The Status of the Internally-Headed Relatives of Japanese/Korean within the Typology of "Definite" Relatives

Alexander Grosu

Abstract. The principal thesis defended in this paper is that the most recent and successful approach to the Internally-Headed Relative (IHR) constructions of Japanese and Korean, i.e., the one in Kim (2007)—which proposes, building on Hoshi (1995) and Shimoyama (1999, 2001), that the analysis of these IHRs needs to rely on the E-type strategy—is demonstrably wrong empirically in relation to both the procedure for licensing IHs and the characterization of temporal relations between the IHR and its matrix, as well as conceptually objectionable in attaching the E-type label to analyses that have to rely on mechanisms that are entirely independent of those used in analyses of E-type anaphora in discourse. The paper proposes an alternative analysis that avoids the difficulties encountered by E-type analyses, and which relies on local equation of the IH with a variable, ultimately assigning to the relative clause the status of a singleton predicate, thereby bringing these IHRs under the more general umbrella of definite/maximalizing relative constructions, while at the same time providing a motivated account of certain similarities between such IHRs and E-type anaphora, which, while real, do not justify an analytical reduction of the former to the latter**.**

Keywords Internally-headed relatives, definite/maximalizing relatives, E-type anaphora, the Relevancy Condition, semantics

1 Introductory Remarks

The literature of the last thirty years or so has recognized the existence of a semantic type of relative clause construction that is distinct from the traditionally known restrictive and appositive types and is characterized by necessarily definite (and sometimes universal) force, to the exclusion of existential force. While this class of relatives has received various names in the earlier literature (e.g., it was dubbed "maximalizing" in Grosu and Landman 1998, and "definite" in Dayal 1995), I will adopt in this paper the term "definite" (construed broadly enough to allow universal force, hence, the scare quotes in the title), primarily for reasons of convenience, since universal force is not relevant to the constructions that form the focus of this paper.

Definite relatives occur in a variety of syntactic garbs, in particular, as free relatives (Jacobson 1995), correlatives (Dayal 1991), externally-headed "amount" relatives (Carlson 1977), and internally headed-relatives (Hoshi 1995, Shimoyama 1999, 2001, Kim 2007); see Grosu (2002) for a survey of the relevant literature up to the time of publication of that paper.

Grosu and Landman (1998) put forward the hypothesis that these syntactically diverse constructions can be brought under a unifying semantic umbrella by analyzing the relative CP as a *singleton predicate*. On this view, definite relatives emerge as closer to restrictives than to appositives, since just like the former, they denote predicates, not propositions, as the latter do. Within the larger class of predicate-denoting relatives, definite relatives were analytically characterized as sharing a *semantic* (i.e., grammar-internal, not pragmatic!) operation of maximalization (henceforth: MAX), which maps a predicate p to the singleton that contains p's maximal member, if there is one, and is undefined otherwise.

Concerning MAX, it seems to be, at least in certain cases, an inherent property of certain syntactic constructions (in particular, free relatives and correlatives), without any currently known independent motivation. In other cases, however, MAX arguably derives some motivation from the particular semantic processes by which the relative CP is compositionally interpreted (Grosu and Landman 1998, Grosu 2002, 2009). I briefly return to this point in relation to the constructions that constitute the focus of this paper in footnote 12.

Concerning the necessarily definite/universal status of the entire complex DP, Grosu and Landman (op. cit., section 2.5) suggest that this state of affairs is derivable from the operation of MAX within CP. In Grosu (2009, section 2), it is noted that this effect arises whenever CP is a singleton, regardless of whether this state of affairs is grammatically or pragmatically induced, and it is suggested, echoing Grosu (2002, example (10b)), that the effect is attributable to a pragmatic conflict between the uniqueness of the singleton's membership and the implicature of possible non-uniqueness associated with existential quantification.[1]

The predicate status of CP in definite relative constructions is a fairly plausible hypothesis in those cases where CP includes a "gap" (e.g., in English-type free relatives and externally-headed amount relatives, as illustrated in (1a–b) respectively), and possibly also in correlatives, where the (counterpart of) a *wh*-pronoun may be analyzed in terms of abstraction over a variable. Predicate status is, however, an

[1] Grosu (2009, section 2) further suggests that the effect at issue is arguably a special case of an even broader principle, dubbed "Maximize Presupposition" by Heim (1991), who appealed to it in order to account for the preferred status of the definite article in superlatives. This principle says, essentially, that when a presupposition of uniqueness exists, this state of affairs should be reflected in the choice of the determiner, so that the definite article, which has a stronger presupposition than the indefinite article, is preferred to the latter in such cases.

arguably less initially plausible hypothesis in internally-headed relative constructions (henceforth: IHRs) of the kind found in Japanese and Korean, which belong to the definite subclass, and are illustrated in (2) (= (4) in Shimoyama 2001, Chapter 3). Possibly as a result of this state of affairs, most of the earlier semantic analyses of Japanese or Korean IHRs, in particular, those proposed by Hoshi (1995), Shimoyama (1999, 2001), and Kim (2007), have viewed the relative clause as denoting a proposition, the definite force of the entire construction being attributed to a CP-external (null or overt, depending on author) E-type anaphor, which is anteceded by a CP-internal antecedent (i.e., the "internal head," henceforth: IH, indicated by boldfacing in (2)). Note that the E-type construal is reflected in the fluent English translation of (2).

(1) a. I ate [what Mary gave me __] (i.e., everything she gave me, not just some of it).

b. I took away [*?(the) three books that there were __ on the desk]

(2) Taro-wa [$_{DP}$[$_{CP}$Yoko-ga reezooko-ni **kukkii-o** **hotondo**
Taro-Top Yoko-Nom refrigerator-Loc **cookie-acc** **most**
irete-oita]-no]-o paatii-ni motte itta.
put-aux-no-Acc party-to brought
'Yoko put most cookies in the refrigerator and Taro brought {them, *some} to the party.'

As far as one can tell, the E-type approach correctly captures the truth conditions of data like (2). Nonetheless, I will argue in what follows (i) that the most

recent and successful analysis of Japanese/Korean IHRs that is based on the E-type approach, in particular, the one in Kim (2007), is demonstrably wrong with respect to certain kinds of data that were not addressed by Shimoyama and Kim, as well as with respect to many examples that Kim explicitly addressed, and (ii) that all current analyses that claim to rely on the E-type strategy are conceptually objectionable in having to resort to mechanisms that are entirely independent of those used in analyses of E-type anaphora in discourse. As an anonymous reviewer puts it, "these analyses are not true E-type analyses—they merely borrow the E-type label to give the impression of unification of IHRs and E-type discourse anaphora without there being any underlying unification to justify the borrowing." As an alternative to this approach, I will propose an analysis that avoids the empirical and conceptual problems that confront the latter, and that interprets the IHRs of Japanese/Korean as predicates of individuals (thereby bringing them under the more general theoretical umbrella of definite/maximalizing relatives), while at the same time providing an explanation for the various similarities between these constructions and E-type anaphora, in particular, for those that prompted the use of the E-type label in earlier literature.

To be slightly more specific concerning the criticism just expressed, a strong empirical objection to Shimoyama's and Kim's analyses is that they are constructed in a way that enables them to deal only with situations where the IH is in the highest clause of the relative, even though the IH can in principle be embedded at an arbitrary depth, subject to certain island constraints. Another empirical objection directed specifically at Kim's theory is that it fails even with respect to certain Japanese IHRs that consist of a single clause, due to the following situation: Kim proposes to build into the semantic derivation one of the ingredients of the so called "Relevancy

Condition" (Kuroda 1976–77) (previously viewed as pragmatic), a move which, while elegant and *prima facie* attractive, crucially relies on the assumption that the relative clause necessarily lacks Tense, an assumption devoid of any independent support, and which will be shown to be empirically untenable.

On the conceptual front, the principal objections are that such analyses must resort to auxiliary mechanisms not needed in discourse, and that the very appeal to the E-type strategy enriches the universal typology of definite relative constructions by allowing their CP to denote propositions in addition to predicates. Correlatively, the definite force of the complex DP is accounted for in two distinct ways under this typological enrichment: by appealing to the operation of MAX within CP under the predicate analysis, and by stipulating a CP-external definite anaphor under the E-type analysis. A conceptual objection specific to Kim's account is that it uses an unnecessarily complex formal apparatus.

The remainder of this paper is organized as follows. In section 2, I list and illustrate a number of differences between the alleged E-type anaphoric relation found in IHRs and the incontrovertible one found in discourses, noting one difference which, to my knowledge, had not been previously observed. I also note in this section a similarity between the two types of situation, which, as far as I can tell, was not signaled in earlier works. Section 3 outlines the gist of the analysis of IHRs proposed in Kim (2007), the most recent, ambitious, and successful analysis known to me that invokes the E-type label. In section 4, I present my empirical and conceptual objections to Kim's analysis. In section 5, I propose an alternative to Kim's treatment of the ingredient of the Relevancy Condition alluded to above, arguing *contra* Kim that it belongs in the pragmatics. In section 6, I propose and illustrate an alternative approach to the compositional semantic derivation of IHRs. I show that this analysis

successfully deals with what may be called the "dual nature" of (definite) IHRs: on the one hand, it accounts both for the constructions that turned out to be problematic for Kim's analysis and for those that were not, and on the other, it sheds light on certain properties shared by IHRs and discourse anaphora, in particular, for the one noted in section 2. Section 7 extends the analysis of section 6 to constructions that exhibit additional complexities. Section 8 is a summary of results.

2 Distinctions between Japanese/Korean IHRs and Comparable Discourses

The earlier semantic and syntactic literature on Japanese/Korean IHRs has noted (at least) three types of restriction that apply to these constructions, but not to discourses with E-type anaphora; these concern (i) the set of possible "antecedents," (ii) the relationship between eventualities described by the relative clause and by its matrix, and (iii) sensitivity to certain island constraints, in particular, to the CNPC and the "factive-island constraint" (which bans extraction from factive complements). For example, point (i) was noted and illustrated in Shimoyama (1999, 2001) and Kim (2007), point (ii) in Kuroda (1976–77) and Kim (2007), and point (iii) in Watanabe (1992, 2003, 2004); see also various citations in these works.

In relation to (i), Shimoyama (1999, 2001) proposed that in IHRs, the antecedent must be internal to the relative clause, and must furthermore play a thematic role within an eventuality described by it. This is in contrast to discourses, where the antecedent needs not be in the sentence that immediately precedes the anaphor, and needs not in fact be explicitly present in earlier discourse at all; furthermore, the antecedent does not need to denote a thematic participant in some

eventuality. Shimoyama (2001, Chapter 3) offers the data in (3a–b) (= her (53) and (52) respectively) in support of the first contrast just mentioned, pointing to the fact that (3a) may have a non-absurd meaning thanks to the option of creating a pragmatically suitable antecedent by accommodation, and stating that (3b) may have only the absurd meaning that certain individuals were simultaneously at the party and at home, a state of affairs which points to the conclusion that the antecedent must be internal to the IHR.

(3) a. **Honno suunin-no insee-sika** doyoobi-no party-ni
just a-few-Gen grad-student-sika Saturday-Gen party-to
ikanakatta. Karera-wa jitsuwa uchi-de term paper-o
go-Neg-Past they-Top in-fact home-at term paper-Acc
kaite ita.
writing were
'Only a few graduate students came to the party on Saturday. In fact, they were writing term papers at home.'

b.*[[**Honno suunin-no insee-sika** doyoobi-no party-ni
just a-few-Gen grad-student-sika Saturday-Gen party-to
ikanakatta]-no]-ga jitsuwa uchi-de term paper-o kaite ita.
go-Neg-Past-no-Nom in-fact home-at term paper-Acc writing was
'#Only a few graduate students came to the party on Saturday, and they (= those very students) were in fact writing term papers at home.'

It turns out, however, that while Shimoyama was basically right, the example in (3b) does not support the point she wanted to make. As an anonymous reviewer

pointed out, IHR in (3b) is grammatically ill-formed independently of any pragmatic conflict with the matrix, as shown by (4a) (kindly provided by the reviewer) and (4b) (provided by Junya Nomura and Yusuke Imanishi, p.c.), in which there is no pragmatic conflict.

(4) a. *[[**Honno suunin-no insee-sika** doyoobi-no
just a-few-Gen grad-student-sika Saturday-Gen
party-ni ikanakatta]-no]-ga sono-party-o tanoshinda.
party-to go-Neg-Past-no-Nom that-party-Acc enjoyed
'Only a few graduate students came to the party on Saturday, and they enjoyed the party.'

b. *[[**Honno suunin-no insee-sika** doyoobi-no
just a-few-Gen grad-student-sika Saturday-Gen
party-ni ikanakatta]-no]-o Mary-ga motenasita.
party-to go-Neg-Past-no-Acc Mary-Nom entertained
'Only a few graduate students came to the party on Saturday, and Mary entertained them.'

What can be the source of the deviance of (4a–b)? My consultants informed me that if the expressions *san-nin-no insei (dake) sika* 'only three students', *ookotumo san-nin-no insei-sika* 'at most three students', or *hitorino insei-mo* 'no student' are substituted for the boldfaced expressions in (4a–b), the result is ill-formed in each case (they also pointed out that if any of these expressions is substituted for the boldfaced expression in (3a), the result is a well-formed and non-absurd discourse). Importantly, the three expressions just mentioned and the boldfaced expressions in (4a–b) all achieve their

meaning by virtue of combining with sentential negation (*nakatta* = Neg+Past). Equally importantly, Yusuke Imanishi informed me that in his speech, 'at most three students' can also be expressed by *ookotumo san-nin-no insei-ga,* which—crucially—does not require negation on the verb.[2] Now, if this expression is used in, say, (4a), the result, shown in (5), is grammatical in his speech.

(5) **Ookutomo san-nin-no insei-ga** doyoobi-no
at-most three-Cl-Gen grad-student-Nom Saturday-Gen
party-ni itta-no-ga sono-party-o tanoshinda.
party-to go-Past-no-Nom that-party-Acc enjoyed
'At most three graduate students came to the party on Saturday, and they enjoyed the party.'

The conclusion suggested by all the facts just noted is that *nominal expressions whose meaning is achieved by combining with negation are unfit to serve as IHs.*[3] This is a distinction between IHRs and discourses which, to the best of my knowledge, has not been pointed out in earlier literature.

Returning to the point that Shimoyama tried to make, it can be successfully supported with data that are not vitiated by the problem just noted.

Thus, Yusuke Imanishi informs me that if *ookutomo san-nin-no insei-ga* 'at most three students' is substituted for the boldfaced expressions in (3a) and (3b) with

[2] Akira Watanabe and Junya Nomura do not allow this option.

[3] For completeness, I note that 'at most three students' and 'no student' are both downward entailing, but this property cannot be viewed as either a sufficient or a necessary condition for the inability of a nominal expression to serve as IH, because, as we have seen, 'at most three' induces deviance only when formed with *sika+Neg,* and furthermore 'only three' is neither upward nor downward entailing.

suppression of sentential negation, the modified (3a) is grammatical (for him; see footnote 2) and permits a pragmatically reasonable construal, while the modified (3b) is grammatical and necessarily absurd.

More significantly, supporting evidence acceptable to all my consultants (i.e., Akira Watanabe, Yusuke Imanishi and Junya Nomura) is also available. Thus, if *tyoodo san-nin-no insei-ga* 'exactly three students' is used (without negation) in (3a–b), yielding (6a–b), the outcome is as follows: In (6a), the non-absurd reading is hard to get 'out of the blue', but may be coerced by an appropriate context. For example, assume that two professors, call them A and B, chat, and they both know that there are twenty students in their department, and that all wanted to attend the party. A also knows that the day after the party was the deadline for submitting a term paper, and that only three students had finished writing their paper. Under these circumstances, if A says (6a) to B, *karera* may be understood as referring to (relevant) students in general (and by implication, to the seventeen who did not show up at the party). In contrast, (6b) remains absurd even in this context.

