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Japanese Type-4 Verbs are Individual-level Predicates[*]

Joseph R. Tabolt

Abstract. This paper analyzes the compositional behavior of Japanese Type-4 Verbs as owing to their lacking an eventuality argument and classifies them as Individual-level predicates. I propose that, as verbs with no eventuality argument, they require rescuing to be used in a sentence. This is what *-te-i-ru* does, contributing an eventuality argument and allowing the expression to conjoin with a Voice phrase. I also show that a generic (or otherwise quantified) DP, which operates over individuals, can also rescue Type-4 Verbs. This results in plain *-ru* Type-4 Verb sentences being generic or otherwise quantified, and *-te-i-ru* sentences being either generic/quantified or referential. The proposed difference in argument structure of stative verbs and Individual-level verbs has implications for how we define verbs and verb phrases, which have come to be equated with eventuality arguments.

Keywords: Individual-level Predicates, States, Generic, Japanese Type-4 Verbs, Verbal Argument Structure, Tense.

1 Empirical observations regarding Type-4 Verbs

1.1 Type-4 Verbs vs. State Verbs

Kindaichi (1950)'s four-type classification of Japanese verbs, while overlapping significantly with Vendler (1957)'s system based on English, points out a category of Japanese verbs which are not adequately described by Vendler, "Type-4". This type includes verbs such as *sugure* (to excel), *sobier* (to tower), *ni* (to resemble), and *arifure* (be completely usual). From their unusual characteristics, I will conclude that they are Individual-level predicates of the type described by Kratzer (1989), which are properties of individuals, not events.

First, their meaning and adjunctive behavior are akin to states in that they describe a characteristic of some entity without a clear start or end point, and they do not take event-modifying adverbs such as locative and manner adverbs (cf. Katz's Stative Adverb Gap (2003)). However, unlike state verbs, which reject *-te-i* inflection, Type-4 Verbs require, or at least strongly prefer, it in many cases when used in the matrix clause of a predicate.

1. State verb: atai-sur (be worthy of)
   Sono sakuhin-wa chūmoku-ni atai{-sur-u / #-shi-te-i-ru}
   That work [is / #is being] worthy of attention
2. Type-4 verb: sugure (excel)
   Suga-sōri-wa kinbensa-ni sugure-{#ru / te-i-ru}
   Prime Minister Suga excels in diligence

We can observe that, opposite to the state verb in (1), the Type-4 Verb in (2) strongly prefers *-te-i* inflection.

1.2 A semantic variant of -te-i inflection

Aside from setting them apart from typical state verbs, Type-4 verbs' affinity for *-te-i* is surprising because none of the three roles that Japanese linguists typically identify as functions filled by *-te-i* apply.

3. Suga-sōri-wa shabet-te-i-ru   **Progressive function**
   Prime Minister Suga is talking
4. Suga-sōri-wa nando-mo shabet-te-i-ru   **Experience function**
   Prime Minster Suga has spoken many times
5. Suga-sōri-wa shaber-i-owat-te-i-ru   **Resultative function**
   Prime Minister Suga is finished talking

The progressive *-te-i* in (3) is basically equivalent to the progressive in English and works with non-instantaneous processes, showing that the process is in progress at the reference time. State verbs cannot be paired with this function because they do not denote processes, and in this sense Type-4 verbs are the same. The experience *-te-i* in (4) shows that the subject has carried out the event at least once previously, requiring the embedded verb to denote a telic event. Neither Type-4 verbs nor state verbs denote

(inherently) telic events, and so this variety of *-te-i* is also incompatible with them. The resultative function shows that the subject is in a state resulting from carrying out the event denoted by the verb. Since it indicates a resulting state, it follows that the verb it inflects must denote a change of state of the subject. In the case of (5), this is the change from the state of being in the process of talking to the state of having completed the process of talking.

Given that Type-4 sentences like (2) denote an atelic property of the subject, the most likely candidate for the role of *-te-i* with them from above is the resultative function. However, consider (6), where *-te-i-ru* inflection is optional.

6. Nihonjin-wa kinbensa-ni { sugure-ru / te-i-ru }
   Japanese people excel in diligence

Whether it has the *-te-i* inflection or not, (6) has the same perceivable meaning: In general, Japanese people have the property of excelling in diligence. Neither with *-te-i-ru* nor with *-ru* does the meaning of *sugure* show a change of state from "not excelling" to "excelling". Since the verb does not denote a change, the *-te-i* form of *sugure* cannot be a case of the resultative function, so *-te-i* must be doing something else.

