Double-Access Sentences Generalized*

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1. Introduction

This paper proposes a theory of tense that accounts for cross-linguistic variation in a natural way. I shall attempt to present an improved version my own proposal made in my earlier work (Ogihara 1996). This paper has two aims. The first is to account for the distribution of absolute and relative tense morphemes (in the sense of Comrie (1985)) in English and Japanese. The second is to account for the semantics of *de re* attitude reports involving tense morphemes, including double-access sentences, in a general fashion.

To be more specific, the hypothesis to be pursued in this paper is that *both English and Japanese* (and possibly many other natural languages) have absolute and relative tenses in the sense of Comrie (1985).[1] In particular, I account for so-called double-access sentences (present-under-past sentences) and other *de re* attitude reports about temporal entities by the same mechanism. The only difference between English and Japanese that we must assume for tense is that English has a SOT rule (or that it has a zero tense in the sense of Kratzer (1998)) whereas Japanese does not. This point of view is not new. I proposed in Ogihara (1996) that the presence or absence of a SOT rule distinguishes between English and Japanese with respect to tense. However, the proposal defended here removes some of the inadequacies of my earlier proposal. For example, the new proposal allows us to eliminate the stipulation about the English present that it must be used as an absolute present tense. Moreover, it allows us to account for the semantics of double-access sentences in a more natural way. Or put in more general terms, the TEMPORAL DIRECTIONALITY ISOMORPHISM proposed in my earlier work (Ogihara 1989, 1996) is presented in a more formally explicit way.

In a series of papers, Abusch (1991, 1994, 1997a, 1997b) developed a theory of tense that is designed to account for tense-related data in English. It is one of the most detailed accounts of the behavior of English tense morphemes, but the details of the proposal are subject to different interpretations. Two slightly different interpretations of Abusch's proposal were put forward by Heim (1994) and by von Stechow (1995). This paper does not attempt to modify her theory to account for both English and Japanese data. Rather, I shall provide a summary of Abusch's proposal as interpreted by von Stechow before presenting my own proposal. I hope that this strategy will help the reader compare these two proposals from an objective point of view.

2. Abusch's Theory of Tense

This section summarizes the main points of Abusch's proposal as interpreted by von Stechow (1995). As I mentioned above, Abusch's proposal is designed for English. Abusch assumes that English tense morphemes have constant interpretations in extensional contexts. That is, **PAST** always has a presupposition

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associated with the precedence relation (henceforth <), whereas **PRES** always has a presupposition associated with the non-precedence relation (henceforth $\neg<$).

The situation is different in intensional contexts. **PAST** does not always have a presupposition associated with < It is possible for **PAST** to be associated with $\neg<$ when it occurs in an intensional context and its closest c-commanding tense is associated with <. That is, a past tense morpheme is required to satisfy one of the following two conditions: (i) it has < associated with it; (ii) its closest c-commanding tense is associated with <, which allows it to be associated with $\neg<$. Von Stechow posits a distinguished variable t_0, and each temporal relation is interpreted with respect to (the denotation of) t_0. The variable t_0 is intuitively the "evaluation time." For example, (1a) is formally represented as in (1b). In the notation von Stechow adopts, the presupposition of some expression is a formula of type t and is separated from the expression by a semi-colon.

(1) a. John PAST_2 left.
b. $\text{leave}(t_2; R^{\text{leave}}(t_2, t_0) \wedge R^{\text{leave}} = <)(\text{John})(w_0)$

(1b) means that John leaves at t_2 and t_2 is presupposed to be located before t_0, which denotes the utterance time. This is an instance of (i). Since the past tense morpheme is not c-commanded by any other past tense, it must have a presupposition associated with <. The verb complement clause in (2a) is an instance of (ii). (2a) is rendered as in (2b).

