The discourse functions of the present perfect

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The interpretation of the present perfect is often assumed to require pragmatic inferences. However, what rules speakers use to perform these pragmatic inferences is not clear. This paper reports two corpus studies of the present perfect in English and Japanese that show that the inferences required to interpret the present perfect follow from general default rules or commonsense entailment rules. These studies also show that the use of the perfect helps discourse coherence in two ways. First, the presence of the state the perfect introduces helps establish discourse relations or allows the establishment of additional discourse relations between discourse segments. Second, the pragmatic inferences required to interpret the perfect can indirectly trigger the rules needed to establish discourse relations.

1. Introduction

Establishing text coherence involves establishing discourse relations between clauses and that discourse relations, in turn, help interpret temporal and anaphoric relations between clauses (Mann and Thompson 1988; Hobbs et al. 1993; Lascarides and Asher 1993; Asher and Lascarides 2003). According to many previous studies, the establishment of discourse relations ultimately relies on the conversational participants’ commonsense knowledge about events or, possibly, the lexical reflexes of that knowledge. In this paper, we show that the choice of grammatical forms, in particular, the choice of a present perfect form over a simple past tense form, can also play a role in inferring discourse relations and building text coherence. Based on the results of two corpus studies of English and Japanese present perfect examples we collected from diverse genres, we argue that the choice of a perfect form affects discourse coherence. We first discuss the discourse functions of the English present perfect and its interaction with the establishment of discourse relations and then show that our results extend to the Japanese nonpast perfect -te-i-ru.

2. Background: the semantics of the English perfect

Many scholars have argued that the present perfect introduces a past event and a state holding at present (henceforth, the perfect state) (Kamp and Reyle 1993; van Eijck and
Kamp 1997; Michaelis 1998; de Swart 1998; Borillo et al. 2004). However, the nature of that state varies among scholars and many of the previous studies provide only a temporal or causal definition of the perfect state.

This paper cannot discuss the semantics of the perfect in any detail. Suffice it to say that to model the fact that the nature of the perfect state varies with the perfect’s interpretation, we modify as in (1) the standard analysis of the perfect within Discourse Representation Theory (DRT) (Kamp and Reyle 1993; van Eijck and Kamp 1997; de Swart 1998).

(1) The meaning of the perfect introduces:
   i. an eventuality ev which satisfies the base eventuality description \( \phi \);
   ii. a subpart ev of ev which also satisfies \( \phi \) and precedes reference time \( r(\tau(ev)) \);
   iii. a perfect state \( s \), which overlaps reference time \( r(\tau(s)) \), and whose category is semantically a free variable \( X \) (in Figure 1).

The presence of the free variable \( X \) is a semantic constraint (imposed by the perfect form), but the value of \( X \) has to be filled in via pragmatic inferences. Figure 1 represents the Discourse Representation Structure (DRS) that results from the interpretation of a sentence whose verb and arguments contribute the eventuality description \( \phi \) (hereafter, the base eventuality description). It is important to note two differences between our analysis of the semantics of the English perfect and other theories. One is that the category of the perfect state is semantically a free variable and the other is that the relationship between the perfect state and the base eventuality is one of inferability, not a temporal (abutting) relation or a causal relation.

Figure 1. The meaning of the English perfect.

Possible values of \( X \) for sentences (2) and (3) and the labels for the corresponding uses of the perfect are shown informally in (2a) – (2b) and (3a) – (3b), respectively:

(2) Ken has broken his leg.
   a. Ken's leg is currently broken (= \( X(s) \)).
      —Entailed resultative reading
   b. Ken is behind in his project (= \( X(s) \)).
      —Conversationally implicated resultative reading

(3) Ken has lived in London.
   a. Ken (still) lives in London (= \( X(s) \)).
      —Continuative reading
   b. Ken knows good restaurants in London (= \( X(s) \)).
      —Conversationally implicated resultative reading

Assuming the correctness of our analysis of the English perfect, for which we have argued elsewhere, three questions arise. The first is what type of inferences are used to find the value of \( X \), i.e., what inference rules lead to fully specified perfect readings. The second is what roles the choice of a perfect form over a simple past tense form plays in discourse. The third is to what extent the results of our analysis of the English perfect extend to other languages such as Japanese. The next section answers the first question through the analysis of a sample of examples culled from a diverse range of corpora.

3. Inference patterns needed to find the value of \( X \) in English

We collected data from various genres, two newspapers (Graff 1997), the two discussion articles in CQ Researcher Online, conversation data from the Switchboard Corpus (Graff et al. 1998), and narrative data from Netlibrary. We examined the interpretations of all present perfect examples including those that occurred in embedded clauses in a pseudo-randomly selected portion of each corpus (605 examples in all). Non-finite forms of the perfect, e.g., perfect forms that followed modal auxiliaries or to were excluded from analysis, as well as the idiomatic expression 'we've got it'.