Following Kindaichi (ibid.), we will take concordance with this distinct form of *-te-i* as the criterion for membership in this category. As such, we also include verbs such as *ai-su-ru* (love) and *takai-hana-wo-su-ru* (have a pronounced nose) in this category. This paper aims to pinpoint the denotation and structure characterizing the Type-4 verb interpretation and will focus on *sugure*, as it does not lend itself to other verb type meanings[1].

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1 Identification of Type-4 Verbs can be tricky. As Kindaichi notes, in some cases it is possible to use the same verbs as different types of predicates.
(a) Kono hari-wa magat-te-i-ru (This needle is bent)
(b) Kono michi-wa magat-te-i-ru (This road is bent)
Here, (a) typically indicates that the needle is in the resulting state of having been bent while (b) indicates that that road has the property of being bent and, unlike (a), does not imply that it was ever in a state of being not-bent. This shows that whatever the meaning of Type-4 Verbs is, it is not necessarily the only interpretation of the lexemes. In the absence of contexts appropriate for a Type-4 Verb interpretation, lexemes which often display Type-4 Verb readings can display other meanings. Even the verb in (a) above could be Type-4 if the sentence were uttered in a context where some needles are manufactured bent.

The main empirical observations regarding Type-4 verbs to be explained are summarized in the following four points.

—Type-4 verbs are like state verbs in that the property/state they denote does not have a clear start or end, but they differ from them in that they prefer *-te-i* inflection while state verbs reject it.

—There is no obvious semantic contribution made by *-te-i-ru*, since with or without it, the same property is denoted.

—Sentences with Type-4 verbs in which *te-i* inflection is optional allow only a generic (or generic-like[2]), interpretation, whether *te-i* inflection is chosen or not.

—Referential subjects in Generic Type-4 verb sentences strongly prefer *-te-i-ru* inflection.

2.   Individual-level predicates

2.1   Individual level predicates in Japanese

I posit that Type-4 verbs are Individual-level predicates, lacking an evidentiality argument. Kratzer (1989) contrasts Individual-level predicates with Stage-level predicates, the latter expressing "very transitory properties" (e.g. (7) below) and the former expressing properties which are not so transitory (e.g. (8) below). Languages such as Spanish, Gaelic, German and Russian have been shown to have various grammatical oppositions that are sensitive to this difference (Maienborn et al., 2011). Japanese, I propose, should be added to that list. (7) and (8) below borrow what is probably the most famous example of the distinction and shows its parallel in Japanese.

7. Firemen are available.   Shōbōshi-wa hima da
8. Firemen are altruistic.   Shōbōshi-wa ritateki da
9. Shōbōshi-wa supīdo-ni sugure-{ru/te-i-ru} (Firemen excel in speed)
10. Sono shōbōshi-wa supīdo-ni sugure-{#ru/te-i-ru} (That fireman excels in speed)

In (7) and (8), although Japanese doesn't require plural inflection on nouns, a bare noun paired with a topic-marking particle *-wa* parallels the English bare plural in its behavior regarding individual/stage-level predicates. Paired with an individual level-

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2 We will see that plain *-ru* inflection is also possible if the subject DP is in the scope of a quantifier.

predicate in (8), the noun phrase is only interpreted generically, but paired with a stage-level predicate, in (7), it can also be interpreted existentially, suggesting that there are some nearby firemen who are available. This gives some evidence that the conceptual opposition is active in Japanese.

The (6) and (9) Type-4 verb sentences with plain *-ru* inflection (i.e. without *-te-i*) allow only generic readings. In addition to this interpretation constraint, they show what I view to be a grammatical phenomenon in Japanese which is limited to Individual-level predicates. I will call it "rescue" and propose two types: generic rescue and *te-i* rescue. Before going into details on that, let us see what (9) and (10) can tell us.

Like (6), (9) allows bare *-ru* inflection and with *-ru* has only a generic interpretation. Meanwhile (10), which has a referential expression for its subject, cannot produce a generic interpretation over "firemen". Also differing from (9), it only allows *-te-i* inflection, or at least greatly prefers it. Note that, when "*shōbōshi* (firemen)" is used anaphorically as a referential expression, even (9) patterns with (10) in strongly preferring *-te-i-ru* inflection. This shows a clear dispreference for plain *-ru* inflection in sentences with a referential subject.