(2) a. John PAST_2 thought that Mary PAST_0 was pregnant.
b. $\text{think}(\lambda t_0[\text{be-pregnant}(t_0; R^{\text{be}}(t_0, t_0) \wedge R^{\text{be}} = \neg<)(\text{Mary})])(t_2; R^{\text{think}}(t_2, t_0) \wedge R^{\text{think}} = <)(\text{John})(w_0)$

(2b) is interpreted as follows: John thought something at t_2 (where t_2 is a past time), and the content of John's thought was that for each world w and time t compatible with what he thought at t_2, Mary is pregnant in w at t. This is what von Stechow calls a bound interpretation, which is informally referred to as a simultaneous interpretation in the literature. This is a semantics of *de dicto* belief.[2]

The condition that **PRES** is subject to amounts to the requirement that it cannot occur under **PAST**. Thus, whenever it occurs, it has a presupposition associated with $\neg<$. (3b) exemplifies this situation. The restriction of the form "$\neg t_0 < t_2$" stems from what Abusch calls the upper limit constraint (ULC), which means that no tense can make reference to a time later than its "evaluation time," i.e., t_0. This is needed to prevent t_2 from denoting an interval later than t_0.

(3) a. Mary PRES_2 is pregnant.
b. $\text{be-pregnant}(t_2; R^{\text{be}}(t_2, t_0) \wedge R^{\text{be}} = \neg< \wedge \neg t_0 < t_2)(\text{Mary})(w_0)$

(3b) means that Mary is pregnant at t_2 and t_2 does not precede t_0 and does not follow t_0. In other words, Mary is pregnant at a time overlapping t_0, which denotes the utterance time.

In addition to *de dicto* interpretations, Abusch's proposal explains how a tense can receive a *de re* interpretation.[3] For example, (4a) is subject to a *res* movement as in (4b), and it is formally analyzed as in (4c).

(4) a. John thought that Bill was asleep.
b. John PAST$_1$ thought PAST$_2$ $\lambda_3\lambda_0$[Bill t_3 was asleep]
c. think(t_2; $R^{res}(t_2,t_0) \wedge R^{res} = <)(\lambda t_3\lambda t_0$[be-asleep($t_3$)(Bill)])($t_1$; $R^{think}(t_1<t_0) \wedge R^{think} = <$)

The presupposition induced by t_2 is that it denotes a time earlier than the utterance time, not that it denotes a time equal to or earlier than the time of John's thinking. In other words, a forward shifted reading (i.e., the reading in which the time of Bill's being asleep falls between the time of John's thinking and the utterance time) is permitted. Von Stechow suggests a way of excluding this reading for **PAST$_2$**. That is, he proposes that the *res* denotes a time not later than the time of John's thinking, which is indicated by the variable t_1 (i.e., the time at which the attitude in question obtains). This is a variant of the condition called ULC (upper limit constraint) originally proposed by Abusch.

De re interpretations are produced by **PRES** as well. The basic idea is that since no present tense is supposed to occur immediately under a past tense morpheme in an intensional context, the present tense that occurs in such a context is subject to the rule for *res* movement and receives a *de re* interpretation. The tense that has been moved to an extensional position must denote the relation $\neg<$. The entire sentence is used to assert that the interval in question, which overlaps the utterance time, is such that the speaker stands in some suitable relation to it and the property described by the embedded clause is assigned to it. For example, (5a) is represented as in (5b) after a *res* movement.

(5) a. John thought that Mary is pregnant.
b. John PAST$_1$ thought PRES$_2$ $\lambda_3\lambda_0$[Mary t_3 be pregnant]

The *res* represented by PRES$_2$ in (5b) is forced to overlap the utterance time because it is an absolute present tense. However, this is not sufficient according to the native speaker's intuitions; it must overlap the time of John's saying. This observation could receive a number of possible explanations. One possibility is that the revised version of the ULC referred to above is valid and this forces the reference of the *res* to overlap the time of John's thinking because the denotation of PRES$_2$ cannot follow it. Alternatively, we can say that the suitable relation that relates the subject to the interval in question must force the *res* to be co-temporal with the time of John's saying.

Although there are many other issues discussed in Abusch's paper and von Stechow's reinterpretation, the above summary should be sufficient to give the reader a rough idea about Abusch's overall proposal.

3. Proposal

In what follows, I will propose a revised version of my previous proposal given in Ogihara (1996) incorporating a number of new ideas. The proposal to be defended differs from Ogihara (1996) in the following respects: (i) the distribution of absolute and relative tenses (in the sense of Comrie (1985)) receives a simple account; (ii) *de re* attitude reports about temporal entities receive a more general characterization, and the range of interpretations attributed to them is accounted for

in a formally explicit manner. The new proposal I defend here has the ingredients listed in (6).