3. We call entailed resultative perfect readings readings in which the value of \( X \) corresponds to the resultant state entailed by the base eventuality description. We call conversationally implicated resultative perfect readings (Depraetere 1998) or (non-entailed) resultative perfect readings readings in which the value of \( X \) is a resultant state that is not entailed from the base eventuality description. Some scholars call the latter readings existential or experiential perfect readings (McCawley 1971; Dahl 1985).

4. This is a slightly revised version of the study presented in Nishiyama and Koenig (2006) and Nishiyama (2006b).
We found that three types of inference patterns were needed to assign a value to $X$. First, in most perfect examples (81.98%, see (4) – (5) and also Table 1 below), readers need draw only trivial inferences in order to find the value of $X$, namely that the state either described or entailed by the verb and its arguments persists until the present (the presumption of persistence (McDermott 1982)). The inferences drawn in the other 18% fall into a handful of inference patterns.

Type (i) Entailed resultative or continuative perfects. In example (4) readers infer that the base eventuality description, i.e., the state of his being a member of her household still persists at present. In example (5), the occurrence of the event of Yeltsin’s health becoming a major issue entails the resultant state of Yeltsin’s health being a major issue. Readers infer that the entailed state still persists at present.

(4) . . . he has been a member of her household ever since. ($X = \text{He is a member of her household.}$) (Cather 1996, 24) — inference of persistence

(5) Yeltsin’s health has become a major issue in the closing days of Russia’s presidential race. ($X = \text{Yeltsin’s health is a major issue in the closing days of Russia’s presidential race.}$) (Graft 1995–1997: Wall Street Journal, 07.01.1996) — entailment and inference of persistence

Type (ii) Speech-act/Epistemic perfects. Some perfect sentences have speech act verbs or epistemic verbs as their main verbs and the value of $X$ can be inferred via default rules that reflect the speaker and hearer’s expectations about each other’s speech acts. They can be divided into two subtypes.

Subtype (ii-a) Evidential use. Authors may use the perfect to communicate that the complement of performative or epistemic verbs such as, say, promise, or see, presently holds or is likely to hold in the future (see (6) and (8)). The default inference rule at play here is that, e.g., if $Z$ says or promises $Y$ and $Z$ is trustworthy (conforms to our cultural model of language and information, see Searle (1987)), $Y$ is (normally) true or likely to be true in the future as per the speech act’s sincerity conditions (see (7) and (9)) (Searle 1969), and therefore, $Y$ holds or is likely to hold (assuming that if $p$ is true, the state whose category is $p$ holds (Ismail 2001)).

(6) Sumitomo has said its losses from Mr. Hamanaka’s trading stand at $1.8$ billion. ($X = \text{Sumitomo’s losses from Mr. Hamanaka’s trading stand at $1.8 billion.}$) (Graft 1995–1997: Wall Street Journal, 07.01.1996)

(7) $\forall x \forall p ((\text{say}(x, p) \land \text{trustworthy}(x)) \Rightarrow p)$ ($\Rightarrow$ means ‘nonmonotonically/defeasibly entail’ (Pelletier and Asher 1997))

(8) Britain’s opposition Labor Party has also promised a ban on all tobacco advertising if it wins the election due to be held by May next year. ($X = \text{There is likely to be a ban on all tobacco advertising if the Labor Party wins the election.}$) (Graft 1995–1997: Reuters Financial News, 07.01.1996)

(9) $\forall x \forall p ((\text{promise}(x, p) \land \text{trustworthy}(x)) \Rightarrow \text{likely}(\text{future}(p)))$

In example (6), if Sumitomo says $Y$, then $Y$ must be true, given rule (7), and the value of $X$ is ‘Sumitomo’s losses from Mr. Hamanaka’s trading stand at $1.8$ billion.’ In example (8) if Britain’s Labor Party promises $Y$, there is likely to be $Y$ in the future, given rule (9) and the value of $X$ is ‘there is likely to be a ban on all tobacco advertising in the future if it wins.’

Subtype (ii-b) Topic negotiation. Speakers often use the perfect with epistemic verbs at the beginning of a conversation to ask about addressees’ epistemic state and to set up a topic (see (10) and (11)). For instance, in examples (10) and (11), the speaker is trying to set up a topic, camping or the movie “Dances with Wolves,” by asking about the addressees’ camping experience or his having seen the movie. Here, the speaker relies on the default rule that if, by asking the addressee whether an epistemic pre-condition for having a conversation on his chosen topic is satisfied (by asking, e.g., the extent of the addressee’s experience or knowledge of the topic), she wants to talk about $Y$ (see (12)).

