensed there. Consequently, as we mentioned before, there arises a 'tension' between θ and ν , resulting in some sort of special connotations, depending on the given utterance situation. In example (23), this special connotation may be related to some concept of 'discovery' of the speaker. Indeed, the utterance (23) is appropriate in those situations that the speaker has been (long) waiting for the bus and notices its arrival at the time of utterance. Therefore, the English example (22) and the Japanese example (23) are quite different in their temporal mechanism of interpretation.

A more plausible candidate for the regression of contexts of speech in Japanese is given below, though the interpretation in point ought to be heavily dependent on the utterance situation:

- (24) [Situation: Watching the gate of the football stadium,
 Ken utters:]
 Zoro-zoro detekuru.
 in succession come out
 Roughly, '(Look!) A crowd of people are getting out (of
 the gate).'

Although, in Japanese, no inlexical expression like the English *here* is explicitly given in the above example, the use of present tense may be licensed, with a special sort of 'colloquial'

interpretation, and the time of ν exactly designates the actual time of speech acts. Furthermore, in the speech of (24), there is no 'gap' between the thought and the utterance, since the thought originates in the (direct) perception by the speaker, which is also the case with the English example of (22). Hence, it seems that example (24) may be a proper instance for the regression of contexts of speech in Japanese.

We admit that there remains much to be discussed on the regression of Schlenker's ramified contexts in Japanese. However, it should be noted here that the case with examples like (24) is basically different from the case of "a pair of shifted contexts" in Japanese, which corresponds to the pattern given in (20) before. In the latter case, the Context of Utterance is indeed a *non-actual* shifted context. Its time coordinate is shifted, together with the Context of Thought, to the (relevant) past temporal point where the thought originates, not corresponding to the actual time of speech acts.

5. Syntax and Context from Dynamic Views

Now, we turn our concern to syntactic aspects of natural language and their interaction with context. In 5.1, we introduce a syntactic model named "Dynamic Syntax" (henceforth, DS), which has been developed by Kempson and her co-working researchers since at the end of last century. Our introduction of DS totally depends on Kempson et al. (2004) (henceforth, abbreviated as KCM)¹¹. In 5.2, based on their ongoing research on linguistic typology, we take up basic characteristics of Japanese, focusing on its verb-final nature, and we try to build a bridge

11 KCM is a working draft, and in 5.1 we are referring to the draft available at <http://semantics.phil.kcl.ac.uk/ldsnl/papers/> (the most updated version of KCM, dated June 25, 2004).

over Schlenker's dynamic theory of context and the DS dynamic views of natural language syntax.

5.1 Dynamic Syntactic Views of Natural Language

Before presenting the distinctive features of DS, some historical remarks should be in order about DS, since this syntactic model is almost unknown to the general linguistic field in Japan. The root of DS goes back to "Labelled Deductive Systems", which was explored by Gabbay (see, e.g., Gabbay (1996)). Later, mainly by Kempson, it has grown into a linguistic model of natural language, with formal contributions by Meyer-Viol, who provided the DS framework with the "Logic of Finite Trees" (cf. Blackburn and Meyer-Viol (1994)). The DS project is now being pushed forward more and more actively, with King's College London as its researching center.

DS is a really new model of natural language syntax, and it diverges from the other contemporary linguistic theories such as Chomskian generative grammar, HPSG, LFG, and so on, to the extent that DS notion of what syntax is in natural language is quite different from the existing views in linguistics. To put it roughly with a DS slogan-like phrase, "syntax is, in essence, a parser". That is, in DS, an utterance (a sentence in context) is parsed *on strictly left-to-right basis* of linguistic inputs (words), and *partial* syntactic structures are generated *incrementally* along with the parsing process, until the final, fixed structure is built up with the whole sentence.

To be obvious enough, in natural language, a sentence consists of words. However, when we reflect on what a word in the sentence contributes to its interpretation, we find that the meaning the word has by itself is quite generally not enough for working out what it means in context. Pronouns and tenses are representative cases in point; see the following example:

(25) He upset her.

In (25), who upset who and when is not provided by the words

themselves. Furthermore, this context-dependency in natural language is far from being a trivial matter. See, for example, the following discourses in English, which are given in KCM (p. 8):

(26) Though John and Mary adored each other, he married Sue. Whenever *he upset her* subsequently, she would remind him that it was Mary he should have married.

(27) Though John and Mary adored each other, he married Sue. The only time they subsequently met, *he upset her* so badly she was glad he had married Sue, not her.

Although the phrase *he upset her* appears in the similar contexts, *her* in (26) means Sue, whereas in (27) it means Mary.

The context-dependency of natural language has hitherto been treated as *semantic* phenomena, and it has been given a formal semantics account in the last two decades, particularly in the literature of Discourse Representation Theory (DRT), where a model-theoretic account for the discourse in natural language has been developed (see, e.g., Kamp (1984), Kamp and Reyle (1993)). However, as is pointed out in KCM (pp. 11-12), in DRT it has already been noted that the above phenomenon is at least in part a *left-to-right process*. Thus, in developing a formal model for the natural language discourse during the eighties and nineties, the left-to-right dynamics of language processing has not gone unnoticed. But, in natural language *syntax*, this aspect of language has not been taken up seriously in linguistics. That is, structural properties of language are assumed to be independent of the left-to-right dynamics of language.

Kempson and her co-researchers challenge this methodological decision on syntax in natural language. It is pointed out in KCM (p. 12) that it results in a 'tension' between the characterization of how words are put together to form strings (the syntactic side of natural language), and the characterization of interpretation of such strings, which is dependent on how linguistic information has built up in context (the semantic side of

natural language). Thus, syntax must, by the hitherto assumption, be characterized independently of processing in context, while semantics generally involves the sensitivity to context. The result of this methodological decision is a 'paradox' for the theory construction of a natural language model. That is, it remains far from obvious how to *fit syntax and semantics together* as distinct but correlated aspects of natural language. We believe that DS is a promising alternative to overcome this apparent paradox. In DS, it is convincingly claimed that syntactic or structural properties of natural language should also be seen in terms of processing on the left-to-right basis in context.

In DS, structural aspects of an utterance, i.e. a sentence in context, are represented with a succession of (partial) trees, as the construction process proceeds. Hence, tree representations given in DS are to be regarded as modeling the process whereby pieces of linguistic information are built up on the left-to-right and word-by-word basis, relative to the current context against which choices for tree growing may be made. Although tree-like representations are employed in DS, the notion of these trees is different in nature from that of those trees familiar in the (traditional) syntax. DS trees do not represent words as form, but interpretations as assigned to words uttered in context. As we will illustrate with a couple of examples later, each node of a DS tree is decorated, among others, with its (logical) type and concept.

Those readers who have been familiar with formal semantics might notice that the DS representation is similar in part to the logical representation employed in the classic Montague Semantics and a recent version of Dynamic Semantics (see, e.g., Groenendijk and Stokhof (1991), Groenendijk, Stokhof and Veltman (1996)), in the sense that syntax and semantics go *in tandem* with the representation. But there is a profound difference between the two formal systems. DS stands for the so-called "representationalism" in linguistic modeling; it belongs to

what may be called the "Representational Theory of Mind" (see, e.g., Fodor (1981, 1983)). However, in Dynamic Semantics, as well as Montague Semantics, the logical representation is used merely for convenience' sake, to provide linguistic expressions with their more explicit contents; there is, in principle, no reason for these semantic models to have recourse to an 'intermediate' representation between linguistic expressions and their interpretations. Indeed, methodologically, they have so far refused representationalism in linguistic modeling.

Therefore, DS, though it is logically formalized, is basically different from those formal semantics frameworks that have been solely concerned with natural language interpretation. Although we do not quite agree with DS that the "Representational Theory of *Mind*" should be required in natural language semantics, we do agree with DS that context of use and its interaction with language cannot be properly accounted for without relying on some representations; a mere 'denotational' view on linguistic contents in context would not be sufficient, as DRT has clearly shown in the literature so far.

In DS, as we have already pointed out, a (partial) tree structure is growing incrementally along with the parsing process, until the final (fixed) tree structure has been built up. These steps of *tree growth* are progressively induced by the formal mechanism of unfolding tree-structure on a top-down basis as driven by *requirements*. This basic nature indicates that DS is *goal-directed* in the dynamics of tree growth. More specifically, each goal of unfolding tree-structure is formally specified by a requirement for types at the tree node. As a DS notation, a requirement is represented by that type required, with a question mark attached to it.

Every DS tree growth for an utterance parsed starts with a *root node* of the tree, which is decorated with the requirement ? $Ty(t)$. Here, t is the (logical) type for propositions, as is usual with type-logical semantics. That is, all processes of tree

growth are induced initially by the requirement that some propositional content should be established for the utterance (at the end of its processing). Formally, this assumption is an Axiom of DS. We believe that it is a sound hypothesis, since the common goal of processing an utterance (i.e. a sentence in context) is, above everything else, to seek for its propositional content in context. Furthermore, this hypothesis is independent of the 'form' of an utterance.

For a rather clear instance in point, consider a situation where Ken was waiting for a bus to get to the University, and uttered to the bus driver when the bus arrived:

(28) The University. [with rising intonation]

Then, the utterance of (28) will be interpreted by the bus driver, depending on the context, to mean a 'proposition' that the bus is bound for the University or at least stops at a (nearest) bus stop to the University. If Ken succeeds in communication with the bus driver, the addressee is driven to 'supplement' the addresser's utterance, depending on the context of utterance; he never takes the utterance simply as the 'two words' in English! In our everyday conversation, we do not usually make a full form of utterance, which does not result in miscommunication, though.

For an illustration of DS parsing mechanism, let us consider the following simple sentence in English:

(29) John upset Mary.