(6) The proposal contains the following ideas:
   a. Both English and Japanese have an absolute present tense morpheme and an absolute past tense morpheme.
   b. Both English and Japanese have a relative past tense morpheme.
   c. There is no such thing as an overt relative present tense morpheme. Since the semantic effect of having a "relative present tense" is accomplished by having no tense, I hypothesize that natural language uses a tenseless verb form to convey this interpretation when this option is available. In Japanese, what is assumed to be a present tense sentence is in fact morphologically tenseless. By contrast, English has no such option. All sentences in the present tense bear an absolute present tense. Thus, English must use tensed sentences to convey tenseless interpretations. This is the source of the SOT rule.
   d. All tense-related *de re* interpretations involve absolute (= indexical) tenses. They are accounted for in terms of *res* movement along the lines of Ogihara (1996) and Abusch (1997a). What is new here is the idea that the property assigned to the *res* is that associated with the relativized version of the moved tense morpheme. This is a formalization of the TEMPORAL DIRECTIONALITY ISOMORPHISM proposed in Ogihara (1989, 1996). This accounts for the range of possible *de re* interpretations, including the interpretations associated with so-called double-access sentences.

In the following sub-sections, I propose a typology of tense using English and Japanese data. First, I provide an account of the crucial difference between English and Japanese with regard to tense. I then move on to discuss the semantics of *de re* attitudes involving (absolute) tense morphemes. This includes an account of so-called "double-access sentences."

3.1. The Crucial Difference between English and Japanese

In this section, I will propose a typology of tense. I shall start with relative tenses. We can assume that the semantic contribution of a relative tense is determined in relation to its closest c-commanding tense, if any. In Abusch (1997a) and Ogihara (1996), simultaneous and shifted interpretations associated with verb complement clauses are handled by adopting Lewis's (1979) proposal about *de se* attitudes. Put simply, the idea is that an attitude verb (e.g., *think*) or an indirect discourse verb (e.g., *say*) denotes a relation between individuals and properties (i.e., sets of world-time-individual triples), not a relation between individuals and propositions (i.e., sets of world-time pairs). Then when someone says "I believe ϕ," this utterance is understood to mean that the speaker self-ascribes the property denoted by ϕ. For example, the truth conditions of (7a) are described as in (7b).

(7) a. John believes that it is five o'clock.
[Assume that it is four o'clock now.]
b. At four, John self-ascribes the property of being located at <w,t> such that t equals five o'clock in w.

On the basis of this proposal, the truth conditions of (8a–b) are described as in (9) in the spirit of Lewis (1979).

(8) a. Taro said that Hanako was pregnant.
b. Taroo-wa Hanako-ga ninsin-si-te iru to it-ta.
Taro-TOP Hanako-NOM pregnancy-do-TE IRU-PRES that say-PAST
'Taro said that Hanako was pregnant (at that time).' [simultaneous reading]

(9) John talks at some (particular) past time as if he self-ascribes the property of being located at some <w,t> such that Mary is pregnant at t in w.

Note first that when the embedded clause translates as a plain property of the form {<w,t,x> | Mary is sick in w at t}, a simultaneous interpretation is predicted.[4] This means that as far as semantic interpretation is concerned, we need the tense configuration in (8b) rather than the one in (8a). Thus, I proposed in Ogihara (1996) that the English **PAST** is subject to the SOT rule, according to which a tense is deleted optionally under identity with the closest c-commanding tense.

A question must be asked at this point as to why (10) cannot mean what (8b) means. In other words, why is it that the English present cannot convey a relative present tense meaning?

(10) Taro said that Hanako is pregnant.

I hypothesize that (8b) does not have a present tense morpheme in the embedded clause; it is morphologically tenseless. On the other hand, (10) has an absolute present tense morpheme in the complement clause, and this produces a peculiar double-access interpretation. It may look as if this account is not very different from the position advanced in my earlier work (Ogihara 1996), where I stipulated that the English present must be used as an absolute present tense. However, the idea that I would like to pursue here is that there is no overt linguistic form that represents a relative present meaning either in English or in Japanese. Note that a clause that has a relative present tense (if such a morpheme exists) is like a tenseless clause since it is not necessary to have a morpheme that shifts the "evaluation time." This is implicit in some previous formal language implementation attempts of natural language tense. For example, Montague's (1973) PTQ system employs tense operators for the past and the future but no operator is proposed for the present. This shows that a relative present tense morpheme is unnecessary at least for semantics.