Incompatibility with referential DPs is not a property of Individual-level verbs in English, at least on the surface. English Individual-level verbs, such as *know* and *resemble*, allow referential subjects in all their forms. Individual-level adjective phrases in Japanese also lack the property, as you can certainly plug someone's name into (7) or (8) and get natural sentences. Kratzer (1989), among others, points out that the same lexemes can alternate between Individual-level and state-level interpretations. In English, there seem to be no morphological changes to reflect this change. I suggest that Japanese, contrary to English, has an overt means to show such changes from Individual-level verbs using *te-i*: *te-i* adds a state argument missing from bare Type-4 verbs, effectively changing them into stative verbs. The incompatibility with referential subjects goes with Individual-level verbs which have not gained a state argument, though I will conclude that this incompatibility is a result of the interaction between pragmatics and semantics and does not fall out directly from semantics and/or syntax.

2.2 Individual-level predicates according to Kratzer (1989)

Kratzer (1989) proposed two hypotheses about Individual-level predicates to explain many phenomena seen in sentences containing them. One was that, unlike

stage-level predicates, they do not have eventuality arguments. The other was that their external argument is generated outside of the VP. This was important because being generated outside of the VP put them outside the scope of the VP's existential closure.

To briefly sum up her proposal, she suggests that neither bare plurals nor DPs with the article *a* have quantificational force of their own, serving only to provide a variable over individuals. Then, following (Heim, 1982), she argues that all variables inside the VP are existentially closed. The existential reading is possible with stage-level predicates because their external arguments are base-generated inside the VP, and if they are interpreted there, they get an existential reading. Since they move to the TP's Spec, they can also be interpreted above the VP. This is possible when there is an operator, such as a generic operator, available to quantify the DP. In contrast, since the external argument of an Individual-level predicate is generated outside of the VP, it cannot be caught in the VP's existential closure to produce an existential reading. Kratzer tentatively suggests the TP Spec as the site of generation of the external argument, but anywhere outside the scope of existential closure would work.

I take Kratzer's explanation for the difference in availability of an existential reading of the noun between the individual and stage-level predicates in (7) and (8) to be essentially correct. However, our understanding of clausal structure has advanced since 1989. We now standardly assume VoicePs and Aspect phrases as part of a clause. I will conclude that Individual-level predicates with *-te-i-ru*, like stage-level predicates, generate their state-holder DP in the Spec of VoiceP rather than in the VP. I also will reject base-generation in the Spec of TP for plain *-ru* Type-4 verb sentences as this would result in type failure given our assumption that DPs without a determiner are of type $<e,it>$.

A third factor is her treatment of tense, and this connects with our assumption that DPs without a determiner are of type $<e,it>$. She suggests that tense is a predicate that appears in the restrictive phrase of an adverb above the VP and "always relates to the external argument of the main predicate" (1989, p.156). As such, tense with stage-level predicates relate to the state argument (11a) while tense with Individual-level predicates relates to the subject (11b).

11. a Firemen were available. before-now(s) & $\exists$x:[firemen(x) & available(s,x)]
    b Henry was French.   before-now(Henry$_3$) & French(he$_3$)

She argues that cases where (11b) is used when Henry used to be French but changed his citizenship are cases of changing "be French" into a stage-level predicate by adding an eventuality variable, giving it a logical form parallel to (11a). Aside from it being unclear what she intends an individual being "located in the past" to mean, sometimes the subject must be relative to a different time than the main clause.

12. Every fugitive is now in jail. (Enç, 1986, p. 407)

(12) means that individuals who were fugitives at a past time are currently in jail (and thus no longer fugitives). The matrix clause tense cannot decide the temporal location of "fugitive." Thus, we need a way to account for tense affects on Type-4 verb sentences which allows the subject to have a different temporal status than matrix tense.

Though she does not specifically address it, I assume her decision not to incorporate a temporal variable into the denotation of Individual-level predicates was motivated by the intuition that Individual-level predicates are non-transient properties. However, a feeling of non-transience could also be due to the lack of an eventuality argument, whose existence is transient by virtue of being a discrete entity. It is not the case that these properties have no place in time. Japanese people do not excel in diligence as infants, firemen do not excel in speed before they are trained, etc. We propose that the feeling of "not so transient" comes from the fact that we do not associate a starting point, an ending point, or any midway point with these expressions.

I propose Individual-level predicates are functions from individuals to functions from intervals to truth values, which I also take non-quantified, non-referential DPs to be. This makes explicit the fact that most categories for individuals we refer to are anchored to time. This fact can be translated to sets as: the members of the set CATERPILLAR now and the set CATERPILLAR in 6 months differ due to their denotations containing members with the CATERPILLAR property at distinct times.

