

Definiteness of relative clause head nouns and temporal interpretation*

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This paper examines the correlation between the definiteness of relative clause head nouns and temporal interpretation, which is first observed by Matsuo (1996, 1998) for Japanese. Tenses in relative clauses with definite head nouns are interpreted independently of tenses in main clauses, while tenses in relative clauses with indefinite head nouns are interpreted in relation to tenses in main clauses. It is argued that tenses in relative and main clauses form a complex tense if the head noun is indefinite. This is because relative clauses are required to be anchored – as are complement clauses (Giorgi and Pianesi, 2004) – and indefinites are existentially closed in VPs (Diesing, 1992). Evidence for complex tense comes from interactions of adverb types in relative and main clauses.

1 Introduction

Matsuo (1996, 1998) points out that there is a difference in temporal interpretation of relative clauses, depending on the definiteness of head nouns.¹ The example in (1) has a definite head noun *that person*:^{2 3}

* This is an abbreviated version of a chapter of my dissertation (Makihara 2005). I thank the participants of the 21st NWLC for their comments and discussion. I also thank Kumiko Kato for reading the draft of this paper and comments and Megan Riley for comments and proof-reading. I am responsible for all remaining errors and shortcomings.

¹ Nakamura (1994a, 1994b) points out a similar case for non-progressive in Japanese.

² Matsuo (1996, 1998) uses the term *specificity* and also *specific/non-specific*. The usage of these terms suggests that the difference in temporal interpretation with respect to the definiteness of relative clause head nouns comes from the existence of a specific referent. In this paper, following C. Lyons (1999) I will use the term *definiteness* as this term does not imply a specific referent for the article *the* and the lack of such a referent for the article *a*. At this moment, it is not clear to me exactly how the existence of a specific referent is related to the difference in temporal interpretation of relative clauses.

³ Throughout this paper, I use the following notations:

TOP = topic, DAT = dative, ACC = accusative,

- (1) watasi-wa [warattei-ta] sono hito-ni at-ta⁴
 I_{TOP} be-laughing_{PAST} that person_{DAT} meet_{PAST}
 'I met that person who was laughing.'

Three possible readings of (1) are schematically shown below (RC = relative clause, MC = main clause, ST = Speech Time, equal sign = simultaneous):

- (2) a. laughing = met
 -----RC=MC-----ST----->
 b. laughing met
 -----RC-----MC-----ST----->
 c. met laughing
 -----MC-----RC-----ST----->

The event in the relative clause can be simultaneous with, as in (2a), precede, as in (2b), or follow, as in (2c), the event in the main clause. On the other hand, if the head noun is indefinite, not all three readings are available. Judgments are subtle and not easy to see, because of the lack of articles in Japanese to specify definiteness. Consider the example in (3), which has an indefinite head noun *two people*:

- (3) watasi-wa [warattei-ta] hutari-no hito-ni at-ta
 I_{TOP} be-laughing_{PAST} two people_{DAT} meet_{PAST}
 'I met two people who were laughing.'

Numerals can be either definite or indefinite, but if the noun with the numeral *two* is interpreted as indefinite, this sentence only allows the readings in (4a) and (4b) as shown below:

- (4) a. laughing = met
 -----RC=MC-----ST----->
 b. laughing met
 -----RC-----MC-----ST----->

The event *laughing* cannot follow the event *met*. In other words, the reading corresponding to (2c) is not available. The following example has two adverbs *this morning* and *yesterday* to force the reading in (2c):

⁴ The examples from (1) and (3) are adopted from Matsuo (1996) with slight modification. The original examples have the predicate *sagasita* 'sought.' For the sake of argument (i.e. to avoid complication from including intentional predicates), I changed the predicate to *met*, since the contrast is still observed.

- (5) #watasi-wa [kesa warattei-ta] hutari-no hito-ni
 I_{TOP} this morning be-laughing_{PAST} two person_{DAT}
 kinoo at-ta
 yesterday meet_{PAST}
 ‘Yesterday, I met two people who were laughing this morning.’

The sentence does not allow an indefinite reading of the head noun (shown by #). The generalization from the above examples is given below:

- (6) a. If the head noun is definite, relative clause tense/events are interpreted independent of main clause tense/events.
 b. If the head noun is indefinite, relative clause tense/events are interpreted in relation to main clause tense/events.