Now the question is how a relative present tense meaning is conveyed in English and Japanese. I contend that Japanese has the option of having no tense in what is normally regarded as a tensed clause. In other words, what we consider to be a Japanese sentence in the simple present tense is in fact a tenseless clause. On the other hand, English does not have this option. All finite clauses in English are indeed overtly tensed. Thus, any English sentence in the present tense has an

absolute present tense morpheme. What then is done in English when the speaker wants to produce a semantic effect that is associated with a tenseless sentence? English is obliged to use tensed clauses in such a way that they sometimes have no temporal meaning. I think this accounts for why English has a SOT rule, whereas Japanese does not. Having a SOT rule is a very clever way of using tensed clauses for a tenseless meaning. I proposed in Ogihara (1996) that the embedded past tense morpheme in the English example (8a) is deleted prior to semantic interpretation. If this rule is adopted for English, then the process of semantic interpretation proceeds as desired. Since the verb complement clauses in (8a) and (8b) are both tenseless when they are interpreted, they receive the same interpretation.

I proposed in Ogihara (1996) that the tense deletion rule applies whenever two occurrences of the same tense (i.e., present or past) are in a specified structural configuration: the higher tense is the closest c-commanding tense for the lower one. That is, this rule is assumed to apply to relative clauses as well as to verb complement clauses. This proposal is motivated by the fact that Japanese relative clauses in the present tense can receive simultaneous interpretations as in (11).

(11) Taroo-wa nai-te iru otoko-ni at-ta.
Taro-TOP cry-TE IRU-PRES man DAT meet PAST
'Taro met a man who was crying (at that time).'

If we assume that when a relative clause is tenseless, it is interpreted in relation to the closest c-commanding tense, then the interpretation is easily accounted for. If we assume that the same type of mechanism for temporal interpretation is present in English as well, then we predict that (12) has a simultaneous reading based upon a tenseless verb form in the relative clause at LF. That is, the lower past tense is deleted by the SOT rule, and the resulting tenseless sentence is interpreted in relation to the time of John's meeting the man.

(12) John met a man who was crying.

This prediction is borne out in that (12) can receive a simultaneous interpretation. However, this complication is not necessary for English since by assuming that the past tense in the relative clause is an occurrence of an absolute past tense, we can predict the simultaneous reading associated with (12) as well. However, when the matrix clause is in the future tense, the SOT rule is needed to account for a purely simultaneous reading. Consider (13).

(13) John will buy a fish that is alive.

(13) simply means that there is a future time t at which John buys a fish x and x is alive at t. It does not require that the fish is alive at the utterance time; it might not even be born when (13) is uttered. If we assume that *will* is analyzed into **PRES** and the future auxiliary *woll*, **PRES** on *is* can be deleted under identity with the matrix **PRES**. This results in the desired reading.

Note also that examples like (14a–f) show that we need to determine the temporal interpretation of various adnominal modifiers in relation to the closest c-commanding tense, rather than in relation to the utterance time.

(14) a. John found a shop to be closed in five days.
b. Last month Professor Jones assigned a research project to be completed in a week.
c. John saw a man crying in despair.
d. I saw a man looking tired from the day's work.
e. Yesterday, I went to the police station and talked to the officer on duty.
f. I shook hands with an actor on the stage.

(14a–f) show that infinitival clauses and tenseless verbal forms (such as participial forms) behave like tenseless clauses in Japanese. That is, a DP containing no overt tense morpheme is interpreted as embedded under the matrix tense. In each of the examples (14a–f), the object DP contains an adjectival expression (an infinitival clause in (14a–b), a participle in (14c–d), and a PP in (14e–f)). In each example, the time of the predicative expression within the DP in question is understood to be the same as the time of the matrix verb. It is clear from these examples that the interpretation of tenseless adnominal modifiers (adjectives, participles, PPs, etc.) that occur within DPs are temporally controlled by the immediately higher tense morpheme. The data in (14) suggest the following account: tense has scope in that it potentially controls the interpretation of all expressions that are structurally subordinate. Let us present one example for the purpose of exposition. (14c) translates as in (15) in our system.