In sum, we may conclude that Shimoyama's claim was correct, even though she did not support it with appropriate data.

(6) a. Tyoodo san-nin-no insei-ga doyoobi-no party-ni kita.
exactly three grad-students Saturday-Gen party-to go-Past
Karera-wa jitsuwa uchi-de term paper-o kaite ita.
they-Top in-fact home-at term paper-Acc writing were
'Exactly three graduate students came to the party on Saturday. In fact, they were writing term papers at home.'

b.#[[Tyoodo san-nin-no insei-ga doyoobi-no party-ni kita]-no]-ga
exactly three grad-students Saturday-Gen party-to go-Past-no-Nom
jitsuwa uchi-de term paper-o kaite ita.
in-fact home-at term paper-Acc writing were
'#Exactly three graduate students came to the party on Saturday, and they (= those very students) were in fact writing term papers at home.'

Turning now to the other component of point (i) above, the need for the antecedent to be a participant in an eventuality in IHRs, but not in discourses, its reality can be appreciated by examining the contrast between the Japanese examples (64) and (65) in Shimoyama (2001), Chapter 3 (reproduced below as (7a–b)), and between the parallel Korean examples (15b) and (16b) in Kim (2007) (reproduced below as (8a–b)). Note that in all the examples in (7)–(8), only DP_2, but not DP_1 (the intended antecedent), plays a thematic role in the eventuality described by the immediately containing sentence, and this state of affairs turns out to be unproblematic in the (a) subcases, but problematic in the (b) subcases.

(7) a. Dono hosuto$_1$-mo [$_{DP2}$ [$_{DP1}$ **soitu$_1$-no** **hahaoya**-no] sushi]-o dasite
which host-mo his mother-Gen sushi-Acc served
suguni pro$_1$ home-ta.
immediately praise-Past
'Every host served his mother's sushi and praised her immediately.'

b. *Dono hosuto$_1$-mo [[pro$_1$ [$_{DP2}$ [$_{DP1}$ **soitu$_1$-no hahaoya**-no] sushi]-o
which host-mo his mother-Gen sushi-Acc
dasita]-no]-o suguni home-ta.

served-no-Acc immediately praise-Past

'Every host served his mother's sushi and praised her immediately.'

(8) a. Enu namca-na [$_{DP2}$ [$_{DP1}$ **caki anay$_i$**]-**uy** kimpap]-ul sonnim-kkey

[every man-Indet [[**self wife**]-**Gen** sushi]-Acc guest.Dat.Hon

taycephass-ko sonnim-i **kunye$_i$-lul** cwuksi chingchanhayssta.

served-Comp guest-Nom she-Acc immediately praised

'Every man served *his wife's* sushi to the guest and, immediately after that, the guest praised *her*.'

b.*[[Enu namca-na [$_{DP2}$ [$_{DP1}$ **caki anay**]-**uy** kimpap]-ul sonnim-kkey

[[every man-Indet [[**self wife**]-**Gen** sushi]-Acc guest.Dat.Hon

taycepha-∅]-un kes]-ul sonnim-i cwuksi chingchanhayssta.

serve-perf]-rel kes]-Acc guest-Nom immediately praised

Intended: 'Every man served *his wife's* sushi to the guest and the

guest praised *her* immediately after that.'

In relation to point (ii) above, i.e., the "Relevancy Condition," Kuroda (1976–77) proposed that in IHRs, the content of the relative clause needs to be, in some sense he did not make very precise, "directly relevant" to the content of its matrix. While Kuroda argued for the recognition of this condition by contrasting IHRs with EHRs (i.e., externally-headed relatives), Shimoyama (2001) also showed that this condition goes beyond coherence requirements for discourses in general (see (9b–c) below).

Kim (2007) endeavored to make this Relevancy Condition more precise and proposed it should include the requirement that a certain type of eventuality described by the IHR should temporally intersect with the eventuality described by the IHR's

matrix. Importantly, Kim proposed to handle this requirement in the *semantics* (in contrast to other ingredients, discussed in Kim 2008, which she relegated to the *pragmatics*). Her semantic treatment, which is described in her sections 3.1 and 4.2.3 and to which we will return in more detail in ensuing sections, makes crucial use of the idea that (certain types of) events induce a particular type of state (Parsons 1990), and proposes that it is the *state* induced by the event described by the relative, rather than the *event* itself, that needs to intersect temporally with the eventuality described by the matrix.

This distinction, although not always needed (as will be seen in section 4), turns out to be useful for characterizing the felicity of (2), which Kim did not directly discuss. Observe that the event of Yoko putting cookies in the fridge and the event of Taro taking those cookies out of the fridge and bringing them to the party do not intersect temporally, or at least do not need to intersect, since the cookies may well have spent a day or two in the fridge before being taken out. However, the event of Yoko's putting cookies in the fridge has as a consequence the fact that those cookies are in a (temporary) state of being in the fridge, and this state does temporally intersect with the event of Taro's bringing the cookies to the party, since the latter event necessarily begins with his taking the cookies out of the fridge. Thus, appeal to the state induced by the event is crucially needed for accounting for the felicity of (2).

The distinction proposed by Kim is also useful for understanding the source of infelicity in certain examples. For example, Shimoyama (2001, Chapter 3) brings up the examples in (9a) and (9b) (= her (43a) and (57b) respectively), where the latter contrasts in felicity with both (9a) and (9c).

(9) a. [[Daidokoro-no mado-kara **siroi neko-ga** haitte-ki-ta]-no]-ga
kitchen-Gen window-from white cat-Nom came-in-past-no-Nom
sakana-o totte nigeta.
fish-Acc steal ran-away
'A white cat came in from the kitchen window, and it stole a fish and ran away.'

b. ?*[[**Haiiro-no neko-ga** kinou mado-kara haitteki-ta]-no]-ga
gray-Gen cat-Nom yesterday window-from came-in-Past-no-Nom
kesa mata yattekita.
this-morning again came
'A gray cat came in from the window yesterday, and it came back this morning.'

c. **Haiiro-no neko-ga** kinou mado-kara haitteki-ta.
gray-Gen cat-Nom yesterday window-from came-in-past
Soitsu-wa kesa mata yatteki-ta.
that.fellow-Top this-morning again came-in-past
'A gray cat came in from the window yesterday. It came back this morning.'

(9a) is felicitous for essentially the same reason that (2) is, i.e., after coming into the kitchen, the cat was in the state of being there, and this state intersected temporally with the event of the cat stealing the fish. (9b) is infelicitous because the state induced by the event of the cat's coming into the house through the window, namely, the state of being in the house, ceased before the cat came back into the house on the following day; there is thus no state with the cat as a thematic participant that intersects

temporally with the event of the cat coming back.[4] The felicity of the discourse in (9c) shows that there is nothing incoherent about (9b), and that its deviance is due to a constraint specific to IHRs, i.e., one that goes beyond general coherence requirements.

Concerning point (iii) above, an IH may be embedded arbitrarily deep within the IHR (illustration postponed until section 4), but may not occur within (certain) syntactic islands. To illustrate, (10a) and (11a) show that an IH may not occur within a complex NP or a factive complement, in contrast to discourses, where neither the antecedent nor the anaphor are subject to comparable constraints, as illustrated in (10b–c) and (11b) (these data were kindly provided by Akira Watanabe, p.c.)

(10) a. *Mary-ga [John-ga [**atarashii kasetu**-o
Mary-Nom John-Nom **new** **hypothesis**-Acc
teianshita *gakusei*-o] homete-ita-no]-no kekkan-o shitekishita.
proposed student-Acc praise-had- no-Gen defect-Acc pointed-out
'[John praised [the *student* who proposed **a new hypothesis**]] and Mary pointed out a defect in **it**.'

b. Jon-wa [**hitsuji-o san-tou** katteiru *hitujikai-o*] shitteiru.
John-top sheep-Acc 3-Cl keep shepherd-Acc know
Sore-ni-wa meshitsukai-ga esa-o yatteiru.
that-Dat-Top servant-Nom food-Acc give
'John knows a *shepherd* who owns **three sheep**. The servant feeds **them**.'

c. Jon-wa **hitsuji-o san-tou** katteiru.

[4] Interestingly, Watanabe (p.c.) informed me that (9b) is not too bad for him. One possible explanation for this difference of opinion may be that Watanabe (also) perceives a state of the cat coming into the speaker's attention, and if so, this state may well last until the cat's return on the following day.

John-Top sheep-Acc 3-Cl-KA keep

[**Sore-ni** esa-o yaru *meshitsukai-wa*] kyoo-wa yasumi-da.

that-dat food-Acc give servant-Top today-Top holiday-Cop

'John has **three sheep**. The *servan*t who feeds **them** is on holiday today.'

(11) a.*?Mary-ga [John-ga [zibun-no gakusei-ga **atarashii kasetu-o**

Mary-Nom John-Nom self-Gen student-Nom **new hypothesis-Acc**

teianshita to] *sitte*-ita-no]-no kekkan-o shitekishita.

proposed Czer know-had- no-Gen defect-Acc pointed-out

'[John had known [that his student proposed **a new hypothesis**]] and Mary pointed out a defect in **it**.'

b. John-wa [zibun-no gakusei-ga **atarashii kasetu-o**

John-Top self-Gen student-Nom **new hypothesis-Acc**

teianshita koto]-o *sitte*-ita. Mary-wa sore-o

proposed fact-Acc know-had. Mary-Top that-Acc

shirasarete-i-nakat-**ta-node,** touzen, **so-no** kekkan-ni-mo

be.informed-have-Neg-Past-because, of-course that-Gen defect-Dat-also

kizuite- i-nakat-ta.

notice-have-Neg-Past

'John had known that his student proposed **a new hypothesis.** Since Mary was not informed of that, she was, of course, unaware of **its** defect.'

This concludes the presentation of the *distinctions* between Japanese/Korean IHRs and discourses with E-type anaphora. Of course, (at least *prima facie*) *similarities* also exist, which is why analyses that invoke the E-type strategy have

arisen in the first place, and an adequate analysis must account for both differences and similarities. To this end, I wish to round off the overall picture of the constructions at issue by noting a similarity which, to the best of my knowledge, has not been pointed out in earlier literature and which distinguishes discourses and definite IHRs on the one hand from definite EHRs on the other.

Kadmon (1990) observes that a nominal expression that exhibits a numerical implicature retains the defeasible status of this implicature when serving as antecedent of an E-type anaphor in discourse. (12) (= Kadmon's (2) with inconsequential adaptations) illustrates this point (observe that the third sentence successfully cancels the 'exactly' implicature of the boldfaced expression).

(12) I have to show this document to **three colleagues**. They are in a meeting, and I am waiting for them. I have to show it to at least two other colleagues, but they have already left, and I'll have to catch them tomorrow morning.

In contrast, Landman (2004) shows that expressions like the boldfaced one in (13), which serves as external head of an EHR (in brackets), are necessarily interpreted as meaning 'exactly three colleagues'. This is brought out by the fact that the second sentence in (13) is felt to contradict the first.

(13) [The **three colleagues** that I have to show this document to] are now in a meeting, and I am waiting for them. #I have to show it to at least two other colleagues, but they have already left, and I'll have to catch them tomorrow morning.

Given the contrast between (12) and (13), it is of interest to check how Japanese IHRs and EHRs behave when compared with such discourses. The following data, kindly provided by Watanabe (p.c.), constitute a minimal triplet that makes it possible to investigate this issue. In (14)–(16), the first sentence is, respectively, a coordination of two sentences, a complex sentence with an IHR, and a complex sentence with a definite[5] EHR. Watanabe reports no significant difference in felicity between (14) and (15) but points out that both contrast with (16), where the second sentence flatly contradicts the first. It thus appears that Japanese IHs behave like the antecedents of E-type anaphors and unlike the definite EHRs of both Japanese and English in failing to exhibit *rigid* exactly-effects.

(14) **Dorobou-ga futa-ri** nige-teite Anthony-wa karera-o tsukamae-ta.
thief-Nom two-Cl run.away-Prog Anthony-Top they-Acc catch-Past
Shikashi san-nin-me-no dorobou-mo nige-teite Anthony-wa kare-o
but three-Cl-th-Gen thief-also run.away-Prog Anthony-Top he-Acc
tsukamae-ru koto-ga deki-nakat-ta.
catch-non.Past thing-Nom be.able-Neg-Past
'Two thieves were running away, and Anthony caught them. But a third thief was also running away, and Anthony did not manage to catch him.'

(15) Anthony-wa [**dorobou-ga futa-ri** nige-teiru-no]-o tsukamae-ta.
Anthony-Top thief-Nom two-Cl run.away-Prog-no-Acc catch-Past

[5] Watanabe (p.c.) informs me that the externally-headed complex DP in (27) is necessarily construed as definite, for reasons that are not entirely clear. Be this as it may, the English translation of this example is sufficient in relation to the point made in the text.

Shikashi san-nin-me-no dorobou-mo nige-teite Anthony-wa kare-o
but three-Cl-th-Gen thief-also run.away-Prog Anthony-top he-Acc
tsukamae-ru koto-ga deki-nakat-ta.
catch-non.Past thing-Nom be.able-Neg-Past
'Two thieves were running away, and Anthony caught them. But a third thief was also running away, and Anthony did not manage to catch him.'

(16) Anthony-wa [nige-teiru] **futa-ri-no dorobou-o** tsukamae-ta.
Anthony-Top run.away-Prog two-Cl-Gen thief-Acc catch-Past
#Shikashi san-nin-me-no dorobou-mo nige-teite Anthony-wa kare-o
but three-Cl-th-Gen thief-also run.away-Prog Anthony-Top he-Acc
tsukamae-ru koto-ga deki-nakat-ta.
catch-non.Past thing-Nom be.able-Neg-Past
'Anthony caught the **two thieves** that were running away. #But a third thief was also running away, and Anthony did not manage to catch him.'

I return to these facts in section 6, where I argue that my proposed alternative analysis accounts for both similarities and differences between definite IHRs and discourses, without in any way reducing the former to the latter.

3 The Gist of Kim's Analysis of IHRs

In this section, I outline the gist of Kim's proposed analysis, and illustrate it in detail with one of her examples. Her central goal, as I understand it, is to capture in a unified

way the facts that fall under points (i)[6] and (ii) of section 2 (point (iii) is not addressed). To see how this is done, observe first that—as can be gathered from the Japanese examples in (2), (4), (7b) and the Korean one in (8b)—IHR constructions include a relative clause with a final verb, which in Korean forms a CP with an overt relative complementizer (*–un*) (for Japanese, Kim assumes a null complementizer with the same interpretation). This CP has a right sister of its own, which is realized as *–no* in Japanese and *–kes* in Korean; Kim analyses these items as N(oun)s. She further assumes that the resulting complex NP has a null right-sister of category D(eterminer), which she stipulates carries the feature [+definite], thereby accounting for the necessarily definite force of the construction.

To capture the temporal intersection requirement, Kim makes crucial use of the theory of Aspect in Kratzer (1998), which proposed that Aspect mediates between events and times by relating the event time to the topic time in the following ways: (i) the *progressive/imperfective* says that the topic time is included in the event time; (ii) the *perfect* says that the event time precedes the topic time; (iii) the *perfective* says that the event time is included in the topic time (for the formal representation of these proposals, see Kim's (42), or Kratzer (1998, p. 107)). Kim builds on these ideas, by combining them with Parson's (1990) treatment of Aspect, in particular, with the view that (a) progressive/imperfective Aspect introduces an in-progress state that is contemporaneous with the event that gave rise to it, and (b) perfect Aspect introduces

[6] More precisely, Kim is concerned only with restrictions concerning the placement of IHs within larger linguistic contexts. The restriction noted in relation to examples (3)–(4), i.e., the inability of nominals that semantically combine with sentential negation to serve as IHs, was not addressed by Kim, and will not be addressed in this paper, either. I view it as a topic for a separate investigation.

a resultant state that holds after the event (Kim in fact refines (b) by distinguishing two varieties of perfect, one with a resultant state, and one with a target state).