I then adopt Kratzer (1996)'s proposal (which, to avoid confusion, is completely independent of and posterior to her paper about Individual and Stage-level predicates summarized above), that the external argument of verbs is introduced above the VP by VoiceP. However, if Type-4 verbs have an argument place for individuals as part of their denotations, where do they get values for it if not VoiceP? Below, I outline two ways they can get a subject, i.e. be rescued: (i) by getting a state argument from *te-i* so it can conjoin with VoiceP (section 3), and (ii) via the semantic demands of a generic

operator below TP, which can apply even in the absence of *-te-i* (section 4).

3 Referential *-te-i* Type-4 verb sentences

First, consider the occurrence of *-te-i* in inflected sentences with Type-4 verbs and referential subjects. In my proposed formalization in (13-16), *-te-i* allows Type-4 verbs to fit into the typical clausal structure of Japanese, combining with Voice (17) and aspectual heads (18) before tense (19).

(Semantic types: e: entities/individuals, t: truth, i: intervals, v: eventualities)

(c is a context, providing values for indexical pronouns)

13. $[[\text{Type4 VERB }]]^c = \lambda x_e.\lambda t_i.$ x VERB_{T4}'s at t

14. $[[\text{te}_{aux}]]^c = \lambda P_{<e,it>}.\lambda M_{<e,it,<e,vt>>}.\lambda x_e.\lambda s_v.$ M(P)(x)(s)

15. $[[\text{i}_{indiv}]]^c = \lambda P_{<e,it>}.\lambda x_e.\ \lambda s_v.\ \forall\, t\colon t\subseteq \tau(s) \rightarrow P(x)(t)$

16. $\tau(s) =$ the duration interval $[t_1,t_2]$ of s

17. $[[\text{HOLDER }]]^c = \lambda x_e.\ \lambda s_v.$ x is the holder of s

18. $[[\text{IMPERFECTIVE}]]^c = \lambda P_{<i,t>}.\lambda t.\ \exists\, s\colon P(s)\ \&\ t\subseteq \tau(s)$

19. $[[\text{ru}]]^c$ is defined iff *c* provides exactly one interval *t* that contains or is preceded by the utterance time. If defined, $[[\text{ru}]]^c = t$

First, *-te* connects a Type-4 verb with aspectual auxiliary verbs such as *ku-ru*, *ik-u* and *-i-ru*, contributing a state argument[3]. *-te* (14) first takes two higher-order arguments: one a temporal property of individuals and the other a function from temporal properties of individuals to stative properties of individuals. After receiving values for these arguments, it returns a function from individuals to a function from states to truth values. The semantic role of *-i* (15), the second argument of *-te*, is to bind the temporal argument and temporally relate membership of the property denoted by Type-4 verbs with a state: all intervals where the state holds are intervals where the individual argument is a member of the set denoted by the Type-4 verb. The runtime measure function τ in (16), which is commonly used to relate events with tense in the literature as can be seen in imperfective aspect in (18), is also built into the denotation of *-i*.

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3 It has been suggested that the *-te* in *-te-i-ru* is the conjunctive counterpart of the perfective *ta* (Mikami, 1963; Yoshikawa, 1995), which is used to turn Type-4 verbs (among other verbs) into noun-modifiers. Expanded analysis may require rearranging the contributions of *te* and *i* to reflect this, but the result of their composition is expected to stay the same.

There is much debate on the differences between states and other types of eventualities, but most accounts agree that all eventualities interact with a Voice phrase (see Fig. 1 below). We will assume that the head of the Voice phrase for stative VPs is a function HOLDER (17) which restricts the states over which it ranges to those for which the value of the individual variable is the holder of the state. Note that this does not use Kratzer's event identification rule. Instead, since HOLDER and the *te-i* phrase are both type <e,vt>, they can combine via predicate modification[4]. I assume that the DP in the Spec of VoiceP moves to the Spec of TP to get nominative case, so the stative property of individuals takes its trace, which is a variable of type <e>, as an argument.[5] Having received an individual-type argument, we get a property of states. The semantic derivation to this point is given in (20).

20. [[[T$_1$ [[kinbensa-ni sugure-te-i] HOLDER]]]]^c
    = λs. $\forall$ t: t$\subseteq$$\tau$(s), [[T$_1$]] excels$_{DILIGENCE}$ at t & [[T$_1$]] is the holder of s
    = *true* of a state *s* iff all intervals in the duration of *s* are intervals where *T$_1$* excels in diligence and [[T$_1$]] is the holder of *s*

As a property of states, the phrase can combine with an aspect operator as any other verb can. I have given the standard aspect operator used for imperfective in (18) above, which returns a property of intervals by relating the state to an interval variable. The process up to this stage is shown in (21).