(15) $\exists t[t < \text{utterance time} \ \& \ t = \text{PAST}_1 \ \& \ \exists x[\text{man}(x)(t) \ \& \ \text{crying-in-despair}(x)(t) \ \& \ \text{meet}'(x)(\text{John})(t)]]$

The temporal interpretation of common nouns is quite variable and often context dependent as claimed by Enç (1986). So the time variable for the predicate *man* should probably be a free variable. But our main concern is the temporal property of the participle *crying in despair*. (15) represents the most natural and possibly the only interpretation of (14c). This account meshes well with a structural account of the SOT phenomena assumed here.

As for relative past tense, Japanese clearly has a relative past tense morpheme. (See Ogihara (1996) for relevant examples.) The existence of a relative past tense in English is not so obvious, but examples like (16) (due to Heim (1994)) show that English does use the regular past tense morpheme as a relative past tense morpheme at least in some cases.

(16) I will charge you whatever time it took.

The point of (16), which was uttered by Heim's roofer, is that the job the roofer was talking about had not even started when the sentence was uttered. Thus, the time the verb *took* refers to cannot be a past time in relation to the utterance time. It follows then that this past tense is an instance of a relative past tense morpheme.

Our basic position is that both English and Japanese have a relative past tense morpheme, a relative present morpheme, and a relative past morpheme. Neither has a relative present morpheme. The only difference between them is that English finite clauses must be tensed, whereas a Japanese "finite" clause can be tenseless. In the next section, I shall discuss *de re* attitudes involving absolute tenses.

3.2. De re Attitudes about Absolute Tenses

The existence of relative tense morphemes is clearly established by the Japanese data. However, it is also clear that this is not sufficient to account for all occurrences of tense morphemes in natural language. In particular, the English tense morphemes exhibit an indexical nature. For example, given that the interpretation of the tense in the relative clause in (17a) or (17b) is utterance time relative, we suspect that the English tense morphemes are indexicals (= absolute tenses).

(17) a. John met a man who is crying.
b. John met a man who was crying.

The null hypothesis is that the English tense morphemes exhibit the same behavior in verb complement clauses as well. That is, we are compelled to account for the data in (18) by assuming that the tense morphemes in verb complements are absolute tenses.

(18) a. John said that Mary bought a car.
b. John said that Mary is pregnant.

(18a) requires that Mary bought a car before the time of John's saying. On the other hand, (18b) has a peculiar interpretation often referred to as a double-access interpretation. If it is indeed the case that each example in (18) contains an absolute tense in the complement clause, then it is important to explain why (18a) does not have a forward shifted reading and why (18b) does not mean that the content of what John said in the past indicates that Mary is pregnant at the utterance time (and not necessarily at an earlier time).

Abusch (1988, 1991) and Ogihara (1996) argue that positing *de se* interpretations for tensed clauses is not sufficient and that tense morphemes sometimes receive *de re* interpretations. What are *de re* interpretations of tenses (or temporal entities)? Cresswell and von Stechow (1982) show how to formalize *de re* attitudes and reinterpret them in terms of *de se* attitudes. For example, Quine's example (19a) is accounted for in terms of the analysis given in (19b).

(19) a. Ralph believes that Ortcutt is a spy.
b. There is a suitable relation R such that Ralph ascribes the property of being a spy to Ortcutt, to whom Ralph uniquely bears R in the actual world.

(20) shows how Cresswell and von Stechow account for the semantics of (19b) in terms of *de se* attitudes.

(20) There is a suitable relation R such that Ralph bears R uniquely to Ortcutt and Ralph self-ascribes the property of bearing R uniquely to some object, which is a spy.