What Kim in effect does is to establish an indirect relation between the event time and the topic time through the mediation of Aspect, the direct relation she envisages being between the topic time and the state introduced by Aspect. Thus, she states by means of axioms that for progressive/imperfective Aspect, the runtime of an event is contemporaneous with the runtime of the corresponding state, and for perfect Aspect, the runtime of an event precedes the corresponding target or resultant state. Furthermore, she assigns lexical entries to the progressive/imperfective and perfect types of Aspect which say that the topic time is included in the runtime of the state introduced by Aspect. With respect to perfective Aspect, Kim proposes to assume that it introduces no state (noting in her footnote 20 that Parsons does not mention the perfective when discussing the semantic contribution of Aspect). Her formal lexical entries for the progressive/imperfect and the perfective are reproduced in (20a–b).

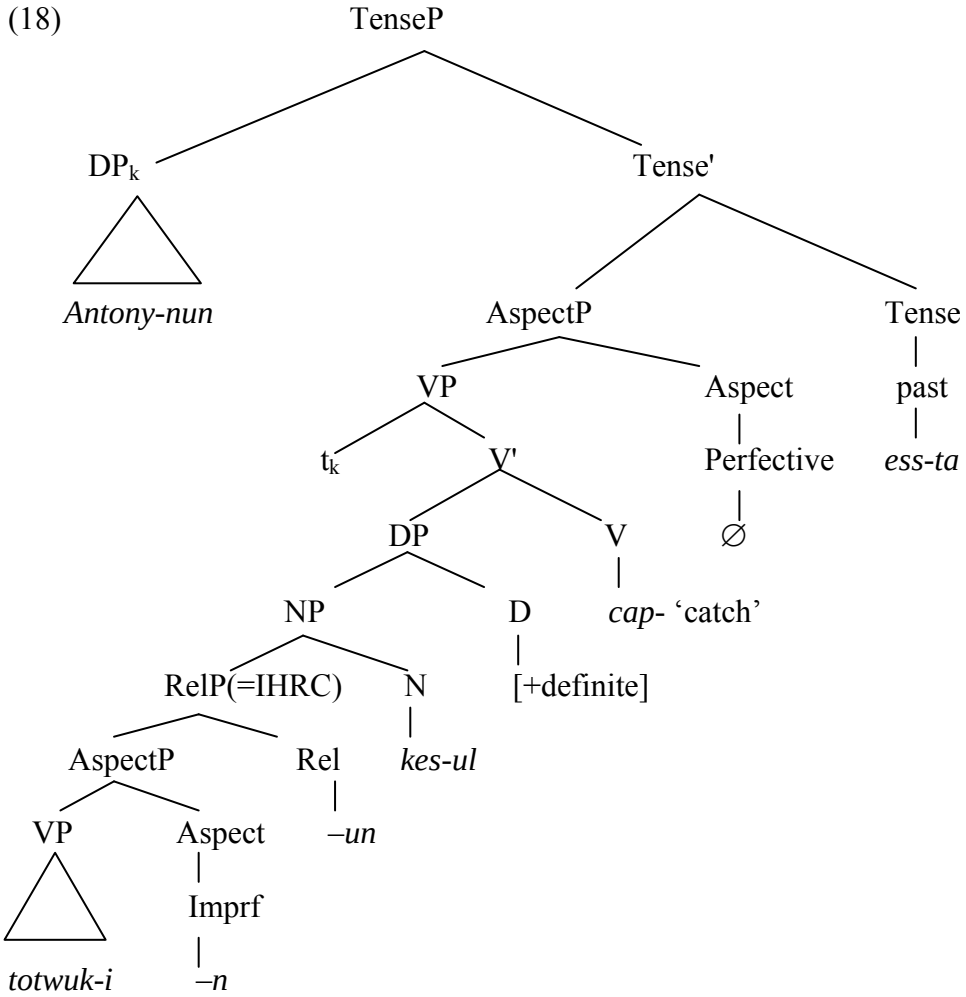
Kim proposes to use the theory informally described in the preceding paragraph in order to capture the temporal intersection requirement by assuming that *the topic time for the relative is always provided by the topic time of the matrix*. This program is implemented in the following way: the left sister of the relative complementizer is assumed to lack the category T(ense)P, and since the lexical entries for Aspect include a time variable, the AspPs in both the matrix and the relative will end up bound by the matrix Tense. To ensure this result, and with a view to also capturing the restrictions on the choice of IHs (i.e., point (i) of section 2), Kim sets up the types of the relative CP and of its sister *kes/no* in such a way that they cannot combine, but the relative CP can ultimately combine with the matrix AspP. This state of affairs forces the relative CP to raise at LF and adjoin to the matrix AspP, with the

result that the binding of the relative-internal time variable by the matrix Tense is coerced at that level. Concerning the choice of an IH, Kim proposes that the trace left by raising CP denotes a state variable, which is identified with the state described by the relative clause via abstraction and combination of the abstract with the raised CP. In virtue of the lexical entry assigned to it, *no/kes* applies to this state, picks out of it a randomly chosen thematic role, and yields a predicate of entities that bear this role as the meaning of the complex NP. The definite Determiner can then apply to this predicate and outputs the maximal sum of entities within it as the meaning of the complex DP.

I will now illustrate in detail how Kim's analysis works, by using the Korean example in (17) (= her (2)), to which she assigns the surface structure in (18) (= her (38)) and the LF representation in (19) (= her (39)).

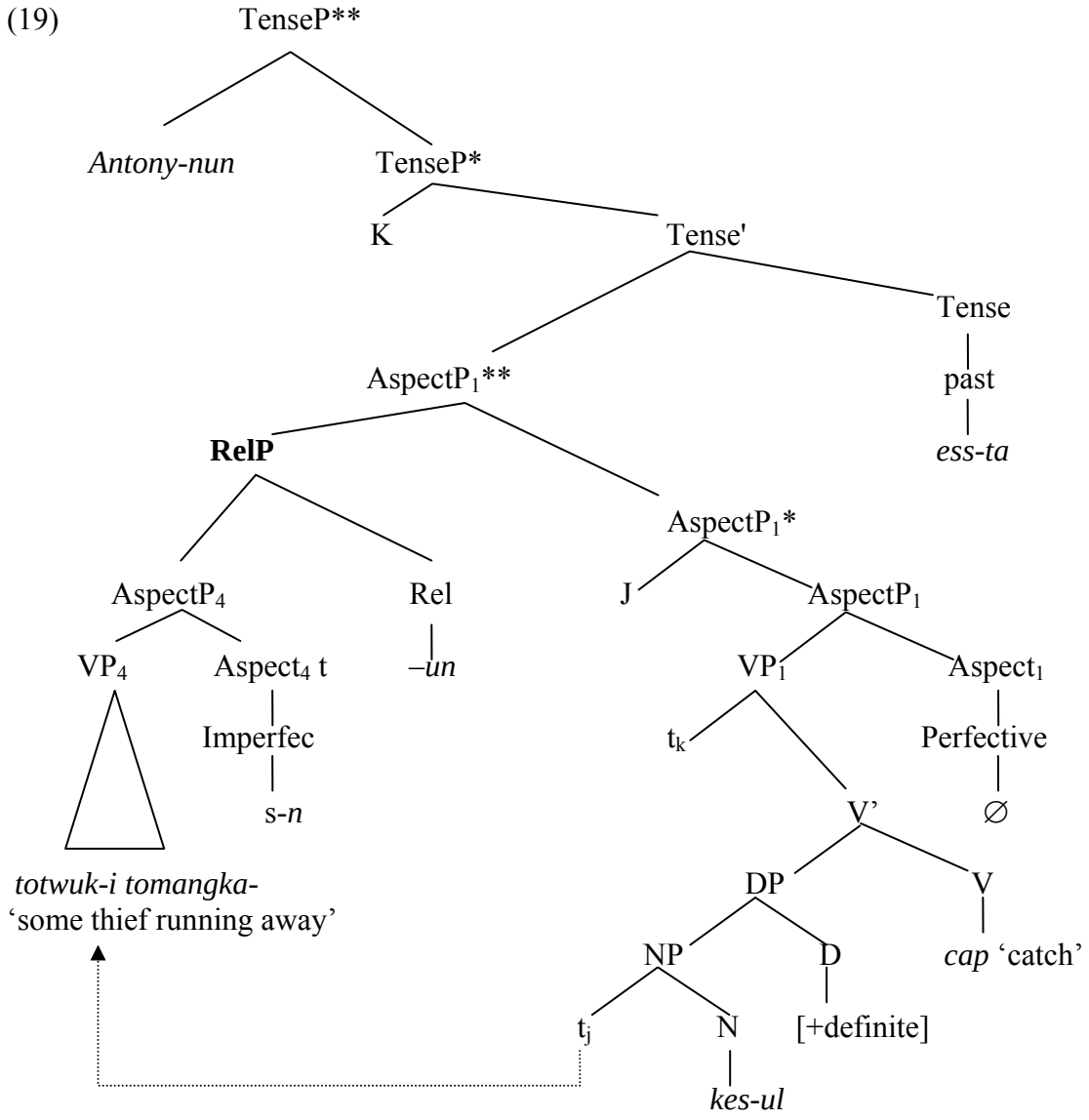
(17) Antony-nun [$_{CP}$ **titwuk**-i tomangka-n-un] kes-ul cap-assta.
Antony-Top [**thief**-Nom run.away-Imprf-Rel] kes-Acc caught-Past
'A thief was running away and Antony caught him (=the thief).'

(18)



'some thief running away'

(19)



As can be seen in (18), the relative CP, which Kim labels RelP, consists of a complementizer and an AspectP, which in turn consists of the Aspect head and a VP, the latter containing a verb and its thematic argument; in accordance with what was said earlier, there is a Tense(P) only in the matrix, and none within the relative. The types of Aspect found in the relative and in the matrix are Imperfective and Perfective

respectively, and the lexical entries Kim assigns to them are as shown in (20a) and (20b) (= Kim's (43) and (49) respectively, with minor adaptations[7]).

(20) a. $[\![\text{Imprf}]\!] = \lambda Q_{,<\mathbf{l},\mathbf{t}>}.\lambda \mathbf{s}_{\mathbf{s}}.\lambda t_i.\exists e[Q(e) \,\&\, \text{In-progress}(s, e) \,\&\, t_i \subseteq \tau(s)]$

b. $[\![\text{Prfv}]\!] = \lambda Q_{,<\mathbf{l},\mathbf{t}>}.\lambda t_i.\exists e[Q(e) \,\&\, \tau(e) \subseteq t_i]$

where **l**, **t** and **s** are the types of events, truth values and states respectively,

s, t_i and e are variables over states, times, and events respectively, and

τ stands for 'runtime'.

In (18), application of the imperfective element *–n* to the set of events denoted by its VP sister yields (21) as the denotation of AspP.

(21) $\lambda \mathbf{s}_{\mathbf{s}}.\lambda t_i.\exists e \exists x[\text{run-away}(e) \,\&\, \text{Agent}(x)(e) \,\&\, \text{thief}(x) \,\&\, \text{In-progress}(s, e) \,\&\, t_i \subseteq \tau(s)]$

The temporal relation expressed by the imperfective and the thematic roles within the state induced by it are defined by the axioms in (22a) and (22b) (= Kim's (44) and (45) respectively). These axioms ensure that the in-progress state exists throughout the duration of the running event and that the thief participates as Agent in this state.

[7] As an anonymous reviewer observed, Kim sometimes uses certain symbols with ambiguous import, i.e., to denote either logical types or variables. For example, "s" stands both for state variables and for the type of states, a potentially confusing situation, which is compounded by the fact that this symbol has also been used in the literature to denote the type of worlds. To keep at least types and variables apart, the reviewer suggested using boldface for types, and this suggestion has been adopted.

(22) a. $\forall s.\forall e.$ [In-progress (s, e) $\rightarrow \tau(s) = \tau(e)$]

(An event and its in-progress state are *contemporaneous*)

b. $\forall s.\forall e.$ [In-progress (s, e) $\rightarrow \forall R$ [theta-role(R) $\rightarrow \forall x$ [R(x)(s) $\leftrightarrow$ R(x)(e)]]]

(An event and its in-progress state have *identical* thematic roles,

with *identical* values)

Next, the relative complementizer is assigned the translation in (23a), which by application to Aspect P (abbreviated as α), yields (23b) as the translation of RelP.

(23) a. $[[un/\varnothing]] = \lambda K_{<\mathbf{s},<\mathbf{i},\mathbf{t}>>}\lambda L_{<\mathbf{s},<\mathbf{i},\mathbf{t}>>}\lambda t_i\ \exists s[K(s)(t_i) \,\&\, L(s)(t_i)]$

b. $[[un(\alpha)]] = \lambda L_{<\mathbf{s},<\mathbf{i},\mathbf{t}>>}\lambda t_i\ \exists s[\alpha(s)(t_i) \,\&\, L(s)(t_i)]$

where **s**, **i** and **t** are the types of states, times and truth values respectively,

and s and t_i are variables over states and times respectively.

At this point, if RelP is not raised, it needs to combine with *kes*, to which Kim assigns the denotation in (24), of type <**s**, <**e**, **t**>>.

(24) $[[no/kes_{R,P}]]^g = \lambda s_{\mathbf{s}}.\lambda x_{\mathbf{e}}[g(R)(x)(s) \,\&\, g(P)(x)$

where *s,x,R,P* are variables over states, individuals, thematic roles and properties respectively, and g is an assignment function.

As can be seen, this is the wrong type for application of (23b), whose first argument needs to be of type <**s**, <**i**, **t**>>. The problem is solved in the following way: RelP raises (covertly) and adjoins to the matrix AspectP. The node $AspectP_1$ in (19), which is created by application of the perfective Aspect (of type <<**l**, **t**>, <**i**, **t**>>) to VP, is of

type <**i**, **t**>. Raising of RelP creates the index node J under the raised position (see Heim and Kratzer 1998), and this state of affairs triggers abstraction over the trace of RelP, which, as noted earlier, is of the type of states. Abstraction ensures that the node AspectP$_1$* is of type <**s**, <**i**, **t**>>, and that the raised RelP can apply to it. The node AspectP$_1$** is of type <**i**, **t**>, and the node Tense, which is assigned the type <<**i**, **t**>, **t**>, can apply to it, yielding a truth value. This operation ensures that the time variable inside the relative clause gets bound by the same tense operator that binds the time variable within the matrix, *thereby accounting for point (ii) of section 2 (the temporal intersection effect).*

Point (i) of section 2 is accounted for in the following way: By virtue of the application of RelP to AspectP$_1$*, the trace of RelP, which is interpreted as a state variable, is identified with the state described by the relative clause. This state becomes the input to *–no/kes* (defined as in (24)), and their mother node NP gets interpreted as a set of entities that play a (freely chosen) thematic role in the state at issue. The P variable denotes a "salient" property, a notion Kim appeals to in order to allow situations in which the IH is elliptical, but its content is derivable from the sentential predicate.

The entire sentence in (17) gets translated as in (25) (= Kim's (51), with inconsequential adaptations).

