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Naoko Takahashi

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QUANTIFICATIONAL AND INHERENT TELICITY OF LOCATIVE VERBS

By

Naoko Takahashi

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ABSTRACT

QUANTIFICATIONAL AND INHERENT TELICITY OF LOCATIVE VERBS

By

Naoko Takahashi

Locative alternating verbs are distinguished from non-alternating verbs, based on their differing syntactic behaviors. For instance, the English verb *load* allows alternation of the direct and oblique objects with an accompanying change in prepositions, while *fill* does not. This thesis investigates these categories from a semantic perspective. Specifically, two kinds of telicity are examined: quantificational telicity, associated with the relationship between event and time, and inherent telicity, associated with the relationship between space and substance. Quantificational telicity is constrained by the specification of the NP amount in the direct object position in locative sentences. On the other hand, inherent telicity is revealed by the two distinct syntactic frames: NP-with-NP and NP-PP. This thesis concludes that quantificational and inherent telicity combine to produce a two-faceted form of telicity in locative verbs, and it is restrictions on inherent telicity which cause or prevent locative alternation.

To my grandmother

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Chapter 1

INTRODUCTION

The syntactic and semantic properties of verbs and other predicators have been explored in several theoretical frameworks, such as Government Binding Theory, Lexical Functional Grammar, and Head-driven Phrase Structure Grammar (Rappaport and Levin 1988; Levin 1993). One focus area in these studies is the representation and characterization of the argument-taking properties of locative alternation verbs. Locative alternation verbs, such as *load*, *spray*, *smear*, and *clear*, are verbs which involve the action of putting objects onto surfaces or into containers, or removing objects from surfaces or containers (Levin 1993:50).[1] These verbs allow alternation of the direct and oblique objects, which occurs with the change of prepositions in English (Fukui, Miyagawa and Tenny 1985; Dowty 1991; and Levin 1993, among others). One example of this type of alternation is shown in (1):

(1) a. I sprayed paint onto the wall.

b. I sprayed the wall with paint.

Paint in (1a) changes from the direct object to the oblique object in (1b), and *the wall* in (1a) changes from the oblique object to the direct object in (1b).

Rappaport and Levin (1988) and Tenny (1992) argue that the phenomenon of locative alternation is observed across languages, as seen with Japanese *nuru:*

(2) a. Bill ga inki o kami ni nut-ta.
NOM ink ACC paper onto smear-PAST
'Bill smeared ink onto the paper.'

[1] This thesis deals only with the locative verbs which are associated with the action of augmenting.

b. Bill ga kami o inki de nut-ta.
NOM paper ACC ink with smear-PAST[2]
'Bill smeared the paper with ink.'[3]

Regarding locative verbs in Japanese, three particles appear in the alternating structures.[4] '*O*' is an accusative marker; '*ni*' indicates a location on which a substance is applied, similar to the English prepositions *to, onto, into* or *over*; and '*de*' indicates the material used, analogous to the English *with*. Consequently, the syntactic roles of Japanese direct objects and oblique objects shift as a result of a change in those case particles. For example, in (2a) above, the particle '*o*' in *inki o* designates the noun *inki* as the direct object. Changing the particle to '*de*' (with) in (2b) renders *inki de* as the oblique object (Fukui *et al.* 1985).

While many locative verbs undergo this alternation, there are some locative verbs which cannot. *Fill* and *pour* in English are examples of these:

(3) a. *Bill filled water into the tank.

b. Bill filled the tank with water.

(4) a. Mark poured water into the tank.

b. *Mark poured the tank with water.

In addition, an examination of alternation in locative verbs should take note of the fact that the division between alternating and non-alternating verbs is not identical cross-linguistically. For example, while *fill* in English does not undergo alternation, semantically analogous Japanese verbs, such as *mitasu*, do:

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[2] NOM, ACC, and GEN refer to a nominative particle, an accusative particle, and a genitive particle, respectively. Also, the Japanese particle *ni* is translated as the English prepositions *onto* or *into* according to the semantic interpretation of the sentence, although it has also been considered a dative marker.

[3] Japanese lacks an article system and bare plural NP forms, so the translation varies depending on the context to some extent. Therefore, the translation of articles and plural NPs must be treated carefully.

[4] The classification of Japanese particles in this thesis is consistent with the widely accepted theory presented by Shibatani (1990). Japanese particles are classified based on their positional and functional features. Those which attach to nominal elements, and which denote semantic and syntactic relationships of the nominals with respect to other nominals and predicate elements, are called case particles. Case particles not only represent cases, such as nominative and accusative, but also clarify semantic relationships, such as location or temporal aspect.

(5) a. Bill ga mizu o tanku ni mitasi-ta.
NOM water ACC tank into fill-PAST
[lit.] 'Bill filled water into the tank.'

b. Bill ga tanku o mizu de mitasi-ta.
NOM tank ACC water with fill-PAST
'Bill filled the tank with water.'

The following data provide examples of locative alternating verbs and non-alternating verbs in English and Japanese (Levin 1993:50-55; Fukui *et al.* 1985:58-68):

Alternating Verbs and Non-alternating Verbs[5]

English: **Alternating verbs:**

brush, cram, crowd, cultivate, dab, daub, drape, drizzle, dust, hang, heap, inject, jam, load, mound, pack, pile, plant, plaster, prick, pump, rub, scatter, seed, settle, sew, shower, slather, smear, smudge, sow, spatter, splash, splatter, spray, spread, sprinkle, spritz, squirt, stack, stick, stock, strew, string, stuff, swab, wrap

Non-alternating Verbs:

adorn, anoint, bandage, bathe, bestrew, bind, blanket, block, blot, bombard, carpet, choke, cloak, clog, clutter, coat, contaminate, cover, dam, dapple, deck, decorate, deluge, dirty, douse, dot, drench, dribble, drip, edge, embellish, emblazon, encircle, encrust, endow, enrich, entangle, face, festoon, fill, fleck, flood, frame, garland, garnish, imbue, impregnate, infect, inlay, interlace, interlard, interleave, intersperse, interweave, inundate, lard, lash, lime, letter, mask, mottle, ornament, pad, pave, plate, plug, pollute, pour, replenish, repopulate, riddle, ring, ripple, robe, saturate, season, shroud, slop, slosh, smother, soak, soil, speckle, spew, spill, splotch, spot, spurt, staff, stain, stipple, stop up, stud, suffuse, surround, swaddle, swathe, taint, tile, trim, veil, vein, wreathe

Japanese: **Alternating verbs:**

mitasu (fill), nuru (smear), sasu (jab), tumarasu (jam)

Non-alternating verbs:

hanekakeru(splash), haneru (splatter), haru (hang), hirogeru (spread), hukitukeru (spray), hukikakeru (dust), maku (squirt, dust, shower), oku (place), tumeru (pack), tumekomu (cram), tumiageru (pile), tumu (load)[6]

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[5] See appendix for more details.

[6] The English verbs are used as translations for the semantically similar Japanese verbs.

The aim of this thesis is to investigate the restricted semantic properties of locative verbs in English and Japanese. As shown previously, it is possible to classify locative verbs into alternating and non-alternating categories, based on their differing syntactic behaviors. If it is assumed that this classification is governed by semantics, one should be able to identify concrete semantic explanations. Earlier studies which have focused on alternating and non-alternating verbs in English and Japanese have not resulted in adequate explanations since they have mostly shown only simplistic rules for the syntactic and semantic representations. Moreover, cross-linguistic research has not satisfactorily compared the different argument-taking semantic properties of locative verbs. Therefore, this investigation will attempt to give a more concrete semantic explanation for what causes the alternation of some locative verbs or what prevents other locative verbs from alternating.

The remainder of this thesis consists of four chapters. Chapter 2 summarizes current research related to locative alternation. Chapter 3 examines an aspectual constraint in terms of telicity (more specifically, quantificational telicity), determined by specified and unspecified amount NPs in the direct object positions of the locative verbs. In Chapter 4, another determinant of the telicity of locative verbs is analyzed based on two grammatical frames, which differentiate alternating from non-alternating verbs. This chapter demonstrates that alternating and non-alternating verbs are distinguished by inherent telicity, as revealed by the two frames. Finally, Chapter 5 states the conclusions of this thesis.

Chapter 2

LITERATURE REVIEW

The alternation of direct and oblique objects was pointed out by Hall in 1965 (Dowty 1991), and since then, a great deal of literature has examined this phenomenon. This chapter provides a review of the current research with respect to locative alternation. The first two sections each present a perspective related to this subject: thematic relations regarding locative alternation, and the affectedness of the direct object NPs in alternating sentences. Section 3 discusses how the Proto-Role Analysis by Dowty (1991) accounts for the alternating and non-alternating phenomenon of locative verbs.

2.1 Thematic Relations and Locative Alternation

Thematic relations describe the semantic relations involved in the interpretation of NP complements of certain verbs. This theory was introduced by Gruber (1965), while Fillmore (1968), almost simultaneously, discussed a related theory in Case Grammar. The study of thematic relations was later intensively developed by Jackendoff (1972).

Many earlier studies, such as these, claimed that a verb takes arguments which bear discrete thematic roles such as Agent, Theme, and Goal, depending on the event or state which the verb represents. The definitions of these representative discrete thematic roles are described below:

(6) a. Agent - "a participant which the meaning of the verb specifies as doing or causing something, possibly intentionally" (Dowty 1989:69)

b. Theme - "the object in motion or being located" (Jackendoff 1990:46)

c. Goal - "the object to which motion proceeds" (Jackendoff 1990:47)

For example, in locative alternation, such as in (7), early theories discussed that one can construe that the NP *Bill* bears the Agent role, the NP *hay* bears the Theme role, and the NP *the wagon* bears the Goal role, in spite of the different syntactic structure of each sentence (Rappaport and Levin 1988)[7]:

(7) a. Bill loaded hay onto the wagon.

b. Bill loaded the wagon with hay.

Taking these discrete thematic roles into consideration, some current theories on locative alternation further involve the study of thematic relations. They elucidate how NP complements are linked with certain meanings in certain grammatical positions.

For instance, Rappaport and Levin (1988) attempt to specify the syntactically relevant semantic constraints on locative alternation utilizing predicate argument structure (PAS), a lexical-syntactic representation; and lexical conceptual structure (LCS), a lexical-semantic representation (developed in part by Hale and Laughen (1983)). Rappaport and Levin begin the discussion of their analysis by pointing out a problem with the simple representations of the discrete thematic role lists and later propose a solution by utilizing both PASs and LCSs, as demonstrated below.

First, the sentences in (8) illustrate locative alternation with the verb *load*. Secondly, (9) shows a single lexical-semantic representation for the pair of sentences using thematic role labels, capturing the near-paraphrase relation between the two sentences. Finally, (10) and (11) show a generalized version of current proposals of the time - (10)

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[7] Several different role labels are utilized to refer to the Theme and Goal roles regarding this alternation in related research. For example, Rappaport and Levin (1988) also refer to the Locatum role interchangeably with the Theme role. Locatum role is taken from Clark and Clark (1979), and it is defined as "an entity that undergoes a change of location" (Rappaport and Levin 1988:22). In addition, Gropen *et al.* (1991) state that the Theme role and Goal role are also analyzed as the Patient role and Location role, respectively.

Also, the degree to which these alternating sentences are semantically analogous has been frequently discussed. It is often concluded that the events which the verb entails in these alternating sentences show analogous actions, and identical semantic roles are generally employed in order to maintain the same semantic representation for both sentences, as mentioned above. In spite of this assumption, Anderson (1971), among others, points out that these alternating sentences are not completely semantically synonymous. In particular, this literature argues that the interpretations of direct objects of alternating sentences cause the readings of these sentences to be different. See Section 2.2 for further discussion.

displays the two PASs of the alternation and (11) lists the linking rules (Rappaport and Levin 1988:18-20):

(8) a. Bill loaded cartons onto the truck.

b. Bill loaded the truck with cartons.

(9) LOAD: < Agent, Theme, Goal >

(10) a. LOAD: x <y, P loc z>

b. LOAD: x <y, P with z>

(11) LINKING RULES:

> Link the Agent role with the external argument variable in the PAS.
> Link the Theme role with the direct argument variable in the PAS.
> Link each remaining theta role to an indirect argument variable in the PAS which is associated with an appropriate preposition.

Rappaport and Levin's representation of the PASs, as shown in (10a) and (10b), follows Williams' differentiation (1981) between external and internal arguments of a verb and Marantz's distinction (1984) between direct and indirect internal arguments of a verb.[8] The variable outside the brackets, *x*, in (10), represents the external argument which is associated with the subject NP *Bill* in (8). The other variables inside the brackets in (10), *y* and *z*, represent the internal arguments which are associated with the remaining NPs, *cartons* and *the truck* in (8). Moreover, one internal argument, *y*, is linked with the direct argument which represents the direct object of the verb, *cartons* in (8a) and *the truck* in (8b). The other, *z*, is linked with the indirect argument which occurs as the object of the preposition, *the truck* in (8a) and *cartons* in (8b). "*P loc z*" in the brackets stands for a variable with a locative preposition, such as *onto* and *into*. In contrast, "*P with z*" stands for a variable specified by the preposition *with*. In addition, the linking rules in (11) define how each thematic role in (9) links with the variable in the PASs in (10a) and (10b).

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[8] Williams (1981) discusses external arguments and internal arguments in the Government Binding theory. External arguments are interpreted as NPs outside the maximal projection of the verb, and they normally are subject NPs. Internal arguments are interpreted as NPs internal to the maximal projection of the verb, and they generally are object NPs. Furthermore, Marantz (1984) distinguishes internal arguments into two distinct arguments: direct internal arguments are assigned their theta roles directly by verbs and are usually understood to be direct object NPs; the indirect internal arguments are assigned their theta roles by prepositions and are generally interpreted to be oblique object NPs.

Rappaport and Levin proceed by discussing the problem which results with the linking rule in (11) if the simple role list in (9) is used; the linking rule does not account for how the Goal role is linked with the direct argument in (10b). In order to solve this problem, Rappaport and Levin go on to present two types of LCSs with regard to this alternation. LCSs describe the predicate decomposition approach, which refers to the decomposition of a verb's meaning to primitive elements; consequently, the properties of verbs in the same categories share similar elements in their decomposition. (12) shows the LCSs for the two variants of the verb *load* (1988:26):

(12) a. LOAD: [*x* cause [*y* to come to be at *z*] / LOAD]

b. LOAD: [[*x* cause [*z* to come to be in STATE]] BY MEANS OF [*x* cause [*y* to come to be at *z*]] / LOAD]

In (12), the variables (*x*, *y*, and *z*) indicate the same variables as those in the PASs mentioned above; *x* is the external argument, *y* and *z* are internal arguments. The representation in (12a) corresponds to the sentence (8a) while (12b) corresponds to the sentence (8b). On one hand, (12a) indicates that the action entailed by the verb *load* involves a change of location - (8a) implies that *Bill* (*x*) causes an action such that *cartons* (*y*) move to *the truck* (*z*). On the other hand, (12b) indicates that the action entailed by the verb *load* involves a change of state which is caused by a change of location - (8b) implies that *Bill* (*x*) causes an action to make *the truck* (*z*) be in a certain state by way of the *cartons* (*y*) moving to *the truck* (*z*).

Then, Rappaport and Levin restate the linking rules in order to associate the variables in the LCSs in (12) with the variables in the PASs in (10) as follows (1988:25):

(13) One must link the variable shown by *x* in either substructure to the direct argument variable in the verb's PAS if the verb's LCS contains one of the substructures, [*x* come to be at LOCATION] or [*x* come to be in STATE].

There are two advantages to linking variables between LCSs and PASs. One advantage is that it yields a more elaborate syntactic and semantic representation than linking variables to

discrete thematic roles in a simple role list. The other is that these structures capture a near-paraphrase relation between alternating sentences, as the LCS in (12b) subsumes that in (12a). Thus, Rappaport and Levin employ both PASs and LCSs, connecting them by the way of the linking rule to describe the thematic relations of locative alternation .[9]

However, their study mainly focuses on the syntactic and semantic representation of locative alternation and does not give a clear explanation for why locative verbs, such as *load*, undergo alternation and why other locative verbs, such as *fill*, do not.

While Rappaport and Levin discuss the representation of locative alternation with PASs and LCSs, Jackendoff (1990) gives an account of how thematic relations concerning locative alternation can be represented by *conceptual structures*. Conceptual structures are constructed to describe mentally encoded syntactic structures, using a decomposition approach. Jackendoff's conceptual structures are similar to the LCSs of Rappaport and Levin (1988); however, Jackendoff's conceptual structures provide a more detailed account of the semantic relations among arguments and predicators.

Conceptual structures include primitive conceptual categories, such as Thing, Event, Place, and Path. Every major syntactic constituent of a sentence, such as a noun

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[9] As another example, LCSs are employed by Fukui *et al.* (1985) to explain the argument representation of Japanese locative alternating verbs . For example, (i) shows the alternation of Japanese ***nuru (smear)***, and (ii) represents the LCS of the verb ***nuru***:

(i) a Bill ga penki o kabe ni nut-ta.
NOM paint ACC wall on smear-PAST
'Bill smeared paint on the wall.'

b. Bill ga kabe o penki de nut-ta.
NOM wall ACC paint with smear-PAST
'Bill smeared the wall with paint.'

(ii) LCS of ***nuru:*** Realize the action NURU by using the Material *x* and Affect *y* (1985:43)

In (ii), *x* and *y* are variables and are associated with NP arguments as internal arguments (in Williams' and Marantz's sense). The variable *x* indicates the NP argument bearing the thematic role which is a material, ***penki*** ***(paint)*** in (i), and *y* indicates the NP argument which represents a location, ***kabe (wall)*** in (i). Hence, (ii) shows the lexical-semantic representation shared by (ia) and (ib) and illustrates the realization of the action done by ***nuru***; a material is applied, and there exists some entity or location which is affected by it (i.e., it changed color).

and a verb phrase, corresponds to a conceptual constituent of these conceptual categories. (14) shows the major formation rules (1990:43):

(14) a. [Place] -> [Place PLACE-FUNCTION ([THING])]

b. [Path] -> $\left[_{\text{Path}} \left\{ \begin{matrix} \text{TO} \\ \text{FROM} \\ \text{TOWARD} \\ \text{AWAY-FROM} \\ \text{VIA} \end{matrix} \right\} \left(\left[\left\{ \begin{matrix} \text{THING} \\ \text{PLACE} \end{matrix} \right\} \right] \right) \right]$

c. [EVENT] -> $\left\{ \begin{matrix} [\text{Event GO ([THING], [PATH])}] \\ [\text{Event STAY ([THING], [PLACE])}] \end{matrix} \right\}$

d. [STATE] -> $\left\{ \begin{matrix} [\text{State BE ([THING], [PLACE])}] \\ [\text{State ORIENT ([THING], [PATH])}] \\ [\text{State EXT ([THING], [PATH])}] \end{matrix} \right\}$

e. [EVENT] -> $\left[_{\text{Event}} \text{CAUSE} \left(\left[\left\{ \begin{matrix} \text{THING} \\ \text{EVENT} \end{matrix} \right\} \right], \text{[EVENT]} \right) \right]$

The summary of these rules are as follows: (14a) illustrates that the constituents which belong to the category Place can be specified as a Place-function in addition to an argument which belongs to the category Thing (e.g., *under the table*). (14b) demonstrates that the category Path or trajectory can be expanded into one of the five Path-functions and it takes either of the two arguments, Thing or Place (e.g., *to the house* or *from under the table*). (14c) exhibits that a constituent which belongs to the Event category has either an Event-function of GO or that of STAY, and each function takes two arguments. The two arguments of GO are: the Thing in motion and the Path it traverses (e.g., *Bill went to New York.*), and the two arguments of STAY are: the Thing which is not in motion and the Place where the Thing is located (e.g., *Bill stayed in the kitchen.*). (14d) describes three kinds of State-functions. The arguments of BE, which represent the location of objects, are Thing and Place (e.g., *The dog is in the park.*). Also, ORIENT plus Thing and Path denotes the orientation of objects (e.g., *The traffic sign points toward Los Angeles.*). In addition, the arguments of EXT, which indicates the spatial extension of objects, are also Thing and Path (e.g., *The highway goes from Washington DC to New York.*). Finally, (14e) gives an Event- function CAUSE. If the first argument of CAUSE is a Thing, it is an

Agent (e.g., *Beth threw the ball out the window.* (Jackendoff 1983:175)), while if the first argument is an Event, it is a Cause (e.g., *John's blowing bubbles made us laugh* (Jackendoff 1983:177)).

An example in (15) shows the lexical entries of the verb *run* with its conceptual structure (Jackendoff 1990:45):

(15)
$$\begin{bmatrix} \text{run} \\ \text{V} \\ [\_\_\ (\text{pp}\ j)] \\ [\text{Event GO}\ ([\text{Thing}\quad]i,\ [\text{Path}\quad]j)] \end{bmatrix}$$

The first line indicates the lexical entry, *run*. The second line illustrates the constituent's lexical category, "verb." The third line gives a representation of the lexical item *run* in terms of its subcategorization. In this case, *run* subcategorizes nothing, such as in *John ran*, or it subcategorizes the prepositional phrase optionally, such as in *John ran to the beach.* The fourth line indicates the conceptual structure of *run*. The Event-function of GO, which implies motion along the path, takes two arguments: the Thing in motion, such as *John* in *John ran*, and the Path as the trajectory of motion, such as *to the beach* in *John ran to the beach.* The index *i* shows that the first argument co-indexes with the external argument in Williams' sense. Also, the index *j* shows that the second argument co-indexes with the prepositional phrase, which is illustrated in the subcategorization feature.

With respect to locative alternation, Jackendoff discusses the lexical entry of *load*, as shown in (16). (17) presents the example sentence which corresponds to the conceptual structure in (16) (Jackendoff refers to this type of sentence as an NP-with-NP frame.) (1990:173):

(16)
$$\begin{bmatrix} \text{load} \\ \text{V} \\ \_\_\text{NP}\ j\ [\text{pp with NP}\ k] \\ [\text{Event CAUSE}\ ([\text{Thing}]i,\ [\text{Event INCH}\ [\text{State BE}\ ([\text{Thing}]k,\ [\text{Place INd/ONd}\ [\text{Thing}]j])]])] \end{bmatrix}$$

(17) Bill loaded the wagon with hay.

As demonstrated in (16), *load* in (17) takes an Event-function CAUSE with two arguments: Thing and Event. The first argument, Thing, is an Agent, *Bill*, in (17). The second

argument, Event, expands into the Event-function INCH. INCH indicates an inchoative reading such that the Event which goes through a change has a final state. Furthermore, the INCH takes the State-function BE. BE specifies the location of objects and gives two arguments, Thing and Place. Thing is *hay* in (17). *IN/ON* denotes Place-functions, such as the prepositions, *in* and *on*. Place is *the wagon* in (17), although the Place-function *onto* is not explicit here. The indices *i* , *j*, and *k* refer to *Bill*, *the wagon*, and *hay* in (17), respectively. In addition, the subscript *d* shows the "distributive location, " as labeled by Jackendoff (1990:101-106).

According to Jackendoff, distributive location denotes that a substance or an aggregate in motion is applied to a location object, such as a container or a flat surface, in equilibrium. The substance or aggregate is found everywhere in/on the location object in a consistent or uniform way. In other words, this distribution to the location which the verb describes connects the sense of "completiveness" (Jackendoff 1990:106) to the location. For instance, in (17), the location *wagon* is occupied by the substance *hay* in a consistent way. Also, the distributive location is often expressed with prepositions, such as *all over*, *all along*, and *throughout*, and it is distinguished from a non-distributive (ordinary) location, which is expressed with other prepositions, such as *on*, *along*, and *in*. For example, *all over the floor*, *all along the road*, and *throughout the pudding* indicate distributive location, while *on the floor*, *along the road*, and *in the pudding* connote non-distributive location.

Jackendoff calls the other type of alternating sentences with *load* " an NP-PP frame," such as in (18)[10]:

(18) Bill loaded hay onto the wagon.

Jackendoff gives two reasons for why the other lexical entry of *load* has to be separately represented. First, one has to capture the different interpretation between the distributive

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[10] Jackendoff's terms (1990), "NP-with-NP frame" and "NP-PP frame," are used throughout the remainder of this paper to refer to the two grammatical frames involved in locative alternation.

and non-distributive locations of the alternating sentences. For example, in (17), the argument Place in the NP-with-NP frame, *the wagon*, involves a distributive location such that the argument has the completed reading; however, in (18), the Place argument in the NP-PP frame, *the wagon*, does not necessarily imply a distributive location, and therefore does not require the completed reading.[11]

Secondly, NP-PP frames give readings which reflect the event in motion rather than inchoative readings as a result of the Path-prepositions. For instance, the NP-PP frame in (18) contains the Path-preposition *onto* and it leads to the interpretation that the verb *load* involves the Event-function GO with a thing in motion rather than the Event-function INCH which renders a definite change of state.

Following these assumptions, the other lexical entry of *load* is shown in (19):

(19) $\left[\begin{array}{l} \text{load} \\ \text{V} \\ \text{\_\_NP}_k\ ([\text{PP}[\text{Thing}]_j]) \\ [\text{Event CAUSE}\ ([\text{Thing}]_i, [\text{Event GO}\ ([\text{Thing}]_k, [\text{path}\ \{\text{TO}\ (\text{Place}\ [\text{IN/ON}\ [\text{Thing}]_j])\}])] \end{array}\right]$

The Event-function CAUSE takes two arguments in (19), as does the other type of conceptual structure with *load* as illustrated in (16). However, in (19), the second argument of CAUSE, Event, expands into the Event-function GO, not the Event-function INCH. In addition, GO takes two arguments, Thing and Path, which are *hay* and *onto the wagon* in (18), respectively. The indices, *i*, *j*, and *k*, are linked to *Bill*, *the wagon*, and *hay*, respectively. In (19), the subscripts which indicate the distributive location are not seen.

Hence, the general conceptual structures corresponding to (16) and (19) are illustrated in (20a) and (20b), respectively:

(20) a. [Event INCH ([State BE ([X], [Place Y d])])] (NP-with-NP frame)

b. [Event GO ([X], [Path TO ([placeY])])] (NP-PP frame)

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[11] As Jackendoff mentions, his distributive location corresponds to the "holistic" interpretation of Anderson (1971), and others. See Section 2.2 below for holistic and partitive interpretations.

Thus, Jackendoff represents the thematic relation of *load* in the two types of conceptual structures. However, these conceptual structures do not give an account as to why alternation occurs with the verb *load*.

In addition to the representation of the alternating verb *load*, Jackendoff displays the conceptual structure of the non-alternating verb *fill*, as shown in (21) (1990:162):

(21) [fill
V
__NPj
[Event CAUSE ([Thing]i, [Event INCH [State BE ([Thing]i, [Place INTOd[Thing]j])]])]]

(21) shows the same type of conceptual structure as that in (16), which is the one that describes the lexical entry of *load* with the NP-with NP frame. However, although Jackendoff demonstrates how this type of conceptual structure applies to non-alternating locative verbs, he does not discuss the distinguishing feature of alternating and non-alternating verbs in his analysis.

Hence, the research reviewed above appears to be successful in representing locative verbs regarding the thematic relations between the verbs and their arguments. However, it has not provided a reason for what causes alternation or what prevents alternation with locative verbs.

2.2 The Affectedness of the Direct Object

In another semantic perspective regarding locative alternation, research has discussed the affected interpretations of direct object NPs of locative verbs, distinguishing between the semantic interpretations of the two frames, NP-PP and NP-with-NP (Fukui *et al.* 1985; Rappaport and Levin 1988; Jackendoff 1990; Dowty 1991; and Levin 1993, among others).

Coining the term, "a holistic/partitive interpretation," Anderson (1971:389) refers to the aspectual interpretations of object NPs. The "holistic interpretation" implies that direct objects are completely affected by the action which the verbs describe, while the "partitive interpretation" indicates that NP arguments are "not necessarily completely affected by the

action which the verbs represent" when these NPs are in the oblique object position. An English example is illustrated in (22):

(22) a. Bill sprayed the paint on the wall.

b. Bill sprayed the wall with the paint.

It is assumed that the direct object *the paint* in (22a) implies a holistic interpretation since it can be construed that all of the paint is sprayed on the wall, while in (22b), *the paint* need not be completely used up. Also, whereas the direct object *the wall* in (22b) has a holistic interpretation such that the whole surface of the wall is affected by spraying paint on it, the oblique object *the wall* in (22a) need not be completely covered by paint.[12]

In a related work, Tenny (1992) describes this affectedness of direct object NPs with her terms, "measure out the event" or "delimit events." She elucidates that direct object NPs are affected such that the action is measured out by the event which the verb describes, and this analysis is valid when applied to locative alternating verbs (1992:15):

(23) a. I sprayed the paint in the hole.

b. I sprayed the hole with the paint.

Tenny argues that *the paint* in (23a) is affected by the delimited action in which all of the paint is sprayed into the hole, and that *the hole* in (23b) is affected by the delimited action such that the paint is spread around on the surface or wall of the hole.

Dowty (1991) is also concerned with the aspectual affectedness of the direct object. He considers that NP objects in the direct object position of some verbs undergo a definite change of the state which each verb describes, and he calls this affectedness "Incremental Theme"[13]. This analysis is also relevant to locative alternating verbs:

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[12] Specifically, much research concerns the holistic or affected interpretation of the direct objects in terms of the spatial relationship between substance arguments and location arguments. For instance, Jackendoff (1990) associates spatially completive interpretations with location arguments in direct object position of locative alternation verbs. He calls this affected interpretation "distributive location", as discussed in the previous section.

