# Determinants of Telicity

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## 1. Introduction

The study of verb aspect originates as far back as Aristotle's observation that some verbs involve an "end" or a "result" (Dowty 1979; Chierchia and McConnell-Ginet 1992). Verb aspects are usually manifested within the inflectional affixes, tenses, or other syntactic frames that verbs acquire in languages (Dowty 1979:52). They also distinguish "different ways of viewing the internal temporal constituency of a situation" (Comrie 1976:3). Aspect thereby 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. Aspect is distinguished from tense in that tense simply provides the time of the event's occurrence, such as the future, past, or present (Comrie 1976; Dowty 1979).

This paper discusses telicity, an aspectual notion which distinguishes whether a situation has a perfect or imperfect meaning. It traces the development of telicity as an outcome of Vendler's work (1969), which is a major work contributing to the establishment of aspectual verb categories in English, and we consider three possible determinants of telicity.

First, Vendler's categories are introduced in Section 2. Section 3 analyzes the correlation between Vendler's aspectual verb categories and telicity. It

focuses on the development of studies on telicity and accounts for Dowty's diagnoses (1979) on Vendler's aspectual verb categories. Section 4 considers three kinds of determinants of telicity. In Section 4.1, we compare definite nouns to indefinite plurals/mass nouns as noun phrase (hereafter NP) referents which occur with verbs. Section 4.2 examines Verkuyl's (1989) claim and reconsiders NP referents in terms of the difference between specified quantity and unspecified quantity. In Section 4.3, the affectedness of NP referents and object NPs are considered. Finally, Section 5 states the summary of this paper.

## 2. Vendler's Aspectual Verb Categories

It was Zeno Vendler (1967) who first attempted to establish four distinct categories of English verbs according to aspectual differences with regard to their restrictions on time adverbials, tenses, and logical entailments (Dowty 1979). First, Vendler divided verbs into two types. One type is the verbs that denote continuous tenses, and the other type is verbs that lack it. 'Activity terms,' such as *running* and *pushing a cart,* and 'accomplishment terms,' such as *running a mile* and *drawing a circle*, belong to the former type. Activities are distinguished from accomplishments in that activities involve no set terminal point while accomplishments have a "climax," which has to be completed if the action is to be what it is stated to be (Vendler 1967:100). Compared to the former type, 'state terms,' such as *love* and *believe,* and 'achievement terms,' such as *reaching the top,* belong to the latter type. The difference between states and achievements is that achievements occur at a single moment of time, whereas states last for a period of time (Vendler 1976:103).

Vendler further provides two subcategories of each type based on the criteria whether or not each term involves a terminal point or not. Vendler

utilizes the following questions: "How long did it take to...?" / At what time did you...?" and "For how long did you...?" The answers to the former two questions deal with the endpoints. Therefore, they correspond to accomplishments and achievements. On the other hand, the answer to the third question has to avoid an endpoint; thus, it links with states and activities. The following example illustrates the point (Vendler 1969:100–103):

(1)  a.   ??How long did it take to **push the cart**?      (activity)

a'.  For how long did he **push the cart**?

b.   How long did it take to **draw the circle**?      (accomplishment)

b'.  ??For how long did he **draw the circle**?

c.   ??At what time did you **believe** in the stork? (state)

c'.  For how long did you **believe** in the stork?

d.   At what time did you **reach the top**?          (achievement)

d'.  ??For how long did you **reach the top**?

Thus, Vendler offers aspectual verb categories according to two kinds of criteria, continuousness and participation of endpoints. The following table shows the summary of Vendler's aspectual verb classification in English, and (2) shows some examples of each category (Vendler 1967; Dowty 1979:54):

**Table 1: Vendler's Aspectual Verb Classification (Vendler 1967)**

|  | + continuous tenses | – continuous tenses |
|---|---|---|
| + endpoint | Accomplishment | Achievement |
| – endpoint | Activity | State |

(2)  (State)    (Activity)      (Accomplishment)     (Achievement)
       know      run            paint a picture       recognize
       believe   walk           make a chair          spot
       have      swim           deliver a sermon      find
       desire    push a cart    draw a circle         lose
       love      drive a car    recover from illness  reach

Accordingly, while states correspond to non-continuous tenses without an endpoint, activities associate with continuous tenses without an endpoint.[1] On the other hand, both achievements and accomplishments are associated with an endpoint, but only accomplishments denote continues tenses while achievements do not.

