PAST IN JAPANESE RELATIVE CLAUSES[*]

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1. INTRODUCTION

Past in relative clauses in Japanese can refer to a time that is subsequent to Speech time. The example in (1) has Past in the relative clause and Non-Past in the main clause (Past under Non-Past). The sentence is ambiguous; the exact temporal location of the event *passed* can be either prior to or subsequent to Speech time, as shown in (1a) and (1b) (ST: speech time, RC: Relative clause, MC: Main clause):[1]

(1)   [NP [CP shiken-ni   ukat-ta]   hito]-wo   raisyuu   yato-u
              exam-IND   pass-PAST   person-ACC   next week   hire-NonPAST
         Lit. 'Next week, (I) hire_NonPAST a man who passed the exam.'
  a.   hire   b.   hire
      --ST--------RC----------------MC---->   -----------RC----------------ST--------MC---->
              passed the exam   passed the exam

In (1a), the past refers to a time subsequent to Speech time. The past in (1a) cannot be interpreted in the same way as the English past *–ed*, which is interpreted against Speech time (e.g. *John met a person who ate pizza*, in which the event *ate* can only refer to a time prior to Speech time). In other words, it needs to be evaluated relative to the main clause event, not to Speech time. Let us call *subsequent readings* the readings in which Past refers to a time subsequent to Speech time as in (1a) and *prior readings* the readings in which Past refers to a time prior to Speech time as in (1b). Interestingly, when Past in relative clauses is under Past in main clauses (Past under Past), the past in the relative clause always gives prior readings as shown in (2). The prior reading is identical with the reading in (1b), in the sense that the past *itta* 'went' in the relative clause in (2) refers to a time prior to Speech time, as the past *ukatta* 'passed' in the relative clause in (1b) does:

(2)   [NP [CP kooen-ni   it-ta]   hito]-ni   hanasikake-ta
              park-to   go-PAST   person-to   speak to-PAST
         '(I) spoke to the man who went to the park.'
         a. '(I) spoke to the person_i after (he_i) went to the park.'
         b. '(I) spoke to the person_i before (he_i) went to the park.'

Differing from the past in (1), in both readings the past in the relative clause refers to a time prior to Speech time. However, the sentence in (2) is ambiguous with respect to the temporal relation of the event *went* in the relative clause and the event *spoke to* in the main clause as in (2a) and (2b). The behavior of the past in (2) is identical to the past in relative clauses in English as shown by the translation. The temporal locations of the two events are unrestricted as long as both events are prior to Speech time (Past-unrestricted reading). From the examples discussed above, we have the following generalization for the past in relative clauses in Japanese:

(3)   a. Past under Non-Past has both the prior and subsequent reading.
         b. Past under Past has the past-unrestricted reading.

The prior reading and the past-unrestricted reading are similar to the English *-ed* in relative clauses. However, the subsequent reading with Past is different. Therefore, analyses proposed for tenses in English relative clauses cannot give a satisfactory account for the Japanese cases. This paper addresses the cases of the past in Japanese relative

[1] Notations used in the glossary are as follows: NOM: nominative   ACC: accusative   IND: indirect object

clauses in (3). The organization of the paper is as follows. In section 2, I review three previous analyses (Hornstein (1990), Enç (1987) and Nakamura (1994)) and point out problems in their analyses. In section 3, I will propose a new analysis and show how it can account for the subsequent and prior reading. In section 4, I adduce further evidence from the distribution of future adverbs and Genericity agreement between main and relative clauses. The conclusion from this paper and remaining issues are discussed in section 5.

2.   PREVIOUS ANALYSES

In this section, I will first briefly review Hornstein (1990) and Enç's (1987) analyses of English relative clauses, especially for the case of Past under Past, which is the focus of their analyses. As an analysis of Past in relative clauses in Japanese, I review Nakamura (1994), who proposes optional LF movement analysis. The flow of the discussion is as follows: For Hornstein (1990) and Enç (1987), I illustrate how their analyses explain Past under Past successfully. Then, I show their analyses cannot be extended to the Japanese Past under Non-Past case. Then, I review Nakamura (1994) for both Past under Past and Past under Non-Past. I illustrate how Nakamura's analysis explains both cases. I argue that although Nakamura's analysis gives an account of tense in relative clauses in Japanese, it generates unwanted readings even in unambiguous cases

2.1.   Hornstein (1990)

Hornstein (1990) develops Reichenbach's (1947) analysis of tense and proposes a framework of tense interpretation. As in Reichenbach's analysis, Past always refers to a time prior to Speech time.[2] In addition, two rules are proposed for complex clauses: 1) the rule for temporal connectives (RTC) such as *when*, *after* and *before*, and 2) the rule for sequence of tense (SOT). The RTC does not apply to relative clauses, since relative clauses do not involve temporal connectives. The SOT rule applies to a clause and its directly embedded clause (Locality in Hornstein (1990), p. 133)). Since relative clauses have an NP intervening between the main clause and the relative clause, the SOT rule is not applicable. Consequently, tense in relative clauses is independent. Consider example (4):

(4)   Fred saw the man who was laughing.
    a.   'Fred saw the man$_i$ when he$_i$ was laughing.'
    b.   'Fred saw the man$_i$ after he$_i$ was laughing.'
    c.   'Fred saw the man$_i$ before he$_i$ was laughing.'