Let us call the readings from (6a) and (6b) *independent* and *dependent readings* respectively. In this paper, I address the question: why is definiteness relevant for temporal interpretation of relative clauses? The organization of this paper is as follows: in section 2, I review Matsuo’s analysis. In section 3, after presenting the general framework that I adopt, I explain why definiteness is related to the temporal interpretation of relative clauses. Section 4 concludes this paper and briefly discusses remaining issues.

2 Matsuo’s (1996, 1998) analysis

Adopting Stowell’s (1993) framework, Matsuo proposes that there is a temporal argument in a definite head noun, which is defined to denote Speech Time.⁵ ⁶ The difference in temporal reading is explained by the presence vs. absence of this special temporal argument. Putting aside the technical details, the rough configuration for definite head nouns is schematically shown in (7) (TA = temporal argument):⁷

- (7) Definite: [CP [NP(=RC) [CP₁ [TP₁ ... TA (=ST) ... VP₁]]] ... Tense VP]

⁵ In Stowell (1993), tense is considered as a dyadic predicate (Zagona 1993) and takes two temporal arguments. The temporal argument in the Spec TP is a temporal PRO, which needs to be controlled by another temporal argument.

⁶ It is claimed that this special temporal argument is a syntactic realization of Enç’s (1986) ‘I-don’t-care-when’ operator. This operator is tentatively proposed by Enç as a possible solution to explain the difference between sentences such as *John met the American citizen* vs. *John met an American citizen* in terms of the temporal interpretation of the ‘citizenship’ of the person who John met. See Makihara (2005) for a critique of such a realization.

⁷ The bracket notations in (7) and (8) are for Head-initial languages such as English.

Given the temporal argument, which denotes Speech Time in the relative clause, VP₁ is interpreted in relation to the local Speech Time. The VP in the main clauses is also interpreted in relation to the Speech Time in the main clause (not shown in (7)). The two events are interpreted ‘separately,’ thus this gives independent readings. On the other hand, relative clauses with indefinite head nouns do not have such a temporal argument as shown by the empty circle in (8):

(8) Indefinite: [CP [NP(=RC) [CP₁ [TP₁ ... ○ ... VP₁]]] ... Tense VP]

Therefore, the VP₁ is interpreted in relation to the VP in the main clause. Thus, (8) gives dependent readings. This analysis captures the difference in temporal readings. However, it does not explain why there is such a difference, since the question of why the special temporal argument is generated only in relative clauses with definite head nouns is not answered.⁸

3. Proposal

3.1 Framework

As the general framework, I adopt Zagana (1993) and Stowell (1993). They claim that tense is a dyadic predicate. As shown in (9), the head T takes two temporal arguments (ET = Event Time):⁹

(9)

$$\begin{array}{c}
 \text{TP} \\
 \swarrow \quad \searrow \\
 \text{TA} \quad \text{T}' \\
 \quad \quad \swarrow \quad \searrow \\
 ((\text{VP}=\text{ET}) \text{TA}) \quad \text{T}
 \end{array}$$

In Makihara (2003), I proposed that tense has two options for its point of orientation, just like the other deictic expressions such as modal adverbs and personal pronouns (Brecht 1974).¹⁰ Such options are realized as the feature

⁸ In addition, the temporal argument in relative clauses with definite head nouns denotes Speech Time by definition. Thus, Matsuo’s theory needs to explain whether or not there are other kinds of temporal arguments that denote a specific time (e.g. Event Time).

⁹ The trees in this section and subsequent sections are for Head-final languages.

¹⁰ Brecht (1974) claims that other kinds of deictic expressions (such as modal adverbs and personal pronouns) also have two possible points of orientation:

- i) a. Endophoric: A deictic element has its defining point of orientation within the actual sentence or the linguistic discourse.
- b. Exophoric: The point of orientation is outside of the linguistic discourse, that is, is contained in the extra-linguistic context.

(Brecht 1974:492)

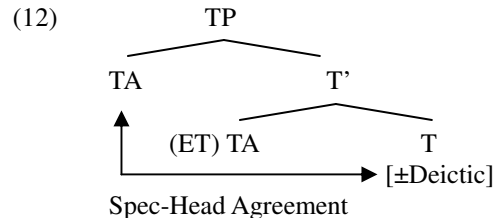
[±Deictic] on the head T of TPs. The feature [±Deictic] is analogous to the selectional features of verbs. For tense, the selectional feature requires a certain type of temporal arguments in the Spec TP. This selectional restriction is enforced by the Spec-Head Agreement as defined in (10):

- (10) SPEC-HEAD AGREEMENT IN TPs
 a. $T_{[+Deictic]}$ must have a [+Deictic] temporal argument in Spec TP.
 b. $T_{[-Deictic]}$ must have a [-Deictic] temporal argument in Spec TP.
 (Rizzi 1996)

For example, if the head T has the feature [+Deictic], a temporal argument with the feature [+Deictic] is also required. In (11), the denotation of temporal arguments is defined. The temporal argument with the feature [-Deictic] requires a c-commanding temporal argument for its linguistic antecedent. For this requirement, I adopt Stowell's idea of temporal controller.