(10) Have you done a lot of camping recently? ($X = \text{I want to talk about camping with you.}$) (Graft et al. 1998, sw2009.txt)

(11) A: Have you seen DANCING WITH WOLVES? ($X = \text{I want to talk about the movies.}$)

B: Yeah. I’ve seen that, . . . . (Graft et al. 1998, sw2010.txt)

(12) $\forall x \forall y (\text{ask_addressee_know}(x, y) \Rightarrow \text{want_talk}(x, y))$

Type (iii) Commonsense entailment. Authors sometimes use the perfect, instead of the past tense, to indicate that the occurrence of a past event provides evidence or an explanation for the truth of a claim she made or will make. The value of $X$ in these cases is the state description conveyed by a clause that precedes or follows the sentence containing the perfect. For example, in (13) the events introduced by the sentence containing the perfect (that the speaker curled up and watched international programs) support and provide evidence for the assertion conveyed by the first sentence. The fact that the speaker curled up on a couch and watched those international programs is proof that you can metaphorically go around the world in 80 channels.

(13) . . . you can go around the world in 80 channels (= $X(x)$). . . . I’ve curled up on my living room couch, clicker in hand, and watched, among other things, an Italian salute to mothers; Latin American telenovelas and variety shows; Greek movies; Japanese samurai epics and modern domestic dramas; Indian musicals; the evening news from Moscow; Chinese-language pop videos; Korean game shows; and France’s “Bouillon de Culture.” . . . (Graft 1995–1997: Wall Street Journal, 07.01.1996)

In order to find the value of $X$ in example (13), readers need to make use of a rather specific commonsense entailment rule such as (14).
(14) \[ \forall x (\text{curl_up, clicker_in_hand}(x) \land \text{watch_international_programs}(x) \rightarrow \text{con_go_around_the_world_in_80_channels}(x)) \]

(15) is a similar example. The value of \( X \) for the first sentence is what the second sentence expresses.

(15) House Democratic leader Richard Gephardt of Missouri … has played a key role in recruiting the party's congressional candidates. Many are merely reflecting his priorities. … \( \neg X(b) \) (Graff 1995–1997: Wall Street Journal, 07.01.1996)

Here, Gephardt's key role in recruiting candidates explains that many congressional candidates reflect his priorities. Readers infer the value of \( X \), using another rather specific commonsense entailment rule, the one stated in (16).

(16) \[ \forall x \forall y (\text{play_key_role_recruting}(x, y) \land \text{reflect_priorities}(y, x)) \]

It must be noted here that all the inference rules used in type (i–iii) are available independently of using the perfect, whenever speech participants are aware that the base eventuality occurred. The perfect simply triggers a search for available and relevant inference rules, because of the need to find a value for \( X \) (see above and Nishiyama and Koenig (2004) for more discussion). Although the inferential process is semantically triggered by the use of the perfect, the triggered inference rules are not part of its semantics.

Table 1 summarizes the types of rules used to determine the value of \( X \) in our examples. It is striking that the value of \( X \) for the overwhelming majority of present perfect examples we have looked at can be found through very general default principles. 81.98% of all the examples belong to Type (i), where the value of \( X \) can be derived through the principle of persistence. 11.24% of the examples belong to Type (ii), where the value of \( X \) can be inferred through general default expectations regarding speech acts. In total, 93.22% of the examples require general default rules to assign a value to \( X \). Only a small number of examples (4.46%) require specific commonsense knowledge rules.

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or speakers' desire to help addressees understand the coherence of the discourse they read or hear.

4.1 Type (i) - (iii, b)

Lascarides and Asher (1993) and Asher and Lascarides (2003) argue, with others, that discourses cohere to the extent one can establish discourse relations between its segments (typically, clauses). We assume the correctness of this hypothesis and will discuss the role the perfect plays in enhancing discourse coherence in the context of the approach to discourse coherence developed in Segmentic Discourse Representation Theory (SDRT) (Asher and Lascarides 2003).

In SDRT, for two sentences or other pieces of text to form a coherent discourse, there must be a discourse relation \( R \) that relates their corresponding meaning representations or DRSs. More precisely, \( R \) takes two utterances' meaning representations as its arguments (\( R(\pi_L, \pi_R) \) where \( \pi \) is a label for the DRS of an utterance or clause), and is nonmonotonically inferred from the information content of utterances, discourse contexts, and world knowledge. Whenever an utterance introduces an additional eventuality into discourse, a new discourse relation must relate its semantic content to that of a surrounding utterance.

Our contention is that when a sentence containing a perfect form introduces a perfect state, additional discourse relations can be established on the basis of the relations that can exist between the perfect state and eventualities described in the surrounding text.6 More generally, the presence of an additional eventuality (the perfect state)

6. As shown in the previous section, the underspecified value of \( X \) is easily resolved at the level of the logical form of each clause, typically via very general default inferences. And if the
either prevents conflicting inferences from being made or increases the number of discourse relations between discourse segments. In both cases, it strengthens the coherence of discourses, as per the Maximal Discourse Coherence Principle (MDC) of Asher and Lascarides (2003) that ranks discourses as more coherent the more consistent discourse relations between discourse segments they support.\footnote{7}

4.1.1 Type (i)

Consider examples of perfect uses of Type (i).