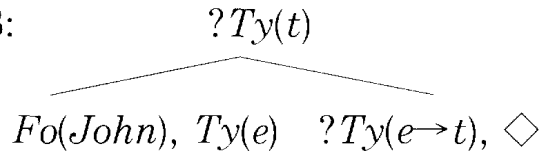
The outline of tree growth for (29) is shown in the following steps:

(30) Step 1: $?Ty(t), \diamond$

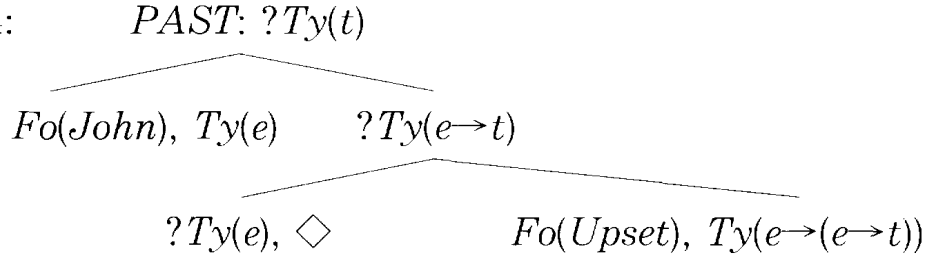
(31) Step 2:

$$\begin{array}{c} ?Ty(t) \\ \diagdown \quad \diagup \\ ?Ty(e), \diamond \quad ?Ty(e \rightarrow t) \end{array}$$

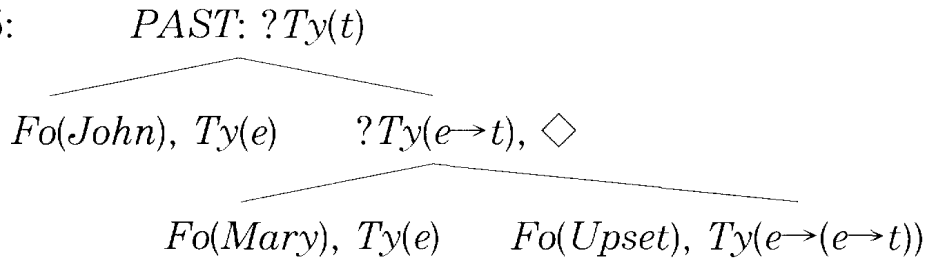
(32) Step 3:



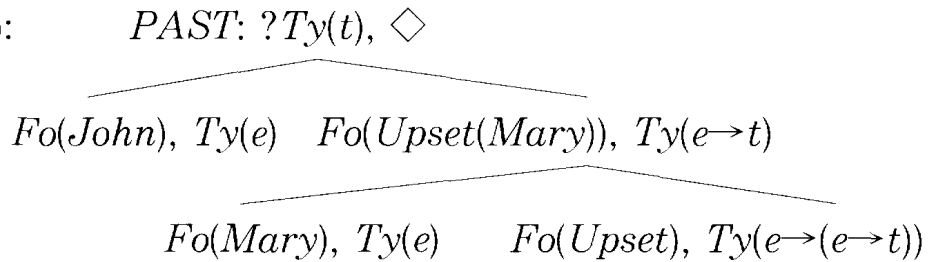
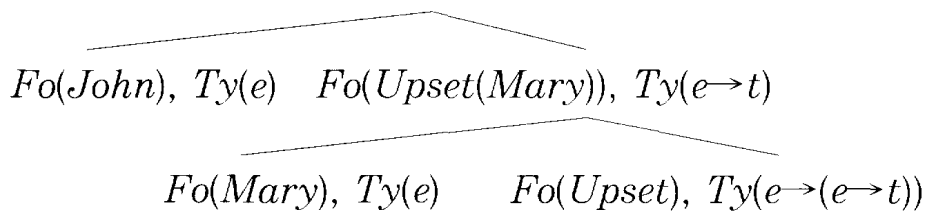
(33) Step 4:



(34) Step 5:



(35) Step 6:

(36) Step 7: $Fo(PAST: Upset(Mary)(John)), Ty(t), \diamond$ 

Step 1 is merely to declare the initial goal of establishing some proposition for the utterance parsed. As we have already mentioned, this goal is specified formally with the requirement $?Ty(t)$ attached to the root node. Notice that at this step of unfolding tree-structure the tree has only a root node. The symbol ' \diamond ' stands for a 'pointer', which is employed in DS to identify

which particular node is under development in the current tree-structure construction process. Notice that, in step 1, the pointer is set on the root node.

Each step of the way from step 1 on is regarded as an 'update' of the preceding tree structure, thus getting closer and closer to the initial goal of establishing some proposition for the utterance. The way from step 1 to step 2 involves a computational action whereby the initial goal for $?Ty(t)$ is divided into two *sub-goals*. That is, by the DS deduction rule for *introduction* and *predication* of tree nodes, what may be called the subject NP-node and the VP-node in English are created in the tree structure at the stage of step 2. In (31), the node decorated with the requirement $?Ty(e)$ corresponds to the subject NP-node, and the one with $?Ty(e \rightarrow t)$ to the VP-node. Notice that in the type-based grammar verb-phrases are usually given the type of $(e \rightarrow t)$. Furthermore, in DS, noun-phrases are *uniquely* given the type of e for some profound logical reasons, which would be beyond the scope of the present paper. Along with the transition of tree-structure from (30) to (31), the pointer moves to the subject NP-node with the requirement $?Ty(e)$, thus 'waiting' for some expression of type e , i.e. a noun-phrase.

In the development of tree-structure from step 2 to step 3, a *lexical action* is involved concerning an input of the word "John". By this lexical action, the formula *John* is decorated on the subject NP-node. Notice that *John* does not mean the word "John", but the interpretation of "John", which is supposedly to be interpreted as 'this particular John' in context¹².

12 In the DS node decoration in a tree, generally, the *Formula* predicate Fo takes as argument values logical formulas, which are consisting of terms of a typed lambda calculus. $Fo(\phi)$, where ϕ is some logical formula, means that the node is annotated with the formula specification ϕ . The *Type* predicate Ty takes as argument values logical types of appropriate sort. $Ty(X)$, where X is some (logical) type, means that the node is annotated with the type specification X .

Formally, a DS lexical action is formulated with a clause in form of 'IF ..., THEN ..., ELSE ...'. With step 3, the lexical action corresponding to the input of "John" is specified as follows:

- (37) IF $?Ty(e)$ holds for description at the pointed node,
 THEN add *John*, $Ty(e)$ to the description, and close off
 that tree node downward,
 ELSE ABORT.

Roughly, the word "John" tests for satisfaction of the requirement $?Ty(e)$ at the pointed node, and if it finds this, then it adds *John*, $Ty(e)$ to the description, and creates a terminal node there. If it does not find $?Ty(e)$ at the pointed node, it aborts. After fulfilling the requirement $?Ty(e)$ at the pointed node, the pointer moves to the VP node, which has the other (sub) goal for $?Ty(e \rightarrow t)$.

In the tree-structure transition from step 3 to step 4, a lexical action is involved concerning the transitive verb "upset". This lexical action, to be more correct, the corresponding set of actions, maps the tree structure represented in (32) to the one in (33), roughly as follows. First, the word "upset" tests for satisfaction of the requirement $?Ty(e \rightarrow t)$ at the pointed node. If it finds this, then it constructs a 'function daughter' which is annotated with the formula specification of *Upset* and the type specification of $(e \rightarrow (e \rightarrow t))$, and it adds a new requirement of $?Ty(e)$ to a 'complement daughter'. With introduction of a new requirement, the pointer moves to the node with this requirement.

However, these are not all the processes for the tree-structure update triggered by a verb in English. That is, the (irregular) verb "upset" is tensed, and it also contains a tense feature as part of its lexical information. Therefore, at the stage of update from step 3 to step 4, this piece of temporal information should be specified somehow in the unfolded tree-structure in (33). Thus, the tense specification *PAST* is added to description of the root node, which is decorated with $?Ty(t)$, because the temporal information is logically to be added to *propositions*, i.e. the term

of $Ty(t)$. Thus, in English, although at the stage of tree-structure update the (initial) requirement $?Ty(t)$ (on the top node) has *not yet* been fulfilled in the parsing process, the temporal information ought to be added to a (partial) tree structure, along with the parsing of a tensed verb in English. Syntactically, this is the crucial point on the tense system in English, which we will return later in 5.2.

Thus, the set of lexical actions induced by the transitive, past-tensed verb "upset" result in the tree structure given in (33). Notice that the pointer is set on a (new) NP-node, which may be called the 'object' of a transitive verb. This object NP-node is decorated with a (new) sub-goal for $?Ty(e)$, thus waiting, again, for some expression of type e , i.e. another noun-phrase. Consequently, the update from step 4 to step 5 is much the same as that from step 2 to step 3. That is, a lexical action concerning an input of the word "Mary" is involved here. By this lexical action, the formula *Mary* is decorated on the object NP-node; thus the sub-goal for $?Ty(e)$ is established. Then, this node is closed off as a terminal node, and the pointer moves 'up' to an intermediate node of type $(e \rightarrow t)$, i.e. a VP-node in English, which has the remaining sub-goal in the parsing process.

At this stage of unfolding tree-structure, all of the input words have already got processed for sentence (29). From then on, the mechanism of 'compiling' interpretation for the introduced structure is proceeding on a bottom-up basis. These processes are driven by type-functional application on the type specification of relevant nodes, roughly as in the type-based (categorical) grammar. That is, these rules involve the application of some 'predicate' to its 'argument'.

First, from step 5 to step 6, the (two-place) predicate *Upset* and its argument *Mary* are combined into the (one-place) predicate *Upset(Mary)*. Then, the sub-goal for $?Ty(e \rightarrow t)$ is established at the intermediate node of type $(e \rightarrow t)$. Consequently, the pointer moves 'up' to the root node, which is waiting for

establishing the (initial) goal for $?Ty(t)$. Then, another functional application is carried out, combining the (one-place) predicate $Upset(Mary)$ and its argument $John$ into the proposition $Upset(Mary)(John)$. Thus, after having established all of the goals, the tree growth reaches a complete logical form representing the assertion in context; that is, this particular John (in context) upset this particular Mary (in context) at the (past) time of the context of utterance. Notice that, in the DS compiling processes of interpretation, nothing on tree-structure is taken away except requirements, and these processes go quite automatically along tree growth.

As the principal claim in DS, *syntax* is, in itself, underspecified in natural language. This is a fundamental departure from the traditional view on natural language syntax. That is, the underspecified nature of natural language has hitherto been treated as *semantic* phenomena, the so-called "context-dependency" of natural language interpretation. It has sometimes been pointed out in the literature of generative grammar (see, e.g., Chomsky (1995)) that natural language syntax is an 'imperfect' system, in the sense that a word sequence may be in a quite 'wrong' order. See, for example, the following sentence in English, which is given in KCM (p. 6):

(38) Mary, John says should never have gone out on her own. In (38), the first word *Mary* is somehow 'misplaced', because it is interpreted as having nothing directly to do with its immediate neighboring word *John*. As is pointed out in KCM (p. 6), the above case is taken to be one where linguistic information may be presented too 'early' in the sentence, the so-called "long-distance dependency" phenomena in linguistics. That is, the displaced item, here in (38) *Mary*, can be a long distance away from the place where it should be interpreted.