21. [[[[T$_1$ [[kinbensa-ni sugure-te-i] HOLDER]] IMP.]]]^c
    = λt'. $\exists$ s: t'$\subseteq$$\tau$(s) & $\forall$ t: t$\subseteq$$\tau$(s), [[T$_1$]] excels$_{DILIGENCE}$ at t & [[T$_1$]] is the holder of *s*
    = *true* of an interval *t'* iff there is a state *s* such that the interval *t'* is included in the duration interval of *s*, all intervals in the duration interval of *s* are intervals where [[T$_1$]] excels in diligence, and [[T$_1$]] is the holder of *s*

The phrase then takes an interval argument from TP's head, as defined in (19). Finally,

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4 Stative predicate modification: If α is a branching node, {β, γ} is set the set of α's daughters, and [[β]] and [[γ]] are both in D$_{<e,vt>}$, then [[α]] = λx$_e$. λs$_v$. [[γ]](x)(s) = [[β]](x)(s) = 1

5 We assume the predicate abstraction rule proposed for the treatment of DP movement in (Heim & Kratzer, 1998). According to it, moved DPs leave an indexed trace variable of type <e>, even if they are not type <e> themselves. This mechanism is commonly employed in the treatment of quantifier scope.

the predicate abstracted from the TP takes the individual from the referential DP in TP's Spec, and gives readings for sentences such as (2) and (10).
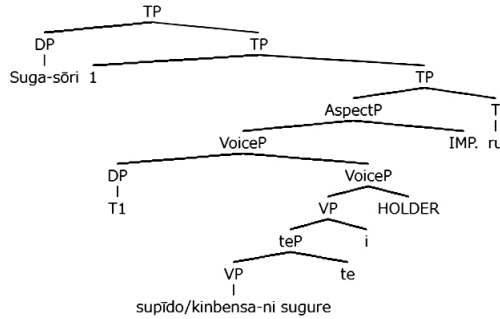
Fig. 1. Type-4 verb sentences with referential subjects

According to this formulation, (2) is true if there is a state held by Suga-*sōri* which contains the speech time or some time after the speech time and Suga-*sōri* excels in diligence during all intervals included in the duration of that state. Note that this formulation correctly predicts that if Suga were not a member of the excellers-in-diligence set corresponding to the speech time or some time after it, but was a member of the set denoted at a previous time, (2) would be false as per the non-past -*ru*.

Note that according to this semantics there is some state which includes the interval provided by *ru* where the property holds. In Section 5, we will see that the presence of the state argument has a general pragmatic effect where the speaker can only felicitously utter a *sugure-te-i-ru* sentence if they have witnessed or heard about some overt display of the property. For example, in the case of (2), believing that Suga has sacrificed sleep to deal with the country's problems would suffice.

4 A generic operator over individuals

Now we must account for the fact that both -*ru* and -*te-i-ru* only allow generic readings when their subject is a non-referring DP with no overt quantifier and that -*ru* only allows non-referring generic readings at all. 4.1 will propose a denotation for the generic operator at play in the target sentences. In 4.2, I will outline the syntax and compositional process of -*te-i-ru* and -*ru* Type-4-verb generic sentences.

4.1 Lexical denotation and category

I analyze genericity as in (22)-(23) below. The generic operator quantifies over a subset of the restricting noun phrase: the set of individuals who have all the properties which are prototypically associated with satisfying the restricting noun phrase at a given time. For example, the prototypical Japanese individuals at a time t may possess the properties of being diligent, having black hair, enjoying tempura, etc. Formally, $PROTO_{Japanese}$ is the intersection of the prototypical temporal properties of Japanese people, i.e. the set of prototypical interval-Japanese individual pairs. A present-tense generic sentence such as, "Japanese people excel in diligence" means that all prototypical Japanese people of the present time have the property of excelling in diligence and is correctly predicted to be false if not all prototypical Japanese are diligent now, even if prototypical Japanese people once had excellent diligence.

22. $[[GEN_x]]^c = \lambda P_{<e,it>}.\lambda Q_{<e,t>}\lambda ti. \forall xe: PROTO_P(x)(t) \rightarrow Q(x)$
   = *true* if all individuals who are prototypical P-s at time t are Q-s.
23. $PROTO_P(x)(t)$
    = *true* if x has, during time t, all properties which are considered to prototypically coincide with the concept responsible for determining membership in P during t

The next task is determining the lexical category and, by extension, the syntactic position of the generic operator. Contrary to most frameworks, I will propose that it is, at least in the sentences we are considering, a determiner which takes the noun phrase as its first argument. The next section highlights my justification for this decision.