(17) a. Alexandra took him in, and he has been a member of her household ever since. ($X = \text{He is a member of her household.}$)
   b. He is too old to work in the fields, but he hitches and unhitches the work-teams and looks after the health of the stock.

In (17a) the value of $X$ for the perfect clause is the state that he is a member of Alexandra's household through an inference of persistence. The DRSs for the clauses (17a) and (17b) can form an Elaboration relation through the Elaboration rule in (18) because the state of his being too old to work in the fields, of his hitching and unhitching the work-teams and of his looking after the health of the stock is a part of the state of his being a member of Alexandra's household (= $X$) (Asher and Lascarides 2003). Since the state of his being too old to work in the fields, the habitual state of his hitching and unhitching the work-teams . . . are all temporally included in the state of his being in Alexandra's household (= $X$), sentence (17b) can elaborate sentence (17a).

(18) Elaboration Rule

\[ \forall \nu \forall \alpha \forall \nu' \forall \alpha' \forall \nu'' \forall \alpha''((\nu, \alpha), \nu' = \nu, \alpha' = \alpha, \nu'' = \nu, \alpha'' = \alpha) \rightarrow \text{Elaboration} \]

(In this and subsequent rules, $\alpha$ and $\beta$ are DRSs, $\nu$ and $\alpha$ are eventuality descriptions, and $\alpha$ and $\alpha'$ are eventuality descriptions. The predicate Part of describes a part-of relation between eventualities.)

The elaboration rule in (18) says that if two discourse segments describe eventualities such that one is part of the other, then one can (defeasibly) infer the existence of an elaboration relation between these two discourse segments.\footnote{8}

If the simple past had been used in (17a) instead (i.e., “and he was a member . . .”), readers would only have been able to infer that his membership held prior to speech time. Because that state might not hold anymore at speech time (in fact, the use of the past tense would imply it does not), the addressee could not establish a part-whole relation between the prior state of being a member of Alexandra's household and the current state of hitching and unhitching work-teams . . . . No inference that an Elaboration relation holds between the DRSs for (17a) and (17b) could then, be drawn.

Discourse (19) illustrates how the choice of a perfect form can help prevent addressees from drawing conflicting inferences. Figure 2 shows the DRSs for discourse (19).\footnote{9}

(19) a. For centuries, the Havasupai Indians of northwest Arizona have performed the ram dance to conduct the spirits of their dead relatives to the next world. ($X = \text{The Havasupai Indians of Northwest Arizona (usually) perform the ram dance to conduct the spirits of their dead relatives to the next world.}$)
   b. But today the sacred ceremony has become more than just a funeral rite. ($X = \text{Today the sacred ceremony is more than just a funeral rite.}$)

The presence of the discourse marker but at the beginning of (19b) indicates that (a portion of) the DRSs for (19a) and (19b) stand in a Contrast relation. One argument of this relation, the one encoded in (19b), corresponds to the event of the ceremony becoming more than a funeral rite. The combination of the semantics of inchoatives and the use of the perfect form will lead readers to infer that the ceremony is more than a funeral rite. But, in turn, this means that the ceremony must still be performed. Had the verb form of (19a) been the simple past performed, an implicature would have arisen that would contradict that entailment, namely an implicature that the ceremony is no more being performed. There are thus two ways in which the use of perfect forms in (19) helps establish discourse coherence. First, the establishment of a Contrast relation between (19a) and (19b) depends on the fact that the ceremony was performed in the past and still is, an inference that the perfect form in (19b) helps trigger. Second, the coherence of (19) depends on the absence of any information that would contradict . . .
that inference. The use of the perfect form in (19a) implicates that the ceremony is still being performed and, more crucially, blocks the implicature that it is not anymore performed.

The inference rule in (21) is based on the knowledge that an eventuality of \( x \) spending \( n \) dollars normally causes an eventuality of \( x \)'s loss standing at \( n \) dollars. The readers' ability to infer a causal relation between spending and losses, in turn, helps trigger the Result discourse relation inference rule stated in (22).

\[
\forall a \forall \alpha \forall \beta \forall \gamma \forall \rho \forall \sigma \forall \tau (P(\alpha, \beta) \land \gamma \land \rho \land \sigma \land \tau) \rightarrow Result(\alpha, \beta)
\]

The rule in (22) says that if the eventuality descriptions \( P \) and \( P' \) are true of \( ev \) and \( ev' \) in DRSs \( \alpha \) and \( \beta \) and if there is a causal relation between \( ev \) and \( ev' \), then \( \alpha \) and \( \beta \) stand in a Result relation. Together, the two rules in (21) and (22) ensure that a Result relation holds between the DRSs for the two sentences in (20). Figure 3 is a representation of the SDRS for discourse (20).