As shown in (4a) through (4c). The temporal order of the main clause event *saw* and the relative clause event *was laughing* is past-unrestricted. Both events are interpreted relative to Speech time independently of each other.

Let us turn to Japanese relative clauses. Hornstein's framework does not offer a solution for the subsequent reading. It is clear that Japanese relative clauses are not temporal connectives. Hence, the RTC is not applicable. Sentences such as (1), repeated below, is not in the scope of SOT, since the main clause has Non-Past:

(1)   [$_{NP}$ [$_{CP}$ shiken-ni   ukat-ta]   hito]-wo   raisyuu   yato-u
            exam-IND   pass-PAST   person-ACC   next week   hire-NonPAST
        Lit. 'Next week, (I) hire$_{NonPAST}$ a man who passed the exam.'

Furthermore, given that the past always refers to a time prior to Speech time, the subsequent reading cannot be generated.

To summarize, Hornstein's analysis cannot account for Past under Non-Past in Japanese. It predicts that Past under Non-Past always refers to a time prior to Speech time. In the next section, I review Enç (1987). As Hornstein's analysis, Enç focuses on the English cases

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[2] Simple past in Hornstein's framework always has the following representation: E,R_S. In other words, the event time is prior to Speech time. See Hornstein (1990, p. 112) for the mapping rules for the English tense morphology.

2.2. Enç (1987)

Based on the assumption that tenses are referential expressions that denote time intervals, Enç (1987) proposes an analysis of tense interpretation of complex clauses by positing the Anchoring principle along with Anchoring Conditions. In Enç's framework, tense has an index, as do other referential expressions. Complementizers function as the specifier of tense (e.g. past) with a temporal index and can optionally denote Speech time (Enç (1987), p.641). The Anchoring principle and the Anchoring Conditions are defined below:[3]

(5)   The Anchoring Principle: Each tense must be anchored.
(6)   Anchoring Conditions:
    a)   Tense is anchored if it is bound in its governing category,[4] or if its local Comp is anchored.[5] Otherwise, it is unanchored.
    b)   If Comp has a governing category, it is anchored if and only if it is bound within its governing category.
    c)   If Comp does not have a governing category, it is anchored if and only if it denotes the speech time.

The Anchoring Principle and the Anchoring Conditions ensure that every tense is related directly or indirectly to Speech time. In essence, the conditions state that tense can be either bound by another tense or anchored through its local Comp. In addition, Past in Enç's (1987) framework always refers to a time prior to Speech time.[6] Given the Anchoring Conditions, there are two ways of Anchoring to explain tense in relative clauses. The schematic representations in (7) below show how indexing is done for Past under Past. The past can be interpreted relative to the main clause Past, as in (7a), or relative to Speech time, which is denoted by $Comp_0$:

(7)   a. $[Comp_0 [_{NP} [PAST_i [V [_{NP} [Comp [... PAST_i$ (Tense Binding)
    b. $[Comp_0 [_{NP} [PAST_i [V [_{NP} [Comp_0 [... PAST_j$ (Comp Indexing)   (Enç (1987), p. 645)

In (7a), as shown by the same index, PAST in the relative clause is bound by PAST in the main clause, which satisfies the Anchoring Conditions. Bound to each other, they denote the same time interval. On the other hand, (7b) has $Comp_0$ in the relative clause. That is, the Comp in the relative clause is anchored by denoting Speech time. The main clause also has an anchored Comp. Therefore, the past in the relative clause and the main clause are interpreted relative to Speech time locally. In other words, there is no interaction between the relative clause tense and the main clause tense. To illustrate how Anchoring accounts for the unrestricted reading, example (4) is repeated below:

(4)   Fred saw the man who was laughing.
    a.   'Fred saw the man$_i$ when he$_i$ was laughing.'
    b.   'Fred saw the man$_i$ after he$_i$ was laughing.'
    c.   'Fred saw the man$_i$ before he$_i$ was laughing.'

Recall that sentence (4) has three readings. The representation in (7a) above is the representation of the simultaneous reading in (4a) and (7b) is for the other two readings in (4b) and (4c).