A common approach to generic sentences is to stipulate an adverbial generic operator. However, since the generic sentences we are addressing operate over individuals, (generics whose loci are on individuals are also pointed out in (Dobrovie-Sorin, 2013)), we need the arguments to include free variables ranging over individuals. Kratzer suggested that English bare plurals, along with the indeterminate article *a*, serve to provide variables ranging over individuals and that the generic operator is an adverb which unselectively binds these variables, borrowing from (Lewis, 1975). The power of the unselective adverb approach is obvious, but it lumps a very large number of sentence types together and may mask important differences. Of more immediate concern, adverbial treatment also presents syntactic difficulties given our assumption that individual properties are generally derived from temporal individual properties.
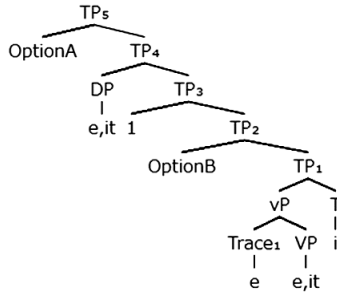
Fig. 2. Syntax possibilities for adverbial generic operator

Borrowing the quantifier movement operation and predicate abstraction rule from (Heim & Kratzer, 1998), when a DP moves, its leaves an indexed trace in its original position and a bare occurrence of that index just below its new position. There is a semantic-type conflict when a non-referential DP with no intrinsic quantifying force combines with a TP. Figure 2 is a highly simplified tree which displays only structure relevant to this conflict. It shows the two possibilities available if the generic operator is a separate constituent from the DP, which would presumably be the case if it were an adverb. OptionA and OptionB are complementary, so when we consider OptionB, OptionA is not present and vice versa.

First, in the absence of either OptionA or OptionB, and maintaining our assumption that a DP with no determiner is type <e,it>, there is a type clash between the DP and TP3, which is type <e,t>, leaving TP4 undefined. A generic adverb (or other quantifying adverb) would have to somehow resolve this clash. Semantically, an adverb between TP4 and TP3 would allow us to get the truth conditions we want, but this is not tenable syntactically given the DP movement operation we have adopted.

OptionA is syntactically possible but untenable semantically because TP4 is undefined. If we abandon our assumption that noun phrases denote temporal properties of individuals and let them denote non-temporal properties of individuals, the DP could combine with the abstracted TP via predicate modification, wherein two nodes of type <e,t> are conjoined, but then the adverb would only have one expression to take as an argument, so quantification with the DP as a restrictor and the TP as the nucleus would not be possible.

OptionB is also syntactically possible. However, TP1 is a proposition (a property of possible worlds), and the only potential variable in such a case is a world variable

(which we are ignoring as worlds play no essential role in the semantics in this paper). Since the generic operator we are dealing with quantifies over individuals, we again have type failure. It seems that we must assume the operator forms a constituent with the noun phrase to assure that it can bind a common variable in two phrases, and treating it as the determiner of a DP is an obvious way to do so.

One test of the category of an expression is what it can be replaced with to get a similar sentence. For example, *the*/*a*/*some*/*most* can be exchanged with each other preceding nouns, so they are often categorized together as determiners. Now recall that plain *-ru* Type-4 verb sentences cannot take referential expressions as an external argument. I then proposed that the element producing a generic meaning was a quantifier in the DP phrase. If the generic operator is indeed a DP quantifier, we should be able to exchange it with other DP quantifiers, and this indeed seems to be the case.

24. Taitei-no nihonjin-wa kinbensa-ni sugure {ru/te-i-ru}
    Most Japanese people excel in diligence

The fact that Type-4 verb sentences with plain -ru are acceptable in the presence of an overt DP-based quantifier like *taitei-no*(most) in (24) is evidence suggesting that the generic operator is also a DP-based quantifier. We will proceed with this conclusion in outlining the structure of generic Type-4 verb sentences.

4.2 *GenP* and Type-4 verbs

Above, I showed how Type 4 verbs can take *-ru* inflection when they are rescued by *te-i*, which introduces a state argument so it can combine with a Voice phrase and then aspect. I have just finished suggesting the generic force is generated in the determiner of a DP. The obvious question is: how can Type-4 verbs get an "external" argument without *-te-i*, as they must in plain *-ru* sentences under this analysis?