An important point that I wish to establish in this paper can be summarized as follows: When a tense is used for a *de re* interpretation, this tense is an absolute

tense. Thus, its interpretation is determined in relation to the utterance time. However, the property attributed to an interval in question is based upon the relativized version of the absolute tense in question, and this has the effect of constraining the actual denotation of the *res*. This is a reinterpretation of the TEMPORAL DIRECTIONALITY ISOMORPHISM proposed in my earlier work (Ogihara, 1989, 1996). The basic idea is that a *de re* report about a temporal entity can only be made when the speaker's viewpoint and the attitude holder's viewpoint match with respect to their temporal directionality. For example, an interval that is described as a future interval by the attitude holder must also be reported as a future interval in a *de re* report. According to this proposal, both English and Japanese tense systems possess absolute (i.e., indexical) tenses and their semantic properties are straightforward. An absolute past tense means 'past with respect to the time of the context' (i.e., the utterance time), whereas the absolute present tense means 'present with respect to the time of the context' (i.e., the utterance time).

First, the fact that (18a) cannot receive a forward shifted interpretation receives the following account. (18a) is subject to a *res* movement and (21) is obtained as a result.

(21) John PAST say PAST $\lambda t_{res} \lambda t'$[t < t′ and Mary buys a car at t]

(21) is understood to mean that at a past time John ascribes the property of being an earlier time to the *res*. Unless John is completely confused about his temporal location, the *res* must be a time located earlier than the time of John's saying in order for (18a) to be a true sentence. Second, the same strategy can be used to account for the peculiar interpretation associated with the embedded simple present tense in (18b). The idea is exactly the same as the case of the simple past: the property to be assigned to the *res* is based upon the meaning of the relativized version of the moved tense (i.e., the *res*). That is, (18b) is represented as in (22) after a *res* movement.

(22) John PAST say PRES $\lambda t_{res} \lambda t'$[t overlaps t′ and Mary be pregnant at t]

(22) reads: according to what John said, he ascribed to the *res* the property of being a current time and a time at which Mary is pregnant. Since the moved present tense is an absolute present tense, we can assume that it must denote a time overlapping the utterance time. As for the (perceived) requirement that it overlap the time of John's saying, we can say that this is because John must assign to it the property of being a current time. In order for the *res* to be a current time from John's perspective at the time of his saying, the *res* is generally understood to overlap both the time of John's saying and the utterance time of the entire sentence. This is my account of the so-called double-access reading associated with (18b). I will not go into the details of how this can be done compositionally, but I believe that it is straightforward to implement it.

Note that according to this account of *de re* interpretations of tense morphemes, it follows that a simultaneous interpretation associated with sentences like (8a) cannot be an instance of a *de re* interpretation because the time of Hanako's being pregnant is not prior to the time of Taro's saying. In other words, it must be accounted for as an instance of the past tense that is devoid of any meaning. The sentence with this "dummy past tense" is interpreted as an instance of *de se*

attitudes as shown earlier. I believe that this is the right account of the data, given that the Japanese example (23) just cannot convey a simultaneous interpretation.

(23) Taroo-wa Hanako-ga byooki-dat-ta to it-ta.
Taro-TOP Hanako-GEN be-sick PAST that say-PAST
'Taro said that Hanako had been sick.'

If we assume that English and Japanese have no idiosyncratic differences over and above the SOT-related differences, then there is no reason to believe that a *de re* interpretation triggered by an absolute past can yield a simultaneous reading in English but not in Japanese. One possible alternative account of the fact that (23) does not have a simultaneous interpretation is that Japanese does not have an absolute past tense.[5] Although I cannot provide a strong piece of evidence that Japanese has an absolute past tense morpheme, the overall theory is much simpler if it had one. Therefore, I assume that (23) can be interpreted in two ways. One is to understand the embedded past tense as a relative past tense; the other is to interpret it as an absolute tense. Given our system, we obtain a shifted interpretation in either case.

The obvious question to ask at this point would be whether Japanese has an absolute present tense. Just as in the case of the past tense, I assume that Japanese has an absolute present. Examples like (24) suggest that a present tense in a verb complement embedded under a past tense can be used to talk about (an interval containing) the utterance time. (24) shows that the speaker takes for granted that Mary is (still) in Tokyo. One possible explanation of this fact is that the sentence has a double-access interpretation and that this fact is obscured in Japanese because a pure simultaneous interpretation is always available with exactly the same sentence.

(24) (The utterance is taking place in Tokyo.)
Kinoo Taroo-ga Hanako-ga ima Tookyoo-ni iru-tte itta yo.
yesterday Taro-NOM Hanako-NOM now Tokyo-at be that say PAST
'Yesterday Taro said that Hanako is now in Tokyo.'
Ai ni it-ta ra?
Meet to go PAST if
'Why don't you go see her?'

The same type of account is made for future-under-past sentences such as (25).

(25) John said that Mary will come to Seattle.

4. A Cross-Linguistic Perspective and Some Unresolved Problems

If my proposal is on the right track, the world's languages are divided into two groups in terms of whether they belong to the "Japanese camp" or the "English camp" concerning the behavior of tense morphemes. However, some recent research shows that this is too simplistic a picture to be drawn with regard to the typology of tense. Kusumoto (1998) points out that Polish and Russian are non-SOT languages as far as verb complements are concerned. However, they do not

behave like Japanese concerning relative clauses. (On the other hand, Hebrew is like Japanese with regard to both verb complements and relative clauses.) This makes us wonder whether the proposal defended here is correct from the cross-linguistic point of view. Obviously there are some important differences between verb complements and relative clauses, but my proposal in Ogihara (1996) predicts that in both verb complement clauses and relative clauses, the interpretation of tense morphemes is dependent on the interpretation of the local c-commanding tense. Schlenker (1998) also proposes a theory which is claimed to work for all the languages he discusses except that it has problems with Japanese relative clauses.

I have checked with a couple of native speakers of Korean to see if it behaves like Japanese concerning the data in question. As far as verb complements and relative clauses, it indeed behaves like Japanese according to my informants. Consider the examples in (26).

(26) a. John-Un Mary-ga aphU-ta ko haess-ta.
John-TOP Mary-NOM sick-PRES that say PAST
'John said that Mary was sick.' [simultaneous reading]
b. John-Un Mary-ga aphass-ta ko haess-ta.
John-TOP Mary-NOM sick-PAST that say PAST
'John said that Mary had been sick.' [shifted reading]

The facts reported in (26) are exactly the same as those of Japanese. It seems that the Korean facts in relative clauses also parallel the relevant Japanese facts. Note the data in (27).

(27) a. John-Un [ul-ko issnUn namca] lUl mannass-ta.
John-TOP cry-PROG-PRES man-DAT see-PAST
'John met a man who was crying (at that time).' [simultaneous reading]
b. John-Un [ul-ko issOsstOn namca] lUl mannass-ta.
John-TOP cry-PROG-PAST man-DAT see-PAST
'John met a man who was crying' [independent reading]

Together with Hebrew, Japanese and Korean then behave in a similar way in both verb complement clauses and relative clauses. But since there are languages like Polish and Russian that are halfway between English and Japanese, we need to investigate what is responsible for this cross-linguistic variation concerning tense.

5. Summary

Our proposal not only accounts for double-access phenomena and similar *de re* reports about temporal entities but also presents a simple and plausible system for tense in natural language. We can assume that both English and Japanese have absolute tenses (present and past) and a relative past tense. Thus, *de re* interpretations about tenses are also possible in Japanese. The range of possible meanings associated with *de re* attitudes about tenses is predicted by the formal version of the TEMPORAL DIRECTIONALITY ISOMORPHISM. The only important difference between these two languages is the presence or absence of the SOT rule. The fact that English has SOT phenomena but not Japanese is accounted for in

terms of the assumption that Japanese allows what appears to be a finite clause to be morphologically tenseless, whereas English disallows this option.

Endnotes

* I wish to thank Uli Sauerland for his helpful comments on an earlier version of this paper. I am solely responsible for any errors.

[1] Here I am referring to absolute present, absolute past, and relative past tenses. I hypothesize that there is no overt morpheme that is used as a relative present tense either in English or Japanese. This point will be discussed later.

[2] For examples like (2a), Abusch (1997a) employs a semantics for *de se* belief based upon Lewis's (1979) proposal.

[3] In Abusch's own presentation, *de dicto* beliefs are rendered as *de se* beliefs (Lewis 1979).

[4] Or "a property of times" of the form {<w,t>| Mary is sick in w at t} in a simplified account.

[5] This presupposes that we can account for the fact that the alleged absolute past tense in English does not have forward shifted interpretations.

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