4.1.2 Type (ii–a)

In uses of the English perfect of Type (ii–a), the perfect introduces \( X(s) \) together with the source from which the speaker derives this piece of information. As we saw in the previous section, the use of a perfect form leads to the inference that \( X(s) \) holds. This inference, in turn, helps readers infer the presence of additional discourse relations between the relevant discourse segments. In discourse (20), for example, the DRSs for (20a) and (20b) form a Result relation based on the causal relation that readers can infer between the event introduced in (20a) and the perfect state introduced by the perfect form in (20b), as seen in (21).

(20) a. Mr. Hamanaka spent billions of dollars . . .

b. Sumitomo has said its losses from Mr. Hamanaka's trading stand at $1.8 billion (\( X = \) Sumitomo's losses from Mr. Hamanaka's trading stand at $1.8 billion).

(21) \[ \forall x \forall y \forall v \forall e \forall v' (\text{spend}(x, n, ev) \land \text{loss stand at}(x, n, ev')) \land \text{cause}(ev, ev') \]

Again, the present perfect plays a critical role in facilitating the inference of a Result relation, as that relation is not between what Sumitomo said and Mr. Hamanaka's spending, but between the fact that Sumitomo is reporting and Mr. Hamanaka's spending, i.e., between the perfect state whose category is implicated by (20b) and the content of (20a). Inferring the category of the perfect state is a prerequisite to the establishment of the relevant discourse relation and the need to infer a category for the perfect state triggers this inference in a way a past tense form would not have.

4.1.3 Type (ii–b): Topic Negotiation QAP

Uses of the perfect of Type (ii–b) can also help make interrogative sentences and their answers cohere. Consider the question in (23) or the question-answer pair in (24).
(23) _Have you done a lot of camping recently?_ (X = I want to talk about camping.) (Graff et al. 1998, sw2009.txt)

(24) a. _Have you seen DANCING WITH WOLVES?_ (X = I want to talk about this movie.)

b. Yeah, I’ve seen that, that’s, uh, that was a really good movie. (Graff et al. 1998, sw2010.txt)

(25) ∀x∀y∀p[ask_whether_experticed(x, y, p) → ask_whether_know(x, y, p)]

Rule (25) says if x asks y about p, normally x is asking whether y knows about p. As discussed before, if x asks whether y knows about p, it can, in turn, be defeasibly inferred that x wants to talk about p, as seen in rule (26) below. We propose that under such circumstances, question and answer pairs such as (24) form a Topic-Nego-QAP via the simplified rule in (27). Q and A in rule (27) are conversational events as defined in Poesio and Traum (1997) or goal related speech acts as defined in Asher and Lascarides (2003). If α is the label of a DRS describing a conversational event Q of x expressing her desire to talk about p (indirectly expressed through the perfect form, here) and β is the label of a DRS describing a conversational event A of y informing whether he wants to talk about p, then one can defeasibly infer that Q and A form a Topic-Negotiation-Question-Answer-Pair.

(26) ∀x∀y∀p[ask_whether_know(x, y, p) → (want_to_talk_about(x, p))]

(27) ∀x∀y∀ζ∀p[Q(A(express(Q, x, y, want_to_talk_about(y, z), α) ∨ inform_whether(A, y, x, want_to_talk_about(y, z), β) → Topic-Nego-QAP(α, β))]

Figure 4 is a simplified SDRS for the dialogue in (24). Although this paper cannot fully discuss discourse relations between speech acts, we can at least say that the choice of a perfect form in uses of Type (ii) facilitates the establishment of a Topic-Negotiation-Question-Answer relation between the question and answer by introducing the perfect state and triggering the inference rule in (27).

4.2 Type (iii)

In uses of the perfect of Type (iii), the value of X is found in the surrounding text, as discussed in Section 3. Interestingly, the perfect form is still instrumental in establishing the coherence of the discourse in which it occurs, even though the perfect state would still have been introduced into the discourse, had a perfect form not been used. This is because the perfect triggers the retrieval of a commonsense rule that may constitute a needed premise to establish a discourse relation between the sentence that contains the perfect and the sentence that contains the state description that is the value of X.

Consider the use of the perfect in discourse (28) (simplified from (13)). The perfect form triggers the search for the value of X and the retrieval of rule (29) from which the value of X is determined.

(28) ... you can go around the world in 80 channels (= X). I've... watched, among other things, an Italian salute to mothers; Latin American telenovelas and variety shows; Greek movies; Japanese samurai epics and modern domestic dramas; Indian musicals; the evening news from Moscow; Chinese-language pop videos; Korean game shows; and France's "Bouillon de Culture," (Graff 1995–1997: Wall Street Journal, 07.01.1996)

(29) ∀x(watch_international_programs(x) → can_go_around_the_world_in_80_channels(x))

The use of the perfect 've watched in the second sentence in (28) facilitates the establishment of an Evidence coherence relation between the SDRSs for the two sentences of (28), because the perfect triggers the retrieval of the commonsense rule in (29).