First, it doesn't get an "external" argument. Kratzer's proposal to sever the external argument from the VP introduces a Voice phrase to standard verbal clause structure. A verb itself contains no argument for the agent/holder. This argument is appended by the Voice phrase. On the other hand, in the case of Type-4 verbs as I have proposed them, there is an argument position which specifies the possessor of the property in the meaning of the predicate itself. That is, the possessor of the property is not "external" as defined by Kratzer. In fact, arguments of Type-4 verbs can behave like what she classifies as internal arguments. For example, when *taichō* (body condition)

is used as the subject of a *sugure* sentence, the verb takes on a different meaning from the one we have examined, along the lines of "be (not) well". However, in contrast to typical internal arguments which get their value from nodes base-generated in the VP, the argument representing the possessor of a Type-4 verb cannot be base generated in the VP due to compositional concerns, which will be described below.
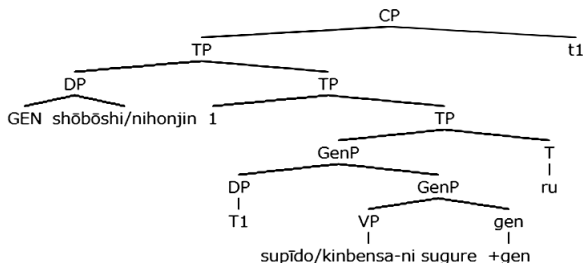

Fig. 3. Generic plain *-ru* inflection

On the other hand, we cannot base-generate this DP in the Spec of the TP like Kratzer, since this would result in type failure. The *sugure* VP is of type <e,it>, so it would not be able to concatenate with tense, which is type <i>. Instead, GenP provides the generic DP, as seen in Fig. 3 above. The head of GenP carries the feature [+gen], so it requires a generic DP in its Spec. This position can be filled by movement of a DP from its scope, seen in Fig. 4 below, or by base-generation, as seen in Fig. 3 above. In the case of plain *-ru* Type-4 sentences, GenP directly concatenates with the VP headed by *sugure-*. Since the head is semantically null, the VP is carried up and the DP in the Spec of GenP saturates the individual-type argument of VP.

A generic DP consists of a generic operator, the two-place operator in section 4.1, and a noun phrase which serves as the restrictor clause. In the denotation in 4.1, the first argument of the generic operator was a temporal property of individuals while the second was a non-temporal one. This argument type, as I will explain below, was motivated by compositional concerns.

First, and perhaps the weaker of the motivations for this denotation, is that the DP of generic sentences is often topicalized in Japanese, evinced by a preference for the topic marker *-wa* as opposed to the nominative-marker *-ga*. If the DP raises to the TP or higher via quantifier movement, as we are assuming, its sister would be of type <e,t>, as shown in (25).

25. [[[[GEN-nihonjin] 1 [T_1 [[gen [kinbensa-ni sugure]] [ru]]]]^c

    = [[[GEN-nihonjin]]]^c (λx_1. x_1 excels in diligence at c(t))

The same is true for *-te-i-ru* sentences, which we will examine below. No matter where the generic DP is generated, it needs to be able to travel at least to the TP, perhaps higher to get topical marking. For this reason, the second argument must be of type <e,t>. After the generic DP takes a property of individuals from its sister TP, we are left with a free variable over temporal intervals in need of a value.

    Another motivation is DP tense. As we observed in (12), the fugitive sentence, allowing the restrictor clause and the nuclear clause to (optionally) be relative to separate intervals also seems generally desirable empirically, as the interval at which individuals are stereotypical examples of the category specified by the embedded noun does not always coincide with the time of the property denoted by the TP. For example, "Japanese people excelled in diligence" could mean that (a) the prototypical Japanese of a past time *t* excelled in diligence at *t*, or that (b) the prototypical Japanese people at the speech time used to have the property of excelling in diligence, while implying that the same people became lazy, perhaps during a national lockdown.

    As reflected in Figures 3 and 4, I will assume that a CP can be headed by a temporal variable. CPs containing temporal intervals have been proposed in the literature for various reasons (Arregui & Kusumoto, 2015; Heim, 1994), so this is not a new take
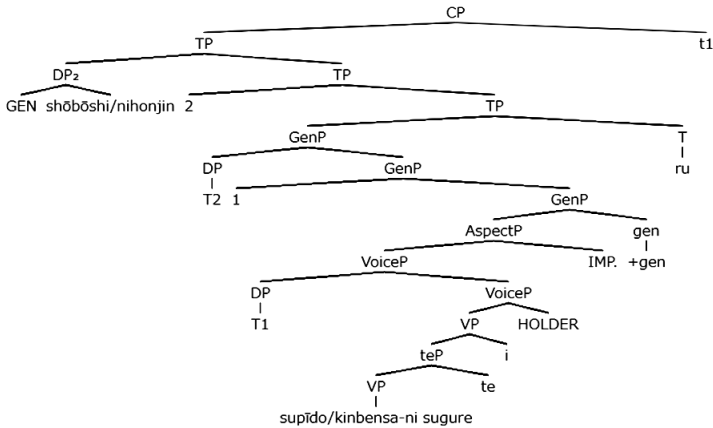

Fig. 4. Generic *-te-i-ru* inflection

on possible CP heads. In Figures 3 and 4, I express it as an indexed temporal variable which is assigned a value by an assignment function. This means that the DP's time could be the same as the matrix tense but doesn't have to be.

