Toward a Unified Account of the English Middle*
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1 Introduction

This paper is concerned with the English middle construction, illustrated by such sentences as (1) below:

(1) a. This book sells easily.

    b. This book reads easily.

Middle formation in English is fairly productive, but yet it is subject to several constraints, as has been set forth in a number of different types of analysis (such as Van Oosten (1977, 1986), Anderson (1979), Hale and Keyser (1987), Tenny (1987), Fagan (1992), Taniguchi (1994) and among others). These analyses are roughly divided into two groups: analyses in terms of the notion of "affectedness" and "responsibility". The former has been proposed by Anderson (1979), and the latter by Van Oosten (1977). The 'responsibility' constraint says that the subject of the middle must be perceived as responsible for the described event. On the other hand, the 'affectedness' constraint says that a predicate undergoes middle formation if it has an 'affected' argument. Here we notice that the notion of responsibility refers to a property of the subject in the middle, whereas affectedness characterizes a semantic property of the object in the transitive sentence. It has been often pointed out, however, that the notions Anderson and Van Oosten have proposed respectively are so vague that they cannot give a clear explanation of the relevant facts. So both of these notions should be expected to make clearer.

However, the notion of responsibility, though adapted as a supplementary condition in some analyses such as Fagan (1992), has been given a clear definition, thus remaining unclear. On the other hand, a great deal of study has been made on the notion of affectedness. Two kinds of definition have been established so far: the definitions in terms of "undergoing change" and "delimitedness". Recently, Taniguchi (1994) has argued that the notion of affectedness is a factor which enhances "transitivity" of the event described by the verb, suggesting that the middle is formed from the predicate which describes a highly transitive event. On a close examination, however, we notice that those affectedness or transitivity approaches still leave unsolved a large number of empirical problems.

Throughout this paper, we will give careful reconsideration to several previous analyses, focusing on how they constrain the distribution of middle constructions. We will see that no analysis can give a sufficient explanation for all the relevant cases. Our main goal here is to point out the problems with previous studies, to cast light on some

facts which have been overlooked, and to present an alternative.

This paper is organized as follows. In section 2, we will reconsider the notion of affectedness. We will claim that no definition of affectedness has succeeded in covering all the relevant cases. Section 3 will deal with Fagan's approach, which says that Vendler's aspectual classification of verbs plays a role in middle formation, and will point out some facts which are overlooked by her analysis. In section 4, we will point out some problems involved in the approach based on the notion of "transitivity". In section 5, we will present our own analysis, in which three different notions are introduced as the necessary means for our approach. In section 6, we will take up the notion of responsibility, and further argue in section 7 that the notions we propose in section 5 are closely related to the notion of responsibility. Section 8 makes concluding remarks.

2   The Notions of Affectedness

2.1   The affectedness approach based on "undergoing change"

In recent years, many linguists including Fellbaum and Zribi-Herz (1989), Wilkins (1988), Hale and Keyser (1987), and Roberts (1987) have argued that only predicates with an "affected" argument can form middle constructions. These studies define the notion of affected argument in basically similar ways: they all characterize the notion in terms of "undergoing change". For example, Hale and Keyser argue that verbs which undergo middle formation should involve the following Lexical Conceptual Structure (LCS):

(2)   [x cause [y "undergo change"], (by....)]

The LCS in (2) says that one participant in the event (the Actor or Agent, represented by the variable x) does something which causes the circumstance in which the other participant (the Theme or Patient, represented by the variable y) undergoes a change of state or position. Fellbaum and Zribi-Herz (1989: 28) characterize an argument of a verb as affected if it "exists prior to the action or process referred to by the verb and if its inherent properties are modified by that action or process".

The notion of affectedness based on "undergoing change" accounts for the contrast between (3) and (4).

(3)   a.   This fabric launders nicely.

     b.   This bread cuts easily.

(4)   a.   *This poem understands easily.

     b.   *The Eiffel Tower sees easily from my window.

The subjects in (3) are affected arguments, because their properties are changed: the fabric becomes clean through laundering, the bread is divided through cutting. On the other hand, the subjects in (4) are not affected, because their properties are not changed by

the action or process described by *understand* or *see*. Thus, we get the grammaticality difference between (3) and (4).

The notion of affectedness, however, does not adequately account for all the relevant cases: there are at least two types of empirical problems yet to be solved. First, for example, verbs like *read*, *photograph* and *play* can form acceptable middles, though containing no affected argument. Secondly, verbs like *rot* and *put*, whose arguments undergo a change of state, cannot appear in the middle construction.

(5) a. This scientific paper reads like a novel.

     b. Mary photographs well.

     c. This play performs easily.

(6) a. *Johnnie's teeth rot easily.

     b. *This book puts easily on the shelf.

The middles in (5) are perfectly acceptable, but the derived subjects, *this paper*, *Mary* and *this play*, do not seem to undergo any change. *This paper* does not change its shape nor its property, and *Mary* and *this play* do not, either. On the other hand, the sentences in (6) are unacceptable as middles, (although (6a) is acceptable as ergatives), in spite of the fact that the derived subjects seem to undergo some change.

Moreover, the affectedness constraint also fails to account for the contrast between *buy* and *sell*. The objects of these verbs should be affected in that they undergo a change of location, but only *sell* can form an acceptable middle.

(7) This book {sells / *buys} easily.

These facts indicate that the analysis based on the notion of affectedness in terms of "undergoing change" is not sufficient to predict correctly which verbs can form middles. In the following section, we will discuss an alternative, in which some, though not all, of the counterexamples to this type of affectedness approach can be explained.

2.2 The affectedness approach based on "delimitedness"

Tenny (1987, 1994) claims that the delimited/non-delimited distinction is a central aspectual property of natural languages. What she calls the delimited/non-delimited distinction is roughly comparable to what has been called the event/process, telic/atelic, bounded/unbounded or durational/non-durational aspectual distinctions. She defines the notion of delimitedness as follows:

(8) Delimitedness refers to the property of an event's having a distinct, definite
     and inherent end point in time.   (Tenny 1994: 4)

As shown in 2.1, a majority of semantic definitions of affectedness in the literature are based on whether or not the argument of a verb undergoes a change of state or position. In contrast, Tenny regards "affectedness" as an aspectual property based on "delimitedness"

and redefines it as follows:

(9) A verb is an "affectedness" verb iff it describes an event that can be delimited by
the direct argument of the verb. (Tenny 1987: 79)

The affectedness defined in this way characterizes the verbs which can form middles more
adequately than the affectedness based on the notion of "undergoing change". For
example, this view of affectedness explains why verbs like *read, photograph* or *perform* in
(5) may enter into the middle construction. According to Tenny, the referents of the direct
arguments *(this scientific paper, Mary, and this play)* "measure out" the events of reading,
photographing and performing; they can be considered as aspectually affected arguments.
This is one of the reasons why she believes that affectedness should be defined with the
notion of delimitedness rather than "undergoing change".

Further, Tenny characterizes Vendler's four aspectual classification of verbs in terms
of "delimitedness". She insists that only the accomplishment and the achievement verb,
which have a "delimited" interpretation, should be eligible for middle formation. Her
claim can be summarized as in (10).