Let us apply Enç's Anchoring to the Japanese cases. It is clear that the past-unrestricted readings in Past under Past are explained by Anchoring in the same way as the English example (4). What is different from the English case is Past under Non-Past. Example (1) is repeated below for convenience:

(1) $[_{NP} [_{CP}$ shiken-ni   ukat-ta]   hito]-wo   raisyuu   yato-u

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[3] (5) and (6) are taken from p. 642 and p. 643 in Enç (1987) respectively
[4] The definition of government is defined as follows (Enç (1987) p. 643):
    A governs B iff   a)   A is X^0, and b)   A and B are contained in all the same maximal projections.
The definition is adopted from Aoun and Sportiche (1983) and Chomsky (1981).
[5] The local Comp is defined as follows (Enç's (25c)): A Comp β is the local Comp of a tense α iff β governs α.
[6] Past is defined as follows (Enç 's (1987) (25a), p. 642)):
    Where α is a past tense, β is a Comp with a temporal index, and β is the local Comp of α, $\| \alpha \|$ is an interval T such that every moment t in T precedes every moment t' in $\| \beta \|$.

exam-IND   pass-PAST person-ACC   next week   hire-NonPAST
Lit. 'Next week, (I) hire$_{NonPAST}$ a man who passed the exam.'

Recall that the event *passed* can be either prior to or subsequent to Speech time. The schematic representations in (8) illustrate the results of Anchoring, if it is applied to Past under Non-Past:

(8)   a.   *[Comp$_0$ [$_{NP}$ [Non-PAST$_i$ [V [$_{NP}$ [Comp ...PAST$_i$ (Tense Binding)
        b.   [Comp$_0$ [$_{NP}$ [Non-PAST$_i$ [V [$_{NP}$ [Comp$_0$ ...PAST$_j$ (Comp Indexing)

As shown by the asterisk in (8a), Enç's Tense binding cannot coindex Past and Non-Past, since they cannot denote the same time.[7] Thus, the subsequent reading is not accounted for. The other option is Comp indexing, as shown in (8b). The prior reading is accounted for by the Comp indexing as in (8b), since the past in the relative clause in such cases refers to a time prior to Speech time. However, the subsequent reading is not explained. In Enç's framework, by definition Past always refers to a time prior to Speech time.

To sum up, as with Hornstein's analysis, Enç's analysis predicts that Past in relative clauses always refers to a time prior to Speech time, which does not hold true for Japanese.

2.3.   Nakamura (1994): LF Movement Analysis

Following Stowell (1993), Nakamura (1994) assumes that tense is a dyadic predicate and takes two temporal arguments called Z(eit)P in the specifier and complement of Tense Phrase (TP). The content of the ZP in the specifier of TP (Spec TP) is a temporal PRO. The ZP in the complement of TP has VP as its event time. The simplified structure of TP is schematically shown below (ZPs are not shown). The index *i* on the main clause event and the PRO show the control relation:

(9) a.   [$_{TP}$ Speech time [$_{T'}$ [T Event time]]]   b.   Event time (MC)$_i$ .... [$_{TP}$ PRO$_i$ [$_{T'}$ [T Event time]]]

When there is no c-commanding tense (temporal controller) for the temporal PRO, it denotes Speech time. Since main clauses have no c-commanding tense, its Spec TP usually has Speech time, as in (9a). When there is a c-commanding tense (usually in embedded contexts) for the Spec TP, the temporal PRO is controlled by the main clause event, as in (9b). Based this framework, Nakamura (1994) claims that Past in relative clauses in Japanese can be accounted for by optional LF movement of relative clauses: 1) relative clauses stay in situ, as shown in the configuration in (10), 2) optionally, relative clauses move out, which will be discussed shortly:

(10)   [$_{TP}$ Speech time [Non-Past ... Event time$_i$ [$_{RC}$ PRO$_i$ Past]]]

Again example (1) discussed in the previous section is repeated below:

(1)   [$_{NP}$ [$_{CP}$ shiken-ni   ukat-ta]   hito]-wo   raisyuu   yato-u
         exam-IND   pass-PAST person-ACC   next week   hire-NonPAST
         Lit. 'Next week, (I) hire$_{NonPAST}$ a man who passed the exam.'

When the relative clause stays in situ as in (10), its tense is interpreted relative to the main clause event. As shown in (10), the PRO in the embedded clause is controlled by the event time in the higher clause. This explains the subsequent reading and the prior reading. Notice that the only requirement for the relative clause event *passed* is to precede the main clause event *hire*. In other words, the exact temporal location of the event *passed* relative to Speech time is not determined. On the other hand, when the relative clause moves out, as in (11) below, its tense in the relative clause scopes out from the main clause event.