[13] See the discussion of Incremental Theme in Section 2.3. for more details.

(24) a. Andy filled the tank with the water.

b. Andy poured the water into the glass.

In (24), the direct objects of both of these non-alternating verbs, *the tank* and *the water*, are affected completely and undergo a complete change of state.

These observations related to the affectedness of the direct object seem to be correct; however, they merely characterize the interpretation of the affectedness of the direct object. This interpretation does not explain why some locative verbs undergo the alternation, but others do not. Therefore, the task of this thesis is to give a semantic explanation for the different behaviors of locative verbs, alternating and non-alternating.

2.3 Proto-Role Analysis and Locative Verbs

Dowty (1991) states that each argument has a set of semantic properties. These properties belong to one of two groups: Agent Proto-Role or Patient Proto-Role. Dowty lists several characteristics which represent those roles and proposes that an argument is either a subject or an object based on the number of characteristics it has from each set of properties. The contributing properties are shown as follows (1991:572):

Contributing properties for the Agent Proto-Role:

a. volitional involvement in the event or state
b. sentience
c. causing an event or change of state in another participant
d. movement (relative to the position of another participant)
(e. exists independently of the event named by the verb)

Contributing properties for the Patient Proto-Role:

a. undergoes change of state
b. incremental theme
c. causally affected by another participant
d. stationary relative to movement of another participant
(e. does not exist independently of the event, or not at all)

Property (b) of the Patient Proto-Role above, Incremental Theme, was introduced by Krifka (1987) (Dowty 1991). Dowty explains that Incremental Theme is an argument which undergoes a definite change of state in which all parts of the NP referent are affected

by all of the subparts of the event which the verb entails; the event goes through each respective change of state and reaches the terminal point of the event. For example, the NP *a house* in *build a house* and the NP *a letter* in *write a letter* represent Incremental Themes; when half of the house has been built, the event is halfway complete, and when the entire house has been built, the entire event is terminated; or when one-third of the letter has been written, one-third of the event is complete, and when the letter is completely written, the entire event is concluded.

Dowty also proposes the Argument Selection Principle, which determines the grammatical relationship between arguments (1991:576):

Argument Selection Principle:

The arguments of the predicate are determined to be either the direct object or the subject of the predicate based on the number of particular properties which they hold. The subject of the predicate will be lexicalized as such if that argument has the greatest number of Proto-Agent properties. The object of the predicate will be lexicalized as such if that argument has the greatest number of Proto-Patient properties.

The following corollaries show how each argument selects its grammatical role, such as the subject, object, or oblique or prepositional object (1991:576):

Corollary 1: Arguments may be lexicalized as either a subject or an object if they contain equal numbers of Proto-Agent and Proto-Patient properties.

Corollary 2: A direct object may be lexicalized if one of the two nonsubject arguments has the greatest number of Proto-Patient properties in a three-place predicate. Also, in the case of a three-place predicate, if one of the two nonsubject arguments has fewer Proto-Patient properties, it will be the oblique or prepositional object. Two nonsubject arguments with approximately the same number of Proto-Patient properties may each be lexicalized as the direct object.

Concerning locative alternation verbs, Dowty claims that alternating verbs, such as *load* and *spray*, select their argument-taking properties based on the Argument Selection Principle. He explains that the direct objects of *load* and *spray*, either a substance or a container, possess the property, Incremental Theme, no matter which of the arguments appears in this position. Consequently, the direct objects of those alternating verbs entail two of the Proto-Patient properties - Incremental Theme and change of state, while the oblique objects of those verbs entail only one of the Proto-Patient properties- change of state. Dowty continues by stating that the reason why English *fill* does not undergo alternation is that the direct object of *fill*, which is the location, has more Proto-Patient properties than the oblique object, which is the substance. In other words, the direct object, the location or container that is filled, has two properties: Incremental Theme and change of state; and the oblique object, the substance that is put into the container, possesses only one property, change of state. As a result, according to Corollary 2, English *fill* selects only the container as the direct object.

When one examines the English *pour* which does not undergo the alternation, the Argument Selection Principle is also applicable:

(25) a. Bill poured water into the glass.

b. *Bill poured the glass with water.

The verb *pour* attributes the Incremental Theme property to the direct object *water* in (25), as Dowty's theory predicts. Dowty's principle seems to properly describe the phenomenon of the alternating and non-alternating of locative verbs. However, it does not explain why the container *the glass* cannot be the direct object of *pour* although *water* can be, as shown in (25). Furthermore, it does not account for why *fill* attributes the Incremental Theme property only to the location, although *load*, *spray*, and *mitasu* can select both location and substances as the direct object. Therefore, this thesis seeks to account for these different argument-taking properties between alternating and non-alternating cases.

2.4 Summary

Researchers have attempted to account for locative alternation by focusing on thematic relations and the affectedness of the direct object. However, studies such as those mentioned above have shown only simplistic representations and they have not satisfactorily explained the distinctive semantic properties of alternating and non-alternating verbs. Therefore, this thesis provides a more concrete analysis concerning the distinguishing features of these two types of verbs.

Chapter 3

TELICITY OF LOCATIVE VERBS

Chapter 2 established that the study of the aspectual affectedness of the direct object had potential to provide a concrete analysis concerning the distinguishing features of alternating and non-alternating verbs. Taking this as fundamental, the analysis described in this thesis assumes that the semantic difference between alternating and non-alternating locative verbs is accounted for by certain types of telicity.

Accordingly, this chapter examines the restricted semantic properties of these verbs in terms of temporal aspect, or telicity. Section 1 introduces the general aspectual classification of locative verbs. In Section 2, a crucial determinant of the telicity of these verbs is presented; the telicity of locative verbs is constrained by the specification of NP amounts in the direct object position.

3.1 Aspectual Verb Classification and Locative Verbs

The study of verb aspect originates as far back as Aristotle's observation that some verbs involve an "end" or a "result." Verb aspect refers to the inflectional affixes, tenses, or other syntactic frames that verbs acquire. It provides a distinction for the temporal situation of an event, such as: whether the event shows repetition or not; whether the event denotes completion or incompletion; and whether the stage of the event is in the beginning, middle or end point. It is distinguished from tense in that tense simply provides the time of the event's occurrence, such as the future, past, or present (Dowty 1979).

The classification of verbs according to aspectual differences has been discussed by philosophers and linguists, such as Vendler (1967) and Dowty (1979). For instance,

Vendler (1967) classifies verbs into four aspectual categories: states, activities, accomplishments, and achievements, based on the verbs' restrictions concerning time adverbials, tenses, and logical entailments.

According to Dowty's observations (1979) regarding Vendler's classification, VPs which contain locative verbs, such as *load* and *fill*, are generally considered as belonging to the accomplishment VP class.[14] However, Dowty also points out that this is not always true. Dowty utilizes the following test to verify his claim, as outlined below (1979:57):

(26) Accomplishment verbs occur with adverbial prepositional phrases, such as *in X minutes*, while activity verbs do not. On the other hand, accomplishment verbs are not associated with continuous expressions, such as durative adverbials, *for X minutes*, whereas activity verbs are.

This test makes it possible to identify the telicity of locative verbs. It demonstrates that VPs containing locative alternating verbs do not belong exclusively to the category of accomplishment VPs, which entail a complete action or end point within a certain period of time. Instead, they may also belong to the category of activity VPs, which entail an incomplete action as signaled by a continuous time expression. In other words, VPs containing locative verbs may have both a telic (complete) interpretation, and an atelic (incomplete) interpretation.

Telicity distinguishes whether a situation has a perfect or imperfect meaning; a telic situation is when the event is a process that leads up to a defined terminal point or a process which cannot continue, whereas an atelic situation is when the event does not have a terminal point or is a process which continues indefinitely (Comrie 1976). Therefore, a

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[14] In response to Vendler's analysis, Dowty (1979) argues that aspectual distinctions apply not only to the verb, but rather to the entire verb phrase (even whole sentences in a certain sense). Dowty utilizes several tests to clarify Vendler's four categories, and addresses the revised "VP" classification. He classifies VPs into more than four categories based on the criteria of state, activities, single change of state, and complex change of state. Dowty further divides these categories into two groups, agentive or non-agentive. According to these criteria, locative verbs, such as *load* and *fill*, are assumed to occur in agentive and complex change of state VPs.

telic interpretation corresponds to the accomplishment category while an atelic interpretation corresponds to the activity VP category.[15]

Dowty (1991) further argues that the aspectual interpretations, telic or atelic, of locative verbs vary depending on whether the NP in the direct object position is definite or indefinite. For example, according to the above test, the adverbial phrase, *in five minutes,* is acceptable with the verb *load* in (27), as a result of the definite NPs in the direct object position, which influence the telic interpretation of accomplishment VPs:

(27) a. Bill loaded the books/hay onto wagons in five minutes.

b. Bill loaded the wagons with books/hay in five minutes.

The sentence in (27a) implies that the substances *the books/the hay* are completely loaded onto the wagons. Likewise, in (27b), the location, *the wagons*, is completely occupied with *books/hay.*

On the other hand, the adverb *in five minutes* cannot occur when indefinite NPs are in the direct object position since the phrases denote the atelic interpretation of activity VPs:

(28) a. *Bill loaded books/hay onto wagons in five minutes.

b. *Bill loaded wagons with books/hay in five minutes.

Neither (28a) nor (28b) is well-formed since the substances *books/hay* are not specified. Thus, Dowty maintains that definite and indefinite NPs in the direct object position constrain the verbal aspect of locative verbs, yielding a telic or an atelic interpretation.

However, Verkuyl (1989) and Abbott (personal communication, 1996) point out that it is not the definiteness of the NP that is crucial, but rather whether or not the NP specifies a certain amount. In other words, the aspect of locative verbs is actually controlled by whether or not the direct object NPs are a specified amount.

This distinction makes it possible to compare English and Japanese locative verbs by adopting specified and unspecified amount NPs which are numerical expressions. This

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[15] Refer to Comrie (1976) for further discussion of telic and atelic interpretations.

manipulation is more beneficial than using definiteness as a test, since Japanese lacks an article system.

The following section investigates how the aspectual interpretations, or the telicity, of alternating and non-alternating sentences change when specified and unspecified amount NPs are involved.

3.2 Data Analysis (I)

3.2.1 Alternating Verbs

Both specified and unspecified amount NP expressions may occur as direct objects and oblique objects in locative alternation. Examples (29) to (31) demonstrate the alternation of both direct and oblique objects that contain specified amount NPs:

(29) a. Bill loaded ten bales of hay onto five wagons.

b. Bill loaded five wagons with ten bales of hay.

(30) a. Bill sprayed two cans of paint onto two walls.

b. Bill sprayed two walls with two cans of paint.

(31) a. Bill ga mittu no pittyaa no mizu o itutu no gurasu ni
NOM three GEN pitcher GEN water ACC five GEN glass into
mitasi-ta.
fill-PAST
[lit.] 'Bill filled three pitchers of water into five glasses.'

b. Bill ga itutu no gurasu o mittu no pittyaa no mizu de
NOM five GEN glass ACC three GEN pitcher GEN water with
mitasi-ta.
fill-PAST
'Bill filled five glasses with three pitchers of water.'

Similarly, unspecified amount NPs may appear in both direct and oblique object positions simultaneously in this alternation as shown in (32) to (34):

(32) a. Bill loaded bales of hay onto wagons.

b. Bill loaded wagons with bales of hay.

(33) a. Bill sprayed cans of paint onto walls.

b. Bill sprayed walls with cans of paint.

(34) a. Bill ga (ikutuka no) pittyaa no mizu o (ikutuka no)
NOM (some GEN) pitcher GEN water ACC (some GEN)
gurasu ni mitasi-ta.
glass into fill-PAST
[lit.] 'Bill filled pitchers of water into glasses.'

b. Bill ga (ikutuka no) gurasu o (ikutuka no) pittyaa no mizu
NOM (some GEN) glass ACC (some GEN) pitcher GEN water
de mitasi-ta.
with fill-PAST
'Bill filled tanks with pitchers of water.'

Moreover, specified and unspecified amount NPs may appear concurrently in the two object positions, in either order:

(35) a. Bill loaded ten bales of hay onto wagons.

a'. Bill loaded bales of hay onto five wagons.

b. Bill loaded five wagons with bales of hay.

b'. Bill loaded wagons with ten bales of hay.

(36) a. Bill sprayed two cans of paint onto walls.

a'. Bill sprayed cans of paint onto two walls.

b. Bill sprayed two walls with cans of paint.

b'. Bill sprayed walls with two cans of paint.

(37) a. Bill ga mittu no pittyaa no mizu o (ikutuka no) gurasu ni
NOM three GEN pitcher GEN water ACC (some GEN) glass into
mitasi-ta.
fill-PAST
[lit.] 'Bill filled three pitchers of water into glasses.'

a'. Bill ga (ikutuka no) pittyaa no mizu o itutu no gurasu ni
NOM (some GEN) pitcher GEN water ACC five GEN glass into
mitasi-ta.
fill-PAST
[lit.] 'Bill filled pitchers of water into five glass.'

b. Bill ga itutu no gurasu o (ikutuka no) pittyaa no mizu de
NOM five GEN glass ACC (some GEN) pitcher GEN water with
mitasi-ta.
fill-PAST
'Bill filled five glasses with pitchers of water.'

b'. Bill ga (ikutuka no) gurasu o mittu no pittyaa no mizu de
NOM (some GEN) glass ACC three GEN pitcher GEN water with
mitasi-ta.
fill-PAST
'Bill filled glasses with three pitchers of water.'

The four types of sentences above are organized as follows:

(38) a. locative verb + specified amount NP + specified amount NP

b. locative verb + unspecified amount NP + unspecified amount NP

c. locative verb + specified amount NP + unspecified amount NP

d. locative verb + unspecified amount NP + specified amount NP

The aspectual interpretation of each of these four types of sentences will be examined by utilizing of Dowty's diagnostic test, with the assumption that the two types of NPs will have differential effects on the verb aspect. Dowty's test is repeated in (39), for convenience:

(39) Accomplishment verbs occur with adverbial prepositional phrases, such as *in X minutes*, while activity verbs do not. On the other hand, accomplishment verbs are not associated with continuous expressions, such as durative adverbials, *for X minutes*, whereas activity verbs are (1979:57) (=(26)).

I. Alternating Verb + Specified Amount NP + Specified Amount NP

The examples in (40) show the effect of two types of adverbial phrases on the grammaticality of sentences with the verb *load*:

(40) a. Bill loaded ten bales of hay onto five wagons in five minutes.

a' *Bill loaded ten bales of hay onto five wagons for five minutes.

b. Bill loaded five wagons with ten bales of hay in five minutes.

b' *Bill loaded five wagons with ten bales of hay for five minutes.