We have determined that the generic DP is generated in the spec of GenP for plain *-ru* sentences. We now must decide where GenP scopes vis-à-vis VoiceP, the *i* VP, and AspectP in *-te-i-ru* sentences. It turns out there is very little latitude. Semantically, *-te* and *-i* need access to the individual variable in the property denoted by the Type-4 verb to associate it with a state. If the DP were generated below *-te-i* the individual-type argument of the Type-4 verb would be saturated with the DP's trace. If the argument were saturated, the HOLDER function could not operate on it. For the HOLDER of the state and the possessor of the property to get the same value, the lowest place the generic DP can be generated is in the Spec of the Voice phrase.

Compositionally, the DP could also be generated directly above the Voice phrase in the Spec of a generic phrase. However, to make this work, we would have to assume the VoiceP has a null spec, making it different from the standard VoiceP for stative verbs. Thus, allowing generic DPs to be generated in the Spec of Voice seems to be the best choice, as it only requires one additional speculation for GenP to work for both referential and generic readings: GenP can but doesn't have to generate its own generic DP as long as it gets one some from somewhere.

5   The pragmatics: What's the difference in use?

The semantics above proposed that *te-i-ru* sentences entail the existence of a state which temporally contains the interval provided by tense, while the plain *-ru* variety has no existential requirements. Despite very similar interpretations, there is a reported difference in the evidential requirements for uttering them. Firstly, *-te-i-ru* is appropriate when the speaker observed a display of the property, for example Japanese people being very diligent at work or fireman being very quick in putting out a fire. This fits the semantics which claim that there is a state during which the subject has the property. Sufficient justification for believing such a state exists works out to be such a display. This is the type of knowledge needed to understand properties of specific individuals, and so *-te-i-ru* is pragmatically preferred for referential subjects. Meanwhile, plain *-ru* sentences are appropriate when possession of the property can be known in the absence of evidence for an extant state. For example, it often appears in textbooks, which rely on abstract facts, or with properties which are associated with the category as in (6) and (9). It also has something of a "predictive" meaning.

26. Chīsa-na kigyō-wa kosuto-pafōmansu-ni sugure-{ru/#te-iru} PR-ni tayor-u yō-ni nat-te-i-ru

Small companies have come to rely on publicity which excels in cost-performance

27. Chīsa-na kigyō-wa kosuto-pafōmansu-ni sugure-{#ru/te-i-ru} PR, tatoeba, FB-ya Tsuitta-)-ni tayor-u yō-ni nat-te-i-ru

Small companies have come to rely on the publicity which excels in cost-performance, including Facebook and Twitter.

In (26), the plain -*ru* form is preferred. However, if the speaker has some concrete examples of publicity in mind, -*te-i-ru* is preferred as in (27). This supports an evidential divide between the expressions. In (26), a type of company is being defined via the Type-4 verb with no need to know any specific company, so a concrete display of the property is irrelevant. However, if the focus is on examples, the -*te-i-ru* form is preferred. This correlation between semantics and interpretation may have its explanation in Gricean principles, but further investigation is for another occasion.

6 Conclusion

In sum, this project has presented some surprising verbs in Japanese and offered an analysis which can predict their behavior in matrix sentences and links them to a cross-linguistically attested class of predicates. This has not only allowed a way to explain their idiosyncratic morphological behavior, but offered predictions about the meaning of -*te-i-ru* generic expressions and -*ru* generic expressions, which may extend to generic expressions with stative matrix verbs as well.

If this analysis is on track, it may also have implications for verbal morphology theory. It presents evidence for verbs without any sort of eventuality argument and shows that, to be used in a sentence, they can get an eventuality argument from -*te-i* or become a value for a quantifier. Recent work in distributed morphology hypothesizes that lexical roots only become verbs when the head of a vP introduces an event argument (e.g. Marantz, 2013). However, if an eventuality-less verb can but need not receive an eventuality argument, the seeming coreness of eventualities to verbal expressions may owe to pragmatics, not semantic necessity. A potential extension would be to see if similar rescuing devices can be observed in other languages.

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