(30) Evidence Rule
∀a∀β[express(P('ve watched', a) ∧ P('for', β, α)) → Evidence(a, β)]

The Evidence Rule in (30) says that if the eventuality descriptions P and P' in DRSs α and β are true of ev and ev' and one can defeasibly infer P'(ev', β) from P(ev, a), then α is evidence for β. In other words, if one makes two claims such that one can (defeasibly) infer the truth of the first from that of the second, the second claim is evidence in favor of the first claim. By evoking a rule on the basis of which one can defeasibly derive P'(ev', a) from P(ev, β) (rule (29)), the perfect helps trigger the rule in (30) on which the coherence of the discourse in (28) partly rests. The SDRS for (28) is shown in Figure 5.
have similar meanings, but differ in one important respect; namely Japanese -te-i-forms can receive both progressive and perfect interpretations while the English perfect has only perfect readings (Nishiya 2006a). Japanese -te-i-forms might best be translated as English progressive perfect forms. Despite this difference, the Japanese -te-i-ru examples we collected have the same discourse functions our English present perfect examples had.

5.1 Summary of the Japanese -te-i-ru data

We collected Japanese -te-i-ru examples from two Japanese newspapers (Graff and Wu 1995), discussion articles from Aozora Bunko (www.aozora.co.jp), conversations from BS Archive (Ohori 1993), and narratives from three novels (Ooe 1959; Nitta 1973; Murakami 1985). The examples include both progressive and perfect readings and occurred in both main and subordinate clauses (including relative clauses), as well as in adjectival phrases that modified noun phrases. The data we report also include the form te-ru, a frequent colloquial form of -te-i-ru. As was the case for our English sample, the perfect examples we examined were all the relevant examples in a pseudorandomly selected portion of each corpus (1186 examples in all). Table 3 shows the types of inference patterns needed to interpret -te-i-ru examples.

Table 3. Inference patterns of -te-i-ru

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<th>Type (iii)</th>
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</tr>
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</table>

*Nihon Keisatsu Shimbun, 07.01, 1994; Dow Jones Telemite/Kyodo News Service, 06, 30, 1995 (Graff and Wu 1993).
**Ohori (1993).

Type (i): Progressives, Entailed Resultative Perfects, and Continuative Perfects. Uses of Japanese -te-i-ru that belong to Type (i) include progressive, entailed resultative perfect, and continuative (progressive perfect) readings. All readings require an inference of persistence. Sentence (31) is an example of progressive perfect (continuative) uses.

(31) Mou nanma-no kore-o tsuka-te-i ru. (Ooe 1959, 26)
Already years as long as this ACC use TE-I NPST
'I have been using this for years now.' (X = I'm using this.)

Progressive, entailed-resultive, and continuing uses make up 88.95% of all our TE-I ru examples. That is, 88.95% of -te-i ru examples correspond to English Type (i) uses, as seen in Table 3: the interpretation of an even larger majority of Japanese nonpast perfect examples depends on an inference of persistence.

Type (ii-a): Speech Act/Epistemic-Evidential Uses. Other Japanese nonpast perfect examples in our corpora turn out to belong to a single inference pattern, namely Type (ii-a) (10.96%). Example (32) illustrates such uses.

(32) Bei-sefu-wa genjoo-da wa 'nichi-bei- sefu
U.S.-government TOP current-situation-in TOP 'Japan's government
choousai kyoutei-ri ihan-su ru' no mi-te-i ru.
trading rules-DAT violation-DAT NPST COMP judge TE-I NPST

"The U.S. government has judged that in the current situation "Japan's free trading" violates WTO rules." (X = Japan's trading violates WTO rules.)

In discourse (32) the author conveys to the reader that the complement of a speech act/epistemic verb (mi- 'judge/regard') is true. Determining the value of X relies on the same sincerity-condition-based rules seen in the corresponding evidential uses of the English present perfect discussed in Section 3. To infer the value of X, readers of (32) rely on the default rule that if somebody gives her judgment and if we assume she fits our cultural model of communication and information (to simplify, she is trustworthy), her opinion is correct and what she says is (normally) true, as seen in rule (33).

(33) ∀x∀p(∃x, p)trustworthy(x)→p

Rule (33) says that if x expresses her judgment about p or explains p, normally p is true. Type (ii-a) uses of Japanese -te-i ru cover examples that include verbs such as setsumei-su ('explain'), bunseki-su- ('analyze'), yosoku-su- ('predict'), kento-su- ('consider'), shiteki-su- ('point out'), iu ('say'), and so on.