- (11) Definition of [±Deictic] temporal arguments
 a. [+Deictic] temporal arguments usually denote Speech Time.
 b. [-Deictic] temporal arguments are referentially dependent and require a linguistic antecedent (i.e. a c-commanding temporal argument).

With this framework, the tree in (12) is the basic structure of a TP:



The Spec-Head Agreement is shown by the broken arrow. Depending on the feature on the T head, the denotation of the temporal argument in the Spec TP varies. The main claim of Makihara (Ibid.) is that the feature [±Deictic] is freely selected for the head T. Principles of other grammatical phenomena determine possible combinations of the feature between main and relative clauses. I claim that the definiteness of head nouns is such a phenomenon. However, just stating that indefinite head nouns only allow the feature [-Deictic] in relative clauses does not explain the correlation between definiteness and temporal interpretation. The challenge is that the relationship between relative clauses and main clauses is not as straightforward as, for example, the relationship between main clauses and complement clauses. Complement clauses are usually selected by verbs, but there is no such selectional relationship between relative and main clauses. In the next two sub-sections, I extend two ideas in order to explain the correlation. One is an anchoring requirement

proposed by Giorgi and Pianesi (2004), which will be applied to relative clauses. The other is the notion of Speech Events proposed by Bianchi (2001). This makes it possible to explain head nouns in relation to temporal interpretations.

3.2 Anchoring requirement for relative clause tenses

Discussing tense in complement clauses, Giorgi and Pianesi (2001a, 2001b, 2004) claim that the temporal anchoring reflects the attitude of the subject towards the propositional content. There are two things that are relevant for the current discussion: 1) temporal anchoring is required for the propositional attitude predicates such as *say*, *believe* etc., because the subject of these predicates expects the possibility that the proposition expressed in the complement clause is true; 2) the temporal anchor corresponds to the temporal coordinate (i.e. temporal axis) of the subject whose proposition is expressed in the embedded clause. If Giorgi and Pianesi's claim is correct, then some kind of temporal anchoring must also be required for relative clauses. Relative clauses contain a proposition. Such a proposition is made by the speaker. Given this, I propose the licensing condition for tenses in relative clauses in (13):

- (13) LICENSING CONDITION ON RELATIVE CLAUSE TENSES
(PRELIMINARY VERSION)
Relative Clause Tenses must be anchored to either
a) Speech Time, or
b) Main clause tense

Anchoring in the current analysis means to have a temporal argument that denotes Speech Time or to have a temporal argument controlled by main clause events. However, the condition in (13) still does not give a full account of the relationship between the definiteness and temporal interpretation.

3.3 Speech Time as Speech Event – Bianchi (2001)

So far in the current framework, we have considered the moment of utterance as a temporal point. This time point is realized as Speech Time in Spec TPs. This is adequate to examine temporal location of events, but it does not explain the correlation between head nouns and temporal interpretation. In this section, I will explore how the correlation is explained by adopting Bianchi's (2001) notion of Speech Event.

Bianchi (2001) proposes to conceive of Speech Time as a speech event rather than a time point, as defined in (14):

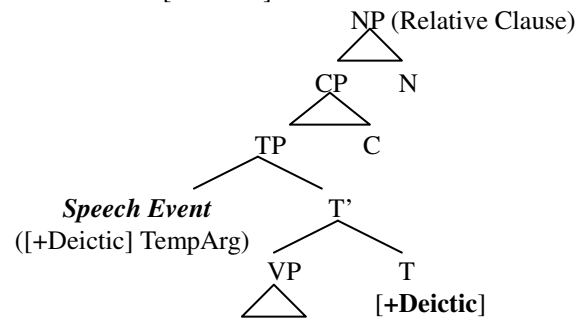
- (14) Speech Events in Bianchi (2001)
- a. the addresser/speaker (= first person)
 - b. the addressee (= second person)
 - c. the spatial/temporal coordinates (= on the temporal axis, the Speech point)