It is also pointed out in KCM (p. 6) that there are converse cases where linguistic information seems to enter 'later' than is optimal for interpretation. See, for example, the following

sentence:

(39) It is obvious that Mary is wrong.

In (39), the subject of the phrase *is obvious* might be expected to occur before this phrase (cf. *That Mary is wrong is obvious.*), but the subject position is occupied by the word *it* as some sort of 'promissory note', functioning as a 'wait-and-see' device, so to speak.

With the assumption that syntax is underspecified in natural language, as well as semantics, DS provides a new solution for the above phenomena, maintaining its fundamental view of syntax as the left-to-right dynamics of language processing. It's a two-bird-one-stone solution, as it were. With putting the notion of underspecification into syntax, we may also solve the apparent 'puzzle' mentioned before; that is, how to fit syntax and semantics together as correlated aspects of natural language.

For illustration, consider the following sentence, which is the simplest kind of long-distance dependency in English:

(40) Mary, John upset.

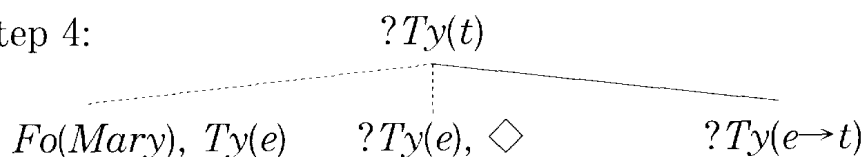
The outline of tree growth for (40) is shown in the following steps:

(41) Step 1: $?Ty(t), \diamond$

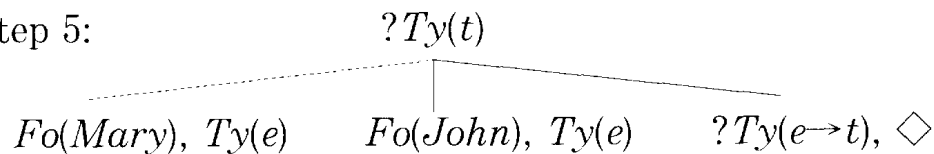
(42) Step 2: $?Ty(t)$
 \vdots
 $?Ty(e), \diamond$

(43) Step 3: $?Ty(t), \diamond$
 \vdots
 $Fo(Mary), Ty(e)$

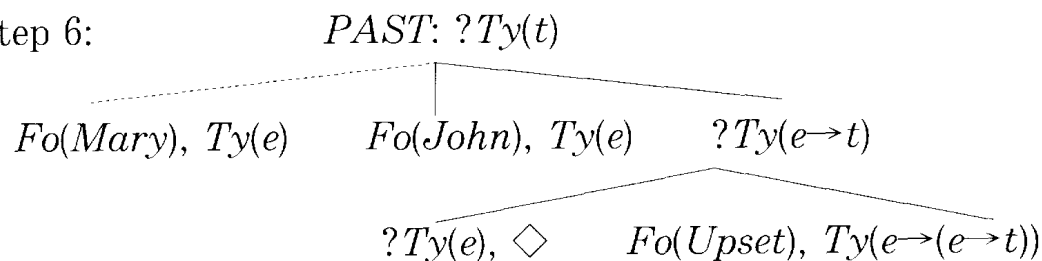
(44) Step 4:



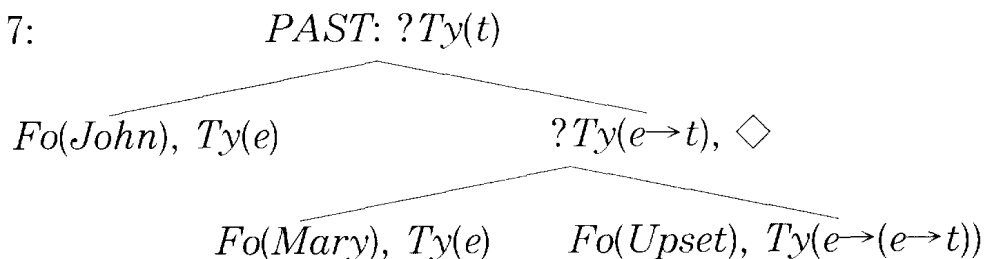
(45) Step 5:



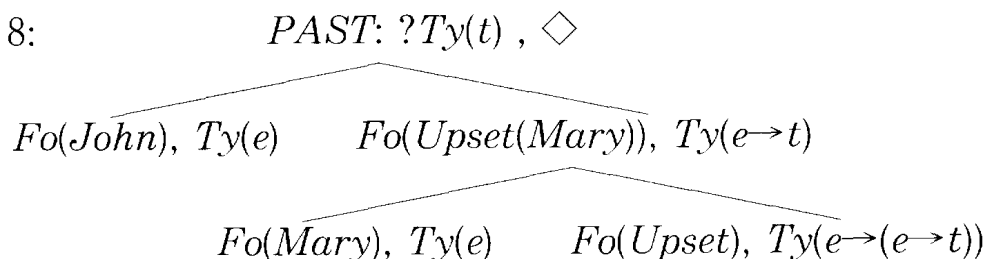
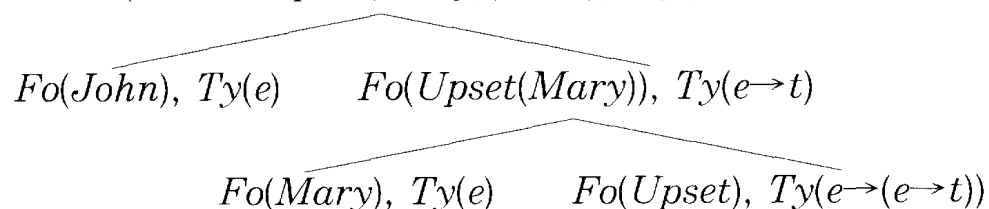
(46) Step 6:



(47) Step 7:



(48) Step 8:

(49) Step 9: $Fo(PAST: Upset(Mary)(John)), Ty(t), \diamond$ 

Among the above steps, those processes that are really unique

to the parsing of sentence (40) are only concerned with steps 2 and 7; the others go like the case of sentence (29). At the stage of step 2, an *unfixed node* of type e is created in the tree structure by a computational action named "*Adjunction" in DS. In the DS parsing process, which is strictly on left-to-right basis, when the word "Mary" is processed, it is construed as providing a term in the (resulting) logical form for the propositional content of (40), but *how* it is to contribute within that logical structure is not at first identified at the parsing stage. Thus, DS allows for those nodes that have *not yet* been specified with their structural identification in a tree. This type of unfixed structural dependency is signaled by a dotted line, as shown in (42). Hence, DS tree structures may be underspecified with some of tree-node relations. Logically, this structural underspecification is due to the "Logic of Finite Trees" (LOFT) adopted in the DS formalism, which incorporates (structural) 'modality' in the tree logic.

After creating an unfixed node with the requirement $?Ty(e)$ at step 2, a lexical action concerning an input of the word "Mary" is carried out at step 3, and the tree structure is developing into the one represented in (43). Notice that in (43) the term *Mary* is attached to an unfixed node whose structural dependency on the root node has not yet been determined at the time when it gets parsed. In step 3, the requirement $?Ty(e)$ is fulfilled, and then this NP-node is closed off as a terminal node and the pointer goes 'back' to the root node.

From step 4 through step 6, the tree-structure unfolding process goes just as in sentence (29). That is, first in step 4, the initial goal for $?Ty(e)$ is divided into two sub-goals, and the subject NP-node and the VP-node are created in the tree structure. Then, in step 5, a lexical action concerning an input word of "John" is carried out, and in step 6, a lexical action involved in the processing of the (tensed) transitive verb "upset" is executed, thus developing the tree structure into the one represented in

(46). Notice that the node annotated with the term *Mary* remains to be unfixed at this stage of tree growth.

This underspecified property of tree-structure is resolved at step 7. Reflecting that the role of the formula *Mary* is taken to be that of providing the object of the 'predicate' *Upset*, the unfixed node is to be *merged* with the object NP-node in the tree structure, hence determining its precise role in the (resulting) proposition structure.

From then on, the tree-structure developing process is just as before (cf. steps 6 and 7 given in (35) and (36), respectively). That is, the mechanism of compiling interpretation for the introduced structure proceeds on a bottom-up basis, first combining *Upset* and *Mary*, and then *Upset(Mary)* and *John*; thus, finally yielding the logical form *Upset(Mary)(John)*. Hence, the utterance of (40) turns out to represent the assertion that this particular John (in context) upset this particular Mary (in context) at the (past) time of the context of utterance; the same truth-condition as that of (29), as is expected.

In DS, what has been called the "long-distance dependency" phenomena in linguistics is explained in terms of tree growth on strictly left-to-right basis. From the DS perspective, long-distance dependency is just one aspect of the growth of information. What is characteristic to the left dislocation in English is simply that information as it comes in may be unspecified with respect to its role in the final, fixed structure; that is, a structural underspecification to be resolved *during* the tree-structure construction process. The structural underspecification of natural language is deep-rooted in the internal system of language, as we will see later when we discuss the application of DS to languages like Japanese.

The dynamic syntactic views of natural language, as modeled in DS, are summarized below:

- (i) Syntactic or structural properties of language should be seen in terms of the left-to-right dynamics of language

processing.

- (ii) Structural aspects of an utterance, i.e. a sentence in context, are represented with a succession of partial trees, as the construction process proceeds, until the final, fixed representation is built up for the utterance.
- (iii) DS trees do not represent words as form, but logical interpretations as assigned to words uttered in context.
- (iv) DS tree-nodes are decorated with their logical type and concept, and possibly with a requirement for their type.
- (v) The DS tree growth is progressively induced by the formal mechanism of unfolding tree-structure on a top-down basis, which is directed by goals corresponding to these requirements for types.
- (vi) The DS tree-structure allows for unfixed nodes, those nodes that are not yet specified with their structural identification in a tree.
- (vii) The structural underspecification with an unfixed node is to be resolved through the formal process of merging it with some fixed node in a tree.
- (viii) Automatic processes of compiling interpretation for the introduced structure proceed on a bottom-up basis, which are driven by type-functional application to relevant nodes à la the type-based grammar.

5.2 Dynamic Syntax and Japanese Typology

Now, we will discuss basic characteristics of Japanese, based upon the DS findings on the Japanese syntax, and we will try to make a bridge over Schlenker's dynamic theory of context and the DS dynamic views of natural language syntax.