(10) Vendler's typology in terms of "delimitedness"

	Delimited	Middle
Activity	—	*
Accomplishment	+	OK
Achievement	+	OK
Stative	—	*

This idea works well in explaining the contrast between the activity verb *wander* and
the accomplishment verb *cross* as in the following:

(11) The desert {crosses / *wanders} more easily than the prairie for settlers with
large wagons. (Tenny 1987: 82-3)

(12) a. The prophet crossed the desert {??for / in} forty years .

b. The prophet wandered the desert {for / ??in} forty years.

Tenny (1987: 82) claims that verbs of motion, whose direct arguments represent delimiting
paths, undergo middle formation. As (12) shows, the verb *cross* describes an event which
is delimited in the same way as *read* and *photograph* as in (5), while the verb *wander* does
not describe a delimited event. Thus, she correctly predicts that the middle formed with
the latter is much worse than that formed with the former describing a delimited event.

Tenny points out that the aspectual situation of a sentence is not described by the
verb alone, but rather by the verb together with its argument (subject or object) and its
modifiers (goal phrases and other kinds of adverbial). That is, the complement or adjunct
that appears with a verb determines (in part) the aspectuality of an event. For example,

the addition of a nominal argument or a goal phrase to a verb can change a non-delimited event (activity) into a delimited one (accomplishment): compare, for example, *paint* versus *paint a picture* and *push a cart* versus *push a cart to the station*. That is, in this case, the object or goal phrase functions as a "delimiter" of the described event. Tenny claims that the presence or absence of a delimiter significantly influences the acceptability of middle constructions. This might be supported by the following contrasts:

(13) a. This wall hits *(down) easily.

   b. This wall kicks *(down) easily.

As the sentences in (13) indicate, *hit* and *kick*, without an adverbial or particle like *down*, cannot form acceptable middles, for these verbs describe activity events which have a non-delimited interpretation. Yet the addition of *down* improves acceptability. Along the line of Tenny's idea, this is because *down* here delimits the described events.

Particles like *down* above exhibit the syntactic trait of being able to appear on either side of the object noun in transitive expressions. Bolinger (1971) uses this characteristic to distinguish pure particles from what he calls pure prepositions, which may only appear before the object noun. These two classes are illustrated in (14) and (15), respectively.

(14) *pure particle*

   a. shoot *down* the elephant

      shoot the elephant *down*

   b. look *up* a name in the phonebook

      look a name *up* in the phonebook

(15) *pure preposition*

   a. climb *up* the mountain

      *climb the mountain *up*

   b. look *at* a photograph

      * look a photograph *at*

Tenny insists that these two classes correspond to the delimited/non-delimited distinction. That is, the pure particle has the semantic property of imposing delimitedness on the event described by a verb phrase or sentence, while the pure preposition does not impose a delimited interpretation. Given this, it is claimed that verbs with preposition cannot form acceptable middles. This claim seems to be supported by the following examples:

(16) a. Mt. Fuji climbs (*up) easily.

   b. The elephant shoots {down /*at} easily.

Verbs like *climb* and *shoot* belong to the class of accomplishment verbs, which have a delimited interpretation, and they may undergo middle formation. The addition of pure prepositions like *up* and *at* makes the middle sentences unacceptable. This is because

these prepositions force non-delimited interpretations of the described events.

Tenny further argues that resultative phrases resemble (pure) particles in that they also serve to delimit an event. The delimiting function of resultative phrases can be seen by examining the effect of adding a resultative phrase to a sentence that, in the absence of such a phrase, may receive a non-delimited interpretation. Consider the following sentence pair, which is cited from Levin and Rappaport (1995: 50):

(17) a. The blacksmith pounded the metal (?in/for two hours).

     b. The blacksmith pounded the metal *flat* (in/ *for two hours).

As illustrated in (17a), *pound* inherently describes a non-delimited activity. The addition of a resultative phrase affects the interpretation: in contrast to (17a), (17b) has only a delimited interpretation. This shift in *pound*'s aspectual type explains why *pound* can participate in the middle construction, when accompanied by a resultative phrase.

(18) Metal pounds *(flat) easily.

With verbs that are lexically delimited, the resultative phrase provides a further specification of the achieved state, as in the sentence like *John broke the door open*. This type of verb can enter into the middle construction, regardless of the presence or absence of a resultative phrase:

(19) The door breaks (open) easily.

All these facts might force us to believe that the notion of delimitedness is the crucial factor that determines eligibility for middle formation. In fact, there seem to be no other alternatives which can explain the above facts so clearly. A closer inspection reveals, however, that it still leaves unsolved a large number of problems. Some of them are fatal to the delimitedness approach.

2.2.1 Problems with the approach based on "delimitedness"

As we have seen above, the affectedness based on the notion of delimitedness can explain more facts than the one based on the notion of "undergoing change". In particular, it works well in accounting for middles such as *This scientific paper reads like a novel* and *Mary photographs well*, which express no change at all in their events, but are perfectly acceptable.[1] However, the delimitedness approach also fails to explain the examples which constitute a difficult problem for the affectedness account based on "undergoing change", as observed in (6), which is repeated as (20).

(20) a. *Johnnie's teeth rot easily.

     b. *This book puts easily on the shelf.

Tenny would incorrectly predict that both *rot* and *put* form good middles because they express an event having a distinct end point in time. In addition, the contrast between *buy* and *sell* is also not explained by either definition of affectedness. Let us repeat the

example as (21).

(21)   This book {sells / *buys} easily.   (=(7))

Both *sell* and *buy* describe a delimited event and should therefore equally form acceptable middles; yet only *sell* does.

As illustrated in the table of (10), Tenny generalizes that the aspectual classes of verbs which undergo middle formation are limited solely to accomplishments and achievements.   Indeed, this is not a valid generalization.   Consider first the following:

(22) a. *This house builds easily.

b. *This paper writes easily.   (Van Oosten 1985: 106)

c. *This chair makes easily.

As Tenny (1994: 15) argues, verbs of creation such as *build, write,* and *make* describe a delimited event and are generally referred to as accomplishments: in the event of building a house, for example, when the house is complete, then the house-building is also complete. The final stage of the completed house provides a temporal terminus for the event. Nevertheless middles formed from such verbs are unacceptable, as (22) shows.   Notice furthermore that not all achievement verbs can enter into the middle construction: although some achievement verbs like *break* and *explode* can appear in the middle construction, verbs like *notice, spot, acquire,* and *recognize* are excluded from the construction.   (The following examples are cited from Fagan (1992: 68))

(23) a. *The dirtiness of New York streets notices easily.

b. *French acquires easily.

c. *A red-winged blackbird recognizes easily.

The facts as seen in (22) and (23), however, do not argue against Tenny's idea so strongly.   At present, we should not say that the notion of delimitedness are totally irrelevant to middle formation.   If the middle were never formed from the predicates which express no distinct end point, there would remain a chance for delimitedness to be a necessary, not a sufficient, condition.   Indeed, even the predicates which have no delimited interpretation can form acceptable middles.

(24) a.   The car drives easily.

b.   This pipe smokes nicely.

c.   This piano plays easily.

The events described by *drive the car, smoke this pipe,* and *play this piano* are no doubt activities, which have no distinct end point in time, yet they are perfectly acceptable as middles.   Tenny (1987: 102) herself notices that there are verbs which do not seem to describe a delimited event but can appear in the middle construction.   For example, certain verbs of motion can form middles, even though they do not appear to describe a

delimited event.

    (25) a.   This cart pushes easily.

           b.   This horse gallops easily.