## 3. Correlation between Vendler's Aspectual Categories and Telicity

### 3.1. Development of Studies on Telicity

Comrie (1976:41) also discusses aspect as a lexical category that contrasts like punctual/durative, telic/atelic, or static/dynamic under the heading of inherent aspectual properties of various classes of lexical items. According to Comrie, telicity is an aspectual notion which distinguishes whether a situation has a perfect or imperfect meaning.[2] 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 1976:45).[3]

For instance, Comrie (1976:44) compares two sentences, *John is singing* and *John is making a chair.* In the first example, John can stop singing at any point, and it will still be true that he has sung, even if he has not completed the song. Therefore, the situation described by *sing* does not denote a terminal point and thus is associated with an atelic situation. On the other hand, in the second example, the situation builds into a terminal point at which John completes the action of making a chair, and at this point the situation must of necessity come to an end. In addition, until this point is reached, the situation described by the phrase, *make a chair*, cannot come to the end unless something happens, such as breaking off

part way through. Therefore, this situation described by *make a chair* is associated with a telic situation.

Note that, as Comrie points out, we cannot simply say that the verb *sing* is an atelic verb since it refers to an atelic situation and the verb *make* is a telic verb because it denotes a telic situation. He argues that situations are not described by verbs alone, but rather by verbs accompanied by other elements, including other elements in a sentence. He explains that point as follows (Comrie 1976:45):

> At first sight, it might seem that we could call verbs that refer to telic situations telic, those that refer to atelic situations atelic; in fact, the picture is not quite so simple. If it were, then we could, for instance, call *drown* a telic verb (drowning is a process that necessarily comes to an end when the animal drowning dies), and *sing* an atelic verb. However, situations are not described by verbs alone, but rather by the verb together with its arguments (subject and object).[4]

In order to solve this problem, Vendler's aspectual verb categories were later analyzed in lexical decompositional analyses (Dowty 1979; Verkuyl 1989; among others).[5] This paper will deal with Dowty's decompositional analysis in Section 3.2.

Thus, the discussion of the notion of telicity includes studies that deal with aspect, and researchers (Comrie1976; Tenny 1987; Dowty 1991; and Chierchia and Maconnell-Ginet 1992; Olsen 1994; among others) have attempted to associate Vendler's verb classification with the notion of telicity. Accordingly, the categories which involve an endpoint: accomplishments and achievements, can correspond to a telic interpretation and the categories which lack it: states and activities, to an atelic interpretation.[6] This correlation has deepened the studies on telicity. The next subsection will discuss how Dowty accounts for these complex notions.

### 3.2. Dowty's Diagnoses of Vendler's Aspectual Categories

Dowty (1979) analyses Vendler's aspectual verb categories intensively adopting several types of diagnoses. First, in response to Vendler's analysis, Dowty argues that aspectual distinctions apply not only to the verb, but rather to the entire verb phrase (even whole sentences in a certain sense). He makes the point that the semantic differences inherent in the meanings of verbs themselves cause them to have different interpretations when combined with aspect markers, such as the habitual quasi-auxiliary *used to* in English. Furthermore, he mentions that some verbs are restricted in the aspect makers and time adverbials that they occur with. Dowty thus

**Table 2: Dowty's Tests for Aspectual Verb Categories (Dowty 1979:60)**

| Criterion | States | Activities | Accom-plishment | Achieve-ment |
|---|---|---|---|---|
| 1. meets non-stative tests (e.g. progressive test) | no | yes | yes | ? |
| 2. has habitual interpretation in simple present tense | no | yes | yes | yes |
| 3. *Ø for an hour, spend an hour Øing:* | OK | OK | OK | bad |
| 4. *Ø in an hour, take an hour to Ø* | bad | bad | OK | OK |
| 5. *Ø for an hour* entails *Ø at all times in the hour:* | yes | yes | no | d.n.a. |
| 6. *x is Øing* entails *x has Øed* | d.n.a. | yes | no | d.n.a. |
| 7. complement of *stop*: | OK | OK | OK | bad |
| 8. complement of *finish* | bad | bad | OK | bad |
| 9. ambiguity with *almost*: | no | no | yes | no |
| 10. x *Øed in an hour* entails *x was Øing during that hour:* | d.n.a. | d.n.a. | yes | no |
| 11. occurs with *studiously, attentively, carefully*, etc. | bad | OK | OK | bad |

OK = The sentence is grammatical , semantically normal.
bad = The sentence is ungrammatical, semantically anomalous.
d.n.a. = The test does not apply to verbs of this class.

distinguishes aspectual forms of the verb (a particular aspect marker or markers it occurs within a given sentence) from aspectual classes of a verb (a verb class to which the verb belongs). He actually focuses on the latter case, and accordingly, based on the verbs' restrictions concerning time adverbials, tenses, and logical entailments, he examines Vendler's four categories using a lexical decomposition analysis. Dowty provides the tests as outlined above to examine Vendler's verb categories (The table is slightly modified for the purpose of elaboration.).

Let us look at some of the diagnoses illustrated above. The third and fourth tests provide results if each term occurs with certain adverbial phrases, such as *for an hour* and *in an hour.* As shown in (3), states, activities, and accomplishments allow durative adverbial *for*-phrases, but the sentence is ill-formed with achievements. In addition, both accomplishments and achievements occur with adverbial prepositional *in*-phrases, but neither states nor activities do. (The first sentences in (3b), (3c), and (3d) below are from Dowty (1979)):

(3)  a.   John believed in the fact for an hour.   (state)

     a'.  ??John believed in the fact in an hour.

     b.   John walked for an hour.         (activity) (1979:56, (28))

     b'.  (*)John walked in an hour.[7]

     c.   John painted a picture for an hour.    (accomplishment)

                                        (1979:56, (27))

     c'.  John painted a picture in an hour.

     d.   ??John noticed the painting for a few minutes. (achievement)

                                        (1979:58, (37))

     d'.  John noticed the painting in a few minutes.

Thus, Dowty explains that Vendler's verb categories can be distinguished in terms of different behaviors among these categories.[8]

Let us return to the discussion on telicity. As mentioned previously, it is assumed that accomplishments and achievements from Vendler's verb categories which involve endpoints, can be associated with a telic interpretation. On the other hand, states and activities which lack endpoints, can be associate with an atelic interpretation. Although Dowty (1979) does not adopt the term 'telicity' in his analysis, he clearly suggests that verb categories are distinguished depending on the fact whether or not an event denotes completion or not. Moreover, he argues that accomplishments and achievements denote completion although some different degree of completion might be involved (1979:189). It can be concluded that his statement definitely suggests the difference between telic and atelic situations on the basis of Vendler's aspectual verb categories.

Hence, maintaining the difference between Vendler's terms which denote completion (accomplishments and achievements) and the categories which do not (states and activities), Dowty concludes that the difference can be explained in terms of the following two points: 1) whether or not the event involves a change of state[9] (either definite or indefinite); and 2) whether or not the event entails a definite change of state or an indefinite change of state. The first point excludes states from the other categories, and the second point distinguishes activities from telic terms, accomplishments and achievement categories. Let us examine these Dowty's claims with the following examples.

First, statives *love* and *know* do not undergo a change of state:

(4)  a.  Mary loves John.

   b.  Mary knows the answer.

On the other hand, activities, accomplishments, and achievement entail a change of state (either definite or indefinite):

(5) a. Tom swam in the pool. (activity)

    b. Mary is running.

(6) a. Tom made a chair. (accomplishment)

    b. John drew a circle.

(7) a. Mary reached the top of the mountain. (achievement)

    b. John noticed the painting on the wall.

Accordingly, states can be distinguished from the other categories in terms of not undergoing a change of state.

  Regarding the second point, Dowty provides a test below in order to define the difference that activities denote an indefinite change of state whereas accomplishments and achievements denote a definite change of state:

(8) Does $x$ was $V$-ing entail $x$ has $V$-ed ? ($x$ = an NP, $V$ = a verb)

                                          (Dowty 1979:184)

According to Dowty, this test makes it possible to show whether or not the event entails a definite change of state or an indefinite change of state. If a category denotes an indefinite change of state, the answer is 'yes,' and if it denotes a definite change of state, the answer is 'no.' The sentences below show the application of this test to the sentences in (5a), (6a), and (7a):

(9) a. John was swimming in the pool (activity)

    b. John has swum in the pool.

(10) a. Tom was making a chair. (accomplishment)

    b. Tom has made a chair.

(11) a. Mary was reaching the top of the mountain. (achievement)

    b. Mary has reached the top of the mountain.

(9a) entails (9b) but (10a) and (11a) do not entail (10b) and (11b), respectively. As shown above, activities denote an indefinite change of state whereas both accomplishments and achievements denote a definite change of state. It is remarkable that these two tests reach the conclusion that the

notion of telic (completion of an event) has to involve a definite change of state.

Thus, Dowty distinguishes telic and atelic terms by examining Vendler's aspectual categories intensively and argues that telic (completion of an event) is distinguished from atelic (non-completion of an event) in terms of denotation of a definite/indefinite change of state.

## 4. Possible Determinants of Telicity

As shown in the previous section, we can see that the inherent aspectual properties of verbs impose a condition of behaviors of verbs in order to determine telicity. This section examines telicity more closely and discusses some possible determinants of telicity in addition to the inherent meanings generally denoted by verbs.

## 4.1. Definite Nouns vs. Indefinite Plurals / Mass Nouns

The first of possible determinants for telicity is definiteness of NP arguments which occur with verbs. Dowty (1979) points out the problem of indefinite plurals and mass nouns in the problem of determining verb categories. That is, if an accomplishment takes direct objects which are an indefinite plural direct object or a mass-noun object noun phrases, and the verb (or verb phrase) behaves like an activity occurring with the adverbial *in*-phrase or being complement of the verb *finish:*

(12) a.   John built **that house** in a month.       (Dowty 1979:62: (50))

　　a'.　*John build **houses** in a month.

　　b.　John finished (eating) **the bag of popcorn**.

(Dowty 1979:63: (53))

　　b'.　*John finished (eating) **popcorn**.

Dowty continues his discussion by arguing that the same result can be

obtained with achievements. As mentioned previously, achievements gener-
ally do not occur with durative adverbial *for*-phrases, but they occur with
indefinite plural nouns and mass nouns that behave like activities:

(13) a.　*John discovered the buried treasure in his back yard for six
weeks.

　　a'.　John discovered fleas on his dog for six weeks.

　　a''.　John discovered crabgrass in his yard for six weeks.

<div align="right">(Dowty 1979:63, (55))</div>

Furthermore, Dowty shows the case in which an indefinite plural occurs
as a subject NP of an achievement although achievements usually do not
occur with *for*-phrases:

(14) a.　*John discovered that quaint little village for years.

　　a'.　Tourists discovered that quaint little village for years.

<div align="right">(Dowty 1979:63, (57))</div>

In order to account for this issue, Dowty states a principle as follows:

> If a sentence with an achievement verb contains a plural indefinite NP or mass
> noun NP (or if a sentence with an accomplishment verb contains such an NP
> as object), then it has the properties of a sentence with an activity verb.