In the recent development of theoretical linguistics, typological aspects of natural language syntax have been studied vigorously. This general tendency in formal grammars also applies to the ongoing DS research project. It is the principal claim in DS that the dynamics of parsing is the basis for structural

properties of languages. This parsing perspective of natural language syntax raises a fundamental problem for DS; that is, how to provide a parsing-based account for the so-called "head-final" languages, among which Japanese is a representative one. These languages have hitherto been assumed to involve very different parsing strategies than those for head-initial languages like English. Hence, the current DS research has been addressed to the former type of languages, much more seriously than the latter. We believe that DS is basically successful in giving a *uniform* treatment for both types of languages, as we will show below, taking up Japanese as a representative of head-final languages.

Typologically, besides being a verb-final language, Japanese is a "full pro-drop" language. Consider the following sentence in Japanese:

- (50) Taro ga Hanako ga ringo wo tabeta to itta.
 NOM NOM apple ACC ate COMP said
 'Taro said that Hanako ate an apple.'

The canonical pattern of a Japanese sentence is that a sequence of noun-phrases, which are marked with case particles like *ga*, *wo*, etc., are followed by a cluster of verbs, here in (50) *tabeta to itta*. Thus, from the parsing perspective, processing in Japanese has to involve 'waiting' until the verb is reached. That is, in the intended reading of (50), the precise role of the (case-marked) noun-phrase *Hanako ga* is only determined when the parsing process reaches the verb *tabeta*, and that of *Taro ga* at the very final stage of parsing the whole sentence. Hence, at first sight, it might seem that the parsing of Japanese is a very complicated process, compared with head-initial languages like English. Then, it would follow that the parsing of Japanese is harder than that of English.

However, this result is against our naïve intuitions. Clearly, no language is harder than any other language for a child to learn. Thus, the parsing of Japanese *should* be no harder than

that of any other language. This is where Dynamic Syntax plays a vital role. That is, DS does invent 'vocabulary' for talking about trees where the relations between their nodes are not all fixed. This is exactly what is needed in the parsing of Japanese. Japanese should be parsed from left to right just as in English, and it is simply that Japanese has much more freedom than English, in unfolding tree-structure without fixing structural identification in a tree definitely right away. This structural underspecification in Japanese is to be resolved during the parsing process for tree growth, just as in English.

Furthermore, despite apparent great freedom in the parsing of Japanese, *in practice*, what a particular role each noun-phrase in the sentence plays in the resulting logical structure may be decided very locally, together with a cluster of verbs and clausal-boundary markers in Japanese. Thus, in Japanese, the construction process of proposition structure does not really impose so heavy a burden, and the context of speech usually leads these decisions quite automatically. What has hitherto been ignored is how details of local structure may be introduced, *without* initially fixing the (precise) role of noun-phrases in the propositional content, only making use of information concerning their case-form.

To put it in one word, there is nothing 'eccentric' in Japanese, even from the parsing perspective of natural language syntax. Rather, a mystery remains to be solved, we believe, with the interaction of the context of speech and the tree growing mechanism in natural language, as well as its typological diversity. Indeed, to unravel some threads of these tangled issues is the very purpose of the present paper, as we mentioned at the beginning in the paper.

Just for illustration, let us consider the following simple sentence in Japanese:

(51) Taro ga ringo wo tabeta.
 NOM apple ACC ate
 'Taro ate an apple.'

The parsing process for (51) is shown in the following steps:

(52) Step 1: $?Ty(t), \diamond$

(53) Step 2: $?Ty(t)$
 \vdots
 $Fo(Taro), Ty(e), \diamond$

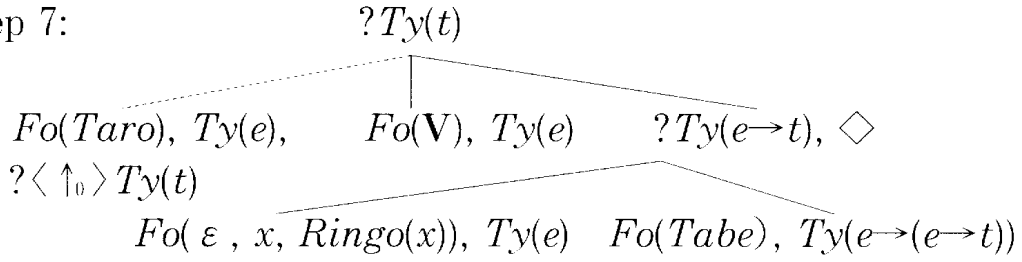
(54) Step 3: $?Ty(t), \diamond$
 \vdots
 $Fo(Taro), Ty(e), ?\langle \uparrow_0 \rangle Ty(t)$

(55) Step 4: $?Ty(t)$
 $\swarrow \quad \searrow$
 $Fo(Taro), Ty(e), ?\langle \uparrow_0 \rangle Ty(t) \quad Fo(\varepsilon, x, Ringo(x)), Ty(e), \diamond$

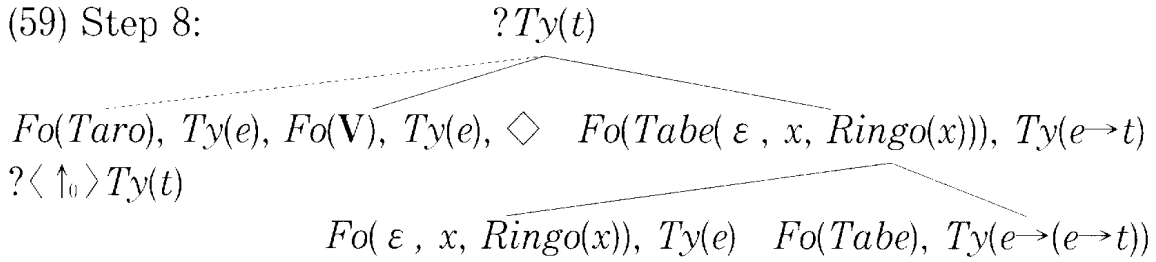
(56) Step 5: $?Ty(t), \diamond$
 $\swarrow \quad \searrow$
 $Fo(Taro), Ty(e), ?\langle \uparrow_0 \rangle Ty(t) \quad Fo(\varepsilon, x, Ringo(x)), Ty(e), ?\langle \uparrow_0 \rangle Ty(e \rightarrow t)$

(57) Step 6: $?Ty(t)$
 $\swarrow \quad \searrow \quad \searrow$
 $Fo(Taro), Ty(e), Fo(\varepsilon, x, Ringo(x)), Ty(e), Fo(V), Ty(e) \quad ?Ty(e \rightarrow t)$
 $?\langle \uparrow_0 \rangle Ty(t) \quad ?\langle \uparrow_0 \rangle Ty(e \rightarrow t)$
 $\swarrow \quad \searrow$
 $Fo(W), Ty(e), \diamond \quad Fo(Tabe), Ty(e \rightarrow (e \rightarrow t))$

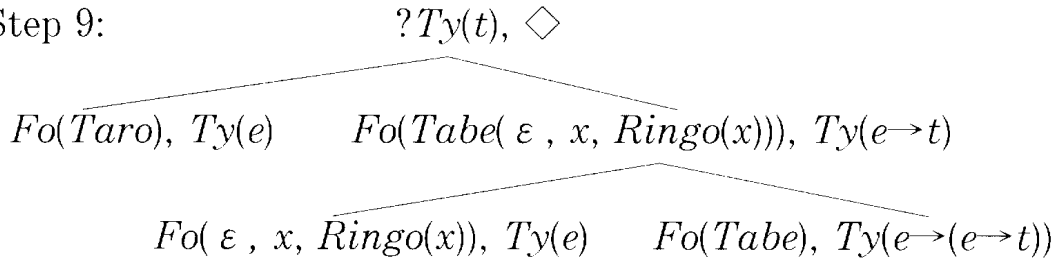
(58) Step 7:



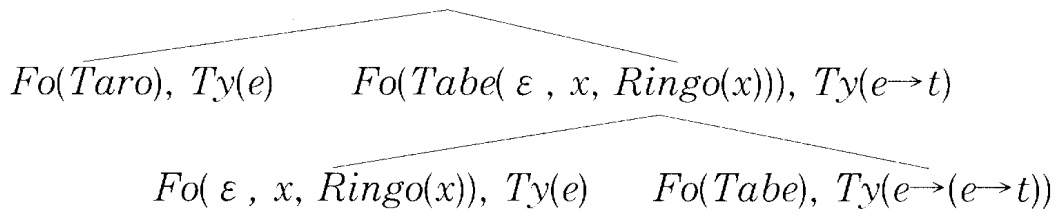
(59) Step 8:



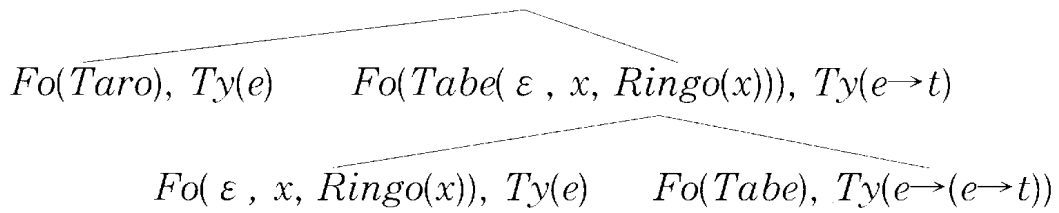
(60) Step 9:



(61) Step 10: $Fo(Tabe(\varepsilon, x, Ringo(x))(Taro)), Ty(t), \diamond$



(62) Step 11: $Fo(PAST: Tabe(\varepsilon, x, Ringo(x))(Taro)), Ty(t), \diamond$



The tree construction process starts with the initial goal of the requirement $?Ty(t)$ (step 1). The next step is a regular application of *Adjunction, coupled with a lexical action by an input

word of "Taro" (step 2).

Then, at step 3, the case particle *-ga*, which marks nominative case in Japanese, adds to the pointed node the requirement $? \langle \uparrow_0 \rangle Ty(t)$. The (lexical) action induced by *-ga* is roughly defined as follows:

(63) *-ga*:

IF $Ty(e)$ holds for description at the pointed node,
 THEN add $? \langle \uparrow_0 \rangle Ty(t)$ to the description, and close off
 that node downward,
 ELSE ABORT

To give an account of the formulation of this rule, several remarks should be in order. First of all, the DS tree-structure representation is based on the "Logic of Finite Trees" (LOFT). Thus, as we have already mentioned, the notion of "modality" is incorporated in the DS tree logic. Logically, this aspect of DS formalism is the base for treating the structural underspecification of natural language. That is, unfixed relations between nodes in a tree are formalized with this logical system. In the DS notation, $\langle \downarrow_0 \rangle X$ holds at some node when some decoration X holds at its *daughter* node, and $\langle \uparrow_0 \rangle X$ holds at some node when X holds at its *mother* node. These tree-node domination relations are also extended to those concerning unfixed nodes. In notation, $\langle \downarrow^* \rangle X$ holds iff X holds at a node along *some* sequence of daughter relations, and $\langle \uparrow^* \rangle X$ holds iff X holds at a node along *some* sequence of mother relations¹³.

13 With the tree modality $\langle \uparrow^* \rangle$, we can give a formal definition of *Adjunction for introducing an unfixed node of type e , as the following deduction rule in DS:

*Adjunction:

$$\{ \{ Tn(a), \dots, ?Ty(t), \diamond \} \}$$

$$\{ \{ Tn(a), \dots, ?Ty(t) \} \{ \langle \uparrow^* \rangle Tn(a), \dots, ? \exists x Tn(x), ?Ty(e), \diamond \} \}$$

Here, $Tn(a)$ indicates the tree-node address in a tree. See Kempson et al. (2001) for these formalities (ibid., p. 85).

In Japanese, where order of noun-phrases is notoriously free, case marking plays a crucial role. Roughly, the information that case particles provide is on *relative* positioning of the case-marked noun-phrase in the tree structure. Marking a noun-phrase with the particle *ga* indicates that the (lexical) information of this noun-phrase is going to be decorated on a node that is immediately dominated by some node of type t , i.e. a subject NP-node. Marking a noun-phrase with the particle *wo* indicates that the (lexical) information of this noun-phrase is going to be decorated on a node that is immediately dominated by *some* node of type $(e \rightarrow t)$, i.e. a VP-node. Thus, the function of the case particles *ga* and *wo* is to *narrow down* the positioning options for these case-marked noun-phrases to occupy in the tree structure.

The requirement $? \langle \uparrow_0 \rangle Ty(t)$ given in (63) indicates that there is some node of type t at its (immediate) mother. With a most simple example like (51), this requirement could be satisfied right away; that is, there is only one 'candidate', i.e. the root node. But this is not the case with more complicated examples (cf. (50)). Therefore, the relative positioning of a noun-phrase marked with *ga* should remain to be underspecified at the time when it gets parsed.

After the decoration of the node corresponding to the input of "*Taro-ga*" is completely finished, the pointer moves 'back' to the top node; here in (54), the root node. This pointer movement is controlled by a general mechanism in DS. That is, once a node is fully developed, the pointer invariably moves to the lowest open node in the emergent construction, in preparation for developing this node as the next 'target'; here, the root node is the lowest open node in the tree structure.

Notice that in the definition of (63), it is required that this rule applies to a 'finished' node; that is, the IF-condition is $Ty(e)$, instead of $?Ty(e)$. This will mean a very important point concerning case particles and noun-phrases in Japanese. That is,

based on the DS parsing mechanism, it follows that Japanese case particles must drive the processes of compiling those decorations on all *non-terminal* nodes, if they are any in the (sub) tree structure corresponding to the noun-phrase that is going to be case-marked. If these processes are not finished up, that noun-phrase is not qualified for an input to the action defined by case particles.

See, for example, the following sentence with complex nouns:

- (64) Watasino saiano musuko ga utokusii Mary wo
 my beloved son NOM beautiful ACC
 aisiteiru.
 love

'My beloved son loves Mary, who is beautiful.'

In (64), just before the *ga*-action is applied to the complex noun *watasino saiano musuko*, the requirement $?Ty(e)$ for this (complex) noun must be already fulfilled, having complied completely those information for its internal structure, and just before the *wo*-action is applied to the (complex) noun *utokusii Mary*, the same constraint is imposed on the way it is to be parsed.

At the current stage of parsing, the common noun *ringo* is ready to get processed in the tree growth. As before, the computational action named *Adjunction provides an appropriate node with the requirement $?Ty(e)$, which serves as a trigger for the lexical action by this common noun, and the tree structure is developing into the one represented in (55). However, this lexical action is not so simple as in English examples like (29), where decoration of some lexical information is merely added to the pointed node.

This complexity is due to the fact that in Japanese 'bare' nouns, by themselves, may constitute a phrasal category, i.e. a noun-phrase, without any determiners. In DS, as we have already pointed out, noun-phrases are uniquely provided with the type of *e*, which we could not go into details in this paper. In the

DS framework we are assuming here, the (bare) noun *ringo* under the intended reading in (51) projects an existentially quantifying operator, a variable for terms, and the description predicate *Ringo*, and the existentially quantified term is construed as the so-called "epsilon term", roughly in the sense of Hilbert and Bernays (1939). Thus, applying the lexical action by the common noun *ringo*, the tree structure is developing into the one given in (55).

Then, the action defined by the case particle *-wo* is applied, which is formulated roughly as follows:

(65) *-wo*:

IF $Ty(e)$ holds for description at the pointed node,
 THEN add $? \langle \uparrow_0 \rangle Ty(e \rightarrow t)$ to the description, and close off that node downward,
 ELSE ABORT

There is little to be said about this formulation. Just as in the nominative case particle, the above rule adds to the pointed node a new requirement of $? \langle \uparrow_0 \rangle Ty(e \rightarrow t)$, and once this node is fully decorated, the pointer returns to the root node; thus the tree structure is developing into the one represented in (56).

In the next step for tree growth, i.e. step 6, the input of verb morpheme *tabe-* is processed. In the DS framework, verbs in Japanese induce a full projection of *proposition schema*, with argument places decorated by *meta-variables*. This is a sound hypothesis on Japanese. In Japanese, even a verb alone may qualify as a full sentence. See, for example, the following 'one-word' sentence:

(66) *Tabeta.*

ate

'I ate it,' among many other interpretations.

Depending heavily on context, the utterance of (66), by itself, means some *full* propositional content like 'I/the person in question ate it', and so on. Notice that those meta-variables that are introduced into the tree structure by the lexical action of a verb

(morpheme) have an accompanying requirement of the form $? \exists x.Fo(x)$, which indicates that these meta-variables must be replaced somehow in the final tree structure¹⁴.

From then on, the formal mechanism of *merge* is going to be applied. First, merging the tree node with the predicate *Ringo* and the one with the meta-variable **W**, and then moving the pointer 'up' to the VP-node with the requirement $?Ty(e \rightarrow t)$, the parsing stage proceeds to the tree structure given in (58). Then, combining the predicate *Tabē* and its argument term ($\varepsilon, x, Ringo(x)$) into the formula $Tabē(\varepsilon, x, Ringo(x))$, and then moving the pointer to the subject NP-node with the other meta-variable **V**, it proceeds to the tree structure given in (59). Then, applying merge again to the tree node decorated by $Fo(Taro)$ and the one with the meta-variable **V**, and then returning the pointer to the root node, it proceeds to the tree structure given in (60). Then, combining the predicate $Tabē(\varepsilon, x, Ringo(x))$ and its other argument term *Taro* into the formula $Tabē(\varepsilon, x, Ringo(x))(Taro)$, it proceeds to the tree structure given in (61). There is nothing exciting in these automatic processes.

Now, a *proposition* formula has been created on the root node. This type of formula is exactly of the right one to combine with some tense specification. Here, notice that Japanese tense-markers are *suffixes*. This simple fact characterizes the fundamental aspect of Japanese. That is, based on the DS parsing perspective of natural language syntax, it is directly related to the way of how an utterance should be parsed in Japanese. Moreover, this point is not restricted to Japanese tense suffixes.

Nouns in Japanese are marked with case particles, and they are also suffixes. As we have already pointed out, the actions defined by case particles like *-ga* and *-wo* take as their input those

14 Here, for simplicity, we are omitting such requirements in the tree-structure representation.

decorated nodes whose requirement $?Ty(e)$ must be already fulfilled before they are fed to the rules corresponding to these case particles. Hence, from the parsing point of view, both case and tense suffixes, arguably suffixes in general, have a significant property in common. In Kempson (2003), she clearly points out that "each suffix indicates that all that is needed to interpret the constituent whose end it marks is already presented" (ibid., p. 28). That is, the action defined by a suffix in general takes those decorated nodes whose type-requirements are already satisfied, and it adds to them some additional specification, which may be specific to the suffix.

To put it rather vaguely, in Japanese, where nouns are marked with case suffixes and verbs with tense suffixes, constituency in the syntactic structure is indicated at its *ending* point. In this respect, English is just a 'mirror image' of Japanese. That is, in English, constituency in the syntactic structure is indicated at its *starting* point. Metaphorically speaking, English is a 'forward-looking' language, while Japanese is a 'backward-looking' language. Of course, this has nothing to do with their mentality (we hope so), but it is merely concerned with the *way* the two languages are getting parsed.

Now, we will present two versions of formulation of the action defined by the past-tense suffix *-ta*. In an earlier version of KCM (dated June 2, 2002), it is formulated as follows (ibid., p. 122):

(67) *-ta*:
 IF $\{Fo(\phi), Ty(t)\}$
 THEN put $(Fo(Spast : \phi))$
 ELSE ABORT

In (67), ϕ stands for some proposition. Thus, as we pointed out in the above, this rule only applies at the parsing stage where some proposition formula is already created in the tree-structure unfolding process. This is the input condition of this rule; notice that $Ty(t)$ is required, instead of $?Ty(t)$. As the

output, it adds a past-tense specification of $Fo(Spast : \phi)$ to the description of the (pointed) node.

In this version of KCM, they are not explicit enough about this tense specification. They only remark (ibid., p. 122) that it expresses "the index of evaluation as an additional label, with a restriction that the relation *PAST* holds between this and some point of reference, e.g. the time of utterance". In our understanding of their vague remarks, "the index of evaluation" expressed by S will correspond to the temporal evaluation of the propositional content ϕ , and it should have the relation *PAST* to the other temporal point of reference, which may be the time of utterance.

Furthermore, we guess that the first sort of temporal point of reference, which they are assuming with S , will possibly correspond to the time of the Context of Thought in Schlenker's theory of context, since, if our understanding is correct, it is to be construed as the temporal point of how the propositional content itself is evaluated from the perspective of context. Likewise, and slightly more clearly, the second sort of temporal point of reference, which they are also assuming, will possibly correspond to the time of the Context of Utterance in Schlenker's theory of context. Anyway, with us, they are assuming that two different sorts of temporal point of reference are needed in the evaluation of (past) tensed sentences in natural language, and moreover, they are supposing that the first one should be in past-relation with the second. In our terms, as in Schlenker's presuppositional theory on the tense, it is presupposed with the usage of past tense that the time of the Context of Thought is before the time of the Context of Utterance.

In Kempson (2003), she presents a more explicit formulation

to the past-tense suffix *-ta*, as follows (ibid., p. 29)¹⁵:

(68) *-ta*:

```

IF      {Fo( $\phi$ ), Ty(t)}
THEN   put (Fo( $S_i$  :  $\phi$ ), PAST( $S_i$ ,  $S_t$ ))
ELSE   ABORT

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With the above formulation, Kempson remarks in a footnote (ibid., p. 29) that " S_i is some temporal variable and S_t is a meta-variable over temporal variables". Here, in Kempson (2003), the index of evaluation expressed with *Spast* in an earlier version of KCM is clearly divided into S_i and S_t , with the relation of *PAST* between them.

We could not figure out what Kempson definitely means there with the phrase of "a meta-variable over temporal variables", but she is putting some additional remarks in that footnote. First, with us, she admits that "Japanese tense-marking is explicitly anaphoric". Then, she points out that "the past tense construal may be relative to some point in time established in the discourse, not necessarily related to some time indexically fixed as prior to the time of utterance".

In her cryptic remarks, things are wrapped up in mystery, but it is notable that she may be assuming *three* sorts of 'temporal point of reference'. Firstly, "some point in time established in the discourse", and secondly, "some time indexically fixed", and thirdly, "the time of utterance". In the footnote, she may also be assuming that the first one is not necessarily related to the second one, and that the second one is prior to the third one. That's all we can get from her remarks in the footnote.

Now, our guess starts. The third one, which is the most simple among the three, will be corresponding to the time of the actual context C in the sense of Schlenker (2004). In Schlenker's

15 In the most updated version of KCM (dated June 25, 2004), the formulation given in (68) is also assumed as it is (ibid., p. 201).

theory of ramified contexts, we have two other temporal points of reference; that is, the time of θ (the Context of Thought) and the time of ν (the Context of Utterance). Indeed, in Schlenker's dynamic theory of context, the time of θ is not necessarily related to the time of ν .

Then, our riddle will be reduced this way: which of Kempson's two 'daughters' (i.e. temporal points of reference) is corresponding to which of Schlenker's two 'sons' (i.e. the time of θ and the time of ν). Kempson's first daughter is to be established in the discourse, while her second daughter is to be indexically or 'deictically' fixed. Thus, her first daughter is more complicated in nature than her second daughter, since the former is deeply connected with the notion of discourse, not simply identified indexically. Of Schlenker's two sons, let us suppose that the time of ν is his first son, and the time of θ his second son, since the former is a more complicated notion than the latter. That is, in Schlenker's concept of ramified contexts, the Context of Thought is defined simply as "the point at which a thought originates", while the Context of Utterance is defined indirectly and 'secondarily' as "the point at which *the* thought is expressed", as we mentioned in 3.2.

Hence, our guess is that Kempson's first daughter will be corresponding to Schlenker's first son, and Kempson's second daughter to Schlenker's second son, as is usual in making a 'match'.

This match between the Kempsons and the Schlenkers is consistent with our notion of "reference time" in discourse. As we show in the Appendix, where we are presenting the correspondence of our tense system with that of Reichenbach, his notion of "reference time" ought to be ramified into two sorts, along with Schlenker's concept of ramified contexts. In the Appendix, we reach the conclusion that the notion of reference time in discourse should have two sources; that is, for English indicatives, it corresponds to the *deictic* anchoring point with the [+actual

θ] case, and to the *coreferential* (or strictly anaphoric) anchoring point with the [-actual ν] case. Kempson's first daughter, who is formalized with S_c , is basically 'anaphoric' in nature from the standpoint of reference time in discourse. On the other hand, Kempson's second daughter, who is formalized with S_i , is basically 'deictic' in nature from this standpoint. Thus, we believe that the above match is plausible from our notion of reference time in discourse, which is to be ramified as shown in the Appendix.

Now, we are halfway successful in making a bridge over Schlenker's theory of context and the DS parsing views of syntax, thanks to Kempson's short comments in a footnote. But here remain Kaplan's 'monsters'. We have to make it clear in what sense Kaplan's 'monsters' are almost everywhere in Japanese. Before proceeding directly to this problem, we will take up one of the most significant findings by DS; that is, why Japanese *should* be a verb-final language.

First of all, notice that since *-ta* is a verbal suffix, no other lexical material is able to occur between the verb morpheme and this tense particle. Thus, the action defined by *-ta* constitutes the very *next* action to follow the update induced by the verb morpheme. Here several (typological) properties of the language come together in Japanese. In KCM, they insist that the following basic properties of Japanese *jointly* require that the verb in Japanese should occur at the final position in a clausal string: (i) Japanese is a *full pro-drop* language; (ii) argument NP-nodes are to be introduced as *unfixed* in tree-structure; (iii) Japanese tense-marker is a (completely regular) *verbal suffix*.

Firstly, from the fact (i), the verb in Japanese should give a full template of *proposition* structure. Secondly, from the fact (iii), the processing of the tense suffix in Japanese requires that *all* lexical information needed to establish the proposition structure should be *already* in hand at its parsing stage. Finally, from the fact (ii), together with the most basic assumption in

DS that a sentence is to be parsed on strictly left-to-right basis, noun-phrases in Japanese should be preceded by the verb. Thus, the verb-final ordering in Japanese is a (theoretical) consequence; it can be expected from the DS views of natural language syntax and the basic typological properties of Japanese.

Everything is now ready for giving a finishing touch. First of all, the temporal variables of S_i and S_c , posited in Kempson (2003) and the most updated version of KCM, may be related to Schlenker's two temporal points of reference for the Context of Thought and the Context of Utterance, respectively. Here, the fact that the tense is realized as a verbal suffix in Japanese plays a crucial role.

As we pointed out before, the tense is projected in Japanese at the parsing stage where the full information of propositional content is already established. This is sharply contrasted with verb-medial languages like English, where the tense is realized as (syntactic) features attributed to the (tensed) verb, and the information on tense is projected syntactically at an *intermediate* stage of parsing in the tree-structure unfolding process, when the initial goal of the requirement $?Ty(t)$ has *not yet* been completed.

Thus, in Japanese, everything is prepared for adding to the proposition structure further specification concerning the tense when the parsing process meets an input of the tense morpheme. This is sharply contrasted with English, where at the stage the tense is projected as (syntactic) features, almost nothing is prepared for the proposition structure; indeed, in the DS parsing process on strictly left-to-right basis, only the lexical information concerning the subject NP and the (tensed) verb is available there.

Hence, the fact that the tense is realized as a (verbal) suffix in Japanese, coupled with the DS fundamental assumption of syntax as the strictly left-to-right parsing process, will provide the base for *freedom* in Japanese of setting values to the above

temporal variables, whose evaluation should be highly dependent on the context of speech. As a result, in Japanese, there is much flexibility for the so-called "shiftable contexts". Thus, in Japanese, the Context of Utterance, as well as the Context of Thought, will not necessarily be mapped into the actual context, even in ordinary discourses. This is clearly contradictory to Kaplan's (optimistic) hypothesis of the so-called "Direct Reference" thesis, since the tense is also indexical in nature.

Hence, Kaplan's 'monsters' dwell in Japanese with (at least) the interpretation of tense, even in ordinary discourses. In Japanese, the action defined by the tense suffix is a completely regular one, which may be *univocally* applied to verb morphemes, not restricted to a particular type of utterances in Japanese. Notice that we do not mean that for those cases of shifted contexts in Japanese, some temporal 'operator' in the traditional sense would be in the scope of some material in the utterance. Indeed, we are not assuming any sort of such an operator. We are merely assuming that some context variables to be projected at the parsing stage of Japanese tense suffixes should be anchored to temporal domains, with much freedom of options, depending upon the particular way of manipulation with the Context of Thought and the Context of Utterance. Thus, there is nothing mysterious about the interpretation of tense in Japanese, though there remains much to be clarified with these temporal variables, from the logical points of view. But it is beyond the scope of this paper.

In English, things are quite different. At the parsing stage where the tensed verb gets processed, (lexical) information for the propositional content is far from being complete. As a result, in the ordinary mode of English discourses, without any indication of their distinctive nature, there will be no means left but to employ the 'non-characteristic' or common way. Metaphorically speaking, in English, they are not allowed for such an individual-based 'free journey' on the contextual manipu-

lation, as in Japanese; to make a journey of their own, they are not provided with enough information in advance. Hence things are going as 'scheduled', as it were.

In English, as we show in the Appendix concerning English indicatives, the time of [+actual ν] is identified simply with the actual time of utterance; that is, the so-called "speech time" in Reichenbach's tense system, and the time of [+actual θ] is identified with the reference time for the actual context; that is, the "reference time" in the traditional sense. Thus, in English ordinary discourses, Schlenker's shiftable contexts are not conceivable, and thus, Kaplan's 'monsters' are kicked out there!

It might seem that our treatment of English indicatives is too simple, since the tense is basically 'anaphoric' in nature and the tense in English is also co-referentially anchored to some temporal domains, as well as deictically. See, as a typical example, sentence (2) again, which was given in section 2, and is reproduced below:

(69) Mary had a party last night and John got drunk.

It is apparent that the temporal point of reference for the second past-tensed verb is most naturally co-referring to the nearly same time (of interval) that is explicitly given in the first clause. There's nothing wrong with this observation.

However, from our parsing perspectives, what matters here is the *way* the second past-tensed verb is to be processed on the strictly left-to-right basis. It may well be the case that, with the phrase *got drunk*, the speaker is really intending it to corefer to the past event already described by the first clause. But the point is whether, at the very stage of parsing this phrase, it should be the *only* option for the following tree growth.

See, for example, a variant of the sentence (69) like below:

(70) Mary had a party last night and John got drunk that morning, which resulted in an embarrassing situation at the party.

In (70), it is notable that the explicit temporal information on

the adverbial phrase *that morning* is going to be 'superimposed' upon the (almost bare) temporal specification at the parsing stage of the past-tensed verb *got drunk*, along with the succeeding tree growth. It is perfectly grammatical and more appropriate to employ the past perfect option of *had got drunk*. But generally, it is not necessary. See, for example, the following famous utterance in the DRT literature:

(71) John fell. Bill (had) pushed him.

In (71), the simple past may be allowed for the second sentence, though it is most naturally interpreted as some event that occurred before the one expressed by the first sentence.

To summarize, both with verb-final languages like Japanese and verb-medial languages like English, the tense specification should be completed only after some proposition formula is created; that is, in the DS terms, the requirement $?Ty(t)$ is already fulfilled in the tree growth. However, given the strictly left-to-right basis of processing, it will turn out to make a tremendous difference in the two types of languages. In Japanese, where tenses are realized as suffixes directly attached to verb morphemes, the parsing process of tree growth does not need a 'wait-and-see' strategy, since some proposition structure is already available at that parsing stage of tense suffixes. In English, on the other hand, where tenses are realized as (syntactic) features of tensed verbs and these features are projected (in advance) with the parsing of tensed verbs, it does require a 'wait-and-see' strategy for the completion of temporal specification, since almost 'bare' temporal specification may be only given at that parsing stage of tensed verbs.

6. A Further Application: Subjunctives in English

In this section, we discuss some aspects of the English subjunctive, and we present a dynamic context-based account for the so-called "Subjunctive Past" and "Subjunctive Past Perfect"

in English. Comparing Japanese with English, we also claim that there is no grammatical distinction of the subjunctive/indicative moods in Japanese.

To start with, as we notified in 4.3, [-actual Past] may be posited with English subjunctives, since the verb or the auxiliary verb in these constructions do appear in the past form, and it seems quite plausible to treat them employing *some* concept of [-actual Past]. The crucial problem here is in what sense this concept is reckoned as 'Past'; it should not be 'Past' in the ordinary sense. The issues are philosophical in nature, not simply linguistic; we have a long history in the philosophical literature on subjunctives in English (see, among many others, Stalnaker (1969), Lewis (1973)). We will not discuss these profound issues in general, merely intending to indicate an instance of further application of our dynamic context-based theory.

Let us consider a simple sentence in English like below:

(72) I wish I could fly!

Here, the issue is: whether we should consider a shifted context of thought ([-actual θ], in our notation) or a shifted context of utterance ([-actual ν]), or both ([-actual θ , -actual ν]).

First of all, it will be natural to suppose that some notion of [-actual θ] is involved here, because it is apparent that the speaker (say, Ken) is situated in some 'imaginary' context, where it would not be impossible for one to fly. Indeed, it is up to Ken what kind of context of thought he may have in mind¹⁶. This is one of the most basic points where subjunctives differ from indicatives in the mood. If Ken believes that he can possibly fly, he would utter other way than (72).

However, we have not touched at all the core of our interest;

16 However, there should be some general restriction on the similarity of this imaginary 'world' to the actual one, as it has hitherto been pointed out in the literature of counterfactuals in English.

that is, why the past tense is employed in English subjunctives. In Schlenker's theory of the tense in English indicatives, it is presupposed with the usage of past tense that the time of θ is before the time of ν . If it is possible to extend his generalization to subjunctives as well as indicatives in English, our problem will be reduced to: in what sense the time of θ should be *before* the time of ν with English subjunctives.

It will be also plausible to suppose with the utterance (72) that the time of ν coincides with the one for the actual context, because there would be no need of conceiving some context shift for the utterance itself. It is notable that so long as ν is not a shifted context, the time of ν is mapped into the actual time of utterance, i.e. the speech time in discourse. Then, with the utterance (72), it will follow that the time of θ is, in *some* sense, before the speech time in discourse. Hence, the real problem is in what sense this should be so with English subjunctives.

The crucial hint lies in Schlenker's notion of "Context of Thought". As we mentioned in 3.2, it is defined as "the point at which a thought originates." In our understanding of his vague definition, the time of θ corresponds to the temporal point of reference at which the (relevant) thought *originates*; we could not interpret it other way.

If Schlenker's generalization on the past tense may be extended to English subjunctives, then it will follow that the relevant thought should be taken to *have originated* before the time of utterance. To be more correct, with English subjunctives, an utterance is to be made against some original thinking of the speaker, in the sense that some proposition should have been made *salient* just before his utterance is made¹⁷. We would like to call those propositions to be posited with English subjunc-

17 Notice that, in principle, the proposition whose 'originality' belongs to the speaker may not be shared among the interlocutors in discourse.

tives the "subjunctive base"¹⁸.

In the example given in (72), the subjunctive base may be regarded as the proposition that Ken is unable to fly. Unless he has not made this proposition salient in the thought before the utterance, he would not utter it in the subjunctive mood. In this case, the subjunctive base has a 'deictic' anchor. In English subjunctives with *if*-clause antecedents, the subjunctive base is explicitly restricted with these conditions; that is, the subjunctive base has a 'coreferential' anchor. Therefore, also in English subjunctives, the general patterns of the so-called "temporal anaphora" can be identified.

Then, in developing Schlenker's presuppositional analysis of the past tense into English subjunctives, we have only to make the following assumption; that is, the time of θ , in which the thought is corresponding to the subjunctive base to be posited, should be before the time of ν . That is, the subjunctive base posited should have already been made *salient* by the speaker, at the time of her utterance. It is notable that this constraint or presupposition on the usage of English subjunctives is consistent with the usual concept of "salience"; that is what it should be.

It will be easy to apply the same kind of treatment to Subjunctive Past Perfect. Consider, for example, the following sentence in English:

(73) I wish I had gone to see her in the hospital more often.

In the English past perfect construction, as it has been assumed in the traditional grammar, the time axis itself is wholly

18 Here, we are referring to the term of "modal base" used in Kratzer (1981), though her theory of modality is based on the traditional notion of "possible worlds". Thus, it is quite different in nature from our account of English subjunctives, which is based on a more dynamic context-based perspective, without depending on the notion of possible worlds.

shifted toward the past onto the relevant past moment of time. This is indeed the distinguishing feature of the past perfect construction, compared with the present perfect, both for indicatives and subjunctives in English. Hence, in Subjunctive Past Perfect, the time of ν is evaluated with respect to the relevant past moment of time, not the actual time of utterance. Furthermore, in Subjunctive Past Perfect, as well as Subjunctive Past, the time of θ should be before the time of ν . Thus, in Subjunctive Past Perfect, the time of θ should be further shifted into the past. Hence *both* ν and θ are identified as shifted contexts in Subjunctive Past Perfect.

This would remind the reader of the pattern of "a pair of shifted contexts" in Japanese. But there is a significant difference between them. In a pair of shifted contexts, which was given in (19) for the Japanese pattern of example (15b), as the result of *simultaneous* shifts of θ and ν , it is the case that $\theta = \nu$, in the notation of Schlenker (2004). However, this is not the case with Subjunctive Past Perfect in English, because the time of θ should be before the time of ν . Therefore, as for the latter, the 'tension' between θ and ν does exist, while it doesn't with the former. We believe that this difference is a good point on our analysis, since the Japanese pattern of example (15b) seems to bear much less marked connotations, compared with Subjunctive Past Perfect in English (see, e.g., the connotations with sentence (73)).

In English Subjunctive Past, where θ is shifted but ν isn't, θ and ν do not match with each other either, so it is also quite different from the Japanese pattern of example (15b). Subjunctives Past and Past Perfect in English would be corresponding, rather, to the Japanese pattern of example (15a), which bears much more marked or 'sentimental' connotations than that of example (15b), in the sense that it is not the case that $\theta = \nu$. We also believe that this match is a good point on our analysis, since the English subjunctive is basically in a 'subjective' mood;

it is not an objective way of making an utterance.

To summarize, in our notation employed with the Japanese patterns of examples (15a-d),

(74) Subjunctive Past: [+actual ν , -actual θ], and $\theta \neq \nu$.

(75) Subjunctive Past Perfect: [-actual ν , -actual θ], and $\theta \neq \nu$.

Notice that the simple features of [\pm actual] alone are not enough; we also have to consider whether it is the case that $\theta = \nu$ or not. Otherwise, we could not distinguish the Japanese pattern of example (15b) from Subjunctive Past Perfect in English, since the two modes of discourse are the same up to the specification of [-actual ν , -actual θ]. We believe that this is a nice point on our analysis, since it will make it possible to give more subtle specifications for the typological variations among the tense system in natural language.

One might wonder why the pattern of '[-actual ν , -actual θ], and $\theta \neq \nu$ ' may not exist in Japanese. Our answer is simply that it isn't needed in Japanese, since there is no clear-cut distinction of indicatives and subjunctives in the language. See, for example, the following conversation between the mother and her child¹⁹:

(76) [Situation: the mother is asking a question to her young child.]

Mother: Ookiku nattara nani ni naruno.

old become-COND. what DAT become

'What do you want to be when you grow older?'

Child: Ookiku nattara zoosan ni naruno,

big become-COND. elephant DAT become

19 This example of dialogue is taken from a newspaper column (*The Yomiuri*, a Sunday edition).

tiisaku nattara arisan ni naruno.
 small become-COND. ant DAT become
 'If I could become bigger, I would be an elephant,
 and if I could become smaller, I would be an ant.'

In the above conversation, the mother is intending to ask her child what she is going to be when she grows up. The utterance on the side of the mother may be taken to be indicative in the mood, given the distinction of indicative/subjunctive in English. On the other hand, the utterance on the side of the child should be taken to be subjunctive in the mood. However, the antecedent clause *ookiku nattara* is in the same form with these utterances.

Hence, in Japanese, the distinction of indicative/subjunctive moods in English is not grammaticalized or conventionalized. We believe that this difference is not accidental, but it is related to the crucial distinction with the way of manipulation of the context of speech in the two languages. In Japanese, we may shift to almost any context we want, even in ordinary discourses. As we have already pointed out, Present and Past in Japanese are generally underspecified with [\pm actual], depending heavily on the context of speech. Thus, context shift is so free that it could sometimes cause such a miscommunication between the interlocutors, as shown in the above dialogue. Notice that, from the perspective of language development, it would not be conceivable at all that a young child should have learned to employ utterances in the subjunctive mood, as early as those in the indicative mood. Indeed, she does *not* have to learn it, since there is *no* grammatical distinction of the indicative/subjunctive moods in Japanese²⁰.

In English, on the other hand, the manipulation of context shift is rather strictly restricted in ordinary discourses, which,

20 For some detailed discussion on conditional statements in Japanese, see Shirai (1998).

as we have already shown, is based on the syntactic property of the language from the parsing perspective. Thus, some more constructions have to be grammaticalized for particular purposes, such as the distinction of indicatives and subjunctives in English.

7. Conclusion

The language use and the internal system of language are not independent of each other. There is an intricate relation between them. In this paper, we demonstrated this point in the discussion of the tense systems in English and Japanese, focusing on their fundamental distinction. On the side of language use, we adopted the context theory proposed by Schlenker, in which the dynamics of context shift can be incorporated rather clearly. On the side of internal system of language, we adopted the linguistic model of Dynamic Syntax. As its name itself indicates, Dynamic Syntax incorporates the dynamics of language processing, which is strictly on left-to-right basis. However, the fascinating feature of Dynamic Syntax is not merely with its dynamics, but with its explanatory power on the typological aspects of languages. Indeed, in the paper, based on Dynamic Syntax, the typological distinction of English and Japanese was explained with their tense systems, which can be reduced to the simple fact that the tense is realized as suffixes in Japanese, while it is realized as (syntactic) features in English.

However, this is not the most significant point that we have shown in the paper. In our theory on the context and tense in Japanese, the above two theoretical perspectives are successfully connected with each other. Thus, the fact that shiftable contexts in Japanese are much more popular than in English can be given a theoretical account, based on the parsing perspective of Dynamic Syntax. This is the very reason that we employed in the paper two different sort of dynamic theories of

natural language; that is, the dynamic theory of context and the dynamic theory of syntax.

Why is there such an intricate relation between context and syntax? In our speculation, what is bridging over speech and thought is the notion of context. In principle, speech and thought could diverge from each other; our utterances sometimes invite misunderstanding. However, in practice, this divergence between speech and thought is subject to some limits, so that it would not have so much effect on our daily communication. If there should not be intimate relationship between the context in language use and the structural properties of language, such a restriction could not be imposed on our utterances.

To put it differently, the context-dependency of natural language is rather an excellent point for the efficiency of natural language communication. This point has already been noticed in the so-called "Situation Semantics" (see, e.g., Barwise and Perry (1983)). But, viewed from the current standpoint, something was missing there. At that time, the underspecification of natural language was only regarded as semantic phenomena. At present, with Dynamic Syntax, it has been shown that the underspecification of natural language is also related with the structural or syntactic aspects of natural language. Hence, context and syntax in natural language can meet together. This meet seems to be strange from the traditional standpoints of language use and system. But, from the dynamic views of context and syntax in this paper, they meet together, as is expected.

Appendix : Our Tense System and Reichenbach's Tense System

We will show the correspondence between the two systems, taking up Simple Past, Present Perfect and Past Perfect in

English. With Past Perfect, it rather indicates their non-correspondence, since Reichenbach's system is too simple to compare with ours.

1. Simple Past

- (1) Reichenbach's diagram: $E=R<S$, where E, R, S represent the "event time", the "reference time" and the "speech time" in discourse, respectively.
- (2) Our notation: [+actual ν , +actual θ]
- (3) Correspondence between the two:
 - (i) The time of ν corresponds to S. ([+actual ν])
 - (ii) The time of θ corresponds to R, which is located before S. ([+actual θ])
 - (iii) Hence, the time of θ is before the time of ν . (a *past* tense).
 - (iv) The time of thought corresponds to E, which is located with R.
 - (v) Hence, the time of thought overlaps with the time of θ . (a *simple* tense)

2. Present Perfect

- (1) Reichenbach's diagram: $E\leq R=S$
- (2) Our notation: [+actual ν , +actual θ]
- (3) Correspondence between the two:
 - (i) The time of ν corresponds to S. ([+actual ν])
 - (ii) The time of θ corresponds to R, which is located with S. ([+actual θ])
 - (iii) Hence, the time of θ is not before the time of ν . (a *present* tense)
 - (iv) The time of thought corresponds to E, which is adjacent toward the past to the time of θ . (a *perfect* tense)

3. Past Perfect

Note: There are two sources for English Past Perfect; that is, the "past of a simple past" and the "past of a present perfect", the latter of which has no counterpart in Reichenbach's diagram.

3.1 The Past of a Simple Past

(1) Reichenbach's diagram: $E < R < S$

Note: To be more correct, in this case, the diagram of Simple Past, $E = R < S$, is wholly shifted into the past.

(2) Our notation: [-actual ν , -actual θ] and $\theta = \nu$.

(3) Correspondence between the two:

- (i) The time of ν is shifted into the past, corresponding, rather, to R. ([-actual ν])
- (ii) The time of θ is shifted further into the past ([-actual θ]), together with the shift of ν , so that it remains to be the case that $\theta = \nu$. (*indexical* in the mood)
- (iii) Hence, the time of θ is before the time of ν . (the past of a simple *past*)
- (iv) The time of thought overrides with the time of θ . (the past of a *simple* past)

3.2 The Past of a Present Perfect

(1) Reichenbach's diagram: No counterpart.

Note: In this case, the diagram of Present Perfect, $E \leq R = S$, is wholly shifted into the past.

(2) Our notation: the same as (2) in 3.1.

(3) Correspondence between the two:

- (i) The time of ν is shifted into the past, corresponding, rather, to R. ([-actual ν])
- (ii) The time of θ is also shifted into the past, together with the shift of ν ([-actual θ]), so that it remains to be the case that $\theta = \nu$ (*indexical* in the mood).
- (iii) Hence, the time of θ is not before the time of ν . (the

past of a *present* perfect)

- (iv) The time of thought is adjacent toward the past to the time of θ . (the past of a present *perfect*)

Remarks:

1. S in Reichenbach's diagram corresponds to the time of [+actual ν] in our system (for Simple Past and Present Perfect, but not for Past Perfect).
2. E in Reichenbach's diagram roughly corresponds to the time of thought in our system (for Simple Past and Present Perfect, but not for Past Perfect).
3. R in Reichenbach's diagram corresponds to the time of [+actual θ] (for Simple Past and Present Perfect) *and* to the time of [-actual ν] (for Past Perfect), in our system. There is no one-to-one correspondence between the two systems, since Reichenbach's diagram is poor and too simple. His notion of "reference time" in discourse is ramified into two sorts in our system. With actual contexts of thought it serves as the time of θ , while with non-actual contexts of utterance it serves as the time of ν . Supposedly, since Reichenbach did not think of two sorts of context of speech, i.e. the Context of Thought and the Context of Utterance, he made confusion there.
4. As it has been well-known in linguistics, for English Past Perfect there are two sources; that is, the past of a simple past and the past of a present perfect. See the following examples given in McCawley (1981):
 - (i) When John married Amy, he had met Cynthia five years earlier.
 - (ii) When John married Amy, he had already read War and Peace three times.
 (i) is an example for the past of a simple past, while (ii) is one for the past of a present perfect. In the English tense morphology, they are converged into one and the same

construction, i.e. Past Perfect. The two cases are only disambiguated with the propositional content of utterance and the context in discourse. This duality can be accounted for in our formulation of English Past Perfect, which is nevertheless specified uniformly as $[-\text{actual } \theta, -\text{actual } \nu]$ and $\theta = \nu$. In both cases, as shown in examples (i) and (ii), the time of ν is shifted to the moment of time designated by the antecedent clause. In (i), the content of John's thought, i.e. 'John met Cynthia five years earlier', is articulated with this shifted context of utterance, so that the time of θ is (simply) before the time of ν . In (ii), the content of his thought, 'John has already read *War and Peace* three times', is also articulated with this shifted context of utterance, so that the time of θ is not (simply) before the time of ν ; that is, *present perfect* in nature.

5. Notice that in both cases θ could not remain to be $[+\text{actual}]$, since it should be the case that $\theta = \nu$; that is, the general requirement for indicatives in English. Thus, the time of θ is also to be shifted into the past, together with the shift of ν ; that is, "a pair of (parallel) shifted contexts" in English. It may be said, in this sense, that the speaker is presenting his thought and utterance from consistent points of view in a non-actual context of thought and of utterance.
6. One might wonder why a pair of shifted contexts may be allowed for English Past Perfect. However, is Past Perfect really an 'ordinary' discourse in English? We don't think so. The usage of Past Perfect is rather complicated, compared with the other indicative discourses in English, because it has two sources, and these different sorts of Past Perfect should be disambiguated, not merely with the propositional content of utterance, but also with the organization of the whole discourse. Moreover, from the standpoint of language development, Past Perfect in English is supposedly to be learned at a rather late stage for even native speakers of English. Its

proper use could not have been mastered, before they had learned enough about the basic organization of English discourses. This is due to the fact that with Past Perfect the context of utterance is not an actual one, and the time of [-actual ν] serves as the "reference time" in discourse; thus, it is heavily discourse-oriented in nature.

Summary: English Indicatives in Our Tense System

- (i) It is generally the case that $\theta = \nu$, since the points of view in the Context of Thought and the Context of Utterance should be consistent with each other. In this respect, indicatives are basically distinguished from subjunctives in English.
- (ii) ν is [\pm actual]. If ν is [+actual], then the time of ν corresponds to the speech time in discourse. If not, then the time of ν corresponds to the reference time in discourse.
- (iii) θ is [\pm actual]. If θ is [+actual], then the time of θ corresponds to the reference time in discourse, and θ is [-actual] only if ν is also [-actual], so that it remains to be the case that $\theta = \nu$.
- (iv) From (ii) and (iii), it will follow that the notion of "reference time" in discourse should have two sources; that is, it corresponds to the "deictic" anchoring point (the [+actual θ] case) and to the "coreferential" (strictly anaphoric) anchoring point (the [-actual ν] case).
- (v) With past tenses, the time of θ should be before the time of ν , and with present tenses, the time of θ should not be before the time of ν .
- (vi) In simple tenses, the time of thought overlaps with the time of θ , and in perfect tenses, the time of thought is adjacent toward the past to the time of θ .

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Ken-ichiro Shirai
Faculty of Liberal Arts
Chukyo University
Yagoto, Showa-ku
Nagoya 466-8666
Japan
E-mail: shirai@scs.chukyo-u.ac.jp

Yoshiki Mori
Doctoral Program in Linguistics and Literature
Graduate School of Humanities and Social Sciences
University of Tsukuba
Tennoudai 1-1-1
Tsukuba 305-8571
Japan
E-mail: mori@lingua.tsukuba.ac.jp

Naoki Yamazoe
Graduate School of Humanities and Social Sciences
Nagoya City University
Aza Yamanobata 1, Mizuho-cho, Mizuho-ku
Nagoya 467-8501
Japan
E-mail: naoki@yamazoe.com

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