According to Tenny, the middles in (25) have an inceptive reading. So, many native speakers usually interpret the sentences above as 'this cart *starts* to push easily' and 'this horse *starts* to gallop easily' respectively. She insists that verbs of motion in the middle usage are actually used as change of state verbs. That is, the moved object undergoes a change of state from being an unmoving object to being a moving object. Therefore, the direct argument, that is, the moved object delimits the situation.

    However, the same line of analysis does not apply to the middle sentences in (24), since they can never be interpreted as *the car starts to drive easily, this pipe starts to smoke nicely,* or *this piano starts to play easily.* Thus, the fact in (24) is really problematic for the delimitedness approach. Therefore, our objection to Tenny's proposal is well-founded. Based on the distribution observed in (22)-(24), we can safely say that the notion of delimitedness is neither a necessary nor a sufficient condition for the middle construction.

    Further, reconsider the examples observed in (13a) and (18), repeated as (26):

    (26) a. *This wall hits *(down) easily. (= (13a))

           b. *Metal pounds *(flat) easily.   (= (18))

The facts above may be considered to be conclusive evidence for the claim that the existence of a explicit delimiter in the described event crucially influences eligibility for middle formation. It should be noticed, however, that middle formation is not always possible with the predicates including a pure particle or resultative phrase. Let us consider the following examples:

    (27) a. *An answer to the problem thinks out easily.

           b.   think out an answer

           c.   think an answer out

    (28) a. * The door kicks easily.

           b.   The door kicks open easily.

           c.   *The bear kicks bloody easily.

As (27b,c) indicate, *out* in (27a) is a pure particle, which delimits the event, yet *think out* is ineligible for middle formation. And the contrast in (28b,c) shows that the addition of a resultative phrase does not always serve to qualify the predicate to form a good middle.

    Ironically, in some cases, the presence of a delimiter itself can be the very reason for the ineligibility for middle formation. Consider the following:

    (29) a.   These tigers shoot (**dead*) easily.

           b.   The wall paints (**red*) easily.

Tenny would be puzzled at the fact above, where acceptable middles become worse because of the addition of the resultative phrases *(dead, red)*, which function as delimiters. A similar fact can be found in the following sentences:

(30) a. The van moves easily *(??to the station).*

b. The cart pushes easily *(??to the shed).*

The predicates *move the van* and *push the cart* describe a non-delimited situation. The addition of goal phrases changes the aspectual situation. Tenny would predict that the latter situation is more suitable for middle formation than the former. The fact is the converse of her predication, as seen in (30): here again, the presence of delimiters causes acceptable middles to be less acceptable.

It should be noticed, however, that the addition of a prepositional phrase does not always bring the same result as in (30), as the following examples show:

(31) a. These couches convert easily *(into beds)*. (O'Grandy (1980: 60))

b. This book translates easily *(into Japanese)*.

c. This bread cuts *(into thin slices)* easily. (Tenny (1987: 44))

Unlike in (30), here the presence of the PPs does not decrease the acceptability. Interestingly, (31a) is unacceptable without the PP *(into beds)*. Probably this is because it is lexically required as an obligatory argument of the verb *convert*. [2]

Lastly, to establish our objection more firmly, let us give another piece of conclusive evidence:

(32) The van {moves/ *inches}easily.

Under the delimitedness approach, the contrast in (32) would be mysterious, because *move* and *inch* describe nearly identical aspectual situations in that both express movement and a non-delimited eventuality, yet only *move* can form an acceptable middle.

So far, we have given abundant compelling evidence against the two types of affectedness approach. It should be concluded, from what have been observed, that the notion of affectedness, whether it is defined in terms of "undergoing change" or "delimitedness", explains the facts only insufficiently.

Fagan (1992) also points out the insufficiency of the affectedness approaches based on "undergoing change" and "delimitedness", and proposes an alternative. Like Tenny, she takes the position that the aspectual properties of verbs play a crucial role in middle formation. However, Tenny and Fagan disagree in opinion about the aspectual classes of verbs that are eligible for middle formation. It seems to be interesting to make a comparative study of Fagan's and Tenny's analyses. In the following section, we will briefly discuss the Fagan's analysis and point out some facts which are overlooked in it.

3 Fagan's aspectual approach

In her discussion of constraints on middle formation, Fagan (1992) also argues that Vender's classification of verbs plays a role in predicting the class of verbs which are middle formation.   By testing verbs from each of Vendler's categories with respect to their ability to form middles, she has obtained the following results, which are different from Tenny's (cf. the table (10) in section 2.2):

(33) Activity (only transitive) (cf. (24))

    a. The car drives easily.

    b. This pipe smokes easily.

(34) Accomplishment

    a. This book reads easily.

    b. Sturdy clear plastic boxes...assemble in seconds.

(35) Achievement (cf. (23))

    a. *A red-winged blackbird recognizes easily.

    b. *French acquires easily.

(36) State

    a. *The answer knows easily.

    b. *A VW owns easily.

    c. *John believes easily.

(The examples are all cited from Fagan (1992: 68))

As (33) and (35) show, Fagan argues, unlike Tenny, that transitive activity verbs can undergo middle formation, whereas achievement verbs cannot, even though they identically observe that accomplishment verbs can form acceptable middles, while stative verbs cannot. In this way, Fagan's generalization explains counterexamples like (23) and (24) which are raised against Tenny's approach.   A question arises here: the issue of how to deal with achievement verbs like *break* and *explode* which Tenny refers to as qualified candidates for middle formation:

(37) a. The glass breaks easily.

    b. The bomb explodes easily.

Fagan (1992: 257) tried to explain the fact by assuming that the sentences in (37) is not middles.   On her assumption, the sentences are simple generic statements formed from ergatives (*The glass broke, The bomb exploded*), that is, predicates that originally are not transitive.   Fagan thinks that they should be interpreted like generic statements in (38), for example, which are also formed from predicates that are not transitive.

(38) a. Toddlers fall easily.

    b. Babies cry easily.

It can be argued, however, that the sentences in (37) also have a middle reading (that they are formed from transitive *break* and *explode*), and that this middle reading is distinct from the ergative reading. Fagan argues against this view by saying that there is no foolproof test that demonstrates that (37) are acceptable middles. Instead, she attributes their acceptability as middles to the ability of the verbs in (37) to form good ergatives, since middles formed from achievements that cannot be used as ergatives (e.g., *The bird recognized, *French acquired, *The dirtiness of the street noticed*) are clearly unacceptable as seen in (36). Then, she concludes that (37) do not provide compelling evidence for the claim that achievements make good middles.

3.1 Problems with Fagan's aspectual approach

However, we cannot agree with this idea, for, although Fagan argues that there is no compelling evidence for interpreting (37) as middles, we may argue in the same way that there is no conclusive evidence showing that they never bear a middle reading. We argue that they can be interpreted as either an ergative or a middle. To make this clear, let us consider the following examples:

(39) a. The door opened naturally. (ergative reading only)
 b. The door opens easily.
 c. John / The draft opened the door.

(40) a. Johnnie's teeth rotted. (ergative reading only)
 b. Johnnie's teeth rot easily. (ergative reading only)
 c. *His mother / All that sugar rotted Johnnie's teeth.

As (39) indicates, *open* can appear not only in the middle but also in the ergative: (39a) has an ergative reading alone, whereas (39b) can have a middle reading. Interestingly, as Fellbaum (1986: 6) points out, (39b) can be ambiguous between two readings: as a middle, (39b) states that the volitional act of opening the door is easy, that is, it asserts the possibility of the door's being opened by a nonspecific agent. As an ergative, the sentence describes the changing of the door's state from closed to open, referring to events generated by an (easily provoked) cause. On this reading, the sentence does not necessarily imply a human agent, but possibly suggests an external cause such as a draft in the room. On the other hand, *rot* cannot appear in the middle, but only in the ergative. Unlike (39b), (40b) cannot have two meanings: it can be interpreted as an ergative, but not as a middle. It only means that the rotting of Johnnie's teeth may be provoked at the slightest cause, but not that the act of rotting his teeth is easy. The reason for the contrast between *rot* and *open* may be attributed to the fact that, as (39c) and (40c) indicate, *open* selects for either a volitional or a non-volitional subject argument (an Agent or a Cause), whereas *rot* always selects for a non-volitional argument. That is, *rot*, unlike *open*, does

not describe the action which can be performed agentively or volitionally. Note that only *open* can enter into *Tough*-constructions, which imply the presence of a human agent:

(41) a. The door is easy to open.

b. *Johnnie's teeth are easy to rot.

Returning now to the sentences in (37), it can be argued that they may have two readings as well as the sentence in (39b): *explode* and *break* both can appear not only in the ergative but also in the middle. As middles, the sentences in (37) state that the act of breaking glass or exploding bombs is easy. As ergatives, they describe the event of glass breaking or bombs exploding may be provoked without much causation. Here again, the reason why the sentences can have a middle interpretation is explained by the fact that *explode* and *break* can select for an Agent other than a Cause as a subject argument when they are used transitively. Although Fagan observes that verbs which are eligible for the ergative cannot form acceptable middles, this applies only to verbs like *rot, corrode,* and *deteriorate.* These verbs, selecting only for an non-human subject argument (Cause) when used transitively, cannot appear in the middle. Then we can say, contrary to Fagan, that a verb which appear in ergatives, if it describes a volitionally performable event, can enter into the middle construction. To put it another way, the nature of the event described by a verb, that is, whether it is agentively performable or not, is one possible foolproof test which determines eligibility for middle formation. We may, therefore, reasonably conclude that the sentences in (37) are obvious counterexamples to Fagan's aspectual approach, since *break* and *explode* can be classified as achievement verbs, yet they can form perfectly acceptable middles.

Further, Fagan's aspectual approach involves some problems which are common to Tenny's. One of them is caused by analyzing accomplishment verbs as possible candidates for middle formation. It is the ineligibility of *build, write* and *make* for middle formation (see (22)), since these verbs are arguably classified as accomplishments. Her aspectual approach also fails to explain the contrast between *buy* and *sell, inch* and *move* (see (32)). Thus, her analysis also leaves some problems unsolved.

Fagan's superiority to Tenny's aspectual approach, if any, would be in her observation that transitive activities are acceptable as middles (see (33)). The following contrast suggests, however, that the observation itself also includes insufficiency:

(42) a. This car drives easily.   (= (33a))

b. *The desert wanders easily.   (cf. (11))

c. John is {driving the car / wandering the desert.

The verb *drive* and *wander* are transitive activities in that they describe an unbounded eventuality, and appear in the progressive as (42c) shows, so Fagan would predict that both

could form an acceptable middle.   In fact, this prediction is incorrect as (42a,b) show.

One might be tempted to say, however, that the ungrammaticality of (42b) is due to the fact that *wander* is a less prototypical transitive verb in the sense that a prepositions or an adverbial can intervene between the verb and its object.

(43) John wandered (*in/around*) the desert.

This line of analysis, however, cannot explain why *walk* in a transitive use is eligible for middle formation:

(44) a.   The floor walks easily.

b.   John is walking (*on/around*) the floor.

As (44b) shows, the verb *walk* has a similar property to *wander* in that a preposition can appear between the verb and its object and in that the object of *walk* also refers to a location where the action of walking takes place.   Yet they behave differently from each other with respect to eligibility for middle formation as (42b) and (44a) show.   Thus, we should point out that the insufficiency is involved even in the claim that transitive activities should be eligible for middle formation.   It appears to be true, however, that the middle is formed from only transitive verbs.   As a syntactic constraint, then, one might propose that intransitive verbs are excluded from the construction.   The propriety of this idea will be fully disputed in the next section.

In this section, we have discussed Fagan's aspectual approach, and argued that the aspectual classification of verbs does not play a role in middle formation.   Now we notice that no aspectual approach adequately explains the relevant facts.   If an advantage must be drawn from the aspectual approach, it would be mentioned that stative verbs like *know* and *believe* do not undergo middle formation without exception.   This fact, however, should be explained, without reference to the aspectual properties of verbs.

4 The notion of transitivity

4.1 The syntactic notion of transitivity

As Fagan points out, many researchers have also argued that, in order for a verb to be eligible for middle formation, it must bear a transitive property (namely "transitivity"). This might be certified by the fact that predicates consisting of a verb and a preposition tend to be ineligible for middle formation.   For example, *walk*, as we have just seen above, can appear in both transitive and intransitive uses, but as an intransitive, it can form a middle marginally at best:

(45) a.   This floor walks easily.

b.   ?This floor walks *on* easily.

Most linguists would accept that the strangeness of (45b) is due to the lack of transitivity.

We should notice, however, that the presence or absence of a preposition does not always affect the eligibility of a predicate for middle formation. In the predicate *walk (for) three miles*, for example, we cannot see any difference between transitive/intransitive uses.

(46) a. *Three miles walk easily.

    b. *Three miles walk *for* easily.

    (cf. Three miles are easy to walk (for).)

Structurally, the predicate in (46a) should be regarded as a transitive because of the absence of *for*, but it is ineligible for middle formation. Here, unlike in (45), the presence or absence of a preposition does not affect the acceptability. Thus, the syntactic notion of transitivity cannot explain the grammaticality difference between (45a) and (46a).[3]

Some might say, however, that the syntactic notion of transitivity still functions as a necessary condition. At first sight, it appears that middles are formed from only transitive verbs. In fact, a number of linguists including Keyser and Roeper (1984), Roberts (1986) and Fagan (1992) point out that verbs with a preposition (that is, intransitives) cannot form acceptable middles as in the following:

(47) a. *John laughs at easily. (Keyser and Roeper 1984: 408)

    b. Its meat eats (*at) like a beef.

    c. Mt. Fuji climbs (*up) easily.

Contrary to this, Rosta (1992: 328) claims that "some speakers unhesitatingly accept the prepositional middles" in (48).

(48) a. Sophy looks after easily.

    b. (?)The chair sits on easily.

    c. The cup drinks out of easily.

The native speakers I have consulted with also point out that the prepositional middles in (48) are far better than those in (47). (Some of them accept (48b) with a little query as in *?The floor walks on easily* (see (45b)).) We consider that the degree of grammaticality in (48b) is not of major importance to the discussion at hand.) Of importance is the fact that there is a clear difference between (47) and (48) with respect to acceptability. This contrast cannot be reduced to the transitive/intransitive distinction, which strongly implies that the syntactic notion of transitivity is not even a necessary condition.

4.2 The semantic notion of transitivity

A number of researchers have noticed the insufficiency of the syntactically defined notion of transitivity and tried to redefine it semantically. It seems to me that no definition of it has been successful in covering all the relevant cases. For example, Hale & Keyser (1986, 1987) characterize transitivity in terms of affectedness. They insist that a verb which selects an affected object undergoing 'change of state' can be understood to

describe a highly transitive event, and thus it forms a good middle. As pointed out in section 2.1, however, the idea involves a number of problems. Hopper and Thompson (1980) argue that delimitedness (though they use the term 'telic' and 'atelic') is one of the important semantic parameters which defines transitivity. Section 2.2.1 claims that transitivity defined by means of the aspectual property of delimitedness is neither a necessary nor a sufficient condition for middle formation.

Recently, within the cognitive grammar proposed by Langacker (1990) and Croft (1990), transitivity relevant to middle formation is characterized by using the action chain, which expresses the evolution of an event comprising three segments (CAUSE, BECOME and STATE). Taniguchi (1994) adopts this notion of transitivity as a crucial constraint on the middle construction. She observes the following: if an event contains all the three segments of the action chain, it should be regarded as highly transitive, and if a verb describes such a highly transitive event, it can occur in the middle construction. To put it another way, if a verb describes a less transitive event which lacks even one segment of the three, it cannot be eligible for middle formation. Her approach works well especially in dealing with the contrasts below, which are cited from Taniguchi (1994: 191):

(49) a. *The metal hammers easily.
     b. The metal hammers flat easily.
(50) a. * These cabinets build easily.
     b. Those toys assemble easily.

According to her analysis, the unacceptability of (49a) is due to the fact that the event expressed by a surface-contact verbs like *hammer* lacks the last segment (STATE), because the described activity affects only the surface of the object; it is not clear whether the affected object (here *metal)* is caused to change its state. The resultative counterpart in (49b), on the other hand, is acceptable because the added resultative phrase *flat* implements the last segment which *hammer* lacks. As for the contrast in (50), she argues that the events described by creation verbs like *build* lack the intermediate segment (BECOME), since the created objects do not appear until the energy flow reaches the final STATE-segment. This is not the case with the verb *assemble,* which is similar to *build* in that both express the act of constructing. The former describes an event where the intermediate segment is present as a component of the created object. Based on these facts, she concludes that the middle requires a highly transitive event which satisfies a transitive chain consisting of the three segments.

So far so good, especially in that her approach can consistently capture the contrast in (50), which was left unsolved in both Tenny's and Fagan's approaches: *assemble* and *build* express the same aspectual situation in that both describe a delimited event which is

classified as accomplishments. The notion of (high) transitivity seems to have the advantage of explaining why stative verbs are excluded from the middle. Stative verbs denote the event which contains only the STATE-segment.

However, her approach also comes up against the wall which, as seen in section 2, Tenny (1987) and Hale and Keyser (1987) could not jump over. First, recall the fact that certain resultatives, in spite of including all the three segments, do not undergo middle formation as in the following:

    (51) a. *The washer loads full easily. (Goldberg 1995: 182)

          b. *These tigers shoot dead easily. (= (29b))

          c. *The wall paints red easily. (= (29d))

Taniguchi would predict that the sentences above are all perfectly acceptable, since they include all the three segments. The facts are contrary to her prediction. Further, a simple question arises: why is it that the so called "periphrastic causatives" cannot be eligible for middle formation? Consider the following examples.

    (52) a. *The metal makes flat easily.

            (cf. John made the metal flat.)

          b. *This light causes to turn on easily. (Hale and Keyser 1987: 16)

            (cf. I caused the light turn on)

Under her interpretation of transitivity, the sentences above involve a highly transitive event, nevertheless they are excluded from the middle. Taniguchi (1994: 192) insists that "the sufficient condition for this construction is high transitivity". Based on the facts in (51) and (52), however, we can say that this is not the case.

There emerge further empirical problems, which cast doubt upon even the status of the high transitivity as a necessary condition. For example, her approach cannot explain why predicates like *play the piano*, *walk the floor* and *read the book* can form good middles, for it is not clear whether the direct objects (*piano, floor, book*) are caused to change their state or position. We cannot tell explicitly what kind of final state they reach. Although it is not so clear what she really means by saying the "final state", it seems to be fair to say that those predicates do not describe an event including all the three segments (CAUSE, BECOME and STATE). They should be analyzed as expressing a less transitive event which lacks a final STATE-segment. Thus, we might say that the notion of high transitivity (at least as defined in her analysis) should be neither a necessary nor a sufficient condition for the middle construction.

In this section, we have discussed the relation between transitivity and middle formation. It has been claimed that the notion of transitivity, whether it is defined syntactically or semantically, does not provide a sufficient explanation for all the relevant

cases. If the notion of transitivity cannot be even a necessary condition, even the facts which the transitivity approach can successfully explain (e.g., the ineligibility of stative verbs and creation verbs for middle formation) should be reconsidered from other viewpoints. In the next section, we will put up possible candidates for a necessary condition, which can solve the problems with the previous analyses.

5. Necessary conditions for middle formation

5.1 Volitionality

As we have argued in each of the previous sections, none of the existing systems provide a possible candidate for the necessary condition for the middle construction. In section 3.1, we have suggested that the notion of volitionality, that is, whether or not the predicate describes a volitionally performable event plays a role in determining its eligibility for middle formation. We suspect that this notion can be a necessary constraint on the relevant construction. It is generally agreed that middle constructions imply the agent, which is construed as generic and nonspecific. We consider that the implied agent must have the potential of playing a volitional agent role in normal active transitive events. In fact, it is observed that the verbs which cannot select for a volitional subject argument are excluded from the middle:

(53) a. The new design of ball (catches / *receives) well. (Dixon 1991: 329)

b. John intentionally (caught / ??received) the ball.

As (53b) shows, *catch* can describe a volitionally performable activity, whereas *receive* cannot. It is this difference, we think, that brings the contrast in (53a).

The same account carries over the contrast between *walk* and *wander* below, which raises, as we have stated before, a difficult problem for the previous analyses.

(54) a. The floor walks easily.

b. *The desert wanders easily.

c. John intentionally walked the floor.

d. ??John intentionally wandered the desert.

As we have seen, Tenny claims that the unacceptability of *wander* as a middle should be attributed to the lack of an end point in its event. This line of analysis cannot explain the acceptability of (54a), for the action of walking the floor also lacks an end point. Instead we argue that the contrast should be reduced to the difference in volitionality. That is, the unacceptability of *wander* as a middle is ultimately due, not to lack of an end point, but to lack of volitionality in the described event.

From these observation, we assume the following condition as a preliminary:

(55) Volitionality Condition

The middle is formed from the predicate which potentially describes a volitionally performable activity.

In terms of the volitionality condition (henceforth VC), we can explain why some perceptual verbs like *notice, hear, see* and *recognize* cannot participate in the middle construction (cf. (35)). Let us consider the following:

(56) a. *John *volitionally* heard her playing the piano.

b. *John *intentionally* (noticed/ recognized/ saw) the fact.

As (56) shows, these verbs do not describe a volitionally performable event. Thus, the VC correctly predicts that they cannot form acceptable middles.

We are now in a position to explain the ineligibility of stative verbs, without using either the aspectual classification of verbs or the notions of affectedness, delimitedness or transitivity. These verbs do not select for the volitional agent subject when used transitively (e.g., *John intentionally {knew/believed} the truth, *John intentionally {had/owned} the car*), therefore excluded from the middle construction (see (36)).

There are, however, some facts which cannot be explained by the notion of volitionality. Consider the following contrast:

(57) a. English {*acquires/??learns/ teaches} easily.

b. John *intentionally* {*acquired/ learned/ taught} English.

Based on the result of (57b), the VC incorrectly predicts that both *learn* and *teach* are eligible for middle formation, whereas *acquire* is ineligible. Here the contrast between *teach* and *learn* is particularly interesting, for both describe a volitionally performable action, yet the latter is excluded from the middle.

The notion of volitionality also fails to explain the contrasts between *buy* and *sell*, and between *inch* and *move*, because the events described by them all contain volitionality, yet only *sell* and *move* are eligible for middle formation. Further, the ineligibility of creation verbs like *build, make* and *write* cannot be captured by the VC. These verbs can appear with an intentional adverb, but cannot appear in the middle.

These problems, however, do not deny the necessity of the VC. As far as I know, no cases can be found which deny the validity of the VC. That is, eligible verbs for the middle construction must satisfy the VC. Thus, we conclude that the VC is one of the necessary conditions on middle formation.

5.2 Pre-existence

One of the characteristics of the middle is that the verb involved, unlike in the passive, still keeps the active form even though its subject corresponds to the object of the transitive counterpart. So we say that the middle is a kind of active sentence. It is argued that in

active sentences, the entity which appears in subject position is generally understood to be present in advance of the occurrence of the described event. If the subject entity were not pre-existent to the action of the verb, it could not bring about a change in the object entity, nor affect the event, nor even experience the denoted action. We notice that the subject of the middle also affects the event in the way that its inherent property facilitates or hinders the event's actualization. Given this, we expect that the subject of the middle must be understood to be pre-existent to the described event, because the entity which affects the event is required to be pre-existent before the event starts. In fact, this is verified by the following examples: [4]

    (58) a.   The ground/ *A small hole digs easily.

          b.   The wall /*A portrait paints easily.

The subjects in (58) correspond to what Fillmore (1968) calls "affectum/effectum" objects: *the ground* and *the wall* are affectum objects, and are understood to exist prior to the action of digging or painting, whereas *a small hole* and *a portrait* are effectum objects, and their existence results from the described actions. It is apparent that this differences causes the grammaticality contrasts in (58). Further, let us consider the following examples:

    (59) a.   *The truth reveals/ proves/ shows easily.

          b.   *The idea suggests/ proposes easily.

In the event of revealing or proving, the subject referent (*the truth*) cannot be identified in the situation prior to the action; we perceive it to appear after the action has finished. Likewise, what is suggested or proposed is not regarded as being present in the situation before the action of suggesting or proposing. Thus both of the subjects in (59) all should be perceived as not having the property of pre-existence, which is assumed to be a fundamental requirement to affect the event's actualization.

    Based on these observations, we assume the following condition at work:

    (60) Pre-Existence Condition (henceforth PEC)

          If an entity is understood to be pre-existent prior to the situation described by the main verb, it qualifies to appear in the subject of the middle. Conversely, an entity which is understood to be non-pre-existent cannot appear in that position, as this would conflict with the fact that the subject of the middle is understood to affect the event.

With the PEC in mind, let us recall the examples where the grammaticality of a middle with the verb *walk* is affected by the choice of subject:

    (61) a.   This floor walks easily.   (=(45a))

          b.   *Three miles walks easily.   (=(46a))

As we have seen before, the contrast above is problematic for Tenny's delimitedness

approach, since it predicts incorrectly that (61a), which has a non-delimited interpretation, is unacceptable, whereas (61b), describing a delimited event, is acceptable. We argue that this contrast can be explained straightforwardly by the PEC: the subject referent of (61a) is the location where the action of walking takes place, so it is understood to be pre-existent before the action. On the other hand, in (61b), the subject referent *(three miles)* is not pre-existent, but rather, in some sense, is created by the action of an implied agent: *three miles* here is like traces which are left by a walker. So it should be understood not to be pre-existent prior to the action. The observation that *three miles* is a created distance can be verified by the fact below:

(62) He made a few more yards before he fell to the ground.

The object referent *(a few more yards)*, like the subject in (61b), is no doubt not pre-existent, but may be created by the mover, since it can occur as the object of the creation verb *make*. Therefore, we can say that the unacceptability of (61b) is due to the violation of the PEC. It is noteworthy that the verb *make* in (62) is interchangeable with the verb *walk* with no semantic modification.

We are now able to see the reason why verbs of creation such as *build, make* and *write* are excluded from the middle (see (22)): the objects of these verbs come into existence after the action of creation, therefore cannot appear in the subject of the middle.

5.2.1 Extension of the domain of existence

Through extension of the domain of 'existence', the PEC can capture the facts more extensively. Consider first the following examples:

(63) a. The box is *on the chair*.

b. An good idea is *in his mind*.

c. There is a fallacy *in his knowledge of Christianity*.

d. The diamond is *in the possession of Mr. King*.

Each of these sentences contains an existential *be* with the preposition *in* or *on*. It can be observed that (63a) alone describes a real-world event where something exists in a certain physical location, while the others express the metaphorical or abstract situation in which something is in existence in an abstract domain: (63b, c) and (63d) refer to the existence of the subject referent in a conceptual domain *(his mind, his knowledge)* and in a possessional domain, respectively. We consider that these examples reflect how we understand the notion of existence. Given this, we roughly assume that the following extending rule is at work:

(64) physical domain of existence → abstract domain of existence

The rule above implies that the notion of pre-existence applies to the abstract domain as well as to the physical domain. It is important to note that the selection of the domain of

existence (physical or abstract) is determined by the semantics of a verb and its arguments.

Based on the idea of domain extension, the PEC explains the difference in middle formation between *teach* and *learn*. Consider the following:

(65) English {teaches/ ??learns} easily.   (cf. (57))

Teach and *learn* describe abstract situations where information is transmitted from someone to someone else. We argue that what is taught must be pre-existent in the domain of teacher's knowledge; if not, he or she cannot teach anything about it. The verb *learn*, on the other hand, does not describe such a situation, because what is learned is regarded as coming into existence in the learner's domain of knowledge after the action of learning. Thus, the middle formed with *learn* is judged unacceptable due to the violation of the PEC. The same explanation may be true of the unacceptability of the following:

(66) a. ??History studies easily.

b. *English acquires easily.   (=(57a))

c. *That sermon understands easily.

The verbs here also belong to the same class of mental process as that of *learn*: the subject referents in (66) are all interpreted as coming into existence in one's conceptual domain after the events denoted by the verbs.

A similar account also plays a role in the contrast between *buy* and *sell*, which has been explained only insufficiently in any other previous approaches:

(67) a. This book {sells /*buys} easily.

b. Unsold stocks buy back with difficulty.   (Endo 1986: 119)

The situations described by *sell* and *buy* are abstract in the sense that both describe a change of ownership. As for *sell*, what is sold or ownership of goods must be present already in one's possessional domain; it is impossible to sell what is not yet in existence in seller's domain. On the other hand, *buy* means "to acquire ownership of goods", ownership being materialized through the action of buying. So what is bought does not have the potential of affecting the buying activity. It is this fact that causes the difference between *buy* and *sell*. Interestingly, the verb *buy*, co-occurring with the adverb *back*, can undergo middle formation, as (67b) shows. This is probably because the semantics of *back* allows us to interpret the ownership of the subject referent (*unsold stock*) to have been originally in existence in one's possessional domain. The following contrast will also contribute immensely to the validity of our analysis:

(68) a. That race wins easily.

b. *That prize {wins/gets/gains} easily.

The subject referent in (68a) is understood to be pre-existent, whereas the subject referent in (68b) is not pre-existent, but construed as coming into existence in his or her

possessional domain after the action of winning, getting, or gaining.

5.3 Characterization

In this section, we have proposed two necessary conditions for middle formation (the VC and the PEC). I assume that the verbs eligible for the middle must satisfy these two constraints. Of course, we notice that there remain some facts which cannot be explained by the two conditions. Some remaining problems are summarized below:

(69) A. Grammaticality contrast between *move* and *inch*:

e.g., *The cart {moves/ *inches} easily.*

B. Ineligibility of the predicates with some prepositions:

e.g., *Mt. Fuji climbs (*up/ *down) easily., The elephant shoots (*at) easily.*

C. Grammaticality difference between the predicate with and without a pure particle or a resultative phrase:

e.g., *The wall kicks *(down) easily., The metal pounds *(flat) easily.*

D. Grammaticality difference among predicates with a prepositional phrase:

e.g., *These couches convert easily into beds*. vs. **The cart pushes easily to the shed.*

These problems, however, do not deny the validity of my assumption that the VC and PEC are necessary conditions; they only suggest that some other constraint is needed in order to explain the facts sufficiently. Thus, we still consider that the conditions in terms of the notions of volitionality and pre-existence play a role in middle formation.

In Kusayama (1996), I have presented an analysis to solve those problems above, by using the notion of characterization. Let us discuss briefly the relation of this notion to middle formation. It is generally agreed that most middles are unacceptable without some modifiers, but not all adverbials are acceptable in the middles: the middle cannot occur with manner adverbs which are agent-oriented in the sense that they attribute a property to the implied agent, while they would be properly included in passives:

(70) a. This book reads {like a novel/ easily/ *carefully/ *slowly}.

b. This book was read {like a novel/ easily/ carefully/ slowly} by John.

c. The book is {like a novel/ easy (to read) / *careful/ *slow}.

In fact, as (70a,c) show, the middle appears only with adverbs that specify the described event in a patient-oriented way. This fact suggests that the following condition is operative in middle formation.

(71) Patient-Oriented Characterization Condition (henceforth POCC)

If an event is characterized in a patient-oriented way, it is more eligible for middle formation. Conversely, if an event is characterized in an agent-oriented way, it is less eligible for middle formation.

The POCC above indicates that the middle can be characterized as a construction that typically defocuses an agentlike active subject and focuses a patient. Thus, in the event described by the middle, the patient should be recognized to surpass the agent in specificity in order to be the focus of attention. That is, the agent in the middle is always required to be less characterized. This is why the implied agent in middles are usually paraphrased into 'people in general' or 'one', which is generic and nonspecific:

(72) a. This car drives easily.

b. People, in general/ (Any) one can drive this car easily.

Interesting is the fact that agent-oriented adverbs like *carefully* and *slowly* do not occur in sentences like (72b), as in

(73) *People in general/ *Any(one)/ John can read this novel *carefully*.

because "not any agent can be assigned the characteristic trait expressed by these adverbs (Fellbaum 1985: 27)."

In terms of the POCC, we can clearly explain the problem of (69A) above, that is, the contrast between *move* and *inch*: the situations described by them are nearly identical in that both express the action of making something change its position. They differ crucially in that *inch* lexically involves the manner of agent (*slowly and carefully*) in addition to the meaning of moving something, while *move* does not. Thus, the former always characterizes the event in an agent-oriented way, even if used in the middle construction; it always describes the event where the intervention of a human agent is strongly implied. Therefore, the POCC blocks the occurrence of *inch* in the middle.

We suspect that the approach based on the POCC is also helpful in explaining the other remaining problems above. As for (69B), for example, it is argued that this is due to the fact that the presence of prepositions like *at* and *up* brings the effect of characterizing the event in an agent-oriented way. Consider the following examples:

(74) a. John shot (??at) the elephant *unintentionally*.

b. John climbed (??up/ *down) the mountain *effortlessly/ unintentionally*

The meaning of 'shoot at something' can be roughly paraphrased into '*tying to* shoot something *by setting one's sight on it*'. So volitionality is necessarily involved in that action, which explains the strangeness of the (74a) with the preposition *at*. Without the preposition, however, the described action does not necessarily contain the agent's intention: it is possible to imagine a situation where the agent happens to shoot something and the bullet hit the target. As for (74b), we argue in the same way: in the presence of *up* or *down*, the agent's direction of moving, upward or downward, is specified more explicitly than in the absence of that preposition. At the same time, its presence brings the effect of emphasizing an effort that the agent makes in performing the action of climbing.

So (74b), with the preposition, is judged anomalous, since the meaning of adverbs like *effortlessly* and *unintentionally* is inconsistent with the meaning expressed by the predicate *climb up/down*. Thus it is reasonable to say from what has been observed that prepositions like *up* and *at* make an agent's manner of action prominent, and as such, the POCC prevents the occurrence of these prepositions in the middle construction. [5]

The POCC further explains why the occurrence of a particle or a resultative phrase in the middle is not blocked, unlike the prepositions above (see (69C)): the resultative phrase or the particle characterizes the event in a patient-oriented way, since they specify a state of the patient; that is, both are patient-oriented modifiers. [6]

Let us now turn to the problem of (69D): the verb phrase *push the cart to the shed* is less eligible for middle formation than the phrase *convert these couches into bed*, though both include a prepositional phrase. It should be noticed that the former expresses a change of *state*, while the latter a change of *location*. We suspect that this difference brings about the contrast between them. In fact, through an overall look at the distribution of middle constructions, we can deduce a generalization that a change of location verb tends to form a worse middle than a change of state verb, when they select two internal arguments. Consider the following examples:

(75) a. The salami slices easily.

b. ??The salami slices *onto the wax* paper easily.

c. The salami slices *into two* easily.

The verb *slice*, in its normal transitive use, expresses a change of state. Accompanied by goal phrases like *onto the wax paper* as in (75b), however, the event described by the predicate is changed into the event of moving something to somewhere (i.e., change of location). It is this semantic shift that causes the strangeness of the middle in (75b). This can be shown by the acceptability of (75c), in which the prepositional phrase does not change *slice*'s semantic type, rather it specifies the changing state of *the salami*.

More noteworthy is that the prepositional phrase *into two* in (75c) characterizes the event in a patient-oriented way, since it refers to the state of the patient, whereas the goal phrase *onto the wax paper* in (75b) characterizes the event in an agent-oriented way, because it specifies the direction of agent's action, or it never characterizes the internal property of the patient. Thus, we may say that the unacceptability of (75b) and the ineligibility of the predicate *push the cart to the shed* are due to the violation of the POCC. [7]

It should be emphasized that a change of location verb is ineligible only when it selects two internal arguments. The verb *ship*, for example, inherently describes a change of location, but it can appear in the middle when selecting only a direct object argument. It is when it takes two arguments that *ship* cannot enter into the middle construction as

follows (the examples are from (Fagan (1992: 79)):

(76) a. *Small packages ship most customers easily.

b. ??Small packages ship to most customers easily.

c. Small packages ship easily.

What is intriguing here, however, is that the middle formed from the ditransitive is the least acceptable of the three. Goldberg (1995: 143) argues that there are certain particular semantic constraints on this construction. Among them is "intended transfer", which says that the transfer involved in ditransitives must be intended. To demonstrate this, consider the verbs *paint* and *tell*, when used ditransitively:

(77) a. Joe painted Sally a picture.

b. Bob told Joe a story.

According to her observation, in (77a) above, *Joe* must be understood to intend to give the picture to *Sally*. It cannot be the case that *Joe* painted the picture for someone else and later happened to give it to *Sally*. Likewise, in (77b) it cannot be the case that *Bob* told the story to someone else and *Joe* just happened to overhear. She suggests that the existence of the constraint is certified by the ill-formedness of the following examples:

(78) a. *Joe threw the right fielder the ball he had intended the first baseman to catch.

b. *Hal brought his mother a cake since he didn't eat it on the way home.

c. *Joe took Sam a Package by leaving it in his trunk where Sam later found it.

Thus, the ditransitive construction means something like 'X *intends* to cause Y to receive Z by doing something'. This fact implies that volitionality necessarily carries over the event described by the middle formed from the ditransitive. Therefore, it is not so surprising that the ditransitive is excluded from the middle, since it inherently describes the event which is characterized in a agent-oriented way. Such a situation strongly conflicts with the POCC.

5.4 Summary

In this section, we have proposed three different conditions for the middle construction: (a) Volitionality Condition, (b) Pre-Existence Condition and (c) Patient-Oriented Characterization Condition. Having examined various instances, we come to realize that each of the three conditions is essential for constraining the behavior of middle constructions. While we have found a close relation between the middle and the three basic notions, a question arises now: why does the middle need to have relevance to these notions? This will be the final main point to be discussed in this paper. Before entering directly into this topic, I would like briefly to review the notion of responsibility proposed by Van Oosten (1977, 1986), for it certainly gives us an indispensable preliminary.

6 Responsibility

6.1 The responsibility approach depending on the 'question-response test'

Van Oosten (1977, 1986) observes that the middle construction is used when the Agent (actor) is irrelevant to the described activity, and at the same time the Patient is regarded as responsible for the performance of that activity. Fagan uses this notion in order to complement the insufficiency involved in her aspectual approach. Like Van Oosten, she claims that the contrast between *buy* and *sell* can be explained best by the notion of responsibility. They argue that the verb *buy* does not form a good middle because the properties of the purchaser (having enough money or not, etc.) -- not those of the object purchased (being cheap or not, etc.) -- are perceived as primarily responsible for the transaction. Van Oosten (1986: 100) demonstrates this by using the question and answers in (79) and (80):

(79) How did Alex manage to buy the Jaguar?

(80) a. He quit school, got a job, pooled all his resources, sold his books,
          moved into a cheap apartment, got a roommate, pawned his guitar....

     b. #It's a great car, a real bargain.

She observes that the statement in (80a), which refers to properties (actions) of the purchaser, can be a direct response to the question in (79). On the other hand, the statement in (80b), referring to properties of the object purchased, is essentially irrelevant as a response. With the verb *sell*, in contrast, the properties of the object are not irrelevant and can have an influence on the act of selling. Of course, the properties of the subject (the seller) can also be of relevance. Thus, both statements in (82) are appropriate responses to the question in (81) (Van Oosten 1986: 100):

(81) How did Marie manage to sell the car?

(82) a. She's taken three Dale Carnegie courses and could sell anybody anything.

     b. It's a great car, a real bargain.

In short, as for the act of buying, it is ultimately one's financial situation that allows one to buy something. In contrast, as for *sell*, it is not just a person's selling abilities that have an effect on the act of selling. The properties of the object for sale can also have a positive effect on the act of selling, even though the seller lacks salesmanship. Because the properties of the object of *sell* can be primarily responsible for the act of selling, the verb *sell* forms a perfectly acceptable middle. [8]

Fagan (1992: 78) further argues that the responsibility depending on the question-response test plays a role in the unacceptability of middles formed from ditransitives:

(83) a. *Money gives (to) victims of natural disasters easily.

     b. *A cup of coffee offers (to) a guest easily.

Here again, Fagan suggests that the question-response test reveals that the properties of the objects of *give* or *offer* are essentially irrelevant to the act of giving or offering.

(84)   How did Suzanne manage to give her nephew some money?

(85)   a.   She used his birthday as an excuse.

b. #It wasn't a large sum.

c.   He didn't resist.

(85b) is not acceptable as a response to the question in (84), because it refers to a property of the object of *give*:   Fagan argues that it is acceptable only if this question is interpreted as inquiring how Suzanne could afford to give her nephew some money, and the actual giving of some money is not affected in any way by the properties of the money.   In contrast, the sentences in (85a) and (85c), which describe the actions of the giver and the person to whom something is given, are relevant as responses to the question in (84). That is, the properties (actions) of both of these individuals alone have a potential bearing on the ease with which something is given.

Given this, we might say that the responsibility approach accounts for the facts more convincingly than any other previous analyses, and at the same time the necessity of responsibility in middle formation is clearer than any other notions including "undergoing change", "delimitedness", and "transitivity".   Fagan (1992: 78) explains why the subject of a middle must be perceived as responsible for the action of the verb like the following: "Because the patient is coded as the active subject in the middle, it inherits some of the prototypical semantics of subjects.   In particular, it inherits the property of being responsible for the event.   In a normal active clause, the subject is responsible for the event because it is (typically) the agent.   In a middle, the patient is responsible for the event because it exhibits some special property."

6.2 Vagueness of the notion of responsibility

Intuitively, we can agree with the idea that the subject of the middle must be perceived as responsible for the described action.   However, several fundamental questions emerge: what is the notion of responsibility, or what elements or factors characterize the notion?   Fagan says that the subject of the middle can be responsible because it exhibits some special property, but what properties does an entity have to satisfy in order to bear responsibility?   In fact, it is not clear at all why some objects of verbs can be responsible for the action instead of the agent, while others cannot.   As for *buy* and *sell*, for example, we cannot tell clearly why we view the activity of transaction in the way that what is bought cannot be responsible for the action of buying, whereas what is sold can be responsible for the selling activity in behalf of the volitional agent.   Though the question-response test may be useful in understanding the way we perceive, it offers no explanation

for the very reason why we have the tendency to perceive the object of *buy* as such.

More noteworthy is the fact that the results of the response-question test do not always predict correctly which entities can be responsible for the denoted event. For example, consider the following response-question pair including the verb *learn*:

(86) How did Alex manage to learn such a long song?

(87) a. He repeated it day and night.

      b. It contains no difficult words and the melody is so familiar.

My informants pointed out that the statement in (87b) is also acceptable as a direct response to the question, in spite of referring to a property of the object of *learn*. The responsibility approach depending on that test would predict that the object of *learn* can be responsible for the action of learning, and therefore can appear in the subject of a middle. Contrary to this prediction, however, *learn* does not undergo middle formation (e.g., **This song learns easily*).

Further, consider again the response-question pair in (84) and (85). As Fagan points out, in addition to (85a), which refers to the action of a giver, (85c) describing a property of the person to whom something is given (receiver or "recipient") is also quite natural as a response to the question in (84). Thus, it would be predicted that the receiver can appear in the subject of the middle formed with ditransitives like *give* or *offer*. This is not the case, as the following examples show:

(88) a. *Victims of natural disasters give (money) easily.

      b. *The bureaucrat offers (a bribe) easily.

      c. The bureaