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1. Introduction

Considerable work has been devoted to analyzing the syntax of the Japanese Post-Verbal Construction (hereafter PVC; also referred to in the literature as the "afterthought construction", *kooti-bun* ('postposed sentence'), "postposing", and "right dislocation") [Haraguchi 1973; Inoue 1978; Kaiser 1995; Kuno 1978a, b; Kuroda 1980; Saito 1985; Simon 1989; Whitman 1991; inter alia].¹ However, in comparison, there has been relatively little attention paid to the pragmatics of this construction [Kuno 1978a, b; Simon 1989]. This paper seeks to offer a formal analysis of the discourse function of the PVC.

Japanese is generally a strict verb-final language. Nonetheless, in colloquial speech nonverbal elements can appear after the matrix verb. The following examples illustrate this phenomenon, in which (1a) gives the canonical SOV word order and (1b) its post-verbal (henceforth PV) counterpart:²

(1) a. Canonical Word Order (S-IO-DO-V):

Katoo-wa Yale-ni gansyo-o dasita-yo.
Katoo-TOP Yale-to application-ACC sent-EMPH
'Katoo sent a/the application to Yale.'

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¹ Simon [1989], following [Clancy 1982], distinguishes two types of Japanese constructions which allow post-verbal elements: One she terms "addition" or "afterthought" construction, and the other "postposing" [Simon 1989: 43-45]. Although these two constructions have the same surface word order, they are distinguished prosodically: In the former construction, the post-verbal element is "... produced after sentence-final falling pitch and an audible pause," whereas the latter construction is "... produced quite fluently with no pause and an unbroken intonation contour with lower, level pitch on the postposed constituent" [Clancy 1982: 69]. All of the data discussed in this paper are limited to the latter, no-pause construction, and henceforth the terms Post-Verbal Construction (PVC) and post-verbal (PV) will be used to refer exclusively to this construction and should not be confused with those constructions that have a significant pause prior to the post-verbal element.

² Post-verbal elements are underlined, and the following notation is used:
ACC = accusative EMPH = emphatic [l] = link
CAPS = denote stress [f] = focus LF = Logical Form
DS = D-Structure GEN = genitive NOM = nominative
e = empty position HON = honorific PF = Phonetic Form
corresponding to a PV IP = Inflection Phrase PROP = proposition
element IS = Information Structure Q = question marker

SS = S-Structure
[r] = tail
[TC] = taped conversation
TOP = topic marker

b. Post-Verbal Construction (PVC) (S-V-DO-IO):³

Katoo-wa dasita-yo, gansyo-o, Yale-ni [based on Inoue 1978:
 Katoo-TOP sent-EMPH application-ACC Yale-to 98, (50)]
 'Katoo sent (it) (there), a/the application, to Yale.'

(2) $\exists x \exists y$ [(application(x) & to-Yale(y)) & sent(Katoo, x, y)] (1a) \equiv (1b)

The canonical order and its PV counterpart share the exact same propositional content (as in (2)). However, the PV word-order is more marked and carries an additional pragmatic inference. This is similar to the well-known fact that in English a cleft sentence (e.g., (4a)) and its neutral-word-order counterpart (e.g., (3a)) have the same truth-conditional value ((3b) \equiv (4b)), but the cleft sentence conveys an additional presupposition (e.g., (4c)) [Halvorsen 1978]:

- (3) a. Mary ate a pizza.
 b. $\exists x$ [pizza(x) & ate(Mary, x)]
- (4) a. It was Mary that ate a pizza.
 b. $\exists x$ [pizza(x) & ate(Mary, x)] (3b) \equiv (4b)
 c. Someone ate a pizza. ((4a) presupposes (4c))

In what follows, I will begin in §2 by basing my characterization of the PVC's pragmatic role on Simon's [1989] proposal that PV elements mark information of "secondary importance". While generally retaining Simon's descriptive insight, this paper will argue that it can be formalized by invoking Vallduví's [1992] theory of INFORMATICS, which offers a formal framework for representing INFORMATION PACKAGING (i.e., how a sentence is "packaged" to optimize the entry of information into a hearer's knowledge-store). After briefly outlining Vallduví's theory in §3, §4 will propose that the PVC is a means of overtly marking the PV element as a TAIL. This proposal will require a slight revision to Vallduví's definition of tail, but additional data from English will be presented in §5 to show that such a revision is warranted. Namely, it will be shown that it is possible for a tail to contain hearer-new information, provided that such information can be BRIDGED (in the sense of [Clark 1977]) to some element already in the discourse-model. By adopting both Vallduví's theoretical framework and Clark's concept of Bridging, we will ultimately be able to dispense with Simon's notion of "secondary information". Finally, §6 will review the theoretical implications of this proposal.

³ The order in which multiple PV elements as in (1b) may appear is not fixed, and a variety of elements including subjects, PPs, adverbs, and even entire clauses may appear in the PV position. See [Kaiser 1995] and [Simon 1989] for more details.

