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A Semantic Analysis of Finite Control in Japanese*

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1. Introduction

Japanese exhibits obligatory control in certain tensed clauses, i.e., clauses in which the embedded predicate carries an overt tense morpheme ($-(r)u$ for non-past, and $-ta$ for past tense), such as the *koto*-complement clause in (1).

- (1) a. John_i-wa [$\emptyset_{i/*j}$ Mary-to kekkonsu-**ru**] koto-o ketuisi-ta
J.-TOP M.-with marry-**NPST** NC-ACC decide-PST
'John decided to marry Mary'
- b. John_i-wa [$\emptyset_{i/*j}$ Mary-to kekkonsi-**ta**] koto-o kookaisi-ta
J.-TOP M.-with marry-**PST** NC-ACC regret-PST
'John regretted having married Mary'

Control is widely taken to be limited to infinitival clauses. However, it is also well known that some languages, including Japanese, exhibit control in finite clauses, and this phenomenon is called 'finite control' (Landau 2004; Lee

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2009; Wang 2011, among others).¹ Since Japanese is a pro-drop language, the syntactic status of the missing subject in (1) has been controversial in the literature (Fujii 2006; Hasegawa 1984/85; Uchibori 2000, among others): PRO should not be able to appear in tensed clauses, but if the missing subject is pro, its obligatorily bound status remains a mystery.

The goal of this paper is to challenge the syntactic view (which takes the missing subject to be PRO) dominant in the literature, and to make a first step toward a semantic account of control in *koto*-clauses. Our analysis identifies a causal relation between two *de se* propositions involving the controller, one denoted by the embedded clause and the other implicit but inherent to the meaning of the higher verb, as the key underlying property inducing control. This leads to a picture in which many of the properties of control traditionally attributed to syntax fall out from the lexical meanings of control verbs.

2. Problems of syntactic approaches to finite control in Japanese

2.1. Fujii’s (2006) analysis

Most previous approaches assume that ‘tensedness’ of the complement clause (which is by assumption only indirectly reflected in morphology) determines the control status (Fujii 2006; Hasegawa 1984/85; Nakau 1973; Uchibori 2000, among others). Details vary, but the key idea is the same, so we take up Fujii’s (2006) work as a representative case of syntactic approach.

The key assumption motivating Fujii’s (2006) syntactic analysis comes from the observation that control sentences do not permit tense alternation in the complement clause, that is, if a sentence shows control, the matrix predicate can take only a non-past or a past complement clause, as in (2) (where (2a,b) are examples of control and (2c), non-control).

- (2) a. Johh-wa [daigaku-o yame-**ru**/***ta**] koto-o ketuisi-ta
 J.-TOP college-ACC quit-**NPST/PST** NC-ACC decide-PST
 ‘John decided to quit college’
- b. John-wa [daigaku-o yame-***ru/ta**] koto-o kookaisi-ta
 J.-TOP college-ACC quit-**NPST/PST** NC-ACC regret-PST
 ‘John regretted having married Mary’
- c. John-wa [daigaku-o yame-**ru/ta**] koto-o happyoosi-ta
 J.-TOP college-ACC quit-**NPST/PST** NC-ACC announce-PST
 ‘John announced that he would quit/quitted college’

Based on these data, Fujii suggests the following generalization:

¹ In this paper, we use the term ‘control’ as a descriptive term, referring broadly to any construction in which the missing subject of the complement clause is semantically interpreted as (obligatorily) being identical to some antecedent (‘controller’) in the matrix clause.

- (3) Tensed subordinate clauses in Japanese act like infinitives if and only if their predicate doesn't alternate between non-past and past tense forms.

According to Fujii, non-alternating tensed clauses involve some sort of defective tense, which (for his purposes) effectively has the same syntactic status as infinitives.

2.2. Problems for Fujii (2006)

Fujii's approach has both empirical and theoretical problems, as discussed in Akuzawa (2018). First, there are some control predicates, such as *kookai-suru* ('regret') in (4), which do permit tense alternation, despite his claim.