The crucial point is that Speech Events are not just a point on a time axis, but include other things defined in (14). What is important in Bianchi's proposal as follows: to have a speech event means to have a center of deixis.¹¹ This conceptual shift is important. Because of this shift, it is now possible to include not just temporal location of events, but also nouns, in the analysis of temporal interpretation. In other words, we now have a link between temporal interpretation and definiteness of head nouns. Given this, the condition (13) is revised as in (15):

- (15) LICENSING CONDITION ON RELATIVE CLAUSE TENSES (Revised version)
Relative Clause Tenses must be anchored to either
- a) *Speech Event*, or
 - b) Main clause tense

The structures for both options of anchoring are given below. The feature [\pm Deictic] on T heads determines whether or not a clause can be a center of deixis. (16) shows the tree with the feature [+Deictic]:

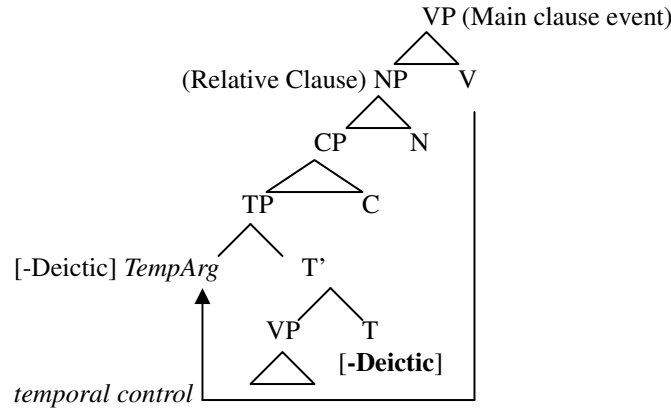
- (16) T with the feature [+Deictic]



With the feature [+Deictic], the relative clause has its own spatio-temporal coordinate. The other option is to have the feature [-Deictic], which is shown in (17):

¹¹ Then, the definition of temporal argument in (11a) is revised:
[+Deictic] temporal arguments usually denote a *Speech Event*.

- (17) T with the feature [-Deictic]



The head T with [-Deictic] does not have its own spatio-temporal coordinate. However, this does not mean that the tense with the feature [-Deictic] can be interpreted in relation to anything. It must be interpreted in relation to the main clause event. Given this, I will propose the licensing condition for Speech Events defined in (18):

- (18) LICENSING CONDITION FOR SPEECH EVENTS IN RELATIVE CLAUSES
Speech Events must contain referentially independent noun phrases (i.e. definites) as relative clause heads.

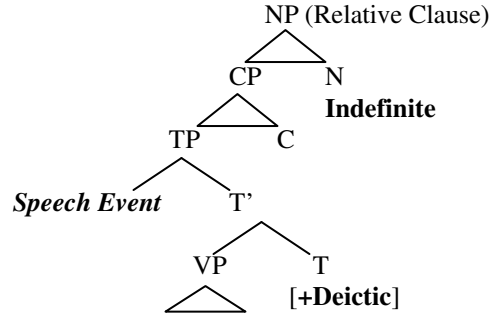
With the condition in (18), relative clauses with indefinite head nouns cannot have a local Speech Event. Nonetheless, due to the condition in (15), relative clauses are required to be anchored. The only choice is to make the tense in relative clauses dependent on the main clause tense, which eventually anchors to a Speech Event. Thus, the condition in (15) is simplified as in (19):

- (19) LICENSING CONDITION ON RELATIVE CLAUSE TENSES (Final version)
Relative Clause Tenses must be anchored to Speech Events.

There is no need to keep the two options of how to anchor tenses in relative clauses. The licensing condition on Speech Events in (18) only allows the feature [-Deictic] in relative clauses to anchor to tenses in main clauses. Let us look at how indefinites with the feature [+Deictic] are excluded. In (20), the feature [+Deictic] is selected for the head T. Therefore, the temporal argument in the Spec TP denotes the Speech Event. This configuration is excluded by the condition in (19):¹²

¹² There is a technical issue that is not solved. The Speech Event in the main clause contains the indefinite noun, which is the head noun of the relative clause. This violates the condition in (18). If we adopt the notion of Phase (Chomsky 2001) (or, alternatively, a version of cyclicity conditions), this problem can be avoided. According to Chomsky

- (20) Impossible: Indefinite head noun and T with the feature [+Deictic]



I will address the correlation between definiteness and temporal interpretation in the next section.

3.4 (In)definites and dependent tense

We still have this question: why do indefinites only allow dependent readings? In this section, I will give an answer to this question by extending Heim (1982) and Diesing (1992). I argue that tenses in relative clauses with indefinite head nouns form a complex tense with tenses in main clauses, and give supporting evidence.

Heim (1982) proposes that the descriptive content of definites is existentially presupposed, while the descriptive content of indefinites is not. Diesing (1992) argues that indefinites are existentially closed in VPs.¹³ Extending these two ideas, I propose the following: for relative clauses, indefinite head nouns are existentially closed in the VP in main clauses. This is because head nouns are shared by both main clauses and relative clauses due to relativization. Therefore, the referent of head nouns participates in events in both

(2001), CPs are defined as Phase (analogous to the notion of cyclic nodes in the pre-Minimalist framework). Therefore, it is conceivable that the relationship between the head noun and its tail becomes invisible to the computation, when the derivation reaches to the CP of the relative clause and is spelled out. Thus, for the Speech Event in the main clause, the indefinite noun is not considered as a head noun. Since the current study does not specifically adopt the latest Minimalist framework, I will leave this issue open.

¹³ Diesing's idea (1992) is different from Heim (1982), who argues that existential closure applies at the sentence level. Biskup (2005) proposes to reinterpret Diesing's mapping hypothesis in terms of the Phase (CP and vP) (Chomsky 2001). Diesing's Mapping Hypothesis is described below:

- i) Mapping Hypothesis (Diesing 1992:10):
 Material from VP is mapped into the nuclear scope.
 Material from IP is mapped into a restrictive clause.

How Diesing's idea is adopted for licensing indefinite head nouns in matrix VPs is beyond the scope of this research.

clauses. Due to this sharing, the tenses in main clauses and relative clauses form a complex tense. In other words, [-Deictic] tenses in relative clauses form a complex tense with tenses in main clause. By ‘complex’ tense, I mean there are multiple time points involved. It is analogous to English past perfect (e.g. *Pat had eaten lunch at 3PM*). Since it is a complex tense, there must be one-to-one correspondence between two events for a legitimate interpretation.

In the remainder of this section, I present supporting arguments for the above claim. If this claim is correct, we expect that there is a close relationship between relative and main clauses. In other words, we should see a strong dependency between events in relative and main clauses. A strong dependency can be observed in the cases of Past in relative clauses under Non-Past in main clauses. Evidence for complex tense comes from interactions of adverbs such as *every week* and specific temporal adverbs such as *tomorrow*. More precisely, it is the relationship of events in relative and main clauses that supports the claim of complex tense. The interaction with temporal adverbs in relative and main clauses makes the event relationships between two clauses clear. Consider the sentence in (21), which has the adverb *next week* in the relative clause and the adverb *every week* in the main clause:¹⁴

- (21) ***[raisyyu** saikooten-o tot-ta] hito-o
 next week highest score_{ACC} get_{PAST} person_{ACC}
 maisyyu hyooshoo-su-ru
 every week award-do_{NonPast}
 Lit. ‘Every week (I) will give an award to a person who got the highest score next week.’

This sentence is ungrammatical. The event relationship of (21) is given in (22) (the series of slashes shows multiple events):

- (22) Impossible relation
 MC = give an award **every week**
 //.....
 -----SE-----RC----->
 got the highest score **next week**

Notice that the main clause event contains the relative clause event. Therefore, the relative clause event cannot correspond to a single time point in the main clause event.

The sentence in (23) below is a minimal pair with (21). The relative clause has the adverb *every year* and the main clause has the adverb *next year* and this sentence is grammatical. The schematic representation in (24) is the event relationship for the dependent reading of (23):

¹⁴ The adverbs are in bold face for the ease of exposition. There is no emphasis in pronunciation implied. This applies to the other examples in this section.

- (23) [maisyuu saikooten-o tot-ta] hito-o
 every week highest score_{ACC} get_{PAST} person_{ACC}
rainen hyooshoo-su-ru
 next year award-do_{NonPast}
 Lit. 'Next year (I) will give an award to a person who got the highest score every week.'

- (24) give an award *next year*
 -----SE-----MC----->
 ..////////////////////
 RC =got the highest score *every week*

There is no overlap of the events because the past tense on the verb *got* marks the end of the period of the relative clause event.

There is further evidence to support the claim of complex tense – namely, the lack of such a restriction in the cases of Past in relative clauses under Past in main clauses (Past under Past). Recall that, as shown in (1), Past under Past can give independent readings, which means that tenses in relative clauses can be independent of tenses in main clauses. Therefore, we predict that a mismatch of adverb types such as the one in (21) is allowed for Past under Past. This prediction is borne out. Consider (25), in which the relative clause has the past verb *got* and the specific temporal adverb *last year* and the main clause has the past verb *awarded* and the adverb *every week*:

- (25) [kyonen saikooten-o tot-ta] hito-o
 last year highest score_{ACC} get_{PAST} person_{ACC}
maisyuu hyooshoo-si-ta
 every week award-do_{Past}
 Lit. 'Every week (I) gave an award to the person who got the highest score last year.'

Although the types of the adverbs do not match, the sentence is grammatical. The event relationships of (25) are given below:

- (26) MC = gave an award *every week*
 ..////////////////////
 -----RC-----SE----->
 got the highest score *last year*

Differing from (22), the contained relation is allowed. The events in the relative clause and the main clause can be independent of each other. This reading is less salient, but it is a plausible reading, which is something like: 'I gave an award every week in the past to the person who happened to have gotten

the highest score last year.” It is also possible to have a ‘dependent’ reading as shown in (27):¹⁵

(27) MC = gave an award *every week*
 ///
 -----RC-----SE----->
 got the highest score *last year*

(27) shows that the onset of the main clause event starts after the relative clause event.

In conclusion, the contrast between (21) and (23) shows that coherency is required for a legitimate interpretation. It also supports the claim that relative clauses with indefinite head nouns form a complex tense with main clause tenses. This, in turn, explains why relative clauses with indefinite head nouns must have the feature [-Deictic]. The cases of Past under Past (i.e. (25)) further supports the claim.

4 Conclusion

To summarize, in this paper I addressed the question: Why is definiteness related to temporal interpretation of relative clauses? I argued that it is because indefinites are not existentially presupposed in the VP of matrix sentences. I also argued that in the case of dependent tenses, tenses in main and relative clauses form a complex tense. I gave evidence for the above claim by examining event relationships between main and relative clauses. This is why there is a correlation between the definiteness and temporal interpretation of relative clauses.

The same phenomenon is observed for Non-Past in relative clauses, as Nakamura (1994a, 1994b) points out. In (28) below, the relative clause has the Non-Past progressive *is running* with the definite head noun *this person*:

(28) [hashitte-i-ru] kono hito-ni at-ta.
 run-be_{NonPast} this person_{DAT} meet_{Past}
 Lit. ‘(I) met this person who is running.’

(28) only allows the reading that the event *running* is simultaneous with the event *met*. The proposed analysis predicts that this is possible.

As Matsuo (1996, 1998) points out, the same contrast is found in English as well:

¹⁵ The reading in (27) is ‘dependent’ in the sense that the relative clause event precedes the main clause event. The proposed analysis predicts that if the head noun in (25) is interpreted as indefinite, only the reading in (27) is allowed. The judgment is subtle and requires further investigation. Due to the space limitation, I will leave this issue open.

- (29) John met the person who was laughing.
- a. John met the person after the person was laughing.
 - b. John met the person when the person was laughing.
 - c. John met the person before the person was laughing.
- (30) John met a person who was laughing.¹⁶
- a. John met a person after the person was laughing.
 - b. John met a person when the person was laughing.

(29), which has the definite head noun, allows independent readings, while

(30) with the indefinite head noun, only allows dependent readings. This is problematic for the claim that tenses in English relative clauses are independent of tenses in main clauses (Enç 1987, Hornstein 1990). However, the English present/progressive do not behave exactly in the same way as Japanese (e.g. *John met a/the person who is running*, in which no such contrast is observed).

In this paper, I did not discuss how intentional contexts are related to temporal interpretation (see footnote 4). However, examples such as *I want to hire a person who got the highest score* do not follow the pattern discussed. This is also probably related to lexical aspect of verbs as well. Interactions with stative verbs such as *love* are not clear to me at this moment.¹⁷ I will leave these issues for future research.

¹⁶ The sentences in (29) and (30) are slightly modified. Matsuo's (1996, 1998) original examples use the verb *seek* instead of *meet*.

¹⁷ I thank Martina Wiltschko and Solveiga Armoskaite, who pointed out these to me.

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