2. Secondary Information⁴

Kuno [1978a, b] first noticed that there are certain ungrammatical PVCs whose infelicity cannot be attributed to any syntactic factors, but instead seem to obey some discourse constraint. For example, a PV element may not answer an information question (5Bb), receive exhaustive listing focus (6b), or be a *wh*-phrase (7b):

(5) Answer to an Information Question: [Kuno 1978a: 69, (4)]

A: Taroo-wa Shoowa nan-nen-ni umareta?
Taroo-TOP Showa what-year-in was.born
'What year of Showa was Taroo born in?'

Ba: Shoowa sanzuyu-nen-ni umareta.
Showa 30-year-in was.born
'(He) was born in Showa 30.'

Bb: * Umareta, Shoowa sanzuyu-nen-ni.
was.born Showa 30-year-in
'(He) was born (then), in Showa 30.'

(6) Exhaustive-Listing Reading:

a. Tookyoo-ga sekai iti-no dai tokai da-yo.
Tokyo-NOM world one-GEN big city be-EMPH
'Tokyo's the biggest city in the world.'

b. * Sekai iti-no dai tokai da-yo, Tookyoo-ga. [Kuno 1978a: 70, (8b)]
world one-GEN big city be-EMPH Tokyo-NOM
'(It)'s the biggest city in the world, Tokyo.'

(7) Wh-Phrase:

a. Nan-niti-ni otaku-ni ukagaimasyoo-ka?
what day-on house-HON-at inquire-PROP-PROP-Q
'On what day shall I inquire at your house?'

b. * Otaku-ni ukagaimasyoo-ka, nan-niti-ni? [Kuno 1978a: 71, (11b)]
house-HON-at inquire-PROP-PROP-Q what day-on
'Shall I inquire at your house (then), on what day?'

Since in each of these infelicitous examples the PV element contains discourse-new information, Kuno proposes the discourse constraint in (8) requiring that a PV element be discourse-anaphoric:

⁴ For expository reasons, Kuno's [1978a, b] and Simon's [1989] arguments have been simplified somewhat, but the discussion here is consistent with their basic analyses. For a more detailed discussion, the reader is referred to [Kaiser 1996].

- (8) Kuno's Discourse Constraints on the PVC: [Kuno 1978b: 62]

Post-verbal elements are discourse-predictable.

However, contrary to Kuno's claim, Simon provides several examples like those in (9) to show that PV elements can in fact contain discourse-new information:

- (9) Evidence Contra (8): PV Elements can be Discourse-New

- a. Watasi-nante copy-dai-to hon-dai-toka ittara,
I-TOP copy-expenses-and book-expenses-etc. said.when
kureta-wa-yo, 300-ikura. [TC] [Simon 1989: 37, (31a)]
gave-EMPH 300-over
'When I said (=asked for) expenses for copying and books, etc.,
(they) gave (it) to me, over 300 (dollars).'
- b. Abunai-yo, kuruma-ga kuru kara. [Simon 1989: 189, (40a)]
dangerous-EMPH car-NOM come because
'Look out, because a car is coming.'

In the example in (9a) (which is taken from an actual taped conversation), the information in the PV phrase had not been previously mentioned in the discourse. Hence, rather than being discourse-anaphoric, Simon instead suggests that PV elements contain "supplementary" or "secondary information", which she defines as "... information that is secondary to what the speaker wants to get across most during the utterance, which is expressed in the preceding clause" [Simon 1989: 38]. For example, in (9a), the fact that the speaker received any money at all is the most important information, and the amount received is secondary. Similarly, in (9b), what is crucial is that the speaker warn the hearer of the potential danger, whereas the exact cause of this danger is only of secondary importance. To account for these facts, Simon proposes the following constraint:

- (10) Simon's Discourse Constraints on the PVC: [Simon 1989: 61]

Post-verbal elements express "secondary information".

Simon's constraint rules out the ungrammatical PVCs in (5-7), since an answer to an information question, an item receiving exhaustive listing focus, and a *wh*-phrase all necessarily constitute information of primary importance. At the same time, (10) correctly permits felicitous examples such as those in (9).

I follow Simon in assuming that the pragmatic function of the PVC is to mark information of secondary importance, since this generalization appears to be descriptively accurate and empirically motivated. However, it would be preferable if we could derive the notion of "secondary information" from some primitive of universal grammar. Moreover, since the pragmatic function of marking "secondary information" is overtly grammaticized in Japanese, we need some way of linking this pragmatic function with its corresponding syntactic structure in our theory of grammar. To resolve these issues, I will adopt Vallduvf's theoretical framework of Informatics as outlined in the next section.

3. Informatics

Vallduví's theory of Informatics provides a theoretical mechanism for linking syntactic structures with the pragmatic field of INFORMATION PACKAGING (along the lines of [Chafe 1976] and [Prince 1986], as cited in [Vallduví 1992]). The role of information packaging is to optimize the entry of information into the hearer's knowledge-store. By "packaging" a sentence in a particular way, a speaker can give instructions about what part of the sentence constitutes new information, and how that information is to be inserted into the hearer's knowledge-store [Vallduví 1992: 15].