<div align="right">(Dowty 1979:63)</div>

In sum, Dowty explains that definite NPs are associated with telic in-
terpretations of sentences while plural indefinite NPs or mass nouns with
atelic interpretation.


## 4.2. Specified Quantity vs. Unspecified Quantity

The previous section discusses how definite NPs render telic interpreta-
tions of the event which verbs describe. However, Verkuyl (1989) points
out that it is not the definiteness of an NP that is crucial, but rather the
aspect of verbs that is actually controlled by whether or not an NP referent

that occurs with the verb defines a specified quantity. For instance, Verkuyl provides the following examples:

(15) a.  For hours Judith ate sandwiches.        (Verkuyl 1989:69, (35))

    b.  *For hours Judith ate three sandwiches.

(16) a.  He discovered cockroaches for hours.    (Verkuyl 1989:69, (36))

    b.  *He discovered some cockroaches for hours.

The activity *eat* usually occurs with *for*-phrases; however, it does not occur with the indefinite object NP *three sandwiches* as shown in (15). Also, achievements generally appear with *for*-phrases when they have indefinite NPs in their object NP positions. However, *discover* does not appear with the indefinite NP *some cockroaches*, as illustrated in (16). Verkuyl argues that the notion of definiteness as an aspectual feature or factor to determine completeness or telicity is not completely accurate and that the aspectual feature should be represented as 'specified quantity of A (an NP)' (1989:70). Takahashi (1999) shows the following data with the accomplishment *load* and it supports his analysis (Takahashi 1999:3, (6)):

(17) 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.

Examples in (17) demonstrate that the sentences in which the two types of NPs, specified and unspecified quantity of hay, alternately appear in the direct object NP positions of the verb *load*: (17a) is well-formed whereas (17a') is ill-formed. This is due to the interpretation that, in (17a'), Bill cannot continue the action of putting the specific quantity of hay onto the wagons. On the other hand, while (17b) is ungrammatical, (17b') is grammatical. In (17b), *in ten minutes* signals that the VP should describe the finishing of a defined task; however, since *bales of hay* is unspeci-

fied, there is no way of judging whether Bill finished the task. Thus, the data shows that that sentences with the accomplishment *load* denote telic interpretation when the direct object NP referent specifies a certain quantity whereas they denote atelic interpretation when the direct object NP referent does not specify the quantity. Thus, Verkuyl successfully demonstrates a crucial determinant of telicity.

### 4.3. Affectedness of NP Referents and Telicity

In another aspect of the semantic view of telicity, some research has discussed the affected interpretations of NP referents in English. Specifically, an investigation on locative alternation verbs, such as *load* and *spray* has been a target of research (Anderson 1971, Rappaport and Levin 1988; Jackendoff 1990; Dowty 1991; and Levin 1993; Tenny 1992; among others). As mentioned previously, it is assumed that 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. This section reviews some studies which have attempted to extend this definition of telicity to include the terminal point which a spatial relationship entails.

Coining the term, "a holistic/partitive interpretation," Anderson (1971:389) refers to the aspectual interpretations of NPs, mainly focusing on NPs in the direct object positions. 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 another position, such as the oblique object position. An example with the locative alternation verb *spray* is illustrated in (18):

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

　　b.  Bill sprayed the wall with the paint.

Anderson assumes that the direct object NP *the paint* in (18a) implies a holistic interpretation since it can be construed that all of the paint is sprayed on the wall, while in (18b), *the paint* need not be completely used up. Also, whereas the direct object NP *the wall* in (18b) 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 (18a) need not be completely covered by paint.