- (4) John_i-wa [\emptyset _i/_{*j} kekkonsi-tei-**ru/ta**] koto-o kookaisi-ta
 J.-TOP marry-ASP-NPST/PST NC-ACC regret-PST
 'John regretted being/having been married'

Second, the subject of the embedded clause can sometimes appear overtly.² This is problematic for Fujii in two respects: first, tense non-alternation should entail obligatory movement of controlled subject; second, nominative case is standardly taken to be licensed by finite T(ense) (Takezawa, 1987).

- (5) John_i-wa [\emptyset /**kare/zibun-ga**_i/_{*j} ik-u] koto-o ketuisi-ta
 J.-TOP he/himself-NOM go-NPST NC-ACC decide-PST
 'John decided to go (himself)'

Third, the control vs. non-control contrast holds even with event nominal complements, which are tenseless, as in (6).

- (6) a. John_i-wa [\emptyset _i/_{*j} Mary-to-no **kekkon**]-o kookaisi-ta
 J.-TOP M.-with-GEN **marriage**-ACC regret-PST
 b. John_i-wa [\emptyset _i/_j Mary-to-no **kekkon**]-o happyoosi-ta
 J.-TOP M.-with-GEN **marriage**-ACC announce-PST

The data in (4)–(6) suggest that Fujii's syntactic approach is problematic both empirically and theoretically. Moreover, it is conceptually unsatisfying too, in that the syntactic approach alone does not shed any light on the question of *why* a generalization like (3) (which is *almost* correct) holds to begin with.

²The awkwardness of *kare* in (5) can be ameliorated by making the embedded clause sufficiently contrastive, e.g., with *hokanaranu kare* ('noone other than him'), as noted, for example, by Hasegawa (1984/85). We take this type of amelioration pragmatic, and assume that the structure itself is well-formed regardless.

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3. Toward a semantic approach to finite control

3.1. Semantic approaches to control

The data above suggest that the null hypothesis is that *koto*-clauses are syntactically tensed and that the missing subject in *koto*-taking control sentences is pro. The main question then is how the obligatorily bound status of pro comes about. We argue below that what determines control is the lexical meanings of the matrix verbs. Our analysis builds on the tradition of semantic approaches to control (Chierchia 1989; Farkas 1988; Foley and Valin 1984; Jackendoff 1972; Sag and Pollard 1991; Stiebels 2007; Uegaki 2011, among others).

3.2. Lexical meanings of control predicates in Japanese

We start with Stiebels' (2007) classification of control into two types: 'structural control', which induces control syntactically (as in English); and 'inherent control', which induces control semantically. Finite control is a case of inherent control in Stiebels' typology. She identifies three semantic classes as inducing inherent control: implicative, directive and aspectual ('phasal' in Stiebels' terminology) verbs. These three classes are indeed control-inducing in Japanese *koto*-taking verbs, but they are not exhaustive:

(7) a. **Implicative**

John_i-wa [\emptyset _{i/*j} Mary-o damas-u] koto-ni seikoosi-ta
 J.-TOP M.-ACC fool-NPST NC-DAT succeed-PST

b. **Directive**

John_i-wa Mary_j-ni [\emptyset _{*i/j/*k} yasum-u] koto-o meizi-ta
 J.-TOP M.-DAT rest-NPST NC-ACC order-PST

c. **Aspectual**

John_i-wa [\emptyset _{i/*j} mainiti nasi-o tabe-ru] koto-o tuduke-ta
 J.-TOP everyday pear-ACC eat-NPST NC-ACC keep-PST

d. **Attitudinal**

John_i-wa [\emptyset _{i/*j} tuma-o settokusu-ru] koto-o kokoromi-ta
 J.-TOP wife-ACC persuade-NPST NC-ACC try-PST

e. **Factive**

John_i-wa [\emptyset _{i/*j} kuruma-o kat-ta] koto-o kookaisi-ta
 J.-TOP car-ACC buy-PST NC-ACC regret-PST

f. **Commissive**

John_i-wa Mary_j-ni [\emptyset _{i/*j/*k} benkyoosu-ru] koto-o tikat-ta
 J.-TOP M.-DAT study-NPST NC-ACC vow-PST

The verbs in (7) can be roughly classified into two types: future-oriented and past-oriented, as in (8) and (9) (here we list some more verbs in each class).