These instructions are created by using different combinations of the following primitives:

- (11) S = {focus, ground} [Vallduví 1992: 46, (44)]
 ground = {link, tail}

First, FOCUS is the only informative part of the sentence; it is new information for the hearer's knowledge-store, as opposed to the GROUND, which is salient knowledge that the speaker assumes to be part of the hearer's beliefs. The ground is comprised of two parts: the LINK and TAIL. The link corresponds to a large extent to what has been called the *topic*. Vallduví adapts Heim's [1983] notion of File Change Semantics (originally developed to account for discourse referents) to account for the hearer's knowledge-store. The knowledge-store is a collection of *file cards*, each of which acts as an address, and this knowledge-store is dynamically modified and updated by creating new file cards and entering information onto those cards. A link, therefore, is an address pointer: it instructs the hearer to go to the same address in his/her knowledge-store as specified by the link and enter the new information in the sentence onto that card. Finally, the tail is the most important of these primitives with respect to the PVC. The tail corresponds to knowledge which the speaker assumes is part of the hearer's knowledge-store; it is already on a file card. However, it is important to clarify that hearer-old knowledge is not necessarily discourse-old; the hearer could have acquired this knowledge from some other previous conversation or experience. Thus, the tail corresponds to an instruction to substitute the new information (i.e., the focus) for a particular "gap" in the knowledge on that card [Vallduví 1992: 46-9, 66-7].

The following example illustrates one possible combination of these primitives:⁵

- (12) a. [_L The boss] [_F HATES] [_T broccoli]. [Vallduví 1992: 56-7, 64-7]
 b. The speaker believes that the hearer already knows that 'The boss ___ broccoli.' (i.e., ___ *broccoli* is already in the hearer's knowledge-store at the address *the boss*).
 c. $\Lambda x, x_1 = \text{the boss} [\lambda x_2 [\Phi [x_1 \text{ hates } x_2]]]$ (broccoli)
 d. 'I instruct you to go to the address *the boss* and retrieve the information of the sentence by substituting *hates* for the blank in *the boss ___ broccoli* which is already under "the boss".'

⁵ Small caps denote stress, and, as Vallduví and others have pointed out, stress is a prosodic means of marking the focus.

For example, suppose the speaker believes that the hearer already knows there is some relation between *the boss* and *broccoli*, but does not know the exact nature of this relation (as in (12b)). In other words, the hearer already has a card with the address *the boss* (which is the link) in his/her knowledge-store, and at that address is already the entry _____ *broccoli*, which is the tail. Consequently, the speaker packages the information by dividing the sentence into a link, focus, and tail, as in (12a), thereby highlighting *hates* as the new information (i.e., the focus) to be substituted into this gap. This particular packaging therefore instructs the hearer to insert the information into his/her knowledge-store as in (12c, d).⁶

To link this theory of information packaging with the corresponding syntactic structures, Vallduví proposes a new level of interface called INFORMATION STRUCTURE (hereafter IS):⁷

- (13) DS [Vallduví 1992: 137, (258)]
 PF SS IS
 ? LF

IS is the level at which information packaging is encoded. Specifically, by the time a derivation reaches the level of IS, whatever is to be interpreted as a link must be adjoined in a position to the left of IP, whatever is a tail must be adjoined to the right of IP, and whatever remains immediately dominated by IP will be interpreted as the focus:

- (14) [LINK [[_{IP} FOCUS] TAIL]] (by the level of IS) [Vallduví 1992: 109, (191)]

The positioning of an information-packaging primitive can be satisfied either overtly at S-Structure or covertly at IS.⁸ For example, in a language like Catalan, the tail is marked overtly, since at S-Structure it is already in a position adjoined to the right of IP due to Clitic Right Dislocation (e.g., (15)). In a language like English, on the other hand, the focus and tail are distinguished prosodically by stressing the focus,⁹ and the tail waits until IS to move covertly to its appropriate position adjoined to the right of IP (e.g., (16)):

⁶ Due to expository reasons, I will not explain the notation used in (12c), but it is a formal equivalent of the instructions spelled out in (12d). The reader is referred to [Vallduví 1992: §4.2.1] for details.

⁷ This is a revision of the "T-model" of grammar in the Principles & Parameters Theory [Chomsky and Lasnik 1977; Chomsky 1981, 1986]. In addition to adding IS, Vallduví [1992: 137] suggests that there may be other interface levels also branching off from S-structure.

⁸ This is similar to the fact that the level at which *wh*-movement occurs can also vary cross-linguistically [Huang 1982]:

- (i) a. Who_i does John love t_i? (English) (overt *wh*-movement at SS)
 b. Taroo-wa dare-o aisite-iru-no? (Japanese) (covert *wh*-movement at LF)
 Taroo-TOP who-ACC love-PROG-Q
 'Who does Taroo love?'

⁹ Since prosodic stress is a means of covertly marking a focus, there appears to be a relationship between PF and IS. Whether this relation should be a direct one or one which is mediated through SS (as Vallduví

- (15) Overt Tail-Marking at SS (Clitic Right Dislocation in Catalan):¹⁰
- a. [L_i L'amo] [F_i l'ODIA], [T_i el bròquil]. [Vallduví 1992: 110, (193b)]
 the.boss it-HATES the broccoli
 'The boss HATES broccoli.'
- b. SS: L'amo, [I_p l'ODIA t_i t_j], el bròquil_j.
- c. IS: L'amo, [I_p l'ODIA t_i t_j], el bròquil_j.