The adverbial phrase *in five minutes* can occur with *load* and the two specified amount NPs, as shown in (40a) and (40b), while *for five minutes* cannot appear with *load* in

conjunction with these NPs verb, as in (40a') and (40b').[16] According to Dowty's test, if a verb occurs with an adverbial phrase containing *in*, the verb belongs to the accomplishment VP category. If it does not, the verb belongs to the activity verb category. Accordingly, the *load* VP accompanied by specified amount NPs behaves like an accomplishment VP and is associated with a complete reading, a telic interpretation.

Examples in (41) illustrate similar data with *spray*.

(41) a. Bill sprayed two cans of paint onto two walls in five minutes.

a' ?Bill sprayed two cans of paint onto two walls for five minutes.

b. Bill sprayed two walls with two cans of paint in five minutes.

b'. (*) Bill sprayed two walls with two cans of paint for five minutes.

(41a') is marginally grammatical depending on the context. It is acceptable if it describes a situation in which Bill completed part of his task to spray the cans of paint onto the wall and intended to go back to his task again. In addition, Dowty (1991) points out that a sentence like (41b') is not completely ungrammatical due to the relationship between the walls and the paint, since the action of putting paint onto walls can be continuous. Thus, the sentences with *for five minutes* in (41) are well-formed only with limited interpretations, making it unlikely that these VPs can be plausibly considered to be activity VPs. Therefore, it is reasonable to conclude that the verb aspect of the *spray* VP with specified amount NPs is an accomplishment VP, generally associated with a telic interpretation.

Next, the Japanese verb *mitasu* (*fill*) with the Japanese adverbial phrases analogous to *in two minutes* and *for two minutes* in English is shown in (42):

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[16] The relationship between the quantity of the substance and the capacity of the containers is crucial. For instance, (40b) is appropriate if the total amount of bales of hay is exactly enough to fill five wagons. This spatial relationship will be discussed in Chapter 4. This section mainly focuses on the reading if the NP objects are used up within a certain time or if they are continuously used for a certain time.

(42) a. Nihun de Bill ga mittu no pittyaa no mizu o itutu no
two minutes in NOM three GEN pitcher GEN water ACC five GEN
gurasu ni mitasi-ta.
glass into fill-PAST
[lit.] 'Bill filled water in three pitchers into five glasses in two minutes.'

a'. ?Nihun kan Bill ga mittu no pittyaa no mizu o itutu no
two minutes for NOM three GEN pitcher GEN water ACC five GEN
gurasu ni mitasi-ta.
glass into fill-PAST
[lit.] 'Bill filled water in three pitchers into five glasses for two minutes.'

b. Nihun de Bill ga itutu no gurasu o mittu no pittyaa no
two minutes in NOM five GEN glass ACC three GEN pitcher GEN
mizu de mitasi-ta.
water with fill-PAST
'Bill filled five glasses with three pitchers of water in two minutes.'

b'. ?Nihun kan Bill ga itutu no gurasu o mittu no pittyaa
two minutes for NOM five GEN glass ACC three GEN pitcher
no mizu de mitasi-ta.
GEN water with fill-PAST
'Bill filled five glasses with three pitchers of water for two minutes.'

Sentences (42a') and (42b') seem awkward since they describe continuous actions in which Bill spent two minutes filling all five glasses with three pitchers of water, and furthermore he did not complete his task. However, (42a') and (42b') could be grammatical if one interprets that Bill had already filled the glasses with water from the three pitchers before he started counting the time. In this case, it could also be interpreted that he monitored the glasses for a certain period of time in order to ensure that they remained full. Thus, (42a) and (42b), with a clearly telic interpretation, are more natural than (42a') and (42b'), respectively, rendering the same conclusion as stated previously for *spray*; the *mitasu* VP with specified amount NPs behaves like an accomplishment VP.[17]

The above test shows that sentences are completely well-formed when alternating verbs appear with specified amount NPs as both direct and oblique objects in conjunction with an adverbial prepositional phrase containing *in*. Also, some of these locative verbs, when combined with specified amount NPs, can appear with an adverbial prepositional

[17] In this case, the spatial relationship between the container, five glasses, and the substance, three pitchers of water, also has to be considered. These interpretations are based on the assumption that the capacity of the container is equal to the amount of the substance. However, these interpretations are variable depending on the context.

phrase that contains *for*, but only in limited circumstances. This gives evidence that alternating verbs with specified amount NPs in object positions form accomplishment VPs, rather than activity VPs.

II Alternating Verb + Unspecified Amount NP + Unspecified Amount NP

In contrast to the previous tests, in which two specified amount NPs occur in both the direct and oblique object positions, the following tests result in a different interpretation when unspecified amount NPs are used for both the direct and the oblique objects. The VPs in the sentences below behave like activity VPs:

(43) a. *Bill loaded bales of hay onto wagons in five minutes.

a'. Bill loaded bales of hay onto wagons for five minutes.

b. *Bill loaded wagons with bales of hay in five minutes.

b' Bill loaded wagons with bales of hay for five minutes.

(44) a. *Bill sprayed cans of paint onto walls in five minutes.

a'. Bill sprayed cans of paint onto walls for five minutes.

b. *Bill sprayed walls with cans of paint in five minutes.

b'. Bill sprayed walls with cans of paint for five minutes.

In both (43) and (44), the verbs *load* and *spray* accompanied with unspecified amount NPs, can be associated with the durative adverbial *for five minutes*,while they cannot be associated with completive expression *in five minutes*. This analysis leads to the conclusion that unspecified NPs are linked with the atelic interpretation of activity VPs, rather than the telic interpretation of accomplishment VPs.

(45) shows a set of Japanese data with *mitasu:*

(45) a. ??Nihun de Bill ga (ikutuka no) pittyaa no mizu o
two minutes in NOM (some GEN) pitcher GEN water ACC
(ikutuka no) gurasu ni mitasi-ta.
(some GEN) glass into fill-PAST
[lit.] 'Bill filled pitchers of water into glasses in two minutes.'

a'. Nihun kan Bill ga (ikutuka no) pittyaa no mizu o
two minutes for NOM (some GEN) pitcher GEN water ACC
(ikutuka no) gurasu ni mitasi-ta.
(some GEN) glass into fill-PAST
[lit.] 'Bill filled pitchers of water into glasses for two minutes.'

b. ??Nihun de Bill ga (ikutuka no) gurasu o (ikutuka no)
two minutes in NOM (some GEN) glass ACC (some GEN)
pittyaa no mizu de mitasi-ta.
pitcher GEN water with fill-PAST
'Bill filled glasses with pitchers of water in two minutes.'

b'. Nihun kan Bill ga (ikutuka no) gurasu o (ikutuka no)
two minutes for NOM (some GEN) glass ACC (some GEN)
pittyaa no mizu de mitasi-ta.
pitcher GEN water with fill-PAST
'Bill filled glasses with pitchers of water for two minutes.'

The sentences with adverbial phrases containing *in*, (45a) and (45b), are potentially ill-formed. The possibility of judging these sentences as well-formed is based on the assumption that they might denote a specified object without a numerical expression, exhibiting the ambiguity of number and definiteness which exists in Japanese due to the lack of plural forms and articles. It is important to note that if the object NPs in (45a) and (45b) imply unspecified amounts of objects, which is the desired reading for this set of data, the sentences are completely ungrammatical. On the other hand, the well-formed sentences in (45) have two possible readings, similar to (42a') and (42b'). One reading is such that Bill spent two minutes filling five glasses with water, and the other possibility is Bill had already filled glasses with water and monitored those glasses for a certain period of time to make sure they remained full. In spite of these ambiguous readings, the grammaticality of (45a') and (45b'), where *mitasu* occurs with unspecified amount NPs and durative adverbial phrases containing *for*, shows that these VPs behave like activity VPs.

Hence, locative alternating verbs which have unspecified amount NPs in both the direct and the oblique object positions may only occur with adverbial phrases that contain *for*, as opposed to *in*. The completed reading is blocked when unspecified amount NPs occur in the sentences.

However, one problem remains; since both specified and unspecified amount NPs can appear in either the direct or the oblique object position, one cannot assume that either of the two positions must be linked with a telic or an atelic interpretation. Therefore, the next test will examine the case in which both specified and unspecified amount NPs are involved simultaneously in locative alternation.

III Alternating Verb + Specified Amount NP + Unspecified Amount NP vs. Alternating Verb + Unspecified Amount NP + Specified Amount NP

Examples in (46) demonstrate the sentences in which the two types of NPs, specified and unspecified amount NPs, alternately appear in the direct and oblique object positions of the verb *load*:

(46) a. Bill loaded ten bales of hay onto wagons in ten minutes.

a'. *Bill loaded ten bales of hay onto wagons for ten minutes.

b. *Bill loaded bales of hay onto five wagons in ten minutes.

b'. Bill loaded bales of hay onto five wagons for ten minutes.

c. Bill loaded five wagons with bales of hay in ten minutes.

c' ?Bill loaded five wagons with bales of hay for ten minutes.

d. ??Bill loaded wagons with ten bales of hay in ten minutes.

d'. ?Bill loaded wagons with ten bales of hay for ten minutes.

(46a) is well-formed whereas (46a') is ill-formed. This is due to the interpretation that, in (46a'), Bill cannot continue the action of putting the specific amount of hay onto the wagons. On the other hand, while (46b) is ungrammatical, (46b') is grammatical. In (46b), *in ten minutes* signals that the VP should describe the finishing of a defined task; however, since *bales of hay* is unspecified, there is no way of judging whether Bill finished the task. While (46c) is grammatical, (46c') is marginally grammatical. (46c') may be grammatical if it is interpreted that Bill spent ten minutes loading hay continuously

and intended to go back to his task again. Furthermore, (46d') is more natural than (46d), exhibiting a similar pattern as (46b) and (46b').

Thus, it is reasonable to conclude that the direct object NP of the verb *load* is linked with verb aspect; the VPs behave like accomplishment VPs when specified amount NPs are direct objects, while the VPs behave like activity VPs when unspecified amount NPs are direct objects.[18]

Additional examples show alternative sentences with *spray*:

(47) a. Bill sprayed two cans of paint onto walls in ten minutes.

a'. ?Bill sprayed two cans of paint onto walls for ten minutes.

b. ?Bill sprayed cans of paint onto two walls in ten minutes.

b'. Bill sprayed cans of paint onto two walls for ten minutes.

c. Bill sprayed two walls with cans of paint in ten minutes.

c'. (*) Bill sprayed two walls with cans of paint for ten minutes.

d. ??Bill sprayed walls with two cans of paint in ten minutes.

d'. Bill sprayed walls with two cans of paint for ten minutes.

The data in (47) show that NPs in the direct object position govern the aspect of the sentence. As mentioned in the previous discussion of a similar sentence *Bill sprayed two cans of paint onto two walls in five minutes* in (41), (47a') is somewhat acceptable when it describes a situation in which Bill completed part of his task to spray the cans of paint onto an unspecified amount of walls and intended to go back to his task again. However, (47a) is more natural than (47a') and this again shows that specified amount NPs in the direct

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[18] One might argue that the NPs in the oblique object position are equally plausible as governors of the verb aspect; however, the verb aspect can be shown to be constrained by the direct object NPs by the following data:

(i) a. Bill completely loaded ten bales of hay (onto wagons).
b. *Bill completely loaded bales of hay (onto five wagons).

In (i), it does not matter if the VPs contain an oblique object or not.

Comparable results are predicted in some literature, such as Dowty (1991), in which the examples utilized definite and indefinite NPs. Moreover, subject NPs cannot be a determiner of the verb aspect in these cases, either, as argued by Tenny (1987; 1992).

object position are more likely linked with completive adverbial phrases. In addition, (47b') is more natural than (47b), supporting the corresponding assumption that unspecified amount NPs in the direct object position are more acceptably linked with durative adverbial phrases. (47c') can be grammatical according to Dowty's explanation as mentioned previously: Bill can carry out his action of putting paint on two walls continuously. When one compares (47d) and (47d'), (47d) sounds awkward since Bill's task is unclear. These tests demonstrate that the direct objects, not oblique objects, are associated with the telic feature of the sentences. Therefore, alternating verb phrases behave like both accomplishment and activity VPs according to the specification of the NP amounts in the direct object position.

(48) illustrates the same pattern with Japanese examples using *mitasu* (*fill*):

(48) a. Nihun de Bill ga mittu no pittyaa no mizu o (ikutuka no)
two minute in NOM three GEN pitcher GEN water ACC (some GEN)
gurasu ni mitasi-ta.
glass into fill-PAST
[lit.] 'Bill filled three pitchers of water into glasses in two minutes.'

a'. ?Nihun kan Bill ga mittu no pittyaa no mizu o
two minute for NOM three GEN pitcher GEN water ACC
(ikutuka no) gurasu ni mitasi-ta.
(some GEN) glass into fill-PAST
[lit.] 'Bill filled three pitchers of water into glasses for two minutes.'

b. ?Nihun de Bill ga (ikutuka no) pittyaa no mizu o itutu
two minutes in NOM (some GEN) pitcher GEN water ACC five
no gurasu ni mitasi-ta.
GEN glass into fill-PAST
[lit.] 'Bill filled pitchers of water into five glasses in two minutes.'

b'. Nihun kan Bill ga (ikutuka no) pittyaa no mizu o itutu
two minutes for NOM (some GEN) pitcher GEN water ACC five
no gurasu ni mitasi-ta.
GEN glass into fill-PAST
[lit.] 'Bill filled pitchers of water into five glass for two minutes.'

c. Nihun de Bill ga itutu no gurasu o (ikutuka no) pittyaa no
two minutes in NOM five GEN glass ACC (some GEN) pitcher GEN
mizu de mitasi-ta.
water with fill-PAST
'Bill filled five glasses with pitchers of water in two minutes.'

c'. ?Nihun kan Bill ga itutu no gurasu o (ikutuka no) pittyaa
two minutes for NOM five GEN glass ACC (some GEN) pitcher
no mizu de mitasi-ta.
GEN water with fill-PAST
'Bill filled five glasses with pitchers of water for two minutes.'

d. ??Nihun de Bill ga (ikutuka no) gurasu o mittu no pittyaa
two minutes in NOM (some GEN) glass ACC three GEN pitcher
no mizu de mitasi-ta.
GEN water with fill-PAST
'Bill filled glasses with three pitchers of water in two minutes.'

d'. ?Nihun kan Bill ga (ikutuka no) gurasu o mittu no pittyaa
two minutes for NOM (some GEN) glass ACC three GEN pitcher
no mizu de mitasi-ta.
GEN water with fill-PAST
'Bill filled glasses with three pitchers of water for two minutes.'

The data in (48) demonstrate that the NP in the direct object position, whether specified or unspecified, controls the aspect of the sentence. The sentences show the characteristics of accomplishment VPs with specified amount NPs in the direct object position of the verb *mitasu* and the characteristic of activity VPs with unspecified NPs in the direct object position. Note that in addition to the reading such that Bill continuously filled the glasses with water, (48a'), (48b'), (48c'), and (48d') may have the other reading such that Bill filled the glasses with water and spent the time ensuring that the water in the glasses did not decrease. In all of the readings, it can be assumed that the amount of water in the pitchers is not necessarily equal to the total capacity of the glasses.