(25) $\exists t_i[t_i < \text{now} \ \& \ \exists s[\exists e[\exists x[\text{run.away}(e) \ \& \ \text{Agent}(x)(e) \ \& \ \text{thief}(x) \ \&$
$\text{In-progress}(s,e) \ \& \ t_i \subseteq \tau(s)] \ \& \ \exists e'[\text{catch}(e') \ \& \ \text{Agent}(\text{Antony})(e') \ \&$
$\mathbf{\text{Theme}(\sigma x[g(R)(x)(s) \ \& \ g(P)(x)])(e')} \ \& \ \tau(e) \subseteq t_i]]]$

4 Critical Evaluation of Kim's Analysis of IHRs

As noted in section 2, Kim makes a valuable contribution to our understanding of the IHRs of Japanese/Korean by proposing to characterize one aspect of the Relevancy Condition in terms of the temporal intersection of eventualities, and especially by drawing attention to the fact that in order to capture the intuitively correct restriction, it is necessary to view the relevant relative-internal eventuality as a state induced by an event, rather than simply the event denoted by VP (see discussion of example (2) in section 2). However, the particular way in which she proposes to introduce the relative-internal state does not work in general, as will be seen in what follows. More generally, Kim's approach to the IHRs of Japanese (and possibly Korean) exhibits serious flaws of design, and is empirically inadequate in a number of ways, as well as open to a number of conceptual objections. I address these two points in reverse order.

A first conceptual objection is one that generally applies to analyses of IHRs that appeal to the E-type label (see section 1). Despite its numerous innovations, Kim's analysis is not fundamentally different in spirit from Shimoyama's, with which it shares the view that the IHR is construed as an E-type anaphor, with the IH serving as antecedent. Note that for Shimoyama, the anaphor (which consists of a null N and *no,* the latter interpreted as a definiteness operator) seeks an antecedent within the relative clause, which undergoes raising at LF and gets interpreted as a *proposition* (its trace being left uninterpreted). For Kim, the E-type anaphor (which, as was seen earlier, consists of *no/kes* interpreted as an N and a null definiteness operator), seeks an antecedent within the trace of the relative clause, which denotes an *eventuality*. In both cases, the search for an antecedent of the E-type anaphor is conducted within *a "closed sentence"* (much as in discourse anaphora). As noted in section 1, analyses of

relative clause constructions that rely on the E-type strategy enrich universal grammar and make it harder to analytically integrate definite IHRs into the class of definite relative constructions, whose other members have relative clauses that are widely viewed as denoting a (singleton) predicate of entities.

Conceptual objections specific to Kim's analysis center upon the fact that it relies on an arbitrary assumption, as well as on complex and non-standard translations of the relative complementizer and of CP's nominal sister (i.e., *kes/no*). The arbitrary assumption is that the relative clause of an IHR, in contrast to that of an EHR, includes no TenseP, even though no independent (morphological) evidence is available, as Kim herself admits (see her remarks on p. 299, and her footnote 18). As for the relative complementizer and the N-sister of CP, such items are usually construed (in non-appositive relatives in general and in definite relatives like (1b) in particular) as, respectively, the identity function on propositions and a predicate that intersects with CP (possibly vacuously). More seriously than their conceptually unattractive status, these various assumptions will be shown to be empirically incorrect as well.

However, before turning to the empirical defects of Kim's analysis, I wish to note that the idea of seeking a formal analytical unification of the choice of an IH with the temporal intersection requirement, while elegant and *prima facie* attractive, may be on the wrong track with respect to definite IHRs in general, because these two effects seem not to occur together in every language that has definite IHRs. In particular, it seems that the temporal intersection requirement is absent from the definite IHRs of Cuzco Quechua. Hastings (2004, Chapters 2 and 3) shows that the IHRs of Cuzco Quechua whose IHs include the item *pisi* 'a little' are necessarily definite, as illustrated in (26) (= Hasting's (2.31) with inessential adaptations). Now,

Rachel Hastings (p.c.) has kindly informed me that the data in (27)–(28), which clearly violate the temporal intersection requirement (cf. with (9b)), are accepted as perfectly natural by her consultants. Thus, should it turn out that the choice of an IH is subject in Cuzco Quechua to restrictions comparable to those found in Japanese/Korean, the analysis of these restrictions proposed by Kim for the latter two languages will not obviously extend to the IHRs of the former. In contrast, the alternative approach I develop in the next two sections will be seen to yield a neat way of capturing both the similarities and the differences between the definite IHRs of these two types of language.

(26) [Asunta-q **pisi aqha** aqha-sqa-n]-ta
Asunta-Gen a-little cornbeer make-cornbeer.NM.3Sg.Acc
apa-ra-ni.
brin.Past.1Sg
'Asunta made a little cornbeer and I brought it (= all the cornbeer she made).'
NOT: 'I brought a little cornbeer that Asunta made' (not necessarily all of it).

(27) Asunta-q pisi aqha kunan ukya-sqa-n]-ta
Asunta-Gen a-little cornbeer now/today drink-NM-3sg-Acc
q'ayna 'unchay t'impuchi-ra-ni.
yesterday boil-CAUSE-Past-1sg
'Asunta drank a little cornbeer today, and I (had) boiled it
(= all the cornbeer she drank today) yesterday.'

(28) Maria-q **pisi papa** kunan p'unchay mihu-sqa-n]-ta,
Maria-Gen a-little potato today eat-NM-3sg-Acc,

(nuqa) q'ayna 'unchay wayk'u-ra-ni.

(I) yesterday cook-Past-1sg

'Maria ate a little potato today, and I cooked it yesterday (it = the entire amount of potato(es) she ate today).'

We now finally turn to the empirical defects of Kim's analysis of Japanese IHRs.[8] There are at least three major problems with its design: (A) it identifies the state in which an IH is to be sought and which needs to intersect temporally with the matrix with a state described by the highest (or only) clause within the relative clause; (B) it assumes that the relevant state is necessarily introduced by Aspect; (C) it assumes that the topic time with respect to which this state is interpreted is necessarily provided by the matrix clause, a state of affairs it proposes to capture by assuming that the relative clause has no Tense(P) of its own. I will now show that (A)–(C) are all untenable.

Concerning (A), earlier literature has established that in syntactically complex IHRs, the IH may be embedded *at an arbitrary depth*; supporting data may be found in, e.g., Watanabe (1992, 2003), Hoshi (1995) and Kuroda (1999). Illustrations are provided in (29)–(30). (29a) and (30a–b) are, respectively, (39a) and (41a–b) in Watanabe (2003); (29b) and (30c) were kindly provided by Akira Watanabe and Yusuke Imanishi respectively (p.c.).

[8] While the earlier literature has detected no significant differences between the properties of Japanese and Korean IHRs, I have not investigated the applicability of either my critique of Kim or my alternative proposals to the facts of Korean, and I thus make no firm claims about them at this stage. I hope to be able to check my analysis against the facts of Korean at some future time.

(29) a. Mary-ga [John-ga [zibun-no gakusei-ga **juuyouna kasetsu-o**
Mary-Nom John-Nom self-Gen student-Nom important hypothesis-Acc
teian-shi-ta to] jimanshite-ita-no]-no kekkan-o shiteki-shi-ta.
propose-do-Past Czer boasted-had- no-Gen defect-Acc point.out-do-Past
'[John had boasted [that his student proposed **an important hypothesis**]]
and Mary pointed out a defect in **it**.'

b. [[[Zibun-no gakusei-ga juuyouna kasetsu-o
self-Gen student-Nom important hypothesis-Acc
teian-shi-ta to] John-ga jimanshite-iru to] minna-ga
propose-do-Past C John-Nom boasting-Prog C everyone-Nom
itte-ita-no]-no kekkan-o Mary-ga shiteki-shi-ta.
say-had-C-Gen defect-Acc Mary-nom point.out-do-Past
'[Everyone had said [that John was boasting [that his student proposed
an important hypothesis]]] and Mary pointed out a defect in **it**.'

(30) a. [[Mary-ga itsu **ronbun**-o shiageru-ka] John-ga Tom-ni
Mary-Nom when paper-Acc finish-Q John-Nom Tom-Dat
tazunete-ita]-no-ga shuppan-sareta.
asked-had-no-Nom publish-pass
'[[John had asked Tom [when Mary would finish **a (certain) paper**]] and
that paper was published.'

b. [[Mary-ga itsu **ronbun**-o shiageru-ka] John-ga Tom-ni
Mary-Nom when paper-Acc finish-Q John-Nom Tom-Dat
tazunete-ita]-no-no shuppan-ga okureta.
asked-had-no-Gen publication-Nom was delayed
'[[John had asked Tom [when Mary would finish **a (certain) paper**]] and

the publication of that paper was delayed.'

c. [[Mary-ga itsu **ronbun**-o shiageru-ka] John-ga Tom-ni
Mary-Nom when paper-Acc finish-Q John-Nom Tom-Dat
tazunete-ita]-no-ga mada owa-tte-i-nai
asked-had-no-Nom yet finish-has-not
'[[John had asked Tom [when Mary would finish **a (certain) paper**]] and
that paper has not yet been completed.'

Since Kim's approach focuses exclusively on a state associated with the highest clause of the relative clause, it has no analysis for such data, either with respect to the choice of the IH or with respect to the temporal intersection requirement; furthermore, it has no way of accounting for the contrast between acceptable data with 'unbounded dependencies' such as (29)–(30) and deviant data like (10a) and (11a), which violate island constraints. To demonstrate conclusively that the highest clause of the relative does not *need to* intersect temporally with the IHR's matrix, more precisely, that the runtime of the state described by the highest clause of the relative does not need to include the topic time of the IHR's matrix, I offer the example in (31), (kindly provided by Akira Watanabe, p.c.). Observe that the time at which Mary pointed out a defect in the hypothesis *precedes* the runtime of John's boasting (as made crystal clear by the adverb *sude-ni* 'already'), so that there is no temporal intersection of the kind viewed as necessary by Kim.

(31) Mary-ga [John-ga [zibun-no gakusei-ga **juuyouna kasetsu-o**
Mary-Nom John-Nom self-Gen student-Nom important hypothesis-Acc

teianshita to] ima sakan-ni jimanshite-iru-no]-no kekkan-o sude-ni
proposed Czer now vocally boast-Prog-no-Gen defect-Acc already
shitekishite-ita.
pointed-out-have
'[John is now vocally boasting [that his student proposed **an important hypothesis**]] and Mary had already pointed out a defect in **it**.'

Concerning (B), recall that Kim proposes to analyze the perfective as inducing no state. This decision makes good sense as far as the literal *meaning* of the perfective is concerned, which, according to Kratzer (1998), is that the runtime of the event is included in the topic time, so that the event is presented as a "closed affair" following the topic time. However, the conclusion that Kim derives from this characterization of the perfective, namely, "that the embedded clause of an IHRC can contain the perfect, but not the perfective" (p. 305) is incorrect. This can be appreciated by examining the acceptable example (9a), in which the verb of the relative is in the simple past tense, which is typically viewed as implying perfective Aspect. Does this imply that the temporal intersection requirement does not need to apply when the verb of the relative has perfective Aspect? By no means! While the state brought about by an event may not be part of the *meaning* of the perfective, it makes no sense to assume that an event presented as terminated within the topic time cannot result in a state that lasts for an arbitrary length of time after the topic time. In (9a), if the cat came in from the kitchen window and the event is thereby terminated, it makes no sense to assume that after having done so, the cat is necessarily no longer (in the state of being) in the kitchen; but if such a state exists, it can satisfy the requirement by intersecting with the event

of stealing a fish and running away. What this means is that a state can be *pragmatically inferred*, even if it is not part of the *lexical semantics* of Aspect.

The point just made can be demonstrated more dramatically, and in a way which removes any conceivable doubt, by the following slightly modified version of (2) (kindly provided by Akira Watanabe).

(2') Taro-wa [$_{DP}$[$_{CP}$Yoko-ga **asa** reezooko-ni kukkii-o hotondo
Taro-Top Yoko-Nom **morning** refrigerator-Loc cookie-Acc most
irete-oita]-no]-o **yuugata** paatii-ni motte itta.
put-aux-no-Acc **evening** party-to brought
'Yoko put most cookies in the refrigerator **in the morning** and Taro brought them to the party **in the evening**.'

In (2'), the distinct (boldfaced) temporal adverbs in the two clauses show conclusively that the relative and its matrix may have distinct topic times, and also remove any motivation for assuming that the relative has no Tense(P) of its own.

Finally, the conclusion I have just urged is also supported by some of Kim's very examples, which she interprets (and glosses) incorrectly (Akira Watanabe p.c.). Thus, consider (32a–b), which are exact reproductions of Kim's (25) and (8) (boldfacing mine).

(32) a.*Yamada-san-wa [[otonari-no musukosan-ga kawaii onna-to
Yamada-Hon.Top next.door-Gen son-Nom pretty woman-with
kekkon-*si*-***ta***]-no]-o tyoonai-no huzinkai-ni
marriage-do-**Perf**-no-Acc neighbourhood-Gen women's club-Dat

kanyuusiyootosita.

tried to talk into joining

'The next door neighbor's son **had** got married to *a pretty woman*$_i$ and Ms. Yamada tried to talk *her*$_i$ into joining the women's club in the neighborhood.'

b. Yamada-san-wa [[otonari-no musukosan-ga wakai oyomesan-to
Yamada-Hon.Top next.door-Gen son-Nom young bride-with
morat-**ta**]-no]-o tyoonai-no huzinkai-ni
get-(**Perf**[9]**)**-no-Acc neighbourhood-Gen women's club-Dat
kanyuusiyootosita.
tried to talk into joining

'The next door neighbor's son got *a young bride*$_i$ and Ms. Yamada tried to talk *her*$_i$ into joining the women's club in the neighborhood.'

Kim glosses the boldfaced *–ta* suffixes in (32a-b) as denoting perfect Aspect, but as already noted, these are *simple past* markers. Furthermore, the asterisk on (32a) was unanimously contested by my three consultants (Akira Watanabe, Junya Nomura, Yusuke Imanishi), who found this example acceptable, and not perceptively worse than (32b). In claiming that (32a) contrasts in acceptability with (32b), Kim proposed to account for this alleged contrast by viewing the Aspect in the former as "perfect with a resultant state," and that in the latter, as "perfect with a target state." According to her axioms regarding thematic roles (see her (48)), both types of perfect induce a state with a single participant playing the Theme role, but this Theme is required to be the Agent of the corresponding event in the former case, and the Theme of the

[9] Kim does not provide this gloss in her (8), but explicitly assigns perfect status to the verbal compound on p. 293, last paragraph.

corresponding event in the latter case. The alleged deviance of (32a) is attributed to the fact that the IH purports to be the Theme of the event, even though the state is of the resultant variety. This argumentation is, however, untenable, both because there is no justification for assuming perfect Aspect in either of the two examples, and also because the alleged contrast appears not to exist (at least, according to my three consultants). Rather, we need to assume perfective Aspect in both examples, and correlatively, a resulting pragmatically inferred state in which the neighbor's son and the pretty woman/young bride are married to each other. This state intersects temporally with Ms. Yamada's attempt to get the young woman to join the local women's club.

The fact that (9a), (32a) and (32b) have past tense with perfective Aspect also has implications for point (C) above. Thus, it can no longer be maintained that the relative clause can contain no Tense(P), and correlatively, that it can have no topic time of its own. Rather, the only reasonable view of these examples is that both the relative and the matrix have their own Tense and topic time, and that the temporal intersection requirement is satisfied thanks to a state pragmatically inferred from the event described by the relative clause.

The conclusions reached with respect to points (B) and (C) are also supported, with an interesting twist, by (33) (= Kim's (26)) , which—as Akira Watanabe pointed out to me—is marred by a decidedly incorrect construal of the boldfaced suffix.