- (16) Covert Tail-Marking at IS (Prosodic Stress in English):
- a. [L_i The boss] [F_i HATES] [T_i broccoli]. [Vallduví 1992: 110, (193a)]
- b. SS: [I_p The boss HATES broccoli].
- c. IS: The boss_i [I_p t_i HATES t_j] broccoli_j.

Vallduví distinguishes IS from LF, since these levels are used to represent two different types of meaning. While IS represents a sentence's information packaging, LF is the level which represents a sentence's logico-semantics. For example, (17) and (18) have the same propositional content and therefore have the same LFs, but their ISs are different since the information packaging of these sentences is not the same. On the other hand, (17) and (19) have the same information packaging and as such have the same structure at IS, but their LF representations differ since they convey different truth-conditions:

- (17) a. SS: [I_p Paul didn't KILL the judge]. [Vallduví 1992: 132, (246)]
 b. LF: ¬ [Paul killed the judge].
 c. IS: [Paul_i [I_p t_i didn't kill t_j] the judge_j].
- (18) a. SS: [I_p Paul [F_i didn't kill the JUDGE]]. [Vallduví 1992: 132, (247)]
 b. LF: ¬ [Paul killed the judge].
 c. IS: [Paul_i [I_p t_i didn't kill the judge]].
- (19) a. SS: [I_p Paul KILLED the judge].
 b. LF: [Paul killed the judge].
 c. IS: [Paul_i [I_p t_i killed t_j] the judge_j].

Having briefly reviewed Vallduví's theory of Informatics, the next section will consider how this theoretical framework can be used to account for the PVC in Japanese.

suggests in his representation in (13)) is an interesting theoretical question. However, I leave this issue for future research, since prosodic stress does not appear to play a role in the analysis of the PVC.

¹⁰ Vallduví [1992: §5.2] presents data which suggest that the underlying word order in Catalan may be VSO, not SVO as is generally assumed.

4. Overt Tail-Marking

I propose that the PVC is a means of overtly marking the PV element as a tail. For example, (20a) illustrates the information packaging of the PVC in (1b), and (20b) gives its IS representation:¹¹

(20) a. Information Packaging of (1b):

Katoo-wa dasita-yo_e], [_T gansyo-o_e, Yale-ni].
 Katoo-TOP sent-EMPH application-ACC Yale-to
 'Katoo sent (it_i) (there_e), a/the application_e, to Yale.'

b. Information Structure Representation of (1b):

[[[Katoo-wa e_i e_j dasita-yo_{CP1}], gansyo-o_{CP1}], Yale-ni_{CP1}].
 Katoo-TOP sent-EMPH application-ACC Yale-to
 'Katoo sent (it_i) (there_e), a/the application_e, to Yale.'

There are several factors in support of this proposal. First, PV elements cannot be foci since they can never contain new information of primary importance, such as the answer to an information question, an item with exhaustive-listing reading, or a *wh*-phrase (e.g., (5-7)). Nor can they be links, which as address-markers must always appear sentence-initially, "... since an address must be pointed to *before* the information to be entered under it is spelled out" [Vallduví 1992: 48]. By process of elimination, we can therefore deduce that PV elements are tails. This analysis is supported by both the structure and functional role of the PVC. In terms of structure, the fact that PV elements are adjoined to the right of the main clause [Kaiser 1995, Simon 1989, and Whitman 1991] is consistent with Vallduví's analysis that tails are adjoined to the right, outside of the focal-scope of IP. Moreover, the functional role of the PV phrase denoting information of secondary importance parallels Vallduví's proposal that tails provide information specifying the "gap" into which the focus should be inserted. Additionally, the fact that tails need not necessarily be discourse-old information is consistent with the PV data in (9). Finally, Vallduví states that "... information packaging is a relational property that constituents have by virtue of their standing in a particular relationship with the other element[s] [sic] of the sentence" [Vallduví 1992: 43-44]. Similarly, a relational property is also present in Simon's definition of what constitutes "secondary information" (i.e., "information that is secondary to what the speaker wants to get across most during the utterance, which is expressed in the preceding clause" [Simon 1989: 38]).

However, there remains one potential problem with applying Vallduví's definition of tail to PV elements. Vallduví makes a distinction between the link and tail, in that the tail, but not necessarily the link, must always be hearer-old (i.e., already entered onto one of the

¹¹ I make no claims about whether *wa*-marked elements are links or part of the focus or about what their position is at IS. As will be discussed in Footnote 17, the information-packaging status of *wa*-marked elements is controversial.

In (20b), the idea that PV phrases are adjoined to the matrix CP has been argued for by [Kaiser 1995], [Simon 1989], and [Whitman 1991]. Also, depending on one's syntactic analysis of the PVC, the *e* which represents the empty position corresponding to the PV phrase could either be a *pro* corresponding to a base-generated PV element or a trace of a moved PV element. Since either analysis is consistent with the claims of this paper, this issue is irrelevant for the present discussion.

hearer's file cards). Because the purpose of the link is to point to an address, it is possible to point to a non-pre-existing address (i.e., hearer-new), thereby simultaneously creating and pointing to that address. The tail, on the other hand, denotes a proposition already entered onto one of the hearer's file cards [Vallduví 1992: 63], and therefore must always be hearer-old. However, the data in (9) show that information in a PV phrase not only can be discourse-new, but also can be hearer-new, since in these contexts the hearer would have had no previous knowledge of the content of the PV phrase. For example, in (9a), the hearer in this taped conversation had no knowledge of the amount of money given to the speaker [Mutsuko Endo Hudson, p.c.]. Similarly, in (9b), why would the speaker tell the hearer to look out if s/he thought the hearer already knew that a car was coming? Therefore, if we are to interpret the PVC as a form of overt tail-marking, then this contradiction regarding the hearer-new status of tails must be resolved. The next section examines this issue.

5. Revised Notion of Tail

I offer the following felicitous English sentences as supporting evidence that tails may in fact contain hearer-new information:

Tails Not Necessarily Hearer-Old: Evidence from English

- (21) A: Who robbed the bank?
 B: [_F It was JOHN] [_T who stole that \$10,000]!
- (22) A: How does the boss feel about green vegetables?
 B: [_L The boss] [_F HATES] [_T green vegetables, especially broccoli].

The above examples have structures which, according to Vallduví's analysis, incontrovertibly contain tails, and these tails in turn contain information which could conceivably have been unknown to the hearer in the above contexts. Specifically, in (21), it is possible that the hearer did not know the exact amount of money that was stolen (i.e., \$10,000), and in (22), although the hearer knew that there was some relation between *the boss* and *green vegetables*, s/he may not have known that this relation was particularly prominent with respect to *broccoli*. Therefore, contrary to Vallduví, it appears that tails may in fact introduce information not previously present on one of the hearer's file cards.

Vallduví makes a binary distinction between hearer-old (i.e., already entered onto a hearer's file card) and hearer-new (i.e., not yet on a file card). Hence, based on Vallduví's terminology, the tails in (9), (21), and (22) contain hearer-new information. However, to be more precise, this apparent "hearer-new" information also has some characteristics of being "old". Specifically, the "new" information in these tails always denotes information which further specifies some old information already in the discourse-model. For example, in (9a), the sum of money expressed in the PV tail is a more exact accounting of the book and copy expenses (*copy-dai-to hon-dai-toka*), and in (9b), *kuruma-ga kuru kara* ('because a car is coming') conveys the reason for the danger. Likewise, in (21), the amount \$10,000 specifies what was stolen from the bank, and in (22), *broccoli* is a member of the set of *green vegetables*.

Another way of explaining this relation is to say that the apparent "new" information in the PV phrase can be linked or BRIDGED via backward inferencing to some ANTECEDENT in the discourse-model (in the sense of [Clark 1977]). Before explicitly

discussing this proposal, first an explanation of this terminology is in order. Clark [1977; see also Clark and Haviland 1977] develops these notions as part of his theory of the GIVEN-NEW CONTRACT, as stated in (23):

(23) Given-New Contract:

The speaker agrees to try to construct the Given and New information of each utterance in context (a) so that the listener is able to compute from memory the unique Antecedent that was intended for the Given information, and (b) so that he will not already have the New information attached to the Antecedent. [Clark 1977: 413]

(24) Definitions: [paraphrased from Clark 1977: 412, 418]

- a. GIVEN refers to information which the hearer already knows.
- b. NEW refers to information that the hearer does not yet know but that the speaker would like to get across.
- c. The ANTECEDENT is information in the hearer's memory (i.e., knowledge-store) with which the Given information in a particular sentence is associated. The Antecedent could be linked to an object such as a discourse referent (e.g., (26-28) below), or to a more abstract notion such as the reason for a previously mentioned event or state (e.g., (29) below).
- b. BRIDGING involves the construction of implicatures which the hearer could plausibly draw via backward inferencing in order to link some Given information with its intended Antecedent.

The notion of Bridging is illustrated by the following examples:¹²

- (25) a. John saw someone leave the party early. It was Mary who left.
- b. In the group there was one person missing. It was Mary who left. [Clark 1977: 412-413, (1, 2)]

Example (25a) is relatively straightforward. Since an *it*-cleft sentence like *It was Mary who left* presupposes $\exists x[\text{left}(x)]$, the hearer will search for an Antecedent for the Given information *X left*. Upon finding in his/her knowledge-store an event of someone leaving as expressed in the first sentence, s/he will then integrate the New information *Mary* into his/her knowledge-store by appropriately associating *Mary* with the propositions expressed in both sentences (i.e., *X left the party early* and *X left*). Example (25b), on the other hand, illustrates a more typical scenario in which the hearer may not be able to find a direct Antecedent in his/her knowledge-store. Since the first sentence does not directly mention anyone leaving, the hearer will have to Bridge the gap to find the intended Antecedent. In

¹² Another typical illustration of the Bridging phenomenon is the example in (i), in which *the bride* can be Bridged to *a wedding* [Sergey Avrutin, p.c.]:

- (i) I went to a wedding. The bride was beautiful.

other words, the hearer will have to deduce the implicature *One person was missing because that person left*. Having inferred this Bridge, the hearer will then correctly be able to associate *Mary* with both propositions (i.e., *X was one person missing* and *X left*) [Clark 1977: 412-413].