In conclusion, alternating verb phrases involve both telic and atelic interpretations depending on the specified or unspecified amount NPs in the direct object positions.

3.2.2 Non-alternating Verbs

This section analyzes non-alternating verbs with respect to specified and unspecified amount NPs in object positions. The analysis proceeds by examining two types of non-alternating verbs. One type is the class of verbs which take only containers as their direct objects, such as *fill* and *cover*. The other is the class of verbs which take only substances as their direct objects, such as *pour* and *tumu*.

3.2.2.1 *Fill* Verbs

Both specified and unspecified amount NPs are involved in non-alternating sentences in the same way as they are involved in alternating sentences.

First, sentences from (49) to (51) illustrate that specified amount NPs may occur both in the direct and oblique object positions:

(49) Bill filled five glasses with fifty ice cubes.

(50) Lucy covered three tables with three tablecloths.

(51) Bill ga mittu no kago o roku-mai no hankati de oot-ta.
NOM three GEN basket ACC six GEN handkerchief with cover-PAST
'Bill covered three baskets with six handkerchiefs.'

Secondly, unspecified amount NPs may appear both in direct and oblique object positions simultaneously:

(52) Bill filled glasses with ice cubes.

(53) Lucy covered tables with tablecloths.

(54) Bill ga (ikutuka no) kago o (nanmaika no) hankati de
NOM (some GEN) basket ACC (some GEN) handkerchief with
oot-ta.
cover-PAST
'Bill covered baskets with handkerchiefs.'

Finally, specified and unspecified amount NPs may appear concurrently in the two object positions, in either order:

(55) a. Bill filled five glasses with ice cubes.

b. Bill filled glasses with fifty ice cubes.

(56) a. Lucy covered three tables with tablecloths.

b. Lucy covered tables with three tablecloths.

(57) a. Bill ga mittu no kago o (nanmaika no) hankati de
NOM three GEN basket ACC (some GEN) handkerchief with
oot-ta.
cover-PAST
'Bill covered three baskets with handkerchiefs.'

b. Bill ga nanmaika no kago o roku-mai no hankati de
NOM (some GEN) basket ACC six GEN handkerchief with
oot-ta.
cover-PAST
'Bill covered baskets with six handkerchiefs.'

The four types of sentences above are set out below in the same way as the alternating cases:

(58) a. *Fill* verb + specified amount NP + specified amount NP

b. *Fill* verb + unspecified amount NP + unspecified NP

c. *Fill* verb + specified amount NP + unspecified amount NP

d. *Fill* verb + unspecified amount NP + specified amount NP

Non-alternating sentences are examined below by applying Dowty's test to distinguish between accomplishment VPs and activity VPs through the use of adverbial phrases containing *in* and *for*.

I. *Fill* Verb + Specified Amount NP + Specified Amount NP

Examples in (59) illustrate the data with *fill* occurring with two specified amount NPs:

(59) a. Bill filled five glasses with fifty ice cubes in ten minutes.

b. ?Bill filled five glasses with fifty ice cubes for ten minutes.

(59b) is not completely natural since Bill cannot fill the specified amount of glasses with a specified amount of ice cubes continuously, while (59a) is well-formed. Therefore, according to Dowty's test, it is reasonable to conclude that the *fill* VP accompanied by two specified amount NPs behaves like an accomplishment VP, associated with the telic interpretation.[19]

Next, (60) shows the test with *cover*:

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[19] If one considers interpretations which do not involve a change of state within the given time frame, the sentence could be grammatical with a resultative interpretation such that Bill had already filled five glasses with fifty ice cubes before he started counting the time.

(60) a. Mary covered five tables with ten tablecloths in five minutes.

b. (*) Mary covered five tables with ten tablecloths for five minutes.

If the meaning of (60b) is that she left the tablecloths on the tables for a certain period of time, the sentence is grammatical. Otherwise, the sentence sounds odd. Thus, (60b) is appropriate only with a limited interpretation, making it unlikely that the VP with two specified amount NPs can be plausibly considered to be an activity VP. It leads to the conclusion that the VPs containing *cover* belong to accomplishment VPs.

Data with *oou* (English *cover*) are shown in (61):

(61) a. Ippun de Bill ga mittu no kago o roku-mai no
one minute in NOM three GEN basket ACC six GEN
hankati de oot-ta.
handkerchief with cover-PAST
'Bill covered three baskets with six handkerchiefs in one minute.'

b. (*)Ippun kan Bill ga mittu no kago o roku-mai no
one minute for NOM three GEN basket ACC six GEN
hankati de oot-ta.
handkerchief with cover-PAST
'Bill covered three baskets with six handkerchiefs for one minute.'

(61b) can be grammatical if it can be interpreted that Bill left six handkerchiefs on the basket for a certain period of time. One cannot assume from the sentence that Bill covered three baskets with six handkerchiefs repeatedly or continuously. With the limited reading of the sentence, it is reasonable to conclude that *oou*, with two specified amount NPs, implies a complete interpretation.

Consequently, non-alternating *fill* verbs accompanied with two specified amount NPs are linked with a telic interpretation, and the verb phrases behave like accomplishment VPs.

II *Fill* Verb + Unspecified Amount NP + Unspecified Amount NP

The examples in (62) show the effect of two types of adverbial phrases on the grammaticality of sentences with *fill*.

(62) a. *Bill filled glasses with ice cubes in ten minutes.

b. Bill filled glasses with ice cubes for ten minutes.

(62a) is ill-formed since *in ten minutes* implies that the VP should describe the completion of a defined task, but since the glasses are not specified, one cannot judge whether or not Bill completed the task.[20]

In addition, (63) shows a set of data with *cover*:

(63) a. *Mary covered tables with tablecloths in five minutes.

b. Mary covered tables with tablecloths for five minutes.

The example in (63) shows that *cover* with two unspecified NPs does not appear naturally with an adverbial phrase containing *in* in (63a), whereas it does with an adverbial phrase containing *for*.[21]

These tests show that the verbs *fill* and *cover* accompanied with unspecified NPs are acceptable with durative adverbial phrases containing *for*, linking them with an atelic interpretation of activity VPs rather than a telic interpretation of accomplishment VPs.

Additional data with Japanese *oou* are illustrated in (64):

(64) a. ??Ippun de Bill ga (ikutuka no) kago o (nanmaika no)
one minute in NOM (some GEN) basket ACC (some GEN)
hankati de oot-ta.
handkerchief with cover-PAST
'Bill covered baskets with handkerchiefs in one minute.'

b. Ippun kan Bill ga (ikutuka no) kago o (nanmaika no)
one minute for NOM (some GEN) basket ACC (some GEN)
hankati de oot-ta.
handkerchief with cover-PAST
'Bill covered baskets with handkerchiefs for one minute.'

(64a) is potentially ill-formed, as mentioned previously; even though an NP in Japanese can imply a specified amount of objects without numerical expressions, the sentence is not

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[20] The sentence in (62a) could be grammatical with the interpretation where it took Bill ten minutes per glass to fill each one with ice cubes. However, this interpretation does not refer to the completion of one specific action; the phrase, *in ten minutes*, does not refer to an identifiable time period within history, but instead refers to a generalized time measure. This interpretation possibly occurs often when the VP contains an unspecified amount NP in the direct object position appearing with an adverbial phrase containing *in*.

[21] (63a) could be well-formed when the sentence is interpreted that it took Mary five minutes per table to cover with tablecloths. See Footnote 20 for more details.

acceptable if the NPs in (64a) imply unspecified amounts of objects, which is the desired reading for this set of data. The grammatical sentence in (64b) is read that Bill left handkerchiefs on baskets for a certain period of time ensuring only during that specific amount of time that the handkerchiefs covered the baskets. It cannot be interpreted that Bill put handkerchiefs on baskets repeatedly.

Thus, when unspecified amount NPs are both in direct and oblique object positions of non-alternating verbs, the verb phrases yield activity VPs.

III *Fill* Verb + Specified Amount NP + Unspecified Amount NP vs.

Fill Verb + Unspecified Amount NP + Specified Amount NP

The problematic case is when both specified and unspecified amount NPs are involved in the sentences simultaneously. The sentences with *fill* are shown in (65):

(65) a. Bill filled five glasses with ice cubes in ten minutes.

a' *Bill filled five glasses with ice cubes for ten minutes.

b. * Bill filled glasses with fifty ice cubes in ten minutes.

b' ?Bill filled glasses with fifty ice cubes for ten minutes.

Fill along with a specified amount NP in the direct object position is natural with *in ten minutes* in (65a), but not with *for five minutes*, as shown in (65a'). Also, *fill* occurring with an unspecified amount NP in the direct object NP position is marginally acceptable with *for five minutes* in (65b') with a distributed reading of fifty ice cubes per glass; however, not with *in five minutes* in (65b).

Thus, the *fill* VP generally behaves like an accomplishment VP when a specified amount NP is the direct object, whereas the VP naturally behaves like an activity VP when an unspecified amount NP is the direct object.

Non-alternating sentences with *cover* are shown in (66):

(66) a. Mary covered ten tables with tablecloths in five minutes.

a'. ? Mary covered ten tables with tablecloths for five minutes.

b. ??Mary covered tables with five tablecloths in five minutes.

b'. ? Mary covered tables with five tablecloths for five minutes.

When the verb *cover* occurs with specified amount NPs in the direct object position accompanied by the adverbial phrase *in five minutes*, the sentences are well-formed as in (66a), but not completely as in (66a'). On the other hand, if *cover* appears with unspecified amount NPs in the direct object position, the sentence accompanied by the adverbial phrase *for five minutes* in (66b') is more natural than when accompanied by *in five minutes* as in (66b).[22] Note that (66a') and (66b') may be interpreted Mary spent five minutes per table to complete her task.

(67) illustrates examples with *oou (cover):*

(67) a. Ippun de Bill ga mittu no kago o (nanmaika no)
one minute in NOM three GEN basket ACC (some GEN)
hankati de oot-ta.
handkerchief with cover-PAST
'Bill covered three baskets with handkerchiefs in one minute.'

a'. (*)Ippun kan Bill ga mittu no kago o (nanmaika no)
one minute for NOM three GEN basket ACC (some GEN)
hankati de oot-ta.
handkerchief with cover-PAST
'Bill covered three baskets with handkerchiefs for one minute.'

b. ?Ippun de Bill ga (ikutuka no) kago o roku-mai no
one minute in NOM (some GEN) basket ACC six GEN
hankati de oot-ta.
handkerchief with cover-PAST
'Bill covered baskets with six handkerchiefs in one minute.'

b'. Ippun kan Bill ga (ikutuka no) kago o roku-mai no
one minute for NOM (some GEN) basket ACC six GEN
hankati de oot-ta.
handkerchief with cover-PAST
'Bill covered baskets with six handkerchiefs for one minute.'

The sentence in (67a') is almost natural because there might be a relationship between handkerchiefs and baskets. However, it requires the reading that Bill placed his handkerchiefs on the basket for one minute, as (67b') is also required. It would be extremely odd to interpret them as meaning that he put the handkerchiefs on the three

[22] Again, (66a') and (66b') could be grammatical with a resultative interpretation.

baskets repeatedly for a certain period of time. This again shows that specified amount NPs in the direct object position are more likely linked with completive adverbial phrases. In addition, (67b') is more natural than (67b), supporting the corresponding assumption that unspecified amount NPs in the direst position are more acceptably linked with durative adverbial phrases.

Over all, the results show that NPs in the direct object position in non-alternating sentences determine the temporal aspect of each sentence as they do in alternating sentences. Specified amount NPs in the direct object position are linked with the telic interpretation associated with accomplishment VPs, which imply complete actions. In contrast, unspecified amount NPs in the direct object position are linked with the atelic interpretation associated with activity VPs, which imply incomplete actions.

3.2.2.2 *Pour* Verbs[23]

The other class of non-alternating verbs are verbs which only take substances as their direct objects. The English verb *pour* and the Japanese verb *tumu* are examined in this category.

First, two specified amount NPs are acceptable when used in both direct and oblique object positions:

(68) Bill poured three pitchers of water into five glasses.

(69) Bill ga hyakukko no hako o godai no kuruma ni tun-da.
NOM hundred GEN boxes ACC five GEN car on load-PAST
'Bill loaded one hundred boxes onto five cars.'

In addition, two unspecified amount NPs can occur in both direct and oblique object positions:

(70) Bill poured pitchers of water into glasses.

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[23] Note that there are several semantic categories of non-alternating verbs which occur with the NP-PP frame (See appendix). This thesis focuses on the *pour* type as a representative.

(71) Bill ga (ikutuka no) hako o (nandaika no) kuruma ni tun-da.
NOM (some GEN) box ACC (some GEN) car onto load-PAST
'Bill loaded boxes onto cars.'

Furthermore, specified and unspecified amount NPs may appear concurrently in the two object positions, in either order:

(72) a. Bill poured three pitchers of water into glasses.

b. Bill poured pitchers of water into five glasses.

(73) a. Bill ga hyakukko no hako o (nandaika no) kuruma ni
NOM hundred GEN boxes ACC (some GEN) car on
tun-da.
load-PAST
'Bill loaded one hundred boxes onto cars.'

b. Bill ga (ikutuka no) hako o godai no kuruma ni tun-da.
NOM (some GEN) boxes ACC five GEN car on load-PAST
'Bill loaded boxes onto five cars.'

The four types of sentences continue to be organized as previously mentioned, and Dowty's test utilizing adverbial phrases is applied to these sentences below.

I. *Pour* Verb + Specified Amount NP + Specified Amount NP

(74) utilizes the non-alternating verb *pour*:

(74) a. Bill poured three pitchers of water into five glasses in five minutes.

b. ?Bill poured three pitchers of water into five glasses for five minutes.

The sentence (74a) is more acceptable than that of (74b). Accordingly, the VP which contains *pour* with two specified amount NPs is more acceptably linked to the accomplishment VPs, not activity VPs.

Japanese *tumu* with two specified amount NPs are shown in (75):

(75) a. Juppun de Bill ga hyakukko no hako o godai no kuruma
ten minutes in NOM hundred GEN boxes ACC five GEN car
ni tun-da.
onto load-PAST
'Bill loaded one hundred boxes onto five cars in ten minutes.'

b. ??Juppun kan Bill ga hyakukko no hako o godai no
one hour for NOM hundred GEN boxes ACC five GEN
kuruma ni tun-da.
car onto load-PAST
'Bill loaded one hundred boxes onto five cars for ten minutes.'

In (75b), the sentence can only be interpreted that Bill has placed one hundred boxes in five cars for a certain period of time; it does not mean that Bill loaded one hundred boxes in five cars repeatedly.

These sentences demonstrate that *pour* type verbs occurring with two specific amount NPs are more likely associated with accomplishment VPs, which imply telic interpretations.

II *Pour* Verb + Unspecified Amount NP + Unspecified Amount NP

Two unspecified amount NPs are used in the sentences with *pour* and *tumu* in (76) and (77), respectively.

(76) a. *Bill poured pitchers of water into glasses in five minutes.

b. Bill poured pitchers of water into glasses for five minutes.

(77) a. ??Juppun de, Bill ga (ikutuka no) hako o (nandaika no)
one minutes in NOM (some GEN) box ACC (some GEN)
kuruma ni tun-da.
car onto load-PAST
'Bill loaded boxes onto cars in ten minutes.'

b. Juppun kan, Bill ga (ikutuka no) hako o (nandaika no)
one minutes for NOM (some GEN) box ACC (some GEN)
kuruma ni tun-da.
car onto load-PAST
'Bill loaded boxes onto cars for ten minutes.'

In (76), *pour* accompanied with unspecified amount NPs can occur with *for five minutes*, but not with *in five minutes*. (77a) should be ill-formed; as mentioned previously, even though an NP in Japanese can imply a specified amount of objects without numerical expressions, the sentence is not acceptable if the NPs in (77a) imply unspecified amounts of objects, which is the desired reading for this set of data. On the other hand, (77b) can

be grammatical if the sentence means that Bill placed boxes onto cars for a certain amount of time.

The results shows these *pour* type verbs with two specified NPs are at the least more naturally associated with atelic interpretations.

III *Pour* Verb + Specified amount NP + Unspecified Amount NP vs.

Pour Verbs + Unspecified Amount NP + Specified Amount NP

Finally, the case in which both specified and unspecified amount NPs appear in the same sentence is examined in order to define how *pour* type verbs with object NPs are linked to the verb aspect. (78) demonstrates a set of data with *pour:*

(78) a. Bill poured three pitchers of water into glasses in five minutes.

a'. ?Bill poured three pitchers of water into glasses for five minutes.

b. ??Bill poured pitchers of water into five glasses in five minutes.

b'. ?Bill poured pitchers of water into five glasses for five minutes.

(78a) is more natural than (78a') while (78b') is more natural than (78b). This result provides evidence that *pour* occurring with a specified amount NP as the direct object corresponds to telic interpretations and *pour* occurring with an unspecified amount NP as the direct object corresponds to atelic interpretations.

Additional examples are shown with Japanese *tumu*:

(79) a. Juppun de Bill ga hyakukko no hako o (nandaika no)
ten minutes in NOM hundred GEN boxes ACC (some GEN)
kuruma ni tun-da.
car onto load-PAST
'Bill loaded one hundred boxes onto cars in ten minutes.'

a'. ?Juppun kan Bill ga hyakukko no hako o (nandaika no)
ten minutes for NOM hundred GEN boxes ACC (some GEN)
kuruma ni tun-da.
car onto load-PAST
'Bill loaded one hundred boxes onto cars for ten minutes.'

b. ?Juppun de Bill ga (ikutuka no) hako o godai no kuruma
ten minutes in NOM (some GEN) boxes ACC five GEN car
ni tun-da.
onto load-PAST
'Bill loaded boxes onto five cars in ten minutes.'

b'. Juppun kan Bill ga (ikutuka no) hako o godai no kuruma
ten minutes for NOM (some GEN) boxes ACC five GEN car
ni tun-da.
onto load-PAST
'Bill loaded boxes onto five cars for ten minutes.'

(79a) is completely well-formed whereas (79a') only implies that Bill left one hundred boxes on five cars for ten minutes, not that Bill was continuously loading the boxes onto the car. On the other hand, (79b) is hypothesized to be ungrammatical according to previous testing although it seems to be marginally well-formed, since it is presumably difficult to associate this circumstance with unspecified objects even though the direct object NP is not modified by a specific amount. However, as mentioned previously, if the direct object NP implies an unspecified amount of objects, the sentence is completely ill-formed. Also, (79b') has two readings: one is Bill's action of repeatedly loading boxes onto five cars; the other is that Bill left one hundred boxes on the cars for a certain period of time.

These sentences in (78) and (79) illustrate that when specified amount NPs are in the direct object position, the VPs generally behave like accomplishment VPs linked with telic interpretations. In contrast, when unspecified amount NPs are in the direct object position, the VPs do not naturally behave like activity VPs linked with atelic interpretations. Hence, NPs in the direct object position can control the telicity of sentences.

3.3 Summary

Dowty's test reveals that VPs with alternating and non-alternating locative verbs are either accomplishment VPs, which are defined as having a telic interpretation, or activity VPs, which are defined as having an atelic interpretation. The categorization of the telicity of locative verbs depends on whether or not the direct object is a specified or unspecified

amount NP. However, once again, the distinguishing feature of alternating and non-alternating verbs has not yet been clearly outlined. The next chapter will present an additional analysis which contributes to the differentiation of these verbs.

Chapter 4

QUANTIFICATIONAL AND INHERENT TELICITY OF LOCATIVE VERBS

As mentioned in Chapter 2, the previous studies have not yet satisfactorily accounted for the crucial factors in determining why a locative verb may or may not undergo alternation. For example, Dowty (1991) argues that Incremental Theme, a semantic property of the verb argument, is involved in locative alternation; locative verbs select an Incremental Theme argument as the direct object argument whenever they imply a complete change of state, as with the verb phrases, *load the wagon with hay* and *load the hay onto the wagon.* However, his assessment merely establishes a principle for how each locative verb selects the argument in the direct object position, and it does not explain why some locative verbs do not allow alternation; it does not elucidate why the Incremental Theme argument is restricted to be either a substance or a location for non-alternating verbs.

In addition, Chapter 3 provides evidence that the telicity of locative verbs is controlled by the specification of NP amounts in the direct object position. However, again, this factor does not satisfactorily explain why some locative verbs undergo the alternation and other verbs do not. Therefore, in contrast to "quantificational telicity," which was discussed in Chapter 3, this chapter attempts to provide this account by utilizing another determinant of telicity, "inherent telicity," which is highlighted by two grammatical structures.

4.1 Grammatical Structure and Inherent Telicity

Two grammatical frames are involved in locative alternation: the NP-PP frame and the NP-with-NP frame. As discussed in Chapter 2, the difference between these two frames is discussed by several researchers, such as Jackendoff (1990) and Rappaport and Levin (1988). The two categories of locative verbs, alternating and non-alternating, can be differentiated by whether a verb can occur with both frames; for an alternating verb, these two frames are interchangeable, whereas a non-alternating verb allows only an NP-PP frame or an NP-with-NP frame, but not both.

This chapter examines these two syntactic frames as another factor in determining the telicity of locative verbs. As discussed in the previous chapter, locative VPs are generally determined to belong to one of the aspectual categories, either the accomplishment VPs or the activity VPs, based on whether the direct object is a specified or unspecified amount NP. Yet, the problem of identifying the crucial determinant in alternating and non-alternating structures remains. Dowty's aspectual diagnostic test, which was utilized in the previous chapter, focuses solely on the relationship between the event and time. In other words, it determines whether the event is completed within a certain time or, in contrast, is durative. However, the test does not satisfactorily take into account that the relationship between the location (container, surface, and so forth) and the substance - that is, the extent to which the location is affected by the substance - is also a factor in measuring whether an event is spatially restricted or not.[24]

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[24] This consideration of space in determining telicity may be closely related to Tenny (1987), who argues that events are delimited not only in terms of time, but also in terms of the direct object argument. The properties of the direct object NP argument provide the scale by which the event may be measured. If the direct object NP argument does not provide a measurable scale, then the event is, in her terms, non-delimited (generally corresponding to activity VPs as regards temporal aspect) versus delimited (generally corresponding to accomplishment VPs as regards temporal aspect). Examples of the properties of direct objects that delimit events are spatial extent (e.g. *the desert* in *cross the desert)*, ripeness (e.g. *the fruit* in *ripen the fruit)*, and so forth. Thus, Tenny's analysis could be argued to provide support for considering telicity of locative VPs in terms of space, as well as time. In the current discussion, the delimiting property to be considered is the capacity of containers, or the extent of surfaces, as a subset of spatial extent.

Similar to Tenny's idea, Dowty's Incremental Theme theory can be interpreted to be a generalization of a definite change of state which is measured out by NP arguments, such as ones which

It seems that the location argument of locative verbs always implies the existence of a spatial measurable terminal point for the event, which is the container or surface's maximum capacity with or without a stated substance. In contrast, the substance provides the means by which the event is measured in reference to the spatial terminal point. Accordingly, this notion of space suggests the existence of another type of telicity of locative verbs. This type of telicity is associated with the extent to which the capacity of the container or the extent the surface is affected by the amount of the substance. The current work labels this type of telicity as "inherent telicity," since it can be assumed that locative verbs inherently possess the notion of producing a completely or incompletely occupied space or a completely or incompletely overlaid surface.

This analysis is an extension of the interpretation of telicity. As mentioned in Chapter 3, telicity distinguishes whether a situation has a perfect or imperfect meaning; a telic situation is when the event is a process that leads up to a defined terminal point whereas an atelic situation is when the event does not have a terminal point (Comrie 1976). The current work extends this definition of telicity to include the terminal point which a spatial relationship entails.

This thesis will utilize the terms "inherent-telic" and "inherent-atelic" to refer to this type of telicity in contrast to "quantificational-telic" and "quantificational-atelic," which refer to the concepts discussed in the previous chapter. If the capacity of the container or the extent of surface is affected completely, the event reaches the spatial terminal point associated with an inherent-telic interpretation, whereas if the interpretation is unspecified between partially and completely affected, it is indeterminate whether the event reaches the spatial terminal point and thus is associated with inherent-atelic interpretation. It will be demonstrated that each of these two spatial interpretations is associated with one of the two grammatical frames.

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refer to space and time. In locative sentences, the Incremental Theme could be identified as the union of space and time.

Chapter 2 briefly discussed the effect of these frames on the meaning of alternating sentences, with regard to the extent to which the container is affected. When the container is the oblique object argument, it is not necessarily completely affected by the event which the verb entails, as in the case of the NP-PP frame, as shown with *load* in (84a); whereas when a container is the direct object, as in the case of the NP-with NP frame in (84b), it is completely affected by the event:[25]

(80) a. Bill loaded ten bales of hay onto five wagons.

b. Bill loaded five wagons with ten bales of hay .

The wagons could be almost empty in (80a); however, each wagon must be full in (80b).[26] This demonstrates that the spatial terminal point is reached in the NP-with-NP frame, but not necessarily in the NP-PP frame. Thus, in addition to the specification of the NP amount, the telicity of locative verbs is associated with the two frames and their interpretations. Consequently, the difference between alternating VPs and non-alternating VPs becomes apparent. Alternating verbs, which take both frames, potentially represent both inherent-telic and inherent-atelic interpretations, whereas non-alternating verbs, which take either the NP-with-NP frame or the NP-PP frame, entail only an inherent-telic or inherent-atelic interpretation, but not both.

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[25] Jackendoff (1991) describes a related idea in his terms, "distributive location" and "non-distributive location," as mentioned in Chapter 2. He supports his arguments with the following data (1991:172-173):

(i) a. Felix loaded books onto the truck.
Felix loaded some books onto the truck.
Felix loaded the books onto the truck.

b. Felix loaded the truck with books.
?*Felix loaded the truck with some books.
Felix loaded the truck with the books.

The books completely occupy the relevant space in the interior of the truck in the NP-with-NP frame, but not in the NP-PP frame. Accordingly, the space of the container is completely affected by the substance in the NP-with-NP frame, implying that this frame is only appropriate when it is clear that the substance could logically fill the container completely. Thus, *some books* is questionable in (ib) because *some* is connotative of an unspecified amount. In contrast, the spatial relationship between container and substance does not matter in the NP-PP frame, since the (a) sentences can be interpreted as having either a spatial-telic or a spatial-atelic interpretation.

[26] As mentioned previously, two interpretations are involved in NP-with-NP frames as shown in (80b); one is that Bill loaded each of the five wagons with ten bales of hay, and the other is that Bill loaded all of the wagons using a total of ten bales of hay. In either interpretation, the wagons must be full.

It seems reasonable to refer to the non-alternating case as marked because of the restriction on its telicity, and the alternating case as unmarked because of its lack of restriction. Moreover, the marked cases can be further divided into two categories based on their frames. *Fill* verbs are marked because they are only associated with an inherent-telic interpretation, as a result of only taking the NP-with-NP frame. In contrast, *pour* verbs are marked since they are only associated with an inherent-atelic interpretation, in accordance with their NP-PP frame. It is hoped that the contrasting the marked cases with the unmarked cases will explain the differing behavior of alternating and non-alternating verbs.[27]

Hence, this chapter exposes the role of the two syntactic frames in terms of the constraints on inherent telicity which locative verbs entail. The following discussion is carried out by presenting data for each of the locative verbs, focusing on the influence of the frame rather than the time references employed in Dowty's diagnostic test. Both specified and unspecified amount NPs are utilized in examples in this section, making it possible to see the relation between quantificational telicity and inherent telicity.

4.2 Data Analysis (II)

4.2.1 Alternating Verbs: Unmarked Case

The data in (81) show alternating sentences with *load*, occurring with specified amount NPs in both the direct and oblique object positions:

(81) a. Bill loaded ten boxes onto two carts.

b. Bill loaded two carts with ten boxes.

Given that containers can denote a spatial measurable end point, the completeness of the event differs depending on how much the capacity of the container is affected by the

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[27] Following Dowty's analysis with respect to Incremental Themehood, it is also interpreted that the non-alternation is marked and the alternation is unmarked. Non-alternating verbs are restricted to selecting either a location or a substance as an Incremental Theme argument, but not both. On the other hand, alternating verbs are allowed to select either of them as their argument.

amount of the substance. *Two carts* are not necessarily completely occupied by *ten boxes* in (81a); however, they must be completely occupied in (81b). Accordingly, in (81a), the emphasis is on the task of loading, because it can not be determined how much of the capacity of the *two carts* is occupied, which is linked with an inherent-atelic interpretation. On the other hand, (81b) emphasizes that *the two carts* are completely full, implying an inherent-telic interpretation. Thus, when both substance and container are specified amount NPs, the distinction between the two frames is clear-cut: NP-with-NP corresponds to an inherent-telic interpretation in addition to a quantificational-telic interpretation, NP-PP to an inherent-atelic interpretation plus a quantificational-telic interpretation.

When unspecified amount NPs appear in both the direct and oblique object positions, such as the one in (82), one can observe the same spatial interpretation:

(82) a. Bill loaded boxes onto carts.

b. Bill loaded carts with boxes.

The measurable end point in these sentences is not as immediately obvious, because no particular amount of either boxes or carts are referred to. Regardless, the space of each cart being loaded is occupied completely by the boxes in (82b), while it is not necessarily so in (82a). Thus, in terms of space, (82a) has an inherent-atelic interpretation, whereas (82b) has an inherent-telic interpretation.

When specified and unspecified amount NPs appear concurrently in the two object positions, in either order, the spatial interpretation is still the same:

(83) a. Bill loaded ten boxes onto carts.

a'. Bill loaded boxes onto two carts.

b. Bill loaded two carts with boxes.

b'. Bill loaded carts with ten boxes.

The sentences in (83a) and (83b) are quantificational-telic sentences, while those in (83a') and (83b') are quantificational-atelic sentences, as a result of the type of NP in the direct object position, as concluded in the previous chapter. However, this set of data

demonstrates that specified and unspecified amount NPs do not govern inherent telicity. While the quantificational telicity is bounded by the specification of the NP amount in the direct object position, the inherent telicity is totally associated with the interpretations of the frames. This is the result of the fact that the container is always a measurable terminal point, but it can delimit the event only when it is in the direct object position. Therefore, the measurable spatial terminal point does not delimit the event in the (a) sentences above; however, it does in the (b) sentences.

The conclusion based on alternating sentences with *load* are confirmed by the following data using *spray:*

(84) a. Bill sprayed two cans of paint onto two walls.

b. Bill sprayed two walls with two cans of paint.

In both sentences in (84), *two walls* implies a measurable spatial terminal point of the event which *spray* entails. In (84a), the extent to which the walls are covered by the substance, *two cans of paint,* is unclear and the wall does not delimit the event; it might be partially or completely affected. Therefore, the sentence implies an inherent-atelic sense. On the other hand, in (84b), the extent of coverage is apparent and the walls are affected by the substance completely, denoting a measurable terminal point; therefore, the sentence implies an inherent-telic sense.

If unspecified amount NPs appear in both the direct and oblique object positions of *spray*, the spatial relations between the location and substance remain the same:

(85) a. Bill sprayed cans of paint onto walls.

b. Bill sprayed walls with cans of paint.

Thus, there could be almost nothing on the walls in (85a), whereas the walls must be covered by paint according to (85b); the space delimits the event in the NP-with-NP frames such that an inherent-telic interpretation results, but not in the NP-PP frame where the VP denotes an inherent-atelic interpretation.

In addition, the following data demonstrate that the relationship of the frame to inherent telicity is not affected by having specified and unspecified amount NPs concurrently in the two object positions of *spray*, in either order:

(86) a. Bill sprayed two cans of paint onto walls.

a'. Bill sprayed cans of paint onto two walls.

b. Bill sprayed two walls with cans of paint.

b'. Bill sprayed walls with two cans of paint.

The (a) sentences in (86) have a inherent-atelic interpretation, while the (b) sentences have an inherent-telic interpretation, regardless of the NPs in the direct object positions, since the space does not delimit the event in the (a) sentences; however, it does in the (b) sentences.

The English data is further confirmed by Japanese data with *mitasu*, occurring with specified amount NPs in both the direct and the oblique object positions:

(87) a. Bill ga mittu no pittyaa no mizu o itutu no gurasu ni
NOM three GEN pitcher GEN water ACC five GEN glass into
mitasi-ta.
fill-PAST
[lit.] 'Bill filled three pitchers of water into five glasses.'

b. Bill ga itutu no gurasu o mittu no pittyaa no mizu de
NOM five GEN glass ACC three GEN pitcher GEN water with
mitasi-ta.
fill-PAST
'Bill filled five glasses with three pitchers of water.'

In (87a), the spatial terminal point of *itutu no gurasu* (*five glasses*) is indeterminately affected by the substance, *mittu no pittyaa no mizu* (*three pitchers of water*), implying an inherent-atelic interpretation, while the containers are completely affected by the substance in (87b), implying an inherent-telic interpretation. Thus, the two frames also play a role in delimiting the event in Japanese.

Moreover, like the English *load* and *spray*, the distinction between the NP-with -NP frame (sentences (a), (b), (c),) and the NP-PP frame (sentences (a'), (b') and (c')) in (88) remains the same, regardless of whether specified, unspecified or a combination of the two types of NPs are employed:

(88) a. Bill ga (ikutuka no) pittyaa no mizu o (ikutuka no) gurasu
NOM (some GEN) pitcher GEN water ACC (some GEN) glass
ni mitasi-ta.
into fill-PAST
[lit.] 'Bill filled pitchers of water into glasses.'

a'. Bill ga (ikutuka no) gurasu o (ikutuka no) pittyaa no mizu de
NOM (some GEN) glass ACC (ikutuka no) pitcher GEN water with
mitasi-ta.
fill-PAST
'Bill filled glasses with pitchers of water.'

b. Bill ga mittu no pittyaa no mizu o (ikutuka no) gurasu ni
NOM three GEN pitcher GEN water ACC (some GEN) glass into
mitasi-ta.
fill-PAST
[lit.] 'Bill filled three pitchers of water into glasses.'

b'. Bill ga itutu no gurasu o (ikutuka no) pittyaa no mizu de
NOM five GEN glass ACC (some GEN) pitcher GEN water with
mitasi-ta.
fill-PAST
'Bill filled five glasses with pitchers of water.'

c. Bill ga (ikutuka no) pittyaa no mizu o itutu no gurasu ni
NOM (some GEN) pitcher GEN water ACC five GEN glass into
mitasi-ta.
fill-PAST
[lit.] 'Bill filled pitchers of water into five glasses.'

c'. Bill ga (ikutuka no) gurasu o mittu no pittyaa no mizu de
NOM (some GEN) glass ACC three GEN pitcher GEN water with
mitasi-ta.
fill-PAST
'Bill filled glasses with three pitchers of water.'

Whether or not the amount of the NP is specified, the interpretation is the same: the VP containing *mitasu* is interpreted as an inherent-atelic interpretation within the NP-PP frame, while it is interpreted as an inherent-telic interpretation within the NP-with-NP frame. Note that all of the data support the fact that the crucial difference is whether or not the location argument is in the direct object position.

Thus, these spatial relationships between the containers and substances contribute to explaining the difference of telicity between the two distinct frames in alternating structures. This implies that locative alternating verbs have two kinds of telicity: one is quantificational telicity, and the other is inherent telicity. Hence, the specification of the

amount of NPs and the two grammatical frames influence quantificational telicity and inherent telicity, respectively.

4.2.2 Non-alternating Verbs: Marked Case

This section discusses the inherent telicity with regard to the marked case, non-alternating verbs. As mentioned in Chapter 3, Jackendoff (1990) differentiated non-alternating verbs into two categories: one is the verbs which occur only with the NP-with-NP frame, the other is the verbs which occur only with the NP-PP frame. Following this categorization, this section focuses on these two types of non-alternating verbs, representing *fill* verbs and *pour* verbs as two different types of marked cases.

4.2.2.1 *Fill* Verbs

Fill type verbs only take NP-with-NP frames, as shown in (89):

(89) a. Bill filled five glasses with fifty ice cubes.

b. *Bill filled fifty ice cubes into the glasses.

According to the previous analysis, it would be predicted that this verb only entails an inherent-telic interpretation, based on its frame. Thus, in (89a), the container *five glasses* is a unit with a measurable terminal point, and the substance *fifty ice cubes* should affect the capacity of the containers completely, which it does.

Furthermore, this interpretation is consistent despite any change in the specification of the NP amount:

(90) a. Bill filled glasses with ice cubes.

b. Bill filled five glasses with ice cubes.

c. Bill filled glasses with fifty ice cubes.

Glasses or *five glasses* as containers are completely affected by the substance, *ice cubes* or *fifty ice cubes,* in all of the sentences in (90). The container in a VP with *fill* always has to be completely occupied by the substance regardless of the amount of substance, and thus

the container delimits the event spatially and the VP is linked with an inherent-telic interpretation.

Cover is another non-alternating verb which takes only an NP-with-NP frame. The event is always delimited by the location argument in the direct object position. Therefore, *tables* or *twelve tables* in the following sentences are completely affected:

(91) a. Lucy covered three tables with twelve tablecloths.

b. Lucy covered tables with tablecloths.

c. Lucy covered three tables with tablecloths.

d. Lucy covered tables with twelve tablecloths.

Thus, the space in (91) delimits the event and the VPs denote an inherent-telic interpretation because the location argument occurs in the direct object position.

Japanese *oou (cover)* illustrates the same consequence:

(92) Bill ga mittu no kago o roku-mai no hankati de oot-ta.
NOM three GEN basket ACC six GEN handkerchief with cover-PAST
'Bill covered three baskets with six handkerchiefs.'

Mittu no kago (three baskets) is completely affected by *roku-mai no hankati (six handkerchiefs)* in (92). Thus, the complete affectedness of the container by the substance indicates that the verb has an inherent-telic interpretation, based on its NP-with-NP frame.

The spatial relationship between the container and the substance with *oou (cover)* is the same when the specification of the NP amount is manipulated:

(93) a. Bill ga (ikutuka no) kago o (nanmaika no) hankati de
NOM (some GEN) basket ACC (some GEN) handkerchief with
oot-ta.
cover-PAST
'Bill covered baskets with handkerchiefs.'

b. Bill ga mittu no kago o (nanmaika no) hankati de
NOM three GEN basket ACC (some GEN) handkerchief with
oot-ta.
cover-PAST
Bill covered three baskets with handkerchiefs.'

c. Bill ga (ikutuka no) kago o roku-mai no hankati de
NOM (some GEN) basket ACC six GEN handkerchief with
oot-ta.
cover-PAST
'Bill covered baskets with six handkerchiefs.'

In all of the sentences in (93), the location, *kago(baskets)* or *mittu no kago (three baskets),* reached the spatial terminal point. Thus, whether or not the NPs representing the space are specified or not, the verb *oou (cover)* implies that the surface of the space is totally covered with the substance implying an inherent-telic interpretation.

Hence, it is apparent that the *fill* verbs are associated with inherent-telic interpretations based on their occurrence with NP-with-NP frames.

4.2.2.2 *Pour* Verbs

Finally, the effects of the frame on the inherent telicity of *pour* verbs are observed. The data in (94) illustrate the English example *pour:*

(94) a. Bill poured three liters of water into ten glasses.

b. *Bill poured ten glasses with three liters of water.

The spatial relationship between the location and the substance in this case is different from *fill* type non-alternating verbs. As shown in (94), the container *ten glasses* may or may not be totally affected by the substance *three liters of water.* Therefore, the event does not reach a measurable spatial terminal point. Accordingly, the VP exhibits an inherent-atelic sense. Note that the container is always in the oblique object position, and therefore it cannot delimit the event by providing a measurable spatial terminal point.

The spatial relations between the container and substance are the same, regardless of the specification of the NPs in the direct and oblique object positions:

(95) a. Bill poured water into glasses.

b. Bill poured three liters of water into glasses.

c. Bill poured water into ten glasses.

In (95), whether or not the specified amount NP or unspecified amount NP is in the direct object positions, the container, *glasses* or *ten glasses*, could be almost empty. Thus, the VPs in the sentences in (95) have inherent-atelic interpretations.

The sentences in (96) show that Japanese *tumu (load)* implies the same spatial interpretation as *pour:*

(96) a. Bill ga hyakukko no hako o godai no kuruma ni tun-da.
NOM hundred GEN boxes ACC five GEN car on load-PAST
'Bill loaded one hundred boxes onto five cars.'

It is not necessary that *godai no kuruma (five cars)* be entirely filled with *hyakukko no hako (one hundred boxes)*. Therefore, the container arguments which occur with *tumu*, cannot delimit the event. This conclusion supports the assumption that the NP-PP frame denotes an inherent-atelic interpretation. Also, the spatial interpretation with *tumu* is constant whether or not specified amount NPs are used:

(97) a. Bill ga (ikutuka no) hako o (nandaika no) kuruma ni
NOM (some GEN) boxes ACC (some GEN) car on
tun-da.
load-PAST
'Bill loaded boxes onto cars.'

b. Bill ga hyakukko no hako o (nandaika no) kuruma ni
NOM hundred GEN boxes ACC (some GEN) car on
tun-da.
load-PAST
'Bill loaded one hundred boxes onto cars.'

c. Bill ga (ikutuka no) hako o godai no kuruma ni tun-da.
NOM (some GEN) boxes ACC five GEN car on load-PAST
'Bill loaded boxes onto five cars.'

Hako (boxes) or *hyakukko no hako (one hundred boxes)* could be almost empty or full, and it cannot be determined if the event is completed by measuring the spatial terminal point in (97). Therefore, VPs with *tumu* denote inherent-atelic interpretations.

In sum, the spatial relationship varies according to the frames. If the verb appears in the NP-PP frame, the VP denotes an inherent-atelic interpretation, while if the verb appears in the NP-with-NP frame, the VP denotes an inherent-telic interpretation.

4.3 Telicity Associated with Locative Verbs

This chapter has examined another determinant of the telicity which locative verbs connote as a semantic property. The following table summarizes the above discussion:

Table 1

		Inherent Telicity	
		inherent-telic	inherent-atelic
Quantificational Telicity	quantificational-telic	the direct object: specified amount NP NP-with-NP frame	the direct object: specified amount NP NP-PP frame
	quantificational-atelic	the direct object: unspecified amount NP NP-with-NP frame	the direct object: unspecified amount NP NP-PP frame

Thus, the telicity of locative verbs is determined by the combination of two variables: quantificational telicity and inherent telicity. Quantificational telicity is governed by whether a specified or unspecified amount NP is in the direct object position, and inherent telicity is manifested by the grammatical frame.

The combination of these variables essentially accounts for the difference between alternating verbs and non-alternating verbs in terms of the categories laid out in the table above. Alternating verbs may be classified as any of the four combinations of quantificational telicity and inherent telicity depending on the specified or unspecified amount NPs in the direct object position and the grammatical frame, respectively. On the other hand, non-alternating verbs belong to either of vertical sections; the *fill* verb class consistently falls in the inherent-telic column, while the *pour* verb class is consistently categorized as inherent-atelic.

It is then possible to determine why non-alternating verbs can take only one of the two frames, but not both; the inherent telicity of these verbs is inherently constrained by their fundamental meanings which refer to cases either where a space is entirely affected or where a space is not completely affected.[28] In other words, *fill* verbs intrinsically imply complete occupancy of containers or extent of surfaces. This verb class strongly entails a spatial terminal point and requires a direct object argument which is a container, surface or object, that can be completely occupied. If these verbs were allowed to alternate, a conflict in terms of the spatial entailment could occur. This is because if a specified amount substance NP were in the direct object position of a *fill* verb, then there would be a conflict between the inherent telicity associated with the frame and the quantificational telicity implied by the direct object.

In contrast, *pour* verbs manifest the notion of the movement of substances rather than the fullness of the space. With these verbs, space is involved simply as the destination of the substance. Accordingly, the verb *pour* in *He poured milk (into the glass)* emphasizes the movement of the milk into the glass. In this sentence, the glass indicates the destination of the milk, but it does not measure out the spatial completeness of the event. Hence, the restriction that only substances may occur as direct object arguments is caused by the inherent meaning of *pour* verbs.