Type (i) and Type (ii-a) uses of Japanese -te-i ru amount to 99.91% of all our examples. In contrast to our English data set, the interpretation of our Japanese nonpast perfect examples only required the use of general default inference rules (the persistence rule or rules based on a speech act's sincerity conditions).

5.2 The discourse functions of Japanese -te-i-

Our sample of Japanese nonpast perfect examples displayed the same range of discourse functions that their corresponding English examples did (to the extent there were examples of a particular type of present perfect use). For instance, the DRSSs for the first and the second sentence in (34) (an example of Type (i) use) form a Narration relation and a Result relation, because of the relationship between the events described in the two sentences (the change in Japanese manufacturers' ability to take orders for commercial satellites and the increased rarity of NASDA satellites). In addition, a Background relation can be established between the perfect state introduced in (34a) (there is currently no way for Japanese manufacturers to take orders for commercial satellites) and the overlapping event described in the second clause. Figure 6 is a simplified SDRS for (34).

(34) a. Nihon-no eisei-sekkyo-ka, jitsuyo-kisei
Japanese satellite-manufacturer-TO commercial-satellite
koubu-no michi-o jitsuyo-to wasuare-te-i ru.
taking-order GEN way-ACC virtually close-Causes TE-I NPST
' Japanese satellite manufacturers' ability to take orders for commercial satellites has been virtually shut down.' (X = There is no way for Japanese manufacturers to get orders for commercial satellites.)

b. . . . NASDA-no eisei-sekkyo-ka . . . kazusukunai . . .
. . . NASDA GEN satellite-production-TO . . . rare
uchuu-kanren-gijutsu-ya chikuuki-suru-ba-to no-ru.
space-related-technology-ACC accumulation-DAT place-BECOME-NPST
'Making an NASDA (research) satellite (will) become a rare opportunity (for Mitsubishi Electronic) to build up space-related technology.'

Figure 6. The SDSS for (34).
In (35) (an example of Type (ii-a) use), the DRSs for the first and the second sentences form an Explanation relation, because of the causal relation that can be inferred between the eventuality described in the first sentence (consumption is not rising), and the perfect state described in the second sentence (two factors are negatively affecting that consumption). Figure 7 is a simplified SDRS for (35). (We assume with others that the progressive use of -te-i-ru is stative.)

(35) a. **Koin-shoubi-wa** ... moriagarim-ni kake,
Individual-consumption-TOP ... upsurge-in lack
'The total amount of consumption by individuals is not rising up, and
b. **dou-shitei-de-wa** '... futaitu-no mainasu yosin-ga
that branch-in-TOP ... two minus factors-NOM
hhibii-te-i-ru a si-te-i-ru.
affect-TE-i-NPST COMP regard-TE-i-NPST
'the branch (Bank of Japan) has judged that there are two factors that negatively affect (that consumption)' (X = Two factors are negatively affecting (that consumption)).

(Graff and Wu 1995)

\[ \pi, \pi_2 \]

\[ \pi_1: \]

\[ Individual\_consumption\_not\_being\_rising (s) \]
\[ t(s) \land n \]

\[ \pi_2: \]

\[ Branch\_regard\_two\_minus\_factors\_being\_affecting (e) \]
\[ X(s) \]
\[ t(s) \land n \]

\[ Explanation (\pi_1, \pi_2) \]

\[ X = two\_minus\_factors\_being\_affecting \]

Figure 7. The SDRS for (35).

5.3 Differences between the Japanese and English samples

A striking difference between our sample of English present perfect examples and our sample of Japanese -te-i-ru examples is that there are no uses of Type (iib) in our Japanese sample. There are two reasons for this. First, because -te-i-ru is vague between a progressive and a perfect interpretation, asking about someone's past experience is typically interpreted as a (perfect) progressive question. This is particularly true as there is another form koto-ga aru, which is exclusively used to ask about someone's past experience (see the made-up example in (36)).

(36) **Panda-o mi-ta koto-ga arimasu-ka.**
Panda-ACC look-at PST COMP-NOM exist.polite-Q
'Have you looked at a panda?'

Second, even when a sentence contains -te-i-ru and the verb shi- ('know (get to know)') and serves a Topic Negotiation function, we categorized it as a Type (i) use, not as a Type (ii-b) use in Table 3. Our decision was based on the fact that addressees only need draw an inference of persistence to interpret the value of X, since the entailed state of someone getting to know someone or something still persists. Consider the examples in (37) which we categorized as examples of Type (i), despite the fact that they are part of a Topic Negotiation QAP pair.