Generally, Clark's notion of Given is equivalent to Vallduvf's notion of hearer-old, and likewise New is equivalent to hearer-new. However, their terminology appears to diverge regarding cases in which Bridging is involved. For instance, in (25b), the information *X left* may not itself have been entered into the hearer's knowledge-store yet, but it can be Bridged to some information which is already in the hearer's knowledge-store (i.e., *there was one person missing*). In this case, Clark refers to the information *X left* as Given, whereas according to Vallduvf's terminology it would be hearer-new since technically it is not yet present on a file card.

Clark [1977: 414-419] presents a taxonomy of some of the different possible kinds of Bridging. Not only can Bridging be used to draw an inference to account for discourse referents (e.g., (26-28)), but it can also be used to account for more abstract notions such as the reason for a previously mentioned event or state (e.g., (29)).¹³

- (26) Direct Reference -- Set Membership: [Clark 1977: 415, (10, 10')]
- a. I met two doctors yesterday. The woman told me a story.
 - b. One of the entities referred to by 'two people' is a woman and the other is not; this woman is the Antecedent of *the woman*.
- (27) Indirect Reference by Association -- Necessary Parts: [Clark 1977: 415, (15)]
- a. I looked into the room. The size was overwhelming.
 - b. The room mentioned has some size; that size is the Antecedent of *the size*.
- (28) Indirect Reference by Characterization -- Necessary Roles: [Clark 1977: 417, (22, 22')]
- a. John was murdered yesterday. The murderer got away.
 - b. Some one person performed John's murder; that person is the Antecedent for *the murderer*.

¹³ This notion of Bridging may seem similar to Prince's [1981, 1992] notion of INFERRABILITY:

- (i) "A discourse entity is Inferrable if the speaker assumes the hearer can infer it, via logical -- or, more commonly, plausible -- reasoning, from discourse entities already [in the discourse-model]." [Prince 1981: 236]

However, as Ellen Prince has pointed out to me [p.c.], Inferrables can only be discourse referents, and therefore this notion cannot be associated with non-discourse entities such as the reason for an event (cf. (29)). Vallduvf's concept of tails, on the other hand, need not be limited to just discourse referents; tails contain all sorts of information which is part of the 'presupposed open proposition'. Since Clark's notion of Bridging is not restricted only to discourse referents, this primitive will be utilized to account for PV phrases and tails containing hearer-new information.

- (29) **Reason:** [Clark 1977: 418, (28, 28')]
 a. John fell. What he wanted to do was scare Mary.
 b. John fell for the reason that he wanted to do something; that something is the Antecedent to *what he wanted to do*.

This notion of Bridging may seem somewhat unconstrained, since, in principle, inferencing need not be determinate (i.e., given the time and inclination one could build an infinitely long bridge of assumptions). However, Clark [1977: 420] points out that while FORWARD INFERENCING is indeterminate, BACKWARD INFERENCING is not. For example, upon hearing only the first sentence in (25b), the hearer could potentially make an infinite number of forward inferences by imagining all sorts of things about the missing person, and s/he would have no way of predicting that this person was necessarily Mary. However, after hearing the second sentence in (25b), there is only one plausible backward inference which the hearer could draw in this context: namely, that Mary was the missing person. This is because all but the necessary backward inferences are unauthorized in Bridging [Clark 1977: 420].

Returning now to the apparent "new" information in the tails in (9), (21), and (22), since this information further specifies some information already in the discourse-model, it is realistic that the hearer would be able to construct a plausible backward inference which Bridges the hearer-new information in these tails to some Antecedent. The specific kinds of Bridging involved in these examples are as follows:

- (30) **Bridging involved in (9a):**
 (cf. (27)) **Indirect Reference by Association -- Necessary Parts**
 a. Watasi-nante copy-dai-to hon-dai-toka ittara,
 I-TOP copy-expenses-and book-expenses-etc. said.when
 kureta-wa-yo_r, [_r 300-ikura]. [TC] [Simon 1989: 37, (31a)]
 gave-EMPH 300-over
 'When I said (=asked for) expenses for copying and books, etc.,
 (they) gave (it) to me over 300 (dollars).'
- b. The expenses mentioned equal some amount; that amount is the Antecedent of 300-ikura ('over 300 (dollars)').
- (31) **Bridging involved in (9b): Reason**
 (cf. (29))
 a. [_r Abunai-yo], [_r kuruma-ga kuru kara]. [Simon 1989: 189, (40a)]
 dangerous-EMPH car-NOM come because
 'Look out, because a car is coming.'
- b. It is dangerous for some reason; that reason is the Antecedent of kuruma-ga kuru kara ('because a car is coming').

(32) Bridging involved in (21):(cf. (28)) Indirect Reference by Characterization -- Necessary Roles

a. A: Who robbed the bank?

B: [_F It was JOHN] [_T who stole that \$10,000]!b. Something was robbed from the bank; that something is the Antecedent of *that \$10,000*.¹⁴(33) Bridging involved in (22): Direct Reference -- Set Membership

(cf. (26))

a. A: How does the boss feel about green vegetables?