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[7] Enç (1987) accomplishes this by revising the definition of local Comp as follows (see footnote 5 for the original definition):
        A Comp β is the local Comp of a tense α iff β governs α or β governs a tense γ and γ binds α. (p.647)
This definition of the local Comp prohibits the embedded tense from being coindexed with the main clause tense:
        John knows the man who was crying.   (Enç's (36))

(11)   [[$_{RC}$ PRO Past] [$_{TP}$ Speech time [Non-Past... Event time [t$_{RC}$]]]]

Lacking a temporal controller, PRO in the moved relative clause denotes Speech time, which gives unrestricted readings such as in (2), repeated below:

(2)   [$_{NP}$ [$_{CP}$ kooen-ni   it-ta]   hito]-ni   hanasikake-ta
             park-to   go-PAST person-to   speak to-PAST
        '(I) spoke to the man who went to the park.'
        a. '(I) spoke to the person$_i$ after (he$_i$) went to the park.'
        b. '(I) spoke to the person$_i$ before (he$_i$) went to the park.'

The order of the events *went* and *spoke* is undetermined. By moving out from the scope of the main clause event, the relative clause event is interpreted relative to Speech time via PRO. The main clause event is also interpreted relative to Speech time, but independently of the relative clause event. Hence, there is nothing that determines the order of the two events. These two possibilities are necessary to explain Past under Non-Past and Past under Past.

Differing from Hornstein and Enç, Nakamura's analysis does explain the Japanese cases. However, optional LF movement cannot be tenable, since by definition LF movement can always apply and will always generate a second reading, even if there is only one plausible reading. In order to maintain the LF movement analysis, the optionality must be stipulated to apply only when there is ambiguity. Let us consider an example with no ambiguity. Example (12) below is not ambiguous, since the temporal adverbs *tomorrow* in the relative clause and *next week* in the main clause set the temporal locations of the two events in order:

(12)   a. [$_{NP}$ [$_{CP}$ asita   shiken-ni   ukat-ta]   hito]-wo   raisyuu   yato-u
              tomorrow   exam-IND   pass-PAST person-ACC   next week   hire-NonPAST
           Lit. 'Next week, (I) will hire a man who passed the exam tomorrow.'
        b.   passed the exam   hire
        -------ST------------------RC---------------------------MC---->

As shown schematically in (12b), the relative clause event *passed* is subsequent to Speech time, which is, then, followed by the main clause event *hire*. Even in this case, nothing prevents LF movement of the relative clause, which should result in the event relation shown below:

(13)   *passed ... tomorrow   hire ... next week
        ------RC---------------------ST--------------------------MC---->

It would be possible to exclude (13) by proposing a condition that prohibits future adverbs from cooccuring with Past. Even if such a condition is proposed to exclude (13), the LF movement is not well-motivated theoretically.[8] Moreover, in (13), the relative clause moves in order not to generate an unwanted incoherent reading. That is to say, the relative clause must stay in situ only for this case. This raises an obvious question: why does it move out originally? This shows that there is a need for a more restrictive grammar than optional LF movement.

In this section, I reviewed three previous analyses of how relative clause temporal construal arises. Hornstein (1990) and Enç (1987), who proposed an analysis for English, can explain Past under Past, but not Past under Non-Past in Japanese. Nakamura (1994) accounts for both Past under Past and Past under Non-Past, but has a problem of generating a second reading regardless of the existence of ambiguity. In the next section, I will propose an analysis that explains both cases without generating unwanted readings.

3.   PROPOSAL

In this section, building on the framework of Zagona (1993) and Stowell (1993), I will propose an analysis that explains both Past under Past and Past under Non-Past. First, I will discuss the basic framework that I adopt for the present analysis and then I will propose a new analysis. After defining the new framework, I will illustrate how

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[8] Minimalist framework (Chomsky (1995)) does not allow optional movement either.

the proposed analysis explains various examples discussed in the previous sections.

3.1. Framework

Putting the details aside, Zagona (1993) and Stowell (1993) claim that Tense Phrase (TP) is a dyadic predicate which takes temporal arguments. A rough schematic representation of a TP with two temporal arguments is shown in (14):

(14) $[_{TP}$ ST $[_{T'} [_{T} \pm Past]$ ET (=VP)]]

In (14), TP has Speech time (ST) in its Spec and Event time (ET) as its complement. The relation of Speech time and Event time is determined by the head T.[9] Let us see how (14) applies to Past under Past. Example (2) is repeated below and the structure of the example (2) is schematically shown in (15):

(2) $[_{NP} [_{CP}$ kooen-ni   it-ta]   hito]-ni   hanasikake-ta
            park-to   go-PAST   person-to   speak to-PAST
            '(I) spoke to the person who went to the park.'

(15)
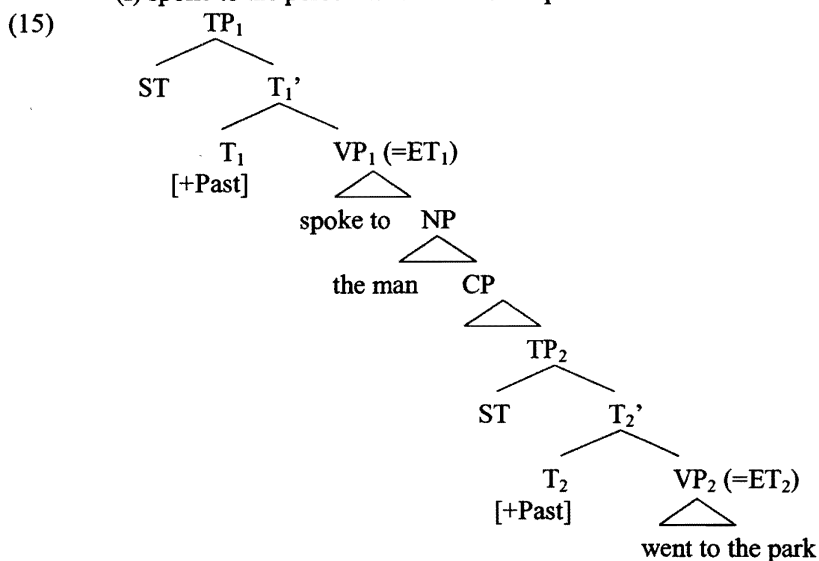
TP_1 and TP_2 have Speech time respectively. The complements of the TPs are VP_1 and VP_2, which denote Event time. ET_1 and ET_2 show the main clause event *spoke to* and the relative clause event *went* respectively. The structure above gives unrestricted readings. However, it does not account for the Japanese cases. Building on the framework described in this section, I propose a new analysis that explains the Japanese cases.

3.2. Deictic temporal arguments & Temporal Domain

Based on the framework discussed in the previous section, I propose that temporal arguments can be deictic or non-deictic, and that a TP with a deictic temporal argument constitutes a domain for temporal interpretation. The nature of temporal arguments is determined by features in the head T via Spec-Head agreement (cf. Rizzi's (1996) Wh-criterion). The head T can be specified as either [+deictic] or [-deictic], as defined in (16):

(16)   Features in the head T: [± Deictic]

I assume that [-deictic] is anaphoric, which requires an antecedent (cf. Giorgi and Pianesi (2000)). Deictic temporal arguments in Spec TP denote Speech time. With the assumption that [-deictic] is anaphoric, non-Deictic temporal

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[9] Zagona (1993) and Stowell (1993) propose a different mechanism to derive the order of the two temporal arguments. I will not discuss the differences between the two analyses in this paper. The representation in (14) is more similar to Stowell's (1993) framework in which the feature [+Past] locates the Event time prior to Speech time.

arguments in Spec TP require a temporal controller. I adopt Stowell's notion of temporal controller, which is a c-commanding temporal argument. The spec-head agreement in TP and deictic temporal arguments are defined in (17) and (18):

(17)   Condition on Spec-Head Agreement in TP
        a. $[_T$ +Deictic] must have a [+Deictic] temporal argument in Spec TP.
        b. $[_T$ -Deictic] must have a [-Deictic] temporal argument in Spec TP.

(18)   Definition of [± Deictic] temporal arguments
        [± Deictic] temporal arguments are defined as below:
        a. [+Deictic] temporal arguments denote Speech time.
        b. [-Deictic] temporal arguments are arguments that require a temporal controller.

The choice of the feature in the head T is free. No stipulation of feature combination is necessary. Among various possibilities of features in the head T, only the ones that converge give a legitimate interpretation (cf. Chomsky (1995)). Therefore, there is no need to impose a condition on the combinations of features. For example, let us see how [-Deictic] is excluded in main clauses. Given that non-deictic temporal arguments require a temporal controller, main clauses cannot contain a TP with a non-deictic temporal argument. The representation in (19) illustrates the point:

(19) $*[_{TP}$ [-Deictic] TempArg $[_{T'}$ $[_T$ -Deictic] ET (=VP)]]

The head T has [-Deictic] and Spec TP has a non-deictic temporal argument. However, since it is the main clause, there is no available temporal controller for the non-deictic temporal argument. Therefore, this structure is excluded. Lastly, the temporal domain is defined as in (20):

(20)   *Temporal Domains* are defined as follows:
        TP with a [+Deictic] temporal argument constitutes a temporal domain.

The notion of Temporal domains plays an important role in explaining the subsequent readings in Past under Non-Past, which will be discussed in the next section.

3.3.   Analysis

Let us apply the proposal discussed in the previous section to Past under Past and Past under Non-Past. Consider the example in (21), in which the events in the relative and main clauses are past-unrestricted:

(21) $[_{NP}$ $[_{CP}$ amerika-ni   it-ta]   gakusei]-ni   at-ta
                 America-to   go-PAST   student-with   meet-PAST
        '(I) met a student who went to America.'

If we assume that Spec TP has the option of taking a deictic or non-deictic temporal argument, and that a deictic temporal argument constitutes a domain for temporal interpretation, we predict that a main clause and a relative clause can each have a deictic temporal argument. The rough representation (22) shows that the main clause and the relative clause have their own domains for temporal interpretation ([± D]=[± Deictic]):

(22) $[TP1$ (Domain) ... $[_{VP1}$ met $[_{NP}$ $[_{CP}$ $[TP2$ (Domain) +D Tmp Arg...$[_{T2'}$ $[_{T2}$[+Past][+D]] $[_{VP}$ went to America ...

TP_1 must be a domain, since a non-deictic temporal argument is excluded due to the lack of a temporal controller. The head T_2 has [+Deictic]. By definition, a TP with a deictic temporal argument in its Spec is a domain for temporal interpretation; it explains why Past under Past is interpreted independently of the main clause event and the temporal order of the events in the relative and main clauses is past-unrestricted. The main clause event *met* and the relative clause event *went* are interpreted within TP_1 and TP_2 respectively. The other choice for the feature of the head T_2 is [-Deictic]. Therefore, TP_2 is not a domain and the relative clause event *went* is interpreted relative to the main clause event *met*. With [+Past] in the head T_2, the configuration has only one reading in which the relative clause event *went* precedes the main clause event *met*. The combination of [+Deictic] in the main clause and

[-Deictic] in the relative clause is possible when there is an implicit temporal adverb supplied by the context or the speaker intends to locate the relative clause event prior to the main clause event.

Let us turn to the cases of Past under Non-Past. Example (1) is repeated below. The exact temporal location of the event passed relative to Speech time is not determined:

(1)   [NP [CP shiken-ni   ukat-ta]   hito]-wo   raisyuu   yato-u
              exam-IND   pass-PAST   person-ACC   next week   hire-NonPAST
         Lit. 'Next week, (I) hire_NonPAST a man who passed the exam.'

One choice is [-Deictic] tense in the relative clause. The other choice is [+Deictic] tense, which I will return to shortly. The tree in (23) shows that the feature [-Deictic] in T_2 is selected and there is only one temporal domain in the entire sentence:

(23)   [*TP1* (Domain)... [VP1 hire [NP [CP [TP2 –D Tmp Arg...[T2' [T2[+Past][-D]] [VP2 passed ...
                                    ↑_____|

Contrary to the case of Past under Past in (22), here the head T_2 has [-Deictic]. Hence, Spec TP_2 has a non-deictic temporal argument, which is controlled by the main clause event *hire*. The past *passed* in the relative clause is interpreted relative to the main clause event, which is shown by the arrow. Therefore, it explains why it is possible to have the subsequent reading as well as the prior reading, since what the tree shows is that the event *passed* precedes the main clause event *hire*, and does not specify the relation between the relative clause event and Speech time. It is possible to have [+Deictic] in the head T of the relative clause in (23), given that the choice of features is free. Having a [+Deictic] temporal argument, TP_2 becomes a domain for the relative clause. This configuration generates only the prior reading, which can be applied to a case in which there is a implicit temporal adverb or the context demands only a prior reading. In other words, cases such as sentence (1) are not really ambiguous, since the speaker's intention is to express a prior reading.

Let us move on to other cases where Past under Non-Past shows a difference from Past under Past. The non-Deictic temporal argument in relative clauses such as in (23) also derives a strict ordering of events in the Past under Non-Past cases. Events in relative clauses must precede events in main clauses. The examples in (24) are a minimal pair with respect to the events in the relative and main clauses. While (24a) is allowed, (24b) is not:

(24)   a.   [CP [NP ashita   ringo-wo   tabe-ta]   hito]-ni   assatte   denwa-su-ru
                  tomorrow   apple-ACC   eat-PAST   person-IND   the day after tomorrow   call-do-NonPAST
              Lit. 'The day after tomorrow, (I) will call the person who ate apples tomorrow.'
       b. *[CP [NP asatte   ringo-wo   tabe-ta]   hito]-ni   ashita   denwa-su-ru
                  the day after tomorrow   apple-ACC   eat-PAST   person-IND   tomorrow   call-do-NonPAST
              Lit. 'Tomorrow, (I) will call the person who ate apples the day after tomorrow.'

The event relation in (24a) is schematically shown in (25a). The event *ate* precedes the event *call*, which is grammatical. However, (25b), which corresponds to (24b), has the relative clause event *ate* following the main clause event *call* and it is ungrammatical as shown below:

(25) a. (=(24a))   ate   call   b. (=(24b))   call   ate
               ----ST----RC-----MC---->   *---ST-----MC-----RC----->

The relative clause event *ate* must precede the main clause event *call*. This strict ordering relation is explained by the current analysis. The tree structure is identical to (23) and there is only one domain for temporal interpretation. A rough schematic representation is given below:

(26)   [*TP1* (Domain)... [VP1 call [NP [CP [TP2 –Deictic Tmp Arg...[T2' [T2[+Past][-Deictic]] [VP ate ...
                                    ↑_____|

The feature [-Deictic] in T_2 requires a non-deictic temporal argument, which takes VP_1 as its temporal controller. Consequently, there is no Speech time in TP_2. Thus, no domain for temporal interpretation is in the relative clause.

The dependent relation between the relative clause event and the main clause event is shown by the arrow. Given that the head T_2 has [+Past], the event *ate* precedes the event *call*. It is impossible to derive an ordering in which the event *call* precedes the event *ate*. Note that the strict ordering relation observed above is only required for Past under Non-Past. As we have seen in example (21), Past under Past allows past-unrestricted readings. In other words, there is no requirement on the ordering of the relative clause event and the main clause event. In the current framework, it is possible to select [+Deictic] for the head T_2 in the relative clause. In such cases, TP_2 forms its own temporal domain, which is schematically shown below:

(27)   [*TP1* (Domain)... [$_{VP1}$ call [$_{NP}$ [$_{CP}$ *TP2* (Domain)+Deictic Tmp Arg...[$_{T2'}$ [$_{T2}$[+Past][+Deictic]] [$_{VP}$ ate ...

The above configuration derives only a prior reading in which the relative clause event *ate* precedes the speech time. The deictic temporal argument in Spec TP_2 denotes Speech time. The head T_2 with [+Past] locates the relative clause event *ate* prior to Speech time. While the tree in (27) is legitimate, the future adverb *ashita* 'tomorrow' in the relative clause conflicts with the prior reading. I will discuss the interaction of temporal adverbs with the temporal domain in such configurations in section 4.1.   In this section, I have shown that the current analysis explains both Past under Past and Past under Non-Past. In the next section, I will give two pieces of supporting evidence for the proposed analysis.

4.   FUTURE ADVERB WITH PAST & GENERICITY AGREEMENT

In the previous section, I introduced a notion of domain for temporal interpretation along with a set of features that determines the type of temporal arguments in TP, and illustrated how the current analysis accounts for Past in Japanese relative clauses. In this section, I will argue for the proposal with two pieces of supporting evidence. First, I show how the current analysis handles the distribution of future adverbs with Past in relative clauses. Then, I will explain Genericity Agreement between relative and main clause events, which is observed only in Past under Non-Past.

4.1.   Future Adverb with Past in relative clauses in Past under Non-Past

Future temporal adverbs cannot co-occur with Past in main clauses as in (28):

(28)   a.   *Ashita   it-ta   b.   Ashita   ik-u
             tomorrow   go-PAST   tomorrow   go-NonPAST
             '(I) I went tomorrow.'   '(I) will go tomorrow.'

The past *itta* 'went' does not allow the future adverb *ashita* 'tomorrow,' as in (28a), while the non-past *iku* 'go' does, as in (28b). However, such cooccurrence is possible in Past under Non-Past. Below in (12), which is repeated, the cooccurrence of the future adverb *tomorrow* and the past *passed* in the relative clause does not yield an ungrammatical sentence:

(12)   a. [$_{NP}$ [$_{CP}$ asita   shiken-ni   ukat-ta]   hito]-wo   raisyuu   yato-u
               tomorrow   exam-IND   pass-PAST   person-ACC   next week   hire-NonPAST
          Lit. 'Next week, (I) will hire a man who passed the exam tomorrow.'

The generalization is that future adverbs must cooccur with a Non-Past, which is either a clause mate or a temporal controller in a single domain. The current analysis explains why example (12) is good. The tree structure in (29) shows that there is only one domain for temporal interpretation (the arrow shows the control relation):

(29)   [*TP1* (Domain) [$_{VP1}$ hire ... next week [$_{NP}$ [$_{CP}$ [$_{TP2}$ −D Tmp Arg ... [$_{VP}$ passed ... tomorrow...
          ↑_____|

The relative clause has a non-deictic temporal argument ([-D]). The future adverb is licensed by the main clause tense, which has [-Past].

The cooccurrence of future adverbs with Past is only possible in the Past under Non-Past cases. The

current analysis correctly excludes such cooccurrence in Past under Past. Example (30) shows that future adverbs cannot occur in relative clauses under Past in the main clause:

(30)   *[NP [CP ashita   siken-niukat-ta]   hito]-wo   kinoo   yatot-ta
             tomorrow   exam pass-PAST   person-ACC   yesterday   hire-PAST
            'Yesterday (I) hired a person who passed the exam tomorrow.'