(8) **Future-oriented**

Attitudinal: *kokoromiru* (‘try’), *ketui-suru* (‘decide’), *takuramu* (‘plan’)

Directive: *meiziru* (order), *susumeru* (recommend), *kinziru* (‘forbid’)

Commissive: *hyoomei-suru* (‘declare’), *tikau* (‘swear’)

(9) **Past-oriented**

Implicative: *seikoo-suru* (‘succeed’), *sippai-suru* (‘fail’), *okotaru* (‘neglect’), *hikaeru* (‘avoid’), *akirameru* (‘give up’)

Factive: *kokai-suru* (‘regret’), *hansei-suru* (‘reflect on’), *zifu-suru* (‘take pride in’), *zikai-suru* (‘discipline oneself’)

It may appear that control-inducing verbs belong to heterogeneous classes that do not have anything in common.³ We will, however, argue in the next section that all the verbs listed in (8) and (9) have one fundamental property in common, and that this property is the key that induces control.⁴

4. Lexical semantics of control predicates

4.1. Previous work on the semantic properties of control

We build on two previous works on the semantics of control in formulating our own analysis of *koto*-taking verbs: Chierchia’s (1989) analysis of control in terms of *de se* properties and Farkas’s (1988) analysis which identifies the notion of ‘responsibility’ as the core property underlying semantic control.

Chierchia (1989) made an important observation that the complement clause of (at least some) control verbs denote obligatorily *de se* properties.

- (10) a. John tried to go to France.
 b. John tried to bring it about that he goes to France.

(10a) and (10b) mean different things. To see the difference, consider the case of confused John, who lost his memory and has an incorrect understanding of his identity. He thinks that his son wants to go to France but that there are various obstacles for it. He does everything he can to make sure his son can travel to France (arranging a visa interview, calling a travel agency to book a flight, etc.). But crucially, John doesn’t know that the person who is supposed to go to France (and whose trip he’s preparing for) is actually *he himself*.

In this context, (10b) can be true and felicitous on the *de re* reading of the embedded pronoun *he*, but (10a) cannot felicitously be used to describe the same situation. For (10a) to be true and felicitous, John has to realize that the

³ We leave aside *koto*-taking aspectual verbs (which induce control) in what follows. These verbs typically express habitual-like meanings involving conscious decisions on the part of the controller. For this reason, it is likely that our proposal will extend to these verbs as well.

⁴ Space precludes detailed discussion, but we take it that the fact that Fujii’s generalization (3) is almost correct also falls out from an analysis of the lexical meanings of control predicates.

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person who goes to France is noone other than himself. That is, the property denoted by the complement is a *de se* property ascribed to the matrix subject.

The other important property of control comes from the work of Farkas (1988). In an attempt to provide a semantic account of controller identification in English, Farkas notes that the notion of ‘responsibility’, defined as in (11), is at the heart of the lexical meanings of verbs that induce control.

- (11) $\text{RESP}(i,s)$ iff s is the result of some act performed by i with the intention of bringing s about. (emphasis added)

Farkas hypothesizes that in control sentences, the RESP relation holds between the controller (i) and the embedded clause (s). In (10a), in the worlds in which John’s goals are satisfied, John brings it about that he goes to France, that is, his going to France is a consequence of some volitional action by John.

While this characterization gets at the heart of the meanings of some of the control predicates (in particular, the future-oriented ones) rather precisely, there seem to be some problems, at least if one literally uses it as a notion that unifies the meanings of all control-inducing verbs in (8) and (9). First, with negative implicatives such as *sippai-suru* (‘fail’), it is unclear in just what sense an event that did *not* happen was brought about by the controller. Second, factive verbs are similarly (or even more) problematic: in the case of *kookai-suru* (‘regret’), the embedded event is typically something that happened *despite* one’s will, or without one’s conscious realization (at the time of the event) that it would later lead to undesirable consequences.

Two key questions emerge at this point. First, as noted above, the notion of responsibility needs to be generalized somehow. Second, while it seems uncontroversial that *de se* and (some suitably generalized version of) responsibility are at the core of the meanings of control predicates, the relationship between the two notions (if any) is still unclear. We aim to shed some light on these questions as we formulate our own analysis of *koto*-taking predicates.

4.2. Accounting for the Japanese predicates

Our proposal can be thought of as a version of decompositional analysis of lexical meaning, and takes the form of decomposing the core meaning of control-inducing predicates into the following three components:⁵

- (12) a. a (possibly counterfactual) volitional action V inherent in the meaning of the verb
 b. a *de se* proposition P denoted by the embedded clause
 c. a causal relation between V and P

⁵ Our proposal shares the spirit of Koenig and Davis (2001), who show that teasing apart the modal meaning component of a verb from the core ‘who-does-what-to-whom’ component helps clarify underlying patterns not immediately obvious from the individual verbs’ surface meanings.

Note that, unlike Farkas (1988), we do not take the notion of responsibility (as defined via the ‘bring about’ relation) as a primitive directly encoded in the meanings of control predicates. Instead, as will become clear below, the ‘bring about’ relation manifests itself (in the case it does) as a consequence of an interaction of the more abstract meaning components. Crucially, the exact content of the volitional meaning and the causal relation differs from one verb to another, and this is essentially the reason that a simple characterization as in (11) is not adequate. Note also that our analysis makes explicit the relationship between the notions of *de se* and responsibility: control induces obligatory *de se* in that the ‘consequence’ of (not) carrying out the volitional action is something that directly pertains to the volitional agent *him/herself*.

In what follows, we illustrate how the lexical decomposition schema in (12) is applied in the analyses of the specific instances of control predicates.

Attitudinal verbs Attitudinal verbs such as *kokoromiru* ‘try’ and *kessin-suru* ‘decide’, which are inherently modal and future-oriented, form perhaps the most prototypical class of control verbs. The subtle meaning difference among members of this class is certainly an important question, but here we focus on characterizing the basic meaning of just one verb, *kokoromiru* (‘try’).

We introduce here a semi-formal system of notation simple to work with yet explicit enough for our purposes. In the symbolization employed below, c denotes the controller, V (of type $\langle e, t \rangle$) the volitional action by the controller, and P (also of type $\langle e, t \rangle$) the *de se* proposition denoted by the embedded clause. $MB_{\alpha, \beta}$ is the modal base of flavor β anchored to the individual α (for example, $MB_{c, epst}$ is the controller’s epistemic modal base).

The meaning of *kokoromiru* ‘try’ can then be written as follows:

- (13) **presupposition:** $[P(c) \rightarrow V(c)] \in MB_{c, epst}$
assertion: $V(c)$

To paraphrase, *kokoromiru* presupposes that the controller (i.e. the matrix subject) recognizes that engaging in some volitional action (V) is a necessary condition for the realization of the *de se* proposition (P) of the embedded clause and asserts that the controller does indeed engage in that action. This is based on the intuition that for John to try to open the door, it is not enough for him to just hold the desire to open the door; John (at least typically) needs to be consciously engaged in some activity which on his belief is a precondition for the door to be opened (such as trying different keys one by one).

Commissive verbs Commissive verbs⁶ are similar to attitudinal verbs in involving a ‘first person’ attitude of the controller. The main difference is in

⁶For an insightful discussion of commissive and directive verbs, see Foley and Valin (1984). We follow their key intuition in formulating our own analysis for these two types of verbs.