B: [_L The boss] [_F HATES] [_T green vegetables, especially broccoli].b. *Green vegetables* can be used to refer to various entities; one of the members of the set of green vegetables is the Antecedent of *broccoli*.

Given that the hearer-new information in these tails can be Bridged to an Antecedent, I propose that Clark's notion of Bridging be incorporated into Vallduví's definition of tail. Specifically, I follow Vallduví in assuming that tails can contain hearer-old information, but contrary to Vallduví, I propose that tails may also contain hearer-new information, provided that the information can be Bridged to some Antecedent in the discourse-model. However, hearer-new information which cannot plausibly be Bridged to an Antecedent is barred from appearing in tails. This revised definition is given in (34):

(34) Revised Notion of Tail:

The tail serves as an instruction to substitute the new information (i.e., focus) for some "gap" in the hearer's knowledge. Therefore, the tail contains information which the speaker assumes is already on one of the hearer's file cards. Or, it may introduce some hearer-new information if and only if a plausible backward inference can be drawn which Bridges the hearer-new information to some Antecedent already in the discourse-model. However, tails may not contain non-Bridgeable hearer-new information.

First, it should be fairly uncontroversial that tails can contain hearer-old information, since this is consistent with Vallduví's original definition. The data in (35) and (36) show that tails and PV phrases permit hearer-old information, regardless of whether or not this information had been previously mentioned in the discourse:

(35) Tail May Contain Hearer-Old, Discourse-Old Information:a. [_F It was JOHN_i] [_T who said he_i hates broccoli].b. [_F Taroo_i-no ototoo-ga syasin-o miseta-yo], [_T kare-ni].

Taroo-GEN brother-NOM photo-ACC showed-EMPH he-DAT
 'Taroo_i's brother showed a picture to him_i.' [Kaiser 1995: 109, (10a)]

¹⁴ There is also a second inference which Bridges the verb *stole* to its Antecedent *robbed*.

(36) Tail May Contain Hearer-Old, Discourse-New Information:

- a. A: How does Molly feel about her co-workers?
 B: [_L She] [_F HATES] [_T them, including her boss].
- b. A: Tomodati-to atta-no?
 friend-with met-Q
 Did you meet a friend?
- B: Un, [_F atta-yo], [_T Mari-to].
 yeah met-EMPH Mary-with
 'Yeah, I met Mary.'

Next, regarding Bridgeable hearer-new information, the revised definition of tail in (34) correctly predicts that examples such as (9), (21), and (22) should be felicitous since the hearer-new information in these tails can be Bridged to an Antecedent (e.g., (30-33)). The information packaging of examples (9a) and (21) is given below to illustrate how this notion of Bridging fits in with Vallduv's framework of Informatics:

(37) Information Packaging of (9a):

- a. [_L Watasi-nante] [_F copy-dai-to hon-dai-toka ittara,
 I-TOP copy-expenses-and book-expenses-etc. said.when
 kureta-wa-yo], [_T 300-ikura]. [TC] [Simon 1989: 37, (31a)]
 gave-EMPH 300-over
 'When I said (=asked for) expenses for copying and books, etc.,
 (they) gave (it) to me over 300 (dollars).'
- b. The speaker assumes no pre-existing knowledge in the hearer's knowledge-store about the information conveyed in this sentence. (Except that there is probably a card with the address *watasi* ('I'), which may be the link.)
- c. $\Lambda x_1, x_1 = \text{watasi-nante} [\lambda x_2 [\Phi [x_1 \text{ copy-dai-to hon-dai-toka ittara, } x_2 \text{ kureta-wa-yo }]]]$ (300-ikura)
- d. 'I instruct you to go to the address *watasi* ('I') and retrieve the information of the sentence by adding under that address *copy-dai-to hon-dai-toka ittara*, _____ kureta-wa-yo ('said (=asked for) expenses for copying and books, etc., (they) gave (it) to me') and update this knowledge by substituting *300-ikura* ('over 300 (dollars)') for the blank, since this information can be Bridged to an Antecedent via the plausible backward inference that there must be some amount that the expenses equalled.

(38) Information Packaging of (21):

- a. A: Who robbed the bank?
 B: [_F It was JOHN] [_T who stole that \$10,000]!
- b. Speaker B believes that hearer A already knows that '(Someone) robbed the bank.' (i.e., robbed the bank is already in the hearer's knowledge-store at the current address).
- c. λx_1 [Φ [John x_1]] (stole that \$10,000)
- d. 'I instruct you (at the current address) to retrieve the information of the sentence by substituting *John* for the blank in robbed the bank and update this knowledge by substituting *stole that \$10,000*, since this information can be Bridged to an Antecedent via the plausible backward inference that there was some amount that was robbed from the bank.'

Finally, the claim that tails cannot contain non-Bridgeable hearer-new information is confirmed by the infelicity of the response in (39Bb):¹⁵

(39) Tail May Not Contain Non-Bridgeable Hearer-New Information:

- A: WHO hates WHAT?
 Ba: [_F JOHN hates BROCCOLI].
 Bb: # [_F It is JOHN] [_T who hates broccoli].