(37) a. **A: Kore shi-te ru?**
This know TE-i-NPST
'Do you know this?' (X = You know this.)

b. **C: Minna shi-te ru ite.**
Everyone know TE-i-NPST PRCL
'Everyone knows it.' (X = Everyone knows it.) (Ohori 1993, RK.data-04)

In discourse (37) speaker A asks whether the addressees know some stuff, implicating that she wants to talk about it. After speaker C accepts the topic by saying everyone knows about it, speaker A starts talking about the topic. The same rule we used in the context of English Type (ii-b) examples can be used here. If the speaker wants to know whether the addressees know something (and thus can talk about it), she probably wants to talk about it (see (12)). The inference rule in (12) ensures that discourse (37) can be part of a Topic-Negotiation-QAP pair. Thus, although -te-i-ru examples never need to make use of speech-act inference rules to determine the underspecified value of the perfect state, the point of choosing -te-i-ru over a simple past form might be the same as the corresponding English present perfect examples, namely to negotiate a topic.

Another difference between our English and Japanese samples is that there does not seem to be any -te-i-ru example whose interpretation requires the use of a commonsense rule (uses of Type (iii)). It is hard to know how to interpret this difference. First, English examples of Type (iii) are also quite rare (only 4.46%). It is therefore possible that the fact we did not find any corresponding example in our Japanese sample is due to the vagaries of sampling. Second, such uses are not impossible and are attested in written texts. In discourse (38) a clause containing -te-i- (whose DRS is labelled as \( \pi \)) serves as evidence of the truth of what was claimed in the preceding context (and which corresponds to the value of X (38a)). The context, which we omit for brevity, states that the manager knows about crimes (in parenthesis in the translation). Given the
context, the fact that the culprit made a basic mistake that only those who have never committed a crime would commit can serve as evidence that the manager is not the culprit.

(38) a. \textit{Kantō ni riru A-san wa hannin-ja arimasen.}  
\textit{Manager-san is not the culprit.}

b. \textit{Shokan ma} yura nai yuuna misu o ya-  
\textit{first time criminal too do NEG like mistake ACC do -te-i ru deshou.} (Yura 1985)

The presence of \(X(x)\) in the semantic representation of clause (38b) triggers the search for the value of \(X\) and the commonsense rule in (39), in turn, facilitates the establishment of an \textit{Evidence} relation between the discourse segments \(\pi_1\) and the segment \(\pi_2\) via rule (30). Figure 8 shows the resulting SDRS for discourse (38).

(39) \(\forall x \forall y ((\text{make basic mistake}(x) \land \text{be experienced/knowledgeable}(y)) \rightarrow x = y)\)

In conclusion, Japanese \textit{-te-i ru} has the same range of interpretive possibilities as the English present perfect form, although the interpretation of \textit{-te-i ru} seems to rely even more on very simple default inferences. Table 4 summarizes the possible inference types and discourse functions of Japanese \textit{-te-i ru} perfect uses. Note that, although no example in our sample had to be categorized as a Type (ii-b) use (because the value of \(X\) could always be determined through an inference of persistence), \textit{-te-i ru} forms can be used to negotiate a topic. All in all, and despite the slight difference in meaning between the English and Japanese perfects, both forms help discourse coherence in very similar ways.

### Table 4. Inference types and discourse functions of Japanese \textit{-te-i ru} perfects

<table>
<thead>
<tr>
<th>Function</th>
<th>Type (i)</th>
<th>Type (ii)</th>
<th>Type (iii)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General inference</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Value (X) is in the surrounding text</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Perfect state introduced implicitly with qualification already present in discourse</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Typical Discourse</td>
<td>To add discourse relations</td>
<td>in discourse</td>
<td>To help establish primary discourse relation</td>
</tr>
<tr>
<td>Function</td>
<td>(including Topic-Neg QAP)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. **Summary**

This paper examined a sample of over 600 English present and 1100 Japanese non-past perfect examples to provide a partial answer to why speakers or writers choose a present or nonpast perfect form to describe a past eventuality. Simply put, the perfect can help establish discourse coherence or maximize discourse coherence. In many cases, the help that the perfect form provides is directly tied to the introduction of an additional eventuality into the Segmented Discourse Structure Representation. The more eventualities, the more semantic relations. The more semantic relations between eventualities, the more possible discourse relations between the SDRSs that describe these eventualities. But in some cases, the help comes from the fact that the category of the perfect state is underspecified semantically. That is, the rules themselves that are needed to determine the category of the perfect state might provide a premise that is needed to infer that, for example, an \textit{Evidence} relation holds. The first kind of discursive help supports the claim that the perfect introduces a perfect state. Without this additional eventuality, no additional discourse relations would arise. The second kind of discursive help supports the claim that the category of the perfect state is semantically underspecified. Without the "firing" of rules used to determine the nature of the perfect state, some premises needed to derive discourse relations would be missing. More generally, the contrast between past tense and present perfect forms we discussed in this paper suggests that inferring discourse relations between discourse segments does
not solely depend on their informational content. It also depends on the grammatical structure speakers or writers choose to communicate that content.

References


Nishiya, A. 2006b. The semantics and pragmatics of the perfect in English and Japanese. Dissertation, University at Buffalo, the State University of New York.