(33) Yamada-san-wa [[otonari-no musukosan-ga kawaii onna-to
Yamada-Hon.Top next.door-Gen son-Nom pretty woman-with
kekkon-***suru***]-∅ no]-o tyoonai-no huzinkai-ni
marriage-do.**Pro**g]-rel no-Acc neighbourhood-Gen women's club-Dat

kanyuusiyootosita.

tried to talk into joining

'The next door neighbor's son **was having** a wedding ceremony with *a pretty woman*$_i$ and Ms Yamada tried to talk *her*$_i$ into joining the women's club in the neighborhood.'

Thus, contrary to what Kim asserts, *–suru* is not interpreted as progressive, but rather as non-past Tense with a "planned" future import, comparable to the future construal of the (superficially "progressive") English verbal complex in, e.g., *he is getting married next month*. A slightly modified version of (33), in which a future adverb has been added to dissipate any doubt concerning future interpretation, is provided in (34) (with a corrected gloss and paraphrase). Furthermore, a variant of (34), which has the same IHR, but a different matrix, is provided in (35).

(34) Yamada-san-wa [[otonari-no musukosan-ga **raigetsu** no]-o

Yamana-Hon-Top next.door-Gen son-Nom **next.month** no-Acc

kawaii onna-no-hito[10]**-**to kekkon-*suru*]-∅

pretty woman-**Gen-person-with** marriage-do.**nonpast**]-Rel

tyoonai-no huzinkai-ni kanyuusiyootosi-ta.

neighbourhood-Gen women's club-Dat tried to talk into joining

[10] The addition of *hito* is necessary, according to A. Watanabe, in order to avoid the implication that the neighbor's son got married to, e.g., a bitch. This addendum is also required in (32), for the same reason.

'The next door neighbor's son **is getting married** to *a pretty woman*$_{i}$ **next month** and Ms. Yamada tried to talk *her*$_{i}$ into joining the women's club in the neighborhood.'

(35) Yamada-san-wa [[otonari-no musukosan-ga **raigetsu**
Yamana-Hon-Top next.door-Gen son-Nom **next.month**
kawaii onna-no-hito-to kekkon-*suru*]-∅ no]-o
pretty woman-**Gen-person-with** marriage-do.**nonpast**]-Rel no-Acc
[shiki-ga owatte-kara] tyoonai-no huzinkai-ni
ceremony-Nom be.over-from neighbourhood-Gen women's club-Dat
kanyuusuru tsumori-da.
talk into joining intention-Cop
and Ms. Yamada intends to talk *her*$_{i}$ into joining the women's club in the neighborhood after the wedding ceremony is over.'

Given the future adverb, it seems beyond doubt that the relative clause in (34)–(35) has its own topic time, and one may thus assume that it also has (future) Tense. The Aspect is, as far as I can see, perfective, with the marriage event included in the topic time defined by *raigetsu* 'next month.' Just as in (9a) and (32a–b), there is a pragmatically derivable post-event state, which satisfies the temporal intersection requirement in (35).

Of special interest is (34), which refutes another generalization put forward by Kim, namely, that "in the case of sentences instantiating the IHRC construction, the event time of the embedded clause invariably precedes the topic time, namely, the time of the embedding clause" (p. 305). Since the event time of the embedded clause (i.e., the relative) is future relative to time of speech, and the time of the embedding

clause (i.e., the matrix) is past relative to the time of speech, we have a clear-cut counterexample to Kim's generalization. What remains to be explained is how the temporal intersection requirement is satisfied (since the sentence is felicitous). Clearly, the state associated with the relative clause cannot be the one that follows the marriage event. Rather, it must be the one that corresponds to the planning stage, when the young woman is (in the state of being) a prospective bride, and only this state can intersect temporally with Ms. Yamada's attempt to get her to join the club. In sum, in both (34) and (35), the relevant state associated with the relative is not one formally induced by Aspect (at least, according to Kim's definitions).

This concludes our critical examination of Kim's proposals. I submit it is by now clear that her account is fundamentally flawed and in need of radical overhauling. In the ensuing two sections, I develop an alternative theory of definite IHRs, which retains from Kim's theory only the positive insight signaled at the beginning of this section (as well as a substantially and substantively modified adaptation of her entry for *no/kes*), and whose main objectives are: (I) To characterize a temporal intersection requirement that straightforwardly applies to both simplex and complex IHRs, (II) to provide a procedure for selecting an IH at an arbitrary depth of embedding, subject to island constraints, (III) to get rid of Kim's unnecessary enrichments of linguistic theory, (IV) to theoretically integrate definite IHRs into the larger class of definite relative constructions, and (V) at the same time to account for what may be descriptively called the "dual nature" of IHRs, i.e., the existence of both differences and similarities between definite IHRs and discourses with E-type anaphora. Points (I) and (II)–(V) are tackled in sections 5 and 6 respectively.

5 The Temporal Intersection Requirement

In addressing the temporal intersection requirement with respect to both simplex and complex IHRs, one assumption that needed no special comment in the former case needs to be made explicit in the latter case. Thus, in sentences with simplex IHRs, the relative-internal eventuality that needs to obey the requirement is automatically one associated with the clause that most immediately contains the IH, call it the "Minimal clause," since it is the only clause within the relative. In data with more deeply embedded IHs, however, there is also a distinct "Top clause," and possibly also an arbitrary number of "Intermediate clauses," all of which include the IH, and we need to consider which of these clauses have to "deliver" eventualities that must obey the requirement. We have already seen in connection with the bi-clausal IHR in (31) that the eventualities associated with the top clause do not have to obey the requirement. To the extent that this requirement concerns eventualities in which the entity defined by the IH plays a thematic role, however, the Minimal clause cannot fail to deliver an intersecting eventuality. At the same time, super-ordinate relative-internal clauses may certainly affect the overall coherence of the entire sentence, as well as the ability of the Minimal clause to satisfy the requirement, but in ways that are also found in minimally different coordinate sentences (with the relative serving as first conjunct and the matrix as second conjunct), so that such effects (of which we will see some below) are not specific to IHRs, and thus do not belong to the (temporal intersection ingredient of the) Relevancy Condition. In what follows, I will provide support for these assumptions.

One important factor that needs to be taken into account in data with complex IHRs is intensionality. In sentences with simplex IHRs, the worlds at which the

relative clause is defined are typically those at which the matrix is defined. This enabled Kim to disregard intensionality in her translations of the various types of Aspect, even though Kratzer (1998) had not done so (see Kim's footnote 19). In sentences like (29)–(31), however, the clause that most immediately contains the IH (henceforth: the Minimal clause) is automatically defined only at the worlds of the immediately super-ordinate clause, and may or may not be defined at the worlds of the IHR's matrix. To illustrate, consider (29a). The event such that John's student proposed an important hypothesis holds in the worlds of John's boasting, but the speaker (whose belief worlds are those of the IHR's matrix) is free to believe or disbelieve the content of the boast in whole or in part. This distinction between data with simplex IHRs and data like (29a) is brought out by the contrast in (36), where (36a) is self-contradictory, but (36b) is not.

(36) a.#[John-no gakusei-ga atarashii kasetsu-o teian-shi-ta-no]-wa
John-Gen student-Nom new hypothesis-Acc proposal-do-Past-C-Top
jitsu-wa teian-s-are-te-i-nakat-ta.
in.fact-Top proposal-do-Pass-te-have-Neg-Past
'#John's student proposed a new hypothesis, and/but that hypothesis was not in fact proposed.'

b. [John-ga [zibun-no gakusei-ga atarashii kasetsu-o
John-Nom self-Gen student-Nom new hypothesis-Acc
teian-shi-ta-to] jiman-shi-te-ita-no]-wa jitsu-wa
proposal-do-Past-C boast-do-te-had-C-Top in.fact-Top
teian-s-are-te-i-nakat-ta.
proposal-do-Pass-te-have-Neg-Past

'John had boasted that his student proposed a new hypothesis,
and/but that hypothesis was not in fact proposed.'

This contrast points to the conclusion that the acceptability of (29a) is traceable to the fact that the speaker exploits the option of assuming that a hypothesis *was* in fact proposed by John's student, and furthermore that this hypothesis was already (in a state of having been) proposed by him at the time when Mary pointed out a defect in it. The more general conclusion is that the intersection requirement concerns not just times, but worlds as well, since it is hard to see how a coherent interpretation might result if eventualities that could perhaps be argued to intersect temporally are defined at non-overlapping sets of worlds. To see this, consider a slightly modified version of (29a), paraphraseable as '#John (had) falsely claimed that his student proposed a new hypothesis, and Mary pointed out a defect in it', which is infelicitous, just like the English paraphrase just provided, because the speaker denies that the new hypothesis exists in his worlds and at the same makes an assertion that presupposes its existence in these worlds. In sum, the requirement we are after is both a modal and a temporal requirement; henceforth: the Modal-Temporal Intersection Requirement (MTIR).

The intensional issues raised by (29b) are not different in kind from those raised by (29a): the Minimal clause is automatically defined only at the worlds of the Intermediate clause, and the latter is in turn automatically defined only at the worlds of the Top clause. Nonetheless, it is possible to construe this example in such a way that the sets of worlds and times at which the state in which the hypothesis found itself after being proposed intersect with the sets of worlds and times at which the matrix eventuality is defined, the outcome of each intersection being non-null. That is to say,

it is possible for the speaker to assume that a hypothesis was in a state of having been proposed at the time when Mary pointed out a defect in it.

The data in (30) are of additional interest, because they exhibit certain complexities not found in (29). Note that in all the sub-cases of (30), we find the same IHR, but different matrices. The Minimal clause is in each case an *intensional* interrogative (given the selection properties of the verb *ask*), and thus denotes a *set of propositions* whose truth values vary across worlds, and where the variation concerns the *time* at which the paper gets finished. The predicate 'finish' may be viewed as shorthand for 'finish writing/preparing', so that the VP of the minimal clause denotes a complex event consisting of an initial stage of preparation and a subsequent stage in which the preparation culminates. Each of these sub-events arguably induces a distinct state: the stage of preparation induces a contemporaneous in-progress state of undergoing preparation, and the culmination, a subsequent state of being completed. Either state can in principle satisfy the MTIR, as can be gathered by examining the various sub-cases of (30). In (30a), the relevant state is the one that follows completion (on the assumption that only completed papers get published). In (30c), it is the in-progress state of preparation. Finally, in (30b), either state can in principle satisfy the requirement, depending on whether the cause of the delay in publication was Mary's failure to finish the paper on time, or some other factor.

Having hopefully clarified the contribution of intensionality to the (in)felicity of data like (29)–(30), let us now consider the contribution of Tense and Aspect, starting our discussion with data with simplex IHRs. In section 4, we have already argued that Kim's assumption that the topic time is invariably provided by the matrix clause is untenable in general. What of situations in which the matrix clause does provide the topic time, or at least seems to provide one, such as (17)?

Before offering an answer to this question, I wish to note that even if we adopt Kim's general approach to such data, i.e., if we assume that the relative has no Tense(P) and that the topic time needs to be provided by matrix, we do not have to also adopt her complex technical machinery, which relies on raising the subordinate clause and adjoining it to the matrix AspP. Rather, we may simply assume that the temporal variable gets automatically bound *in situ* by the hierarchically closest suitable c-commanding operator. I note in this connection that Shimoyama (2006) argues convincingly that automatic binding in the way just described is responsible for certain relativized minimality effects (in the sense of Rizzi 1990) that arise in relation to the binding of Japanese indeterminate phrases by quantificational or interrogative operators, and this approach can generalize effortlessly to the data of relevance here. However, in view of the need to assume a Tense(P) in at least *some* IHRs, I see no point in retaining the *ad hoc* and unsupported assumption that Tense(P) may sometimes be missing in IHRs. In fact, I am not convinced that the topic time of the relative in (17) *must* be identical to the topic time of the matrix. The speaker of this sentence may have watched the thief running from, say, 9:24 a.m. to 9:26 a.m., and may have seen Anthony catching the thief at exactly 9:26. Under these circumstances, the topic time of the relative is the period from 9:24 to 9:26, which is not identical to the shorter topic time of the matrix, although both topic times are included in the runtime of the running event and of the induced in-progress state. I thus propose to assume that the distribution of Tense(P) is not more restricted in IHRs than anywhere else.

We may now proceed to a consideration of data with deeply embedded IHs, using (29a) for illustration. The verb of the IHR's matrix is in the simple past form, and thus may be viewed as having past Tense and perfective Aspect, the verb of the

Minimal clause is in the simple past form, and thus also has past Tense and perfective Aspect, and the verb of the Top clause exhibits the auxiliary *–ita*, which I propose to view as inducing either a "past perfect reading" or what one may call a "past anterior perfective reading." I note in this connection that the English so called past perfect form is in fact ambiguous in precisely the way just alluded to. Thus, in 'John had already climbed Mount Everest in 1990', we get a *perfect* reading, in the sense that the time of the climbing event precedes the topic time 1990, but in 'Mary told me yesterday that John had climbed Mount Everest in 1990', the climbing event is included in the topic time (i.e., last month), and the reading is thus *perfective*, the only difference between this example and a "simpler" one like 'John climbed Mount Everest in 1990' being that in the more complex example, the topic time is not just earlier than the time of speech, but also earlier than some other past time (in this case, yesterday). Returning to (29a), whichever of these two interpretations is assigned to the verb of the Top clause, it follows that the event described by this clause is earlier than the event described by the matrix. The Minimal clause, which has a verb in the simple past form, is simply specified as temporally prior to the time of speech (without indication that it is also prior to a distinct past event), but in the absence of indications to the contrary, it seems reasonable to assume that John boasted about something that had already happened. By transitivity, it may be deduced that the hypothesis was proposed prior to the time at which Mary expressed her criticism and thus existed at the time of the latter event. This is all that is needed for satisfaction of the temporal intersection requirement.

Comparable deductive reasoning will show that temporal (and modal) intersection of eventualities including the IH as a thematic participant is also satisfied

in the remaining sub-cases of (29)–(31), and spelling out the computation is left as an exercise to the reader.

Having illustrated the ways in which the MTIR may be satisfied in both simplex and complex IHRs, I propose to formulate it as follows:

(37) **The Modal-Temporal Intersection Requirement (MTIR)**

Some state derivable from the event described by the Minimal clause must be construable as defined at sets of worlds and times that intersect in non-null fashion with the sets of worlds and times at which the eventuality described by the IHR's matrix is defined.

I view the MTIR as an essentially pragmatic constraint external to the compositional semantic derivation of IHRs and limited in applicability to specific constructions in specific languages. In particular, I view it as applicable to the IHRs of Japanese and Korean but not necessarily to definite IHRs in general. This provides a neat way of distinguishing the definite IHRs of Japanese/Korean from those of Cuzco Quechua, which, as noted and illustrated in section 4, appear not to be subject to the MTIR.

Before concluding this section, I wish to address, for the sake of completeness, a point that was alluded to in section 2, namely, that relative-internal clauses super-ordinate to the Minimal clause may in principle affect overall coherence, even though they do not have to satisfy the MTIR themselves. An anonymous reviewer of an earlier version of this paper observed that the acceptability of the data in (29)–(30) is somewhat reduced if the verbal form *jimanshite-ita* in the Top clause is replaced with the simple Past form *jimanshita*, a judgment confirmed by Akira Watanabe, and suggested on this basis that the Top clause may need to be the one that satisfies

temporal intersection. We have already seen that this is not the case in general (see earlier discussion of (31)), but the reviewer's observation is interesting, since the use of the simple past in the Top clause does not in general reduce acceptability; in particular, this seems not to happen in certain data with simplex IHRs (see earlier discussion of (9a) and (32)). I conjecture that this distinction is due to the fact that when there are three distinct instances of the simplex past, the sequence of events may be insufficiently clear, with resulting odd inferences or implicatures. In particular, if the verb in the Top clause of (29a) is changed to the simple past, the result may suggest that Mary's critique was a direct reaction to the boast, and if the boast is furthermore assumed to be the source from which Mary first learned about the existence of the hypothesis, it may seem strange she was able to find the defect on the spot. When the verb has the *–ita* auxiliary, on the other hand, it is implied the boasting took place at a more remote time in the past, which is consistent with her having had sufficient time to study the hypothesis. That this suggestion is on the right track is suggested by the fact that the degradation caused by using the simple past in the Top clause of (29a) can, after all, be eliminated with the help of slight modifications in the IHR's matrix, shown in boldface in (29a') (kindly provided by Akira Watanabe).

(29a') Mary-**wa** [John-ga [zibun-no gakusei-ga juuyouna kasetsu-o
Mary-**Top** John-Nom self-Gen student-Nom important hypothesis-Acc
teian-shi-ta to] jimanshita-no]-no kekkan-o **tachidokoroni**
propose-do-Past Czer boasted-no-Gen defect-Acc **on.the.spot**
shiteki-shi-ta.
point.out-do-past

'[John boasted [that his student proposed an important hypothesis]] and Mary **instantly** pointed out a defect in it.'

As Watanabe observes, the addition of the adverb *tachidokoroni* 'on the spot' and the topicalization of the main clause subject have the overall effect of turning this sentence into a statement about how smart Mary is/was, with resulting full acceptability.

Of interest in this connection is also the example in (31), which uses the auxiliary *ita* in the main clause. Watanabe observes that this sentence becomes unacceptable if the main clause verb is put in the simple past form *shitekishita*, but this is due to a clash with the adverb *sudeni* already. Thus, if this adverb is suppressed and the simple past form is used, the result is acceptable, but the meaning is changed, in the sense that the time of the event of pointing out the defect is understood to be included in the runtime of the boasting event and located between the beginning of the boasting event and the moment of speech. The function of the auxiliary *–ita* is thus to license the interpretation that places the time of Mary's criticism prior to the beginning of the boasting event.

In summary, whatever contribution to coherence or interpretation may be made by a Top clause distinct from the Minimal clause, there are no grounds for assuming that the former needs to satisfy the MTIR.

As a parting shot, I wish to note in passing a certain family resemblance between the MTIR and a constraint detectable in another kind of relative clause construction, which is illustrated in (38), and was studied in detail in Grosu and Krifka (2007).

(38) a. [The *gifted mathematician* that **Bill** supposedly is] should be able to solve this problem with little effort.

b. [The *brilliant mathematician* that **Bill** might become some day] will hopefully be able to prove or disprove the Riemann Hypothesis.

These authors observed that such constructions are felicitous just in case the sets of modal and temporal indices at which the italicized property is predicated of the boldfaced subject are construable as intersecting with the corresponding sets of indices at which the matrix is evaluated (see their paper for supporting evidence). Of interest is the fact that in this case, too, it is sometimes necessary to invoke states (pragmatically) induced by events. Thus, in (38b), the strict lexical semantics of *become* describes a process that is completed when a change of state has taken place, but (38b) is perceived as felicitous even in situations where Bill does not prove or disprove the Riemann Hypothesis the very moment he has become a brilliant mathematician. The obvious reason is that becoming such a mathematician brings about a state of being one, and this state is not normally assumed to cease as soon as it has come into existence.

6 The Compositional Analysis

Having addressed point (I) from the concluding paragraph of section 4, we now turn to points (II)–(V).

Concerning (II), I propose to achieve the selection of a suitable IH with introduction of an individual variable bearing the IH's thematic role by a procedure

that bears a certain family resemblance to Kim's translation of *kes/no*, but with the following crucial differences: (i) the function that randomly selects an IH will apply not to the trace of the relative CP, but rather to a VP within the relative, which thereby becomes the VP of the Minimal clause, and (ii) the individual variable is introduced by equation, rather than by predication, and abstraction over it is postponed until the level of the relative CP.

The function at issue is introduced as the translation of a null functional category, which I will call "Ch(oose) R(ole)," and which selects a VP as complement, forming a ChRP that serves as complement to Aspect. Its lexical entry is shown in (39).

(39) $[\![\text{ChR}]\!]^g = \lambda E \lambda e.E(e) \wedge (g(R))(e) = g(x_n)$

where E, e, R, and x_n are variables over sets of events, events, thematic roles, and individuals respectively, and g is an assignment function.[11]

The cost of assuming CR(P) is roughly the same as that of assigning Kim's non-standard translation to *kes/no*, and it has important welcome consequences, both empirical and conceptual; in particular, it paves the way towards achieving the goals indicated in (III)–(IV), as I now proceed to show.

[11] For simplicity, I have ignored the property P in (25). It can, of course, easily be added, if desired.

Observe also that (39) picks out an IH out of an event, not out of a state induced by it. This should cause no problems, since every participant in an induced state is also a participant in the event that induced it. Should there be situations in which the IH picked out by (39) is not a participant in any state derivable (semantically or pragmatically) from it, the outcome will be marked as infelicitous by the MTIR. Kim claims that such situations exist, but the examples she provides are not convincing (see earlier remarks on (32)).

First and foremost, it provides an analysis for data like (29)–(31), which Kim's approach was unable to provide (point (II)).

Second, in view of the twin facts that CR makes no use of the trace of CP and that raising CP was seen to be unnecessary for ensuring satisfaction of the MTIR, there is no argument left for assuming covert raising of CP, and the IHR can be interpreted *in situ*. Correlatively, it becomes unnecessary to assign a non-standard translation to the relative complementizer, which can be simply taken to denote the identity function on propositions, much as in other definite relative constructions, e.g., in (1b) (point (III)).

Third, it makes it possible to abstract over the individual variable at the relative CP level, thereby enabling it to emerge as a predicate of individuals (point IV). Furthermore, MAX may apply to the output of abstraction, much as in other definite relative constructions[12], thereby coercing definiteness in the CP-external Determiner by a procedure needed elsewhere, instead of introducing a special stipulation of definiteness for the Determiner, as Kim did (point (IV)).

[12] As alluded to in section 1, MAX seems to be an inherent, non-derivable property of CP in English-type free relatives and in correlatives and an arguably derivable property in other constructions (see, e.g., Grosu and Landman 1998, Grosu 2002, Grosu 2009 for suggestions concerning the construction in (1a)). In definite IHRs, MAX may be viewed as "coerced" by the fact that without it, some of the information achieved by equation within CP might be lost insofar as the denotation of the complex DP is concerned.

A referee of an earlier version of this paper asked what the role of MAX would be when the IH is a (singular) proper name. The answer is that MAX would vacuously apply in such cases, since equation with a unique individual already ensures singleton status for the abstract formed at the relative CP level.

Fourth, it becomes possible to assign to *kes/no* a standard interpretation, i.e., as a predicate of entities that intersects with CP (point (III)). Since this item makes no substantive contribution to the meaning of the IHR, it can be interpreted as a maximally underspecified predicate, i.e., $\lambda x.\ x = x$.

Fifth, the use of equation in (39) makes it possible to fulfill the goal in (V); I postpone demonstration of this point until further down in this section.

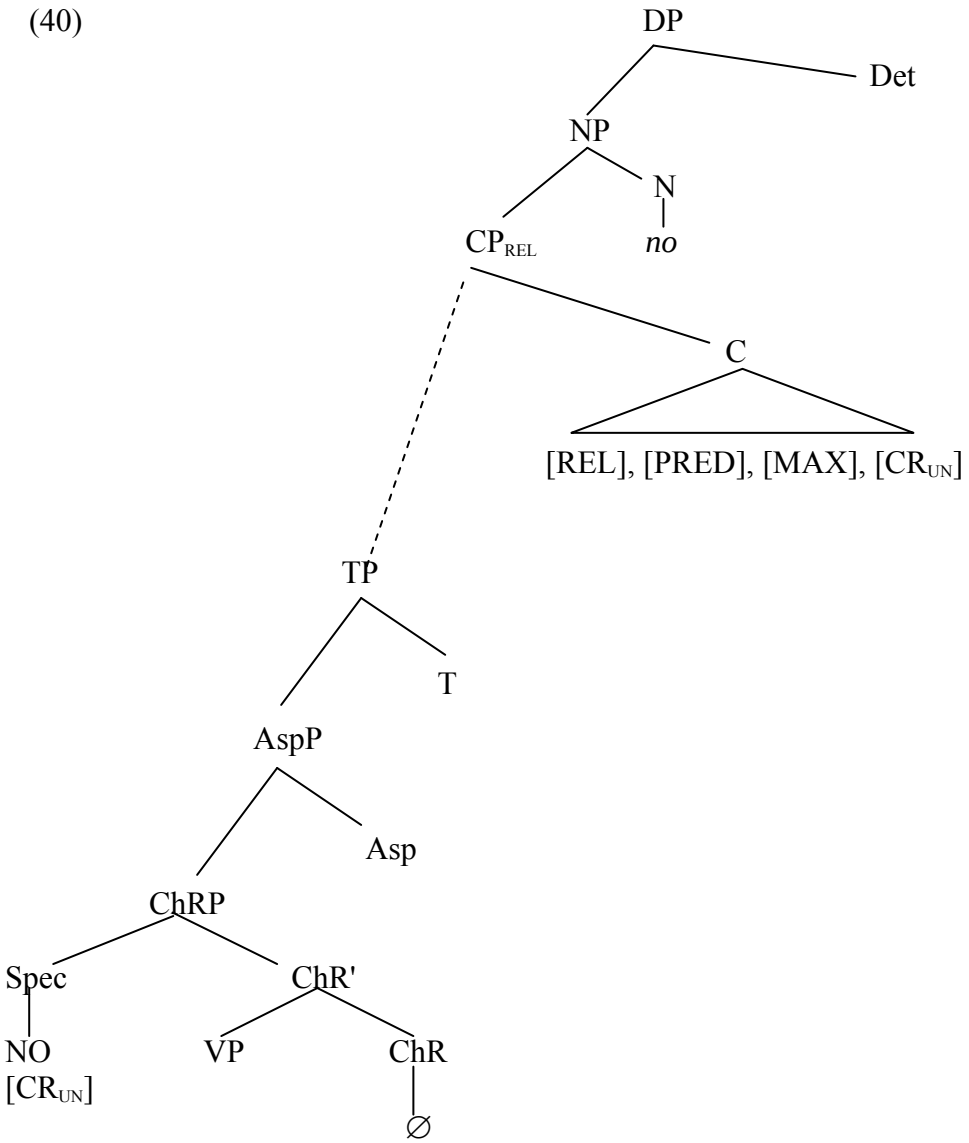
Having proposed to assume ChR(P), it is necessary to limit its distribution to definite IHRs, and furthermore to ensure that there is only one token of ChR(P) per IHR. I propose to achieve these goals in a way that also makes possible an account of island sensitivity. Specifically, I propose to assume that the typing features of the relative CP include, in addition to those features that are found in the CPs of all definite relative constructions, in particular, [REL], [PRED], and [MAX] (Grosu 2000, 2002, where [PRED] is a trigger for abstraction and [MAX] a trigger for maximalization), an uninterpretable feature (in the sense of Chomsky 1995), which may be called [ChR_{UN}]. Correlatively, I propose to assume that the category ChRP houses in its Spec a semantically vacuous null operator (NO) that also carries the feature [ChR_{UN}]. This state of affairs coerces the cyclic A-bar raising of the NO to the Spec of the relative clause, where the two tokens of the un-interpretable feature check each other. These assumptions ensure that converging derivations will result just in case exactly one token of ChR has been merged within a definite IHR (and nowhere else), and they also ensure that island constraints are respected[13].

The proposals so far made are schematically indicated in (40). In keeping with what was said in section 5, I indicate a Tense(P) in the Minimal clause. The dotted

[13]As the astute reader has undoubtedly noticed, the acceptability of the data in (30) show that Japanese IHRs are not sensitive to the *wh*-island constraint. I address this point further down in this section.

line suggests that any number of clauses (including none) may occur between the Minimal clause and CP_{REL}.

(40)



I will now illustrate the principal steps in the derivation of a sentence with a simplex IHR, using Shimoyama's example in (2). The verbal form of the relative, *irete-oita*, is glossed by Shimoyama as 'put-aux', and its counterpart in the English paraphrase she provides is the simple past form *put*. Akira Watanabe (p.c.) informs me that this auxiliary has no aspectual force; it simply indicates that the activity described by the main verb was done with some purpose in mind and thus increases the

coherence of the sentence by implicating that Yoko had not intended that the cookies be taken to the party. Watanabe further informs me that this auxiliary also suggests anteriority to some past event, and I will thus assume that the verbal complex is interpreted as anterior past Tense with perfective Aspect. I note in passing that this anteriority implication finds explicit expression in the fluent English translation provided by Shimoyama (2001, Chapter 3) for her example (5), which is the EHR counterpart of example (2) in this paper.[14]

The structure of the IHR that I assume serves as input to the semantics is (41).

(41) Taro-wa $[_{DP}[_{NP}[_{CP}[_{TP}[_{ASPP}[_{ChRP}$NO $[_{ChR'}$ $[_{VP}$Yoko-ga reezooko-ni **kukkii-o**

Taro-Top Yoko-Nom fridge-Loc **cookie-Acc**

hotondo irete[15]-oi] ∅]] ∅] –ta] ∅]-no]-∅]–o paatii-ni motte itta.

nearly-all put-Aux-ChR-prfv-Past-Czer-no-Det-Acc party-to brought

[14] The example just referred to is reproduced below. Observe that the verbal complex is translated by *had put*.

(i) Taro-wa $[_{DP}[_{CP}$Yoko-ga reezooko-ni ∅ irete-oita] **kukkii-o** **hotondo**]

Taro-Top Yoko-Nom refrigerator-Loc put-Aux **cookie-Acc** **nearly-all**

paatii-ni motte itta.

party-to brought

'Taro brought nearly all cookies that Yoko had put in the refrigerator to the party.'

[15] The main verb *irete* is morphologically decomposable into the root *ire* and the past suffix *–ta*, but since the latter is semantically redundant, I have ignored this morphological complexity in the semantic derivation.

'Yoko put nearly all the cookies in the fridge and Taro brought them to the party.'

The compositional interpretation of (41) starts with the VP, which receives the translation in (42). I note that Shimoyama glossed *hotondo* as 'most', but a reviewer pointed out that this is a mistranslation and that a more appropriate gloss is 'nearly all' or 'an overwhelming majority of'; following a suggestion of this reviewer's, I use the symbol "≫" with the intended import of 'far greater than.' The expression *kukkii-o hotondo* is thus assigned the semantics of 'overwhelmingly more than half of the (contextually assumed) cookies'; e is a variable over events, and ⊔ is the sum operator.

(42) $\lambda e.PUT(e) \wedge Ag(e)=Yoko \wedge *COOKIE\ (Th(e)) \wedge IN(e)=FRIDGE \wedge$

$|Th(e)| \gg |\sqcup(*COOKIE) - Th(e)|$

Application of (39) to (42) yields (43) as the meaning of ChR' (assuming that g selects Theme as the IH). (43) is also the meaning of ChRP, since the NO (or its trace) makes no contribution to meaning (i.e., it is simply the identity function on sets of events).

(43) $\lambda e.PUT(e) \wedge Ag(e)=Yoko \wedge *COOKIE\ (Th(e)) \wedge IN(e)=FRIDGE \wedge$

$|Th(e)| \gg |\sqcup(*COOKIE) - Th(e)| \wedge Th(e)=g(x_n)$

For the perfective Aspect, I assume Kim's entry in (20b) (reproduced as (44) for convenience). Application of (44) to (43) yields (45) as the denotation of AspP.

(44) $[\![\text{Prfv}]\!] = \lambda Q_{<\mathbf{l},\mathbf{t}>}.\lambda t_i.\exists e[Q(e) \,\&\, \tau(e) \subseteq t_i]$

where **l**, and **t** are the types of events and truth values respectively, t_i and e are variables over times and events respectively, and τ stands for 'runtime'.

(45) $\lambda t_i\ \exists e[\text{PUT}(e) \wedge \text{Ag}(e)=\text{Yoko} \wedge {}^*\text{COOKIE}(\text{Th}(e)) \wedge \text{IN}(e)=\text{FRIDGE} \wedge$

$|\text{Th}(e)| \gg |\sqcup({}^*\text{COOKIE}) - \text{Th}(e)| \wedge \text{Th}(e)=g(x_n) \,\&\, \tau(e) \subseteq t_i]$

The next step involves application to (45) of past anterior Tense, which I assume has the lexical entry in (46). The output of this application is (47).

(46) $[\![\text{T-Past-Ant}]\!] = \lambda T_i.\ \exists t_i\ [\exists t^*_i\ [T_i(t_i) \wedge t_i < t^*_i < \text{now}]]$

where T_i and t_i are variables over sets of times and times respectively.

(47) $\exists t_i[\exists t^*_i[t_i < t^*_i < \text{now} \wedge [\exists e[\text{PUT}(e) \wedge \text{Ag}(e)=\text{Yoko} \wedge {}^*\text{COOKIE}(\text{Th}(e)) \wedge$

$\text{IN}(e)=\text{FRIDGE} \wedge |\text{Th}(e)| \gg |\sqcup({}^*\text{COOKIE}) - \text{Th}(e)| \wedge \text{Th}(e)=g(x_n) \,\&\, \tau(e) \subseteq t_i]]]]$

We have now reached the level of the relative CP. Since C is construed as the identity function on propositions, C' is construed just like TP. At this stage, [PRED] and [MAX] on C trigger, respectively, abstraction over the free individual variable and maximalization of the output of abstraction. The relative CP thus comes to denote a singleton of individuals, just as in definite relative constructions of other kinds. As noted earlier, *no* may be viewed as a maximally underspecified noun (translatable as $\lambda x.x = x$), so that the complex NP comes to denote the same singleton predicate as CP.

The singleton status of the complex NP coerces the definite interpretation of the null Det, for reasons noted in section 1, and the translation of the entire complex DP emerges as shown in (48).

(48) $\sigma(\lambda x_n(\exists t_i[\exists t^*_i[t_i < t^*_i < \text{now} \wedge [\exists e[\text{PUT}(e) \wedge \text{Ag}(e)=\text{Yoko} \wedge *\text{COOKIE}(\text{Th}(e)) \wedge$

$\text{IN}(e)=\text{FRIDGE} \wedge |\text{Th}(e)| \gg |\sqcup(*\text{COOKIE})-\text{Th}(e)| \wedge \text{Th}(e)=x_n \;\&\; \tau(e) \subseteq t_i]]]]]))$

From here on, the derivation of (41) is straightforward, and I will not follow it step by step. For readability, let us represent (48) as "β." The matrix verb is in the simple past Tense with perfective Aspect, and assuming (49) as the entry for (non-anterior) past Tense, the entire sentence in (41) receives the interpretation in (50), which correctly captures its truth conditions.

(49) $[\![\text{T-Past}]\!] = \lambda T_i.\ \exists t_i\ [T_i(t_i) \wedge t_i < \text{now}]$

where T_i and t_i are variables over sets of times and times respectively.

(50) $\exists t_i'[t' < \text{now} \wedge \exists e'[\text{BRING}(e') \wedge \text{Ag}(e')=\text{Taro} \wedge \text{Th}(e')=\beta \wedge \text{TO}(e')=\text{PARTY}$

$\;\&\; \tau(e') \subseteq t'_i]]$

As can be seen by examining (48) and (50), there are two distinct past Tense operators in the relative and in the matrix, the former indicating anteriority to another past time. There is thus a reasonable interpretation that places the subordinate event before the matrix event, and since there is also a reasonable pragmatically derivable state of being in the fridge with the cookies as Theme and lasting until Taro takes them out, the MTIR is satisfied, and the sentence correctly emerges as felicitous.

This concludes our illustration of the compositional derivation of a sentence with a simplex IHR. We now turn to an augmented version of (41), shown in (51), in which a Top clause distinct from the Minimal clause has been added, so that the IH is more deeply embedded. The added material is boldfaced. The fluent English translation gives explicit expression to anteriority in relation to the verbal complex *irete-oita*, much as in Shimoyama's example of footnote 14.

(51) Taro$_i$-wa [$_{DP}$[$_{NP}$[$_{CP}$**[$_{TP}$[$_{AspP}$[$_{CP}$**[$_{TP}$Yoko-ga reezooko-ni kukkii-o hotondo
Taro-Top Yoko-Nom fridge-Loc cookie-Acc nearly-all
irete-oita]] **to] John-ga kare$_i$-ni it-ta]** ∅]-no]-o paatii-ni motte itta.
put-aux-Past Czer John-Nom he-Dat say-past-Czer-no-Acc party-to brought
'**John told him$_i$ that** Yoko had put nearly all the cookies in the fridge and Taro$_i$ brought them to the party.'

The derivation starts with the Minimal clause and proceeds in essentially the same way as before up to the level of TP, with one small difference, due to the need to take intensionality into account (see the discussion of this point in section 5). Thus, instead of (44), I will assume the slightly more complex entry in (52), with the result that the Minimal TP is translated as in (53), which is also the translation of the Minimal CP, since the complementizer *to* is simply the identity function on propositions. CP is now of a type fit to serve as Theme argument of *itta* 'said', and the TP of the Top clause receives the translation in (54).

(52) $[\![\text{Prfv}]\!] = \lambda Q_{,<\mathbf{I},\mathbf{t}>}.\lambda t_i.\lambda w.\exists e[Q(e)(w) \ \& \ \tau(e) \subseteq t_i]$

where **l**, and **t** are the types of events and truth values respectively, t_i, w and e are variables over times, worlds and events respectively, and τ stands for 'runtime'.

(53) $\exists t_i[\exists t^*_i[t_i < t^*_i < \text{now} \wedge [\exists w[\exists e[\text{PUT}(e)(w) \wedge \text{Ag}(e)=\text{Yoko} \wedge {}^*\text{COOKIE}(\text{Th}(e)) \wedge \text{IN}(e)=\text{FRIDGE} \wedge |\text{Th}(e)| \gg |\sqcup({}^*\text{COOKIE}) - \text{Th}(e)| \wedge \text{Th}(e)=g(x_n) \,\&\, \tau(e) \subseteq t_i]]]]]$

(54) $\exists t'_i[\ t'_i < \text{now} \wedge \exists e'[\text{TELL}(e') \wedge \text{Ag}(e') = \text{Wasaburo} \wedge \text{Goal}(e') = \text{Taro} \wedge \text{Th}(e') = \exists t_i[\exists t^*_i[t_i < t^*_i < \text{now} \wedge [\exists w[\exists e[\text{PUT}(e)(w) \wedge \text{Ag}(e)=\text{Yoko} \wedge {}^*\text{COOKIE}(\text{Th}(e)) \wedge \text{IN}(e)=\text{FRIDGE} \wedge |\text{Th}(e)| \gg |\sqcup({}^*\text{COOKIE}) - \text{Th}(e)| \wedge \text{Th}(e)=g(x_n) \,\&\, \tau(e) \subseteq t_i]]]]] \,\&\, \tau(e') \subseteq t'_i]]$

After this, the interpretation of the relative C, abstraction, maximalization, combination of CP with *no* and combination of the complex NP with the Determiner take place just as in the derivation of (41), and the complex DP receives the interpretation in (55). Abbreviating (55) to "α" for legibility, the sentence in (51) translates as in (56).

(55) $\sigma(\lambda x_n(\exists t'_i[\ t'_i < \text{now} \wedge \exists e'[\text{TELL}(e') \wedge \text{Ag}(e') = \text{Wasaburo} \wedge \text{Goal}(e'') = \text{Taro} \wedge \text{Th}(e') = \exists t_i[\exists t^*_i[t_i < t^*_i < \text{now} \wedge [\exists w[\exists e[\text{PUT}(e)(w) \wedge \text{Ag}(e)=\text{Yoko} \wedge {}^*\text{COOKIE}(\text{Th}(e)) \wedge \text{IN}(e)=\text{FRIDGE} \wedge |\text{Th}(e)| \gg |\sqcup({}^*\text{COOKIE}) - \text{Th}(e)| \wedge \text{Th}(e)=x_n \,\&\, \tau(e) \subseteq t_i]]]]] \,\&\, \tau(e') \subseteq t'_i]]))$

(56) $\exists t_i''[t'' < \text{now} \wedge \exists e''[\text{BRING}(e'') \wedge \text{Ag}(e'')=\text{Taro} \wedge \text{Th}(e'')= \alpha \wedge \text{TO}(e'')=\text{PARTY} \,\&\, \tau(e'') \subseteq t_{''i}]]$

Since it may be assumed that John truthfully told Taro that Yoko had earlier put nearly all the cookies in the fridge, and since it may also be assumed that the cookies remained in the fridge until Taro took them out in order to bring them to the party, (51) respects the MTIR, and is correctly marked as felicitous. Furthermore, the above derivation correctly captures its truth conditions. In sum, the approach I have proposed has dealt with equal ease with (41) and (51).

There are two remaining loose ends, which need to be taken care of before concluding this section.

The first point is (V) in the last paragraph of section 4. As noted in the conclusion to section 2, the data in (14)–(16) show that IHRs pattern with discourses, rather than with EHRs, with respect to the cancellable status of "exactly" construals. This state of affairs, while possibly *prima facie* surprising, is straightforwardly predicted by my proposed analysis. While definite EHRs exhibit a relative-internal gap, which is construable as a variable that gets ultimately bound by the EHR's definite operator, with the result that a numerical predicate is itself in the scope of this operator, definite IHRs exhibit a relative-internal full DP with its own binding operator, the variable that gets bound by the IHR's definite operator being an independent object related to the IH by equation. This configuration resembles the one found in discourse E-type anaphora in the sense that there, too, the antecedent is an object independent of the anaphor, with its own binding operator, and out of the scope of the definite operator in the anaphor. If so, it is to be expected that numerical implicatures associated with the element independent of the definite operator should have the defeasible status that they have in general. For discourse anaphora, this prediction was shown to be correct in earlier literature (see (12) and the paragraph that

precedes it). For equation, the prediction is confirmed by the incontrovertibly equational construction in (57), in the following context: assume that a scientist obtained a specific experimental result, and that in order to obtain a patent for it, the result needs to be successfully replicated at least three times. The experiment is repeated by a team of ten different researchers, who obtain confirmatory evidence in seven of the cases. Under these circumstances, the head of the team felicitously reports the outcome of his team's work by telling the scientist (57).

(57) Congratulations! Three results were identical to yours (in fact, seven were).

In conclusion, we have a straightforward explanation for the effects in (14)–(16). Importantly, however, this explanation in no way argues for reducing the grammatical relation of equation to the discourse relation of E-type anaphora.

The second loose point concerns the acceptability of the data in (30), which, as the astute reader may have already noticed, is inconsistent with the wh-island constraint. The topic of which islands hold of which constructions under which circumstances in Japanese has been an abundantly debated issue in both the syntactic and the semantic earlier literature (see, e.g., Watanabe 2003, 2004; Shimoyama 2006, and references therein), and having nothing new to add, I will confine myself to noting the view I find most reasonable. Watanabe (2003) points out that constituent-interrogation (i.e., *wh*-in-situ) and comparative formation exhibit sensitivity to the *wh*-island constraint, and that PP-topicalization and IHR-formation do not. He attributes the manifestation of this constraint to a "quantificational feature" on the operator that undergoes syntactic A-bar movement in the former two constructions, with this movement being subject to a crossing constraint on quantificational features, in effect,

relativized minimality in the sense of Rizzi (1990). As already noted in section 5 in relation to a different issue, Shimoyama (2006) offers a (convincing, in my view) semantic reinterpretation of relativized minimality in interrogative *wh*-in-situ constructions, which generalizes to all indeterminate phrases that require binding by a quantificational particle of some kind. She proposes that no syntactic movement is involved in these constructions and that indeterminate phrases simply get bound by the closest appropriate operator. If we accept her view, and if we also accept the well-known view that *wh*-island effects in languages like English are traceable to a filled [Spec, CP] of the *wh*-complement, the acceptability of data like (30) follows from the twin facts that the [Spec, CP] of the interrogative complement contains no *wh*-phrase and that the NO is not an indeterminate phrase.

7 More Complex IHR Constructions

In this section, we will consider IHR constructions that exhibit additional kinds of complexity, which parallel facts that are found in discourses but not in EHRs, and which, much like the facts in (14)–(16), are arguably traceable to the fact that IHs, just like E-type anaphors, are objects independent of the variable bound by a definite operator.

7.1 Constructions with Multiple IHs

While EHRs are, to my knowledge, never "multi-headed," IHRs with multiple IHs have been signaled in earlier literature (see, e.g., Kim 2007, footnote 8), much as

discourse anaphors may have "split" antecedents. A Japanese example provided by Yusuke Imanishi (p.c.) is shown in (58).

(58) [**Keisatsukan**-ga **doroboo**-o oikakete-i-ta]-no-ga
[policeman-Nom robber-Acc was chasing]-no-Nom
hutari-tomo ayamatte gake-kara oti-ta.
two accidentally cliff-from fall-Past
'A policeman was chasing a robber and they both fell off the cliff accidentally.'

In this example, the two boldfaced IHs belong to a single VP, and such situations are easy to handle. All that is needed is to assume that the variable R in (39) can range over sums of roles. This allows the assignment function g to pick out the sum of roles Agent⊔Theme and to equate this sum with a variable that ranges over individual sums. Everything else proceeds as in the previously examined examples.

A more complex situation arises when the multiple IHs are participants in distinct eventualities. I have not seen such situations discussed (or even mentioned) in the earlier literature on IHRs, but they have been brought up in studies of discourse anaphora, for example, in Elbourne (2001, section 7.2.4), where the donkey-sentence in (59) (= his (101)) is brought up.

(59) a. If a man has **a wife** who owns **a donkey**, he loves *them*.

Elbourne notes that some speakers find this example "distinctly awkward," but an arguably less awkward example of (non-donkey) E-type anaphora is shown in (60).

(60) ‘A boy was shouting that a girl was singing too loud, and both got scolded by the teacher.’

Now, Akira Watanabe kindly provided a Japanese IHR construction that closely mimics (60), and evaluated the result, shown in (61), as “not too bad.” If such data are ruled in by the grammar, an account becomes necessary.

(61) [Otokonoko-ga [onnanoko-ga urusai to] donat-te-i-ta]-no-ga
boy-nom girl-Nom too.loud Czer shout-TE-have-Past-no-Nom
futa-ri-tomo sensei-ni shika-rare-ta.
two-Cl-both teacher-by scold-Pass-Past
‘A boy was shouting that a girl was being too loud and both got scolded by the teacher.’

As far as (59) is concerned, Elbourne, whose primary concern was to reduce E-type anaphora to NP-ellipsis, had the following to say: “NP-ellipsis can sometimes take the form of supplying in the ellipsis site a conjunction of two NPs from the linguistic environment, even when the word *and* does not actually occur” (p. 280–81). This is not very precise, and it would be desirable to achieve greater precision in relation to (61).