　Following Anderson's suggestion, much research has been concerned with the holistic or affected interpretation of NPs in terms of the spatial relationship between substance arguments and location arguments. Jackendoff (1990) also associates spatially completive interpretations with location arguments with locative alternation verbs in his terms, "distributive location" and "non-distributive location." His claim is that there are two different interpretations of the grammatical frames of verb phrases (hereafter VPs), the NP-with-NP frame and the NP-PP (PP= prepositional phrase) frame, in the locative alternations:

(20) a.  Felix loaded books onto the truck.

　　a'.  Felix loaded some books onto the truck.

　　a''.  Felix loaded the books onto the truck

　　b.  Felix loaded the truck with books.

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

　　b''.  Felix loaded the truck with the books.

(Jackendoff 1990:172–173, (44))

Jackendoff's argument in (20) is as follows: *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 (20b') because *some* is connotative of an unspecified quantity. 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 an occupied or an unoccupied interpretation.[10]

Based on Anderson and Jackendoff's claims, Takahashi (1999) incorporates this spatial interpretation of telicity. It argues that location arguments of locative verbs in locative alternation 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. Takahashi (1999) explains that 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. It labels this type of telicity as "inherent telicity," assuming that locative verbs inherently possess the notion of producing a completely or incompletely occupied space or a completely or incompletely overlaid surface.

For instance, in locative alternation, 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 (21a); whereas when a container is the direct object, as in the case of the NP-with NP frame in (21b), it is completely affected by the event:

(21) 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 (21a); however, each wagon must be full in (21b).[11] This demonstrates that the spatial terminal point is reached in the NP-with-NP frame, but not necessarily in the NP-PP frame. Thus, the telicity of locative verbs is associated with two frames and their interpretations. Locative alternation verbs which take the NP-with-NP frame denote an inherent-telic interpretation and the ones which take the NP-PP frame denote inherent-atelic interpretations.

Dowty (1991) is also concerned with the aspectual affectedness of NP referents in a different way. He assumes that NP objects in the direct object position of some verbs undergo a definite change of state which each verb describes, and he calls this affectedness 'Incremental theme.' Krifka (1987) introduced this term, and it refers to 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. With an incremental theme, it can be interpreted that 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. The sentence in (22) shows another example which illustrates the affectedness of direct object NPs with the verbs *fill* and *pour*:

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

　　 b.　Andy poured the water into the glass.

In (22), the direct object NPs of both of these non-alternating verbs, *the tank* and *the water,* are affected completely and undergo a complete change

of state. Hence, these NPs can be interpreted as incremental theme.

Finally, incorporating the direct affectedness interpretation of the direct NPs, Tenny (1987) argues that events are delimited not only in terms of time, but also in terms of direct object arguments.[12] The properties of direct object NP arguments provide the scale by which the event may be measured. If direct object NP arguments do 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. Tenny calls these different interpretations delimit vs. non-delimit and she considers the telicity of locative VPs in terms of space, as well as time. In her analysis, the delimiting property to be considered can include the capacity of containers, or the extent of surfaces, as a subset of spatial extent.

In fact, similar to the ideas of Takahashi (1999) and Tenny (1987), Dowty's incremental theme analysis can be interpreted to be a generalization of a definite change of state which is measured out by NP arguments, such as ones which refer to space and time. In locative alternation sentences, the incremental theme could be identified as the union of space and time. However, in fact, Dowty claims that Tenny's delimit vs. non-delimit distinction is quite different than the conventional telic vs. atelic distinction. Despite Dowty's claim, the approach of Takahashi and Tenny which incorporates telicity and the affected interpretation of NPs would definitely capture the linguistic resolution of how events are described in terms of temporal and spatial aspects.

## 5. Conclusion

This paper defined Vendler's aspectual verb categories (1967) and attempted to trace the development of the notion of telicity based on his work. At the same time, we considered three possible determinants of telicity.

First, this paper introduced Vendler's four aspectual verb categories, state, activity, accomplishment, and achievement, and discussed how researchers, such as Comrie and Dowty, correlate Vendler's aspectual categories and telicity. Specifically, this paper focused on Dowty's diagnoses (1979) and examined how he analyzes Vendler's aspectual categories with his diagnoses defining the notions of telicity.