This conclusion is supported by the list of non-alternating verbs by Levin (1993) (see appendix). The list of *fill* verbs provides the examples of *enrich, pollute,* and *season,* which clearly demonstrate the core meaning of *fill* verbs:

(98) a. Farmers *enrich* the soil with manure.

a' *Farmers *enrich* manure into the soil.

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[28] Dowty (1991) argues that the core meaning of the verbs which entail a completely occupied space or a completely overlaid surface, such as *fill* and *cover*, might be morphologically related to the nouns and adjective forms of these verbs. For instance, the English *fill* is related to the adjective *full* which refers to complete occupancy of the space, and *cover* is related to the noun *cover* which refers to the complete coverage of the space. Japanese *oou* is also related to the noun *ooi* which refers to the thing which would completely overlay an object. By contrast, the English noun *load* does not always refer to an object which completely fills a space as shown by Dowty's example, *She carried a load of books with her* (1991:563).

b. The company *pollutes* a stream with chemicals.

b'. *The company *pollutes* chemicals into the stream.

c. Mary *seasoned* the soup with spice and garlic.

c'. *Mary *seasoned* spice and garlic into the soup.

All of the VPs in (98) denote the complete affectedness of space or location. *The soil* is completely enriched by *manure* in (98a), *a stream* is completely polluted by *chemicals* in (98b), and *the soup* is completely seasoned by *spice* and *garlic* in (98c). Thus, the verbs which occur only with the NP-with-NP frame have a strong intrinsic interpretation related to complete affectedness of the space.

Japanese also provides examples demonstrating the complete affectedness of the spatial end point:

(99) a. Mary ga hako o kami de *tutun-da.*
NOM box ACC paper with wrap-PAST
'Mary wrapped the box with paper.'

a'. *Mary ga kami o hako ni *tutun-da.*
NOM paper ACC box on wrap-PAST
'[lit.] Mary wrapped paper around the box .'

b. Ben ga niwa o saku de *kakon-da.*
NOM garden ACC fence ACC surround-PAST
'Ben surrounded the garden with fences.'

b'. *Ben ga saku o niwa ni *kakon-da.*
NOM fence ACC garden on surround-PAST
'[lit.] Ben surrounded fences along the garden.'

Hako (the box) is completely covered by *kami (paper)* in (99a), and *Niwa (the garden)* is completely surrounded by *saku (fences)* in (99b). Thus, these examples in Japanese also give evidence that these verbs inherently measure out the event with completely occupied containers or entirely covered surfaces.

On the other hand, because *pour* verbs inherently mean that a spatial terminal point is not completely affected, the location argument is placed in the oblique object position. Levin's list of *pour* verbs demonstrates that these verbs imply an action in which substances are moved from one place to the other:

(100) a. He *slopped* milk on the floor.

a' *He *slopped* the floor with milk.

b. She *spilled* water on the backyard.

b'. *She *spilled* the backyard with water.

Neither *the floor* in (100a) or *the backyard* in (100b) delimit the event as measurable end points, instead they indicate the destination of the substance.

In addition, the sentences in (101) show the Japanese examples of *haru* and *kobosu*. These verbs occur only with the NP-PP frame and entail the movement of the substance:

(101) a. Mary ga posutaa o kabe ni *hat-ta.*
NOM poster ACC wall on plaster-PAST
'Mary plastered the poster on the wall.'

a'. *Mary ga kabe o posutaa de *hat-ta.*
NOM wall ACC poster with plaster-PAST
'[lit.] Mary plastered the wall with the poster.'

b. Mike ga mizu o yuka ni *kobosi-ta.*
NOM water ACC floor on spill-PAST
'Mike spilled water on the floor.'

b'. *Mike ga yuka o mizu de *kobosi-ta.*
NOM floor ACC water with spill-PAST
'Mike spilled the floor with water.'

Both *yuka (the floor)* in (101a) and *kabe (the wall)* in (101b) are locative destinations of the movement which these verbs denote. Therefore, the location arguments cannot delimit the events. Thus, on the basis of these examples, it can be generalized that *pour* verbs have an innate inherent-atelic property.

Some concerns might be raised regarding the current analysis. First, in opposition to this conclusion, Dowty (1991) argues that the completed reading of *fill* verbs is not because of their inherent meaning. He introduces the default case of the usage of the *fill* verbs; he refers to Pinker's observation (1989) that English-speaking children produce examples like *I filled water into the glass*. However, it is also reasonable to conclude that

children are simply in the process of developing the notion of fullness as it pertains to the location arguments which occur with *fill* verbs.

Moreover, the treatment of similar lexical items in English and Japanese, such as English *load* and Japanese *tumu*, and English *fill* and Japanese *mitasu*, should be considered. The selection of the grammatical frame by these similar locative verbs could be a key to identifying the inherent telicity of each verb. In both languages, if a verb allows only an NP-with-NP frame, the verb entails an inherent-telic interpretation which is associated with the complete affectedness of the space as a semantic property of the verb. In contrast, if a locative verb occurs with only an NP-PP frame, the verb entails an inherent-atelic interpretation which is associated with the interpretation of a destination of the substance. Regarding the case in which a verb allows both frames, the verb can represent these two kinds of inherent telicity. Consequently, the difference between English *load* and Japanese *tumu* is apparent. English *load* entails an event which can involve not only a completion of the measurable spatial terminal point but also a destination of the substance, since the verb occurs with both the NP-PP frame and the NP-with-NP frame. On the other hand, Japanese *tumu* entails only a destination of a substance since it occurs with only an NP-PP frame. Likewise, the difference between English *fill* and Japanese *mitasu* is related to their comparative tendencies to entail occupancy of a terminal points or destination of a substance. English *fill* entails an event which involves only an occupancy of the measurable terminal point since the verb selects only an NP-with-NP frame, whereas Japanese *mitasu* entails both an occupancy of the measurable terminal point and a destination of a substance because the verb allows both the NP-PP frame and the NP-with-NP frame. Thus, the inherent telicity is manifested by the two grammatical structures of locative verbs.

4.4 Summary

This chapter investigated the semantic properties of locative verbs, concluding that there are two variables which determine the telicity of locative verbs: the specification of NP amounts in the direct object position and the two grammatical frames. Specified amount NPs and unspecified amount NPs play a role to constrain quantificational telicity, while the role of the two grammatical frames is linked to inherent telicity.

Chapter 5
CONCLUSION

This thesis has investigated the semantic argument-taking properties of locative verbs in order to give an account for the differing syntactic behaviors of alternating and non-alternating verbs. Earlier studies have analyzed locative alternation in terms of thematic relations and the complete affectedness of the direct objects; however, they have not satisfactorily explained what causes locative verbs to allow alternation or what prevents them from alternating.

This thesis has focused on two kinds of telicity as an explanation for the difference between alternating and non-alternating verbs: quantificational telicity, which is associated with the relationship between event and time, and inherent telicity, which is associated with the relationship between space and substance.

Chapter 3 presented evidence that telicity (or more specifically quantificational telicity) is constrained by the specification of the NP amount in locative sentences. This chapter concluded that when a specified amount NP occurs in the direct object position, the VP denotes a (quantificational) telic interpretation, but when a unspecified amount NP appears in that position, the VP entails a (quantificational) atelic interpretation. Since this type of telicity does not successfully predict alternation versus non-alternation, another type of telicity, inherent telicity, was proposed in Chapter 4.

Inherent telicity is revealed by the two distinct syntactic frames witnessed in locative verbs. In particular, the marked cases of two non-alternating categories, *fill* and *pour* verbs, distinguish between the two types of inherent telicity which are associated with the two frames. Chapter 4 concluded that the NP-with-NP frame is inherent-telic, which

denotes the completed occupancy of space or location, and that the NP-PP frame is inherent-atelic, which emphasizes the destination of the substance. Thus, the non-alternating *fill* and *pour* are inherent-telic and inherent-atelic, respectively, according to their frames. In contrast, alternating verbs can be both inherent-telic and inherent-atelic since they may take both of these frames. In sum, quantificational and inherent telicity combine to produce a two-faceted form of telicity in locative VPs.

The conclusions presented in the previous chapters result in two questions which should be addressed in future research. First, the current thesis has not addressed the exact relationship between quantificational telicity and inherent telicity. There are at least three possibilities: they could be two completely independent constructs; they could represent different features of the same construct; or they might interact such that one influences the other. For example, reconsider this data using temporal adverbial phrases *in five minutes*:

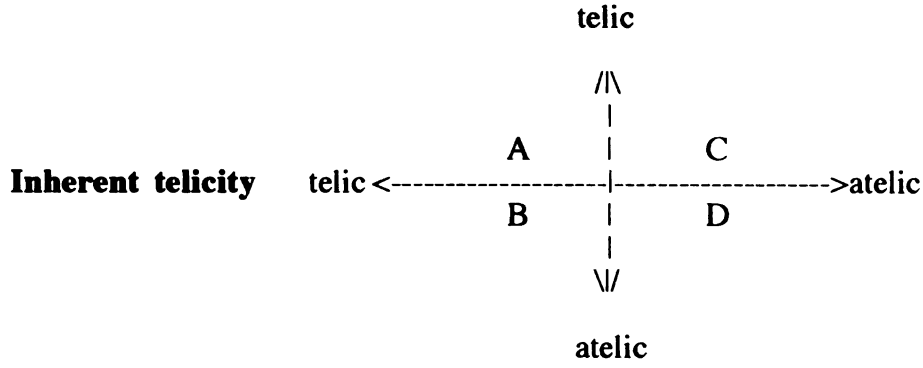
(102) a. ?Mark loaded boxes onto carts in five minutes.

b. Mark loaded carts with boxes in five minutes.

As discussed in Chapter 3, both sentences are generally ungrammatical with *in five minutes*. However, it is possible to interpret the sentence in (102b) that for each cart, Mark spent five minutes filling it with boxes. In contrast, the sentence in (102a) cannot be interpreted in the same way as in (102b); it is impossible for Mark to have spent five minutes filling each cart with boxes. This interpretation demonstrates that quantificational telicity may be influenced by inherent telicity in a certain way; in particular cases, inherent telicity may be able to override a grammaticality judgment based on quantificational telicity.

The second issue concerns whether the telic and atelic categories are dichotomous or represent a continuum from more telic to less telic within each kind of telicity. Despite the generalization of the distinct inherent telicity of *fill* verbs and *pour* verbs, one might assume that the telicity of each of these verbs is perhaps not the clear-cut distinction as shown in Table 1, but rather the continuum as illustrated below:

(103) **Quantificational telicity**



For example, when an unspecified amount NP and a specified amount NP appear in direct and oblique object positions, respectively, such as in *Bill loaded wagons with the hay,* the quantificational telicity of the VP is not clearly determined. In this sentence, the direct object NP should denote an atelic interpretation because it is not specified; however, the specified oblique object NP could imply the complete action of the event. This result leads to the conclusion that the quantificational telicity of locative verbs may be variable; the telicity might move between quantificational-telic interpretations (AC area) and quantificational-atelic interpretations (BD area). In addition, as discussed previously, some alternating verbs, such as *spray,* can have a quantificational-telic sense as well as a quantificational-atelic sense in spite of a change between the specified and unspecified amount NPs in the direct object position. Accordingly, the quantificational telicity of *spray* in *Bill sprayed the wall with paint for five minutes* is ambiguous between quantificational-telic (AC area) and quantificational-atelic (BD area).

Moreover, since the NP-PP frame is unspecified as to whether the spatial end point is reached, the spatial aspect which the frame represents could possibly extend to the telic interpretation, that is, from AC to BD, such as in *Bill poured water to the top of the glass.* where the top of the glass specifies the spatial end point. Then it might be assumed that inherent telicity also is variable; it might shift between the inherent-telic interpretation (AB area) and the inherent-atelic interpretation (CD area). Furthermore, on the basis of the

above discussion, it could be reasonable to posit that a key difference between alternating and non-alternating verbs is that alternating verbs shift freely along the inherent telicity continuum, while non-alternating verbs do not.

However, although these issues remain, the anticipated questions do not appear to invalidate the importance of considering both quantificational and inherent telicity. It is hoped that future research will cover a wide range of data involving locative verbs in order to corroborate this thesis' generalizations regarding the semantic properties of locative verbs.

APPENDIX

APPENDIX

Spray/Load Alternation in English and Japanese

English (Levin 1993: 50-51)

Alternating Verbs

brush, cram, crowd, cultivate, dab, daub, drape, drizzle, dust, hang, heap, inject, jam, load, mound, pack, pile, plant, plaster, prick, pump, rub, scatter, seed, settle, sew, shower, slather, smear, smudge, sow, spatter, splash, splatter, spray, spread, sprinkle, spritz, squirt, stack, stick, stock, strew, string, stuff, swab, wrap

Non-alternating Verbs

(1) Non-alternating verbs occurring only with NP-with-NP frame

adorn, anoint, bandage, bathe, bestrew, bind, blanket, block, blot, bombard, carpet, choke, cloak, clog, clutter, coat, contaminate, cover, dam, dapple, deck, decorate, deluge, dirty, douse, dot, drench, edge, embellish, emblazon, encircle, encrust, endow, enrich, entangle, face, festoon, fill, fleck, flood, frame, garland, garnish, imbue, impregnate, infect, inlay, interlace, interlard, interleave, intersperse, interweave, inundate, lard, lash, lime, letter, mask, mottle, ornament, pad, pave, plate, plug, pollute, replenish, repopulate, riddle, ring, ripple, robe, saturate, season, shroud, smother, soak, soil, speckle, splotch, spot, staff, stain, stipple, stop up, stud, suffuse, surround, swaddle, swathe, taint, tile, trim, veil, vein, wreathe

(2) Non-alternating occurring only with NP-PP frames

a. Pour Verbs: dribble, drip, pour, slop, slosh, spew, spill, spurt

b. Put Verbs:

arrange, immerse, install, lodge, mount, place, position, put, set, situate, sling, stash, stow

c. Verbs of Putting in a Spatial Configuration (except *hang*)

dangle, lay, lean, perch, rest, sit, stand, suspend

d. Funnel Verbs:

bang, channel, dip, dump, funnel, hammer, ladle, pond, push, rake, ram, scoop, scrape. shale. shovel, siphon, spoon, squeeze, squish, squash, sweep, tuck, wad, wedge, wipe, wring

e. Verb of Putting With a Specified Direction: drop, hoist, lift, lower, raise

f. Coil verbs: coil, curl, loop, roll. spin, twirl, twist, whirl, wind

Japanese (Fukui, Miyagawa, and Tenny 1985)

Alternating verbs

mitasu (fill), nuru (smear), sasu (jab), tumarasu (jam)

Non-alternating verbs

hanekakeru(splash), haneru (splatter), haru (hang), hirogeru (spread), hukitukeru (spray), hukikakeru (dust), maku (squirt, dust, shower), oku (place), tumeru (pack), tumekomu (cram), tumiageru (pile), tumu (load)

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