It is not plausible to assume that Hearer A could construct a backward inference which would Bridge *broccoli* (i.e., hearer-new information contained in the tail in (39Bb)) to an Antecedent. Given that Hearer A is asking the question *what* precisely in order to illicit the information *broccoli*, we can assume that the hearer's knowledge-store does not have a file card containing any appropriate information corresponding to *broccoli*. In fact, if s/he could construct a Bridge to some such appropriate Antecedent, then presumably s/he would not have asked this question in the first place. Therefore, it would be extremely uncooperative for Speaker Bb to put the response in the tail, thereby implying that the hearer should have been able to infer the answer on his/her own.

Also, if we assume that tails may not contain non-Bridgeable hearer-new information, then the ungrammatical PV data in (5-7) will also be ruled out. In each of these cases, the hearer would not be able to realistically Bridge the new information to an Antecedent. For example, the response in (5Bb) (in which the PV phrase contains the answer to a question) would be ruled out for the exact same reason that (39Bb) above is. Similarly, in (6b), there is no way the hearer could plausibly draw a backward inference to Bridge the exhaustive-listing reading induced by the use of the nominative marker *-ga*, which is itself contained within the PV phrase.¹⁶ The use of the so-called topic marker *-wa*

¹⁵ Prosodic stress can effect the judgment of this example. In (39Bb), *broccoli* should not be stressed, since stress is a means of covertly marking an element as a focus.

¹⁶ The relationship between the nominative marker *-ga* and focus is complex, and the reader is referred to [Heycock 1994] for a more detailed analysis of this relation. Suffice it to say that in this particular example the use of the nominative marker results in an exhaustive-listing interpretation.

does not induce this exhaustive-listing reading, and therefore the corresponding sentence with *-wa* is felicitous:¹⁷

- (40) Sekai iti-no dai tokai da-yo, Tookvoo-wa. [Kuno 1978a: 70, (7b)]
 (cf. (6b) world one-GEN big city be-EMPH Tokyo-TOP
 '(It)'s the biggest city in the world, Tokyo.'

This suggests that the ungrammaticality of (6b) can therefore be attributed to the fact that there is no Antecedent to which the new information in the PV phrase (i.e., the exhaustive-listing reading conveyed by *-ga*) could be Bridged. Likewise, in (7b), there is no Antecedent to which the hearer can Bridge the *wh*-phrase, which takes scopal domain over the entire sentence. Without the presence of a *wh*-phrase, the question marker *-ka* in the main sentence merely gives the hearer the interpretation of a yes-no question. As such, this question marker is insufficient to serve as an appropriate Antecedent for the *wh*-phrase. Therefore, hearer-new information is banned from appearing in the PV position and in tails in general in precisely those cases where there is no Antecedent in the discourse-model to which the new information could plausibly be Bridged via a backward inference.¹⁸

The above data support the proposal that tails may contain hearer-old information or hearer-new information which is Bridgeable, but not non-Bridgeable hearer-new information. Furthermore, I propose that by incorporating this notion of Bridging into the definition of tail, we no longer need to rely upon Simon's concept of "secondary information", which was originally proposed to rule out pragmatically infelicitous examples such as (5-7), while still permitting licit ones such as (9). Since the revised definition of tail in (34) correctly accounts for all of the aforementioned PV data, it can subsume the notion of "secondary information".

6. Conclusion

In conclusion, this paper has proposed that the pragmatic role of the PVC in Japanese is to overtly mark PV elements as tails. This analysis has a number of theoretical implications. First, Simon's analysis of the pragmatic role of the PVC has been derived from a more primitive notion within universal grammar: namely, the notion of tail. Secondly, this proposal has also led to the discovery that cross-linguistically tails can contain hearer-new information, provided that this new information is Bridgeable to an Antecedent in the

¹⁷ As (40) illustrates, *wa*-marked constituents can appear in the PV position. Since the notion of *topic* corresponds most closely to Vallduvf's primitive *link*, examples like (40) in which the post-verbal phrase contains a so-called "topic marker" might appear to be problematic for the analysis argued for in this paper, since it would seem to suggest that links can appear in the post-verbal position. However, the exact characterization of the *wa*-marker has been extremely controversial, and it is not at all clear that the *wa*-marker is necessarily a link-marker. Although this issue is certainly relevant, I must leave it for future research since it would require a comprehensive examination of the nature of the *wa*-marker, which is beyond the scope of this current paper.

¹⁸ As Sergey Avrutin [p.c.] has pointed out to me, other instances in which the failure to find a plausible Antecedent leads to unacceptability are cases involving deixis. For example, the following sentence would be infelicitous if there were no Antecedent for *this chair* in the discourse-model (i.e., in the discourse or physical context or salient in the hearer's mind):

(i) # This chair is broken again.

discourse-model. This revised definition of tail therefore allows us to dispense with Simon's notion of "secondary information". Furthermore, one of the most important consequences of adopting Vallduvf's framework is that it enables us to give a unified account relating the pragmatic function of the PVC with its corresponding syntactic structure via the syntax-pragmatics interface level of Information Structure.¹⁹ Hence, this treatment of Japanese provides further cross-linguistic support in favor of Vallduvf's theory of Informatics.

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¹⁹ More precisely, IS is an interface level between syntax and Informatics, which is a sub-theory within the field of pragmatics.

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