In section 6, I proposed an account that limits the number of ChR(P)s to one token per IHR, and it seems desirable to maintain this restriction, since multiple instances of ChR(P) would lead to multiple instances of abstraction over variables, a situation that does not obviously lead to the desired type of interpretation for the relative CP. If so, since ChR needs to c-command a VP from which it selects an IH,

the single token of ChR can only take the higher VP as sister. Under these circumstances, the question arises how the lower VP can be accessed.

A way of dealing with this situation is suggested by the minimally different example in (62), which Akira Watanabe evaluated as "basically OK," and in which the two VPs are embedded within two coordinate TPs.

(62) [Otokonoko-ga donat-te-i-te onnanoko-ga urusaku-shi-te-i-ta]-no-ga
boy-Nom shout-TE-have-TE girl-Nom noisy-do-TE-have-Past-no-Nom
futa-ri-tomo sensei-ni shika-rare-ta.
two-Cl-both teacher-by scold-Pass-Past
'A boy was shouting and a girl was being too loud and both were scolded by the teacher.'

Note that if the coordinate node were of category VP, it could be viewed as denoting a complex event, and it would be an essentially straightforward matter to allow ChR to access the coordinate terms "across-the-board," picking out a sum of roles. The fact that the coordination is of category TP introduces a certain complexity, but one which has been signaled and discussed elsewhere, in particular, with respect to nominal coordinations of the kind that Link (1984) called "hydras," an example being (63).

(63) All men and most women [who get up early in the morning] feel sleepy in the early afternoon.

Note that in (63), the relative clause is construed as intersecting across-the-board with the NP-predicates *men* and *women,* not with the DPs themselves, despite the fact that there is no NP coordinate node. I will not go into the details of how (63) can be analyzed and confine myself to noting that whatever solution is adopted for such data ought to generalize to data like (62).

Assuming that much, how can one deal with (61)? Observe that for (61) to satisfy the MTIR, it is necessary for each of the two events at issue to intersect modally (and temporally) with the matrix. With respect to the complement clause, modal intersection means that the speaker needs to assume that what the boy was shouting was correct, i.e., that a girl was being too loud. Now, if we allow this assumption to be given explicit expression in the input to semantics by (covertly) adding a conjunct to the Top clause (perhaps as a "last resort" move), we get the configuration schematically shown in (64), which can be handled in the way (62) is.

(64) [**A boy** was shouting that a girl was singing too loud] and
[**a girl** was singing too loud]

In sum, the theory in section 6 can be extended to deal with a variety of constructions with multiple IHs.

7.2 IHs in the Scope of a Distributive Quantifier

In discourse, an E-type antecedent may be construed in the scope of a distributive quantifier. In such cases, two kinds of anaphors are in principle possible, as illustrated in (65).

(65) a. Every city will elect **a single delegate**. *He* must be elected by secret ballot.

b. Every city elected **one delegate**. *They* (= all the delegates elected by the various cities) subsequently gathered in Parliament Hall.

In (65a), the pronoun and the predication about it are construed as though themselves in the scope of the distributive quantifier *every* (by virtue of the mechanism known as "modal subordination"). In (65b), on the other hand, the pronoun and the predication about it target the sum of outputs obtained by distribution in the preceding sentence; let us call this interpretation of the pronoun a "collecting" one. It is only this interpretation that will concern us in the remainder of this section.

Shimoyama (1999) observes that in IHRs, a collecting interpretation of an IH in the scope of a distributive quantifier is also possible, providing the examples in (66) (=her (51)), without however analyzing such data.

(66) a. Wasaburo-wa [*dono gakusei-mo* **peepaa-o** **3-bon** dasita]-no-o
Wasaburo-Top [*every student* **term-paper-Acc** **3-Cl** *turned-in*]-*no-Acc*
itiniti-de yonda.
one-day-in read
'Every student turned in three term papers and Wasaburo read them (= all the papers that all the students turned in) in one day.

b. Wasaburo-wa [*3-nin-no kodomo-ga sorezore* **ringo-o** **2-tu-zutu**

Wasaburo-Top [*3-Cl-Gen children-Nom each apple-Acc 2-Cl-each*
kate kitta]- no-o tana-ni oita.
buy-came]*-no-Acc one-day-in read*
'Three children bought two apples each and Wasaburo put them (= all the apples that all the children bought) on the shelf.'

Collecting interpretations do not seem possible in EHRs, as suggested by the deviance of (67a), which contrasts with the acceptability of (68) (kindly provided by Akira Watanabe). The most that can be achieved with an EHR is a "functional" interpretation (Sharvit 1999), as in (67b), which is analogous to the discourse in (65a).[16] Presumably, the absence of collecting construals is a consequence of the already noted fact that the variable denoted by the gap is bound by the EHR's determiner.

(67) a. #[The single delegate that every district elected] gathered in Parliament Hall for the opening ceremony.

[16] Whether IHRs also allow functional construals is not of concern here. I nonetheless note the following example provided by Akira Watanabe, which he rated as marginal, but not completely impossible.

(i) ??[Dono toshi-mo daigiin-o hitori-zutu senshutu-suru]-no-ga
every city-MO delegate-Acc 1-cl-each elect-do-C-Nom
sono senkyoku-no rieki-o gikai-de
that constituency-Gen interest-Acc Parliament-Loc
daihyous-suru koto-ni-naru.
represent-do will
'The one delegate that every city will elect will faithfully represent its interests in parliament.'

b. [The single delegate that every district elected] was chosen by secret ballot.

(68) [Dono toshi-mo daigiin-o hitori-zutu senshutushita-no]-ga
which city-MO delegate-Acc one.Cl-each elected-NM-Nom
Kokkai-Gijidou-ni atumatta.
Parliament-Hall-Loc gathered
'Every city elected one delegate. They gathered in Parliament-Hall.'

The data in (66) require special comment, because we want the Theme picked out by g in, e.g., (66a), to denote not merely three papers, but the totality of triples of papers submitted by all the students. A hint on how to proceed is arguably suggested by certain remarks made in Elbourne (2001) in relation to donkey anaphora. Observe that this type of anaphora, in addition to "simple" examples like (69a), also allows collecting anaphors, as shown in (69b).

(69) a. If a peasant owns a donkey, the village priest (always) confiscates *it*.
b. If two peasants own three donkeys (each), the village priest (always) confiscates *them*.

While Elbourne proposes to analyze donkey anaphora in terms of "minimal" situations (in the sense of Heim 1990), he also notes in section 4.2.3 that minimality sometimes needs to be construed in a flexible manner. In data like (69), which Elbourne does not directly discuss, the only kind of minimal situation capable of providing a suitable antecedent for the anaphor is a "molecular," not an "atomic" one, that is to say, a situation that consists of the sum of atomic situations with one villager and three donkeys each. In the molecular situations defined by the *if*-clause in (69b),

each such situation will have a "molecular Theme," in particular, the pair of triples of donkeys owned by the two villagers that belong to that situation.

What this suggests with respect to data like (66) is to view the VP inside the relative as denoting a "molecular event," that is, the sum of atomic events which have one student/child each. The interpretation of the IH is then the Theme of the molecular event, in particular, the (totality of the) papers turned in by the students in (66a), and the (totality of the) apples bought by the children in (66b).[17]

8 Summary of Results

The following conclusions have been proposed and argued for in this paper:

[A] The ingredient of the Relevancy Condition that concerns temporal and modal intersection of eventualities needs to be analytically separated from the procedure that picks out an appropriate IH, and is essentially pragmatic in nature. The approach to Japanese/Korean IHRs proposed by Kim (2007), whose central goal was to account for both phenomena by means of the semantic derivation, was shown to be fundamentally flawed in its design. Granting that her account was elegant and *prima facie* attractive, empirical adequacy unquestionably takes precedence over technical elegance.

[B] The choice of an IH needs to be carried out with maximal locality, in particular, by a functional category ChR, which takes VP as its complement, whose distribution is restricted to definite IHRs, and which may be embedded arbitrarily

[17] I am grateful to an anonymous reviewer for drawing my attention to Elbourne's paper and to the kind of solution it makes available.

deep within an IHR. The mechanism of un-interpretable formal features ensures that CO is licensed only within definite IHRs, that there is a single ChR per IHR, and that the IH is not merged within a syntactic island.

[C] ChR also introduces a free individual variable that is equated with the entity (sum) defined by the selected IH. Equation ensures the possibility of abstraction and maximalization at the relative CP level, thereby allowing a smooth integration of definite IHRs into the larger class of definite relative constructions, while at the same time making it possible to capture a number of differences between definite IHRs and definite EHRs on the one hand, and a number of similarities between the former and discourse E-type anaphora on the other.

[D] The theory summarized in [A]–[C] can be extended to account for IHRs with multiple IHs, as well as for IHRs with an IH in the scope of a distributive quantifier.

It is to be hoped that the proposals made in this paper will stimulate further research on the definite IHRs of other languages, in particular, of languages like Korean, which also exhibit the Modal-Temporal Intersection Requirement, and of languages like Cuzco Quechua, which, as far as I can tell at the moment, do not.

Acknowledgments

First and foremost, I wish to express my overwhelming gratitude to Akira Watanabe, without whose help—both as a native consultant *and* as an adviser on subtle aspects of Japanese syntax and pragmatics—this paper could never have achieved its present form. His patience and helpfulness have gone way beyond any

normal inter-collegial expectations, and I am most deeply indebted to him. Heartfelt thanks are also due to Yusuke Imanishi, Junya Nomura and Rachel Hastings for valuable help with a variety of data.

I am furthermore very grateful to two anonymous reviewers, who, on two successive rounds of refereeing, have urged me to investigate a much wider range of data than I initially intended to, and whose sharp and penetrating remarks have substantively contributed to making this a better paper. I also wish to thank the three JEAL editors for their constant encouragement during my work on this project.

To Fred Landman, I am indebted for illuminating discussion that resulted in an initial joint submission. If this article ended up single-authored and quite different in orientation and content from the original draft, it is largely due to Fred's two-year sabbatical leave, which put several thousand miles between us and made collaboration unrealistic.

Lastly, I wish to thank Julia Horvath, Istvan Kenesei, Hadas Kotek, Philippe Schlenker and the audiences at the *Generative Grammatik des nordenS* in Berlin, May 2010, and at the workshop *Adjectives and Relative Clauses* in Venice, June 2010, for helpful comments and useful discussion of various aspects of this paper.

None of these persons is in any way responsible for the use I have made of their ideas or suggestions, and all remaining faults are entirely my own.

This research was supported by **THE ISRAEL SCIENCE FOUNDATION** (grant No. 700/06).

References

Carlson, Gregory. 1977. Amount relatives. *Language* 53: 520–542.

Chomsky, Noam. 1995. Categories and transformations. In *The minimalist program*, 219–394. Cambridge, MA: MIT Press.

Dayal, Veneeta-Srivastav. 1991. The syntax and semantics of correlatives. *Natural Language and Linguistic Theory* 9: 637–686.

Dayal, Veneeta-Srivastav. 1995. Quantification in correlatives. In *Quantification in natural languages*, vol. 1, ed. Emmon Bach, Angelika Kratzer, and Barbara H. Partee, 179–205. Dordrecht: Reidel.

Elbourne, Paul. 2001. W-Type Anaphora as NP-Deletion. *Natural Language Semantics* 9: 241–288.

Grosu, Alexander. 2000. Type resolution in relative constructions. Feature marking and dependency encoding. In *The syntax of relative clauses*, ed. Artemis Alexiadou, and Chris Wilder, Amsterdam: John Benjamins.

Grosu, Alexander. 2002. Strange relatives at the interface of two millennia. *GLOT International* 6: 145–167.

Grosu, Alexander. 2009. Two kinds of degree-denoting relatives: Hebrew versus Romanian. *Brill's Annual of Afro-Asiatic Languages and Linguistics* 1: 176–203.

Grosu, Alexander, and Krifka, Manfred. 2007. The gifted mathematician you claim to be: Equational intensional 'reconstruction' relatives. *Linguistics & Philosophy* 30.4: 445-485.

Grosu, Alexander, and Fred Landman. 1998. Strange relatives of the third kind. *Natural Language Semantics* 6: 125–170.

Hastings, Rachel. 2004. *The syntax and semantics of relativization and quantification: The case of Quechua.* Ph.D. dissertation. Cornell University.

Heim, Irene. 1990. E-type pronouns and donkey anaphora. *Linguistics and Philosophy* 13: 137–177.

Heim, Irene. 1991. Artikel und Definitheit. In *Handbuch der Semantik*, ed. Arnim von Stechow, and D. Wunderlich. 487–535. Berlin: de Gruyter.

Heim, Irene, and Angelika Kratzer. 1998. *Semantics in generative grammar.* Malden, MA: Blackwell.

Hoshi, Koji. 1995. *Structural and interpretive aspects of head-internal and head-external relative clauses*. Ph.D. dissertation. University of Rochester.

Jacobson, Pauline. 1995. On the quantificational force of English free relatives. In *Quantification in natural languages*, vol. 2, ed. Emmon Bach, Eloise Jelinek, Agelika Kratzer, and Barbara Partee, 451–486. Dordrecht: Kluwer.

Kadmon, Nirit. 1990. Uniqueness. *Linguistics and Philosophy* 13: 273–324.

Kim, Min-Joo. 2007. Formal linking in internally headed relatives. *Natural Language Semantics* 15: 279–315.

Kim, Min-Joo. 2008. Relevance of grammar and pragmatics to the relevancy condition. *Language Research* 44: 95–120.

Kratzer, Angelika. 1998. More structural analogies between pronouns and tenses. In *SALT VIII: Proceedings of the second conference on semantics and linguistic theory 1998*, ed. Devon Strolovitch, and Aaron Lawson, 92–110. Ithaca, NY: CLC Publications.

Kuroda, Sige-Yuki. 1976–77. Pivot-independent relativization in Japanese III: Types of Japanese relatives. *Papers in Japanese Linguistics* 5: 157–179.

Kuroda, Sige-Yuki. 1999. Shubu naizai kankeisetsu [Internally headed relative clauses]. In *Kotoba-no kaku-to shuuen* [*The core and the periphery of language*], ed. Kuroda, Suge-Yuki and M. Nakamura, 27–103. Tokyo: Kurosio.

Landman, Fred. 2004. *Indefinites and the type of sets*. Malden, MA: Blackwell.

Link, Godehard. 1984. Hydras. On the logic of relative clause constructions with multiple heads. In *Varieties of formal semantics,* ed. Fred Landman, and Frank Veltman, 245–257. Dordrecht: GRASS 3, Foris.

Parsons, Terence. 1990. *Events in the semantics of English: A study in subatomic semantics.* Cambridge, MA: MIT Press.

Rizzi, Luigi.1990. *Relativized minimality.* Cambridge, MA: MIT Press.

Sharvit, Yael. 1999. Functional relative clauses. *Linguistics and Philosophy* 22: 447–478.

Shimoyama, Junko. 1999. Internally headed relative clauses in Japanese and E-type anaphora. *Journal of East Asian Linguistics* 8: 147–182.

Shimoyama, Junko. 2001. Wh-*constructions in Japanese.* Ph.D. dissertation. University of Massachusetts Amherst.

Shimoyama, Junko. 2006. Indeterminate phrase quantification in Japanese. *Natural Language Semantics* 14: 139–173.

Watanabe, Akira. 1992. *Wh* in situ, Subjacency and chain formation. In *MIT occasional papers in linguistics* 2. Cambridge, MA: MIT Press.

Watanabe, Akira. 2003. *Wh* and operator constructions in Japanese. *Lingua* 113: 519–558.

Watanabe, Akira. 2004. Parametrization of quantificational determiners and head-internal Relatives, *Language and Linguistics* 5: 59–97.