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the relationship between the relevant attitude and the controller. With attitudinal verbs, the attitude is internal to the controller him/herself, in principle unknown to others. Commissive verbs necessarily involve other individuals. In fact, the whole point of the speech acts denoted by commissive verbs is to make the relevant attitude *public* (i.e., known to others).

The meaning of *hyomei-suru* (‘declare’) can then roughly be characterized as a three-place relation (encoded as the primitive *declare* in (14)) between the controller, the recipient of the message, and the content of the message which is essentially an ascription of obligation to oneself (thus involving a commitment to the *de se* attitude V), along the following lines (here, c_s denotes the controller/matrix subject and o the matrix dative object):

- (14) **presupposition:** $[P(c_s) \rightarrow V(c_s)] \in MB_{c_s,epst}$
assertion: $declare(c_s, o, V(c_s)) \in MB_{c_s,deont}$

Directive verbs Directive verbs are similar to commissive verbs in that they also involve obligation ascription. The difference between the two is to whom the ascription is directed. While commissives involve ‘first person’ ascription, directives involve ‘second person’ ascription of obligation (encoded via the three-place predicate primitive *impose* in (15)): order is an illocutionary act in which the addresser ascribes a certain type of *de te* attitude to the addressee.

Thus, the meaning of *meiziru* (‘order’) can be characterized as follows (here, c_o denotes the controller/matrix dative object, and s the matrix subject):

- (15) **presupposition:** $[P(c_o) \rightarrow V(c_o)] \in MB_{c_o,epst}$
assertion: $impose(s, c_o, V(c_o)) \in MB_{c_o,deont}$

Implicative verbs Let us now turn to the past-oriented verbs, first, implicatives. Our analysis of the positive implicative verb *seikoo-suru* (‘succeed’) is based on the intuition that ‘succeed P ’ can roughly be paraphrased as ‘try P and P ’. More precisely, *seikoo-suru* presupposes that some conscious attempt on the part of the controller had been made to realize the embedded proposition P , and asserts that P did indeed obtain as a consequence:⁷

⁷ One may wonder whether the ‘try’ component is really necessary in the meaning of *seikoo-suru*, in view of the fact that sentences such as the following seem not totally unacceptable:

- (i)(?)John-wa guuzen atarasii wakusei-o hakkensu-ru koto-ni seikoosi-ta
 J.-TOP by.chance new planet-ACC discover-NPST NC-DAT succeed-PAST
 ‘John accidentally succeeded in discovering a new planet’

To the extent that (i) is acceptable, the relevant construal seems to hinge on either joint responsibility (of a group involving John), or an imposition of a ‘hindsight’ perspective by the speaker (that is, John may not have intended to make any discovery, but since the discovery was significant, it deserves to be called ‘success’, on a par with prototypical successes involving effort).

- (16) **presupposition:** $[P(c) \rightarrow V(c)] \in MB_{c,epst} \wedge V(c)$
assertion: $P(c)$

Factive verbs Factive control verbs have perhaps the most complex type of meaning. For example, for *kookai-suru* (‘regret’), the target of regret P is certainly not something that one has brought about intentionally. But then, is intentionality not involved in the meaning of this verb at all? To answer this question, it is instructive to compare *kookai-suru* with another factive verb *zannen-garu*, which is not a control verb but which has a similar meaning:

- (17) John-wa me-ga aoi koto-o {a. zannengat-ta/b. #kookaisi-ta}
 J.-TOP eye-NOM blue NC-ACC regret-PST/regret-PST
 ‘John regretted having blue eyes’

Unlike *zannen-garu*, *kookai-suru* is incompatible with ‘uncontrollable’ situations. That is, (17b) is bad since having blue eyes is something that one cannot change by will. At the same time, we also have examples in which *kookai-suru* is felicitous even without any direct involvement of the controller’s will:

- (18) John-wa saifu-o otosi-ta koto-o kookaisi-tei-ru
 J.-TOP wallet-ACC drop-PST NC-ACC regret-ASP-NPST
 ‘John regrets having dropped his wallet.’