The only difference between (12) and (30) is that the former has Non-Past in the main clause, while the latter has Past. As in the rough structure (31) for this case, the relative clause has a deictic temporal argument ([+D]) and constitutes a domain for temporal interpretation. Thus, the future adverb is not licensed in TP_2:

(31)   *[*TP1* (Domain)...[+Past] ... yesterday [NP [CP [*TP2* (Domain)...+D Tmp Arg [T2' [T2[+Past]] tomorrow ...

The present framework accounts for the domain within which [+Past] or [-Past] agreement with Tense must be satisfied. The exact method of licensing needs to be formulated, which I will leave for future research.

4.2.   Genericity Agreement

The notion of temporal control also extends to Genericity agreement between relative clause events and main clause events, which is shown by the examples in (32). If the main clause is generic, the relative clause must be generic as well:

(32)   a. *[NP[CP ashita   ringo-wo   itchi jikan-de hyakko   tabe-ta] hito]-wo   maisyuu hyoosyoo-su-ru.
               tomorrow apple-ACC   one hour-in   one hundred eat-PAST person-ACC every week award-do-NonPast
           Lit. 'Every week, (I) give an award to the person who ate one hundred apples in one hour tomorrow.'
       b. [NP[CP ashita   ringo-wo   itchi jikan-de hyakko   tabe-ta] hito]-wo   raisyuu hyoosyoo-su-ru.
               tomorrow apple-ACC   one hour-in   one hundred eat-PAST person-ACC next week award-do-NonPast
           Lit. 'Next week, (I) give an award to the person who ate one   hundred apples in one hour tomorrow.'

In (32a), the relative clause has a specific temporal adverb *tomorrow*, thus the event depicted by the relative clause is specific. However, the main clause has the generic temporal adverb *every week*, so the main clause event is generic. The mismatch of the adverb types results in an ungrammatical sentence. On the other hand, in (32b), both relative and main clauses have specific temporal adverbs *tomorrow* and *next week* respectively and the sentence is grammatical. Under the current analysis, the contrast in (32) amounts to only one domain in the entire sentence, which is shown in the tree (33):

(33)   [*TP1* (Domain) [VP1 give *every week / √ next week[NP [CP [TP2 –D Tmp Arg [T2[+Past]] [VP ate ...tomorrow
                        ↑_____|

If the non-deictic temporal argument is anaphoric as assumed in the current analysis, it is conceivable that there is an agreement in events analogous to the number agreement between antecedents and anaphors. Interestingly, the requirement of genericity agreement is only forced if Past under Non-Past yields a subsequent reading. Consider the following sentence:

(34)   [NP [CP kinoo   ringo-wo itchi jikan-de hyakko   tabe-ta] hito]-wo   maisyuu   hyoosyoo-su-ru.
             yesterday   apple-ACCone hour-in   one hundred eat-PAST person-ACC every week   award-do-NonPast
           Lit. 'Every week, (I) give an award to the person who ate one hundred apples in one hour yesterday.'

With the past adverb *yesterday* in the relative clause, the sentence in (34) has a prior reading, which is the only available reading. Even though the Genericity in the relative and main clauses do not agree, the sentence is grammatical. The grammaticality of (34) is expected, since there is a temporal domain in the relative clause, which means that TP in the relative clause does not require a temporal controller. Hence, there is no dependency on the main clause event. It is also possible to have mixed types of adverbs in Past under Past as shown in (35):

(35)   [NP[CP kinoo   ringo-wo   itchi jikan-dehyakko tabe-ta] hito]-wo   maisyuu   hyoosyoo-si-ta.

yesterday apple-ACC one hour-in one hundred eat-PAST person-ACC every week award-do-PAST
Lit. 'Every week, (I) gave an award to the person who ate one hundred apples in one hour yesterday.'

In (35), the relative clause has a specific adverb *yesterday* and the main clause has a generic adverb *every week*. The sentence is grammatical. This is not surprising, given that the relative clause and the main clause have their own domain for temporal interpretation and there is no dependent relation between them.

5. CONCLUSION AND REMAININGISSUES

In this paper, I gave a new account for Past in Japanese relative clauses. First, I reviewed three previous analyses and pointed out problems. Then, adopting Zagona (1993) and Stowell's (1990) framework, I proposed Deictic temporal arguments and the temporal domain. To support the current analysis, I illustrated how this proposal explains the distribution of future adverbs and Genericity Agreement.

Remaining issues are: 1) to formalize how temporal adverbs are licensed, 2) how Genericity agreement is licensed, 3) to examine the current analysis with respect to other embedded contexts such as complement and adjunct clauses *and* 4) to examine implications for other languages: Does English have [-Deictic] temporal arguments? Is Genericity Agreement observed in other languages? I will leave these issues for future research.

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