Second, based on their analyses, this paper considered three possible determinants of telicity. First, this discussion started with a consideration of definite nouns and indefinite plurals/mass nouns as NP referents. It also examined Verkuyl's (1989) claim that points out the difference between specified quantity and unspecified quantity which NPs associate with. Finally, the affectedness of NP referents was used to account for another determinant of telicity.

## Notes

[1] According to Chierchia and McConnell-Ginet (1992:352), activities typically involve a subject doing something while agents and subjects of states are not perceived as an agent doing something.

[2] The term, 'telic' was introduced by Garey (1957), originally from the Greek word *telos* 'end.'

[3] According to Levin and Rappaport Havov (1991), telicity is also described as 'bounded in time' and this notion is contrasted with the notion of durativeness.

[4] Related to this issue, Vendler (1967) also notes some complexities and ambiguities in determining aspectual categories of verbs. For instance, he explains different interpretations of the verb *smoke* (1967:108). In the sentence "*Are you smoking?,*" it

is possible to consider the verb as an activity. However, in another sentence, such as "*Do you smoke?,*" the verb could be a state. Although he makes the point, Vendler does not provide the explanation for how to handle the complicity of aspectual situation which verbs denote. This paper attempts to give a consideration of this point. Therefore, in the rest of this paper, I will use the terms, *state(s)*, *activity* (or *activities*), *accomplishment(s)*, and *achievement(s)* instead of *state verb(s)*, *activity verb(s), accomplishment verb(s),* and *achievement verb(s).*

5  Lexical decompositional analysis is an approach which deals with translations of complex concepts of words or sentences into syntactically complex expressions by utilizing logical calculus. See Dowty (1979) and Chierchia and Maconnell-Ginet (1992) for details.

6  Chierchia and Maconnell-Ginet (1992) adopt the term 'telic eventualities' to refer to both accomplishments and achievements.

7  Dowty (1979:56–57) notes that (3b') has acceptable interpretations, but *an hour* in these interpretations does not describe the duration of John's action as it does in (3b). It seems to give the time that elapsed before John actually began to walk in the reading in (3b').

8  Based on the diagnoses above, Dowty (1979) further classifies VPs into more than four categories based on the criteria of state, activities, single change of state, and complex change of state, and addresses the revised "VP" classification. Dowty further divides these categories into two groups, agentive or non-agentive. For example, according to these criteria, locative verbs, such as *load* and *fill*, are assumed to occur in agentive and complex change of state VPs. See Dowty (1979, Chapter 3) for details.

9  According to Dowty (1979), 'change of state' verbs denote events which occur either at a nearly minimal interval or over a large interval. In the former case, verbs do not entail a subsidiary event or activity which brought about the change (e.g. *reach the finish line; arrive in Boston)*. On the other hand, in the latter case, verbs entail that two or more temporally consecutive subsidiary changes or activities (e.g. *build a house; shoot someone dead)*.

10  In a related work, Tenny (1992) describes this affectedness of direct object NPs with her terms, 'measure out the event' or 'delimit events.' She claims 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 (Tenny 1992:15, (27)):

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

       b.  I sprayed the hole with the paint.

Tenny argues that *the paint* in (i-a) is affected by the delimited action in which all of the paint is sprayed into the hole, and that *the hole* in (i-b) is affected by the delimited action such that the paint is spread around on the surface or wall of the hole. See the related work in Tenny (1987).

[11] Two interpretations are involved in NP-with-NP frames as shown in (21b); 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.

[12] Tenny (1987) argues that the affected interpretation mostly incorporates to a direct object NP in a sentence and that it is not necessary for subject or oblique NPs to carry the affected interpretations. However, Dowty (1991) claims that not all affected interpretations, incremental themes, are direct object; subjects, pair of prepositional phrases, and sometimes verb alone can encode incremental themehood (Dowty 1991:589).

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