What, then, distinguishes the good (7e)/(18) and the bad (17b) examples? We think that the difference lies in whether the situation was *avoidable*. That is, though John can’t ‘redo’ his life, he could, in principle, have avoided the disaster (of losing his wallet) had he been more attentive, or had he not taken his wallet when going out, etc. There could have been any number of different decisions he could have made to prevent the (from the current perspective) undesirable outcome. This is not the case with having blue eyes. We know that John couldn’t, for example, have chosen his parents before birth.

The meaning of *kookai-suru* is thus essentially counterfactual. A volitional action is inherent, but it is hidden, as it were, inside the meaning of the verb as an alternative possibility which did *not* get realized. Taking this counterfactual volitional action to be V and the *de se* property of the embedded clause to be P , the meaning of *kookai-suru* can be characterized as follows:

- (19) **presup:** $[V(c) \rightarrow \neg P(c)] \in MB_{c,epst} \wedge P(c)$
assertion: $V(c) \in MB_{c,desider}$

(19) is still rough in several respects, for example, in not taking into account the different epistemic states of the controller at different time points. But (we believe) it captures at least the core meaning of the verb. Aside from the usual factive presupposition $P(c)$, the verb presupposes that the controller realizes that doing V would have prevented P . Based on this recognition of ‘lost

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opportunity’, the controller holds an additional attitude that it would have been desirable to do V . Note that the epistemic component is a presupposition rather than part of the assertion (that is, the precondition for ‘regret’ (in the sense of *kookai-suru*) to make sense is that the relevant individual recognizes unrealized alternative courses of events which could have been chosen).

5. Conclusion

The reader should surely have noticed by now one recurrent pattern: not only do all the verbs examined above share three key components identified in Section 4.2, but the relevant causal relation between V and P is an *epistemic* modal statement that is part of the *presupposition* in all cases. Why is this the case? We think that this question ultimately relates to the larger issue of lexicalization patterns in lexical semantics research: what types of conceptual meanings are (typically) expressed by single words in natural language?

This is a rather broad issue, but we can make some preliminary speculations. First, the epistemic nature of the relevant meaning component makes sense, given that the causal relation in question is inherently *de se*. It is not surprising at all that human language has a class of words that hinge on the recognition of the possible/likely consequences of one’s own action directly affecting oneself. And the presuppositional nature of this meaning is also unsurprising. Presumably, such recognitions are so inherent to human cognition that we tend to talk about things *on the basis of* them, rather than talk *about* such recognitions themselves. We make ‘attempts’ and ‘decisions’ on the basis of foreseeing the likely outcomes of our own actions, and we talk about ‘successes’ and ‘failures’ on the basis of the understanding that some decisions and attempts have been made (and so on, for other control relations). It is then tempting to say that control verbs occupy an essential part of the inventory of natural language words in that they reflect the typical way in which we perceive the relationship between ourselves (as volitional agents) and the world around us (that is, the environment acted upon by the volitional agent).

While implications for lexicalization is an exciting issue worth exploring in more depth, since this paper is meant to be a modest contribution to the semantics of finite control in Japanese, we would like to conclude by identifying some of the more specific remaining issues. First and foremost, we have left out aspectual verbs from our discussion entirely, mainly due to the additional complexity (i.e. the temporal axis) they introduce. Extending the present approach to these verbs is an important next task. Second, each of the verbs we have examined above has its own complex meaning, and a lot more has to be said about them. While we have deliberately chosen to take a bird’s-eye approach in the present paper, we believe that much insight can be gained by approaching the problem from the opposite direction also, by focusing

on the individual verbs and analyzing their meanings closely. Finally, in this paper we have said almost nothing about the syntax-semantics interface. In particular, the fact that the controlled argument is the *subject* of the embedded clause cannot be captured solely within the semantics, and one needs to make some assumptions about how the ‘center’ of the ‘centered proposition’ corresponding to the *de se* property gets identified as the subject argument of the embedded clause. While we do not foresee any fundamental difficulty in implementing this component explicitly, this task, too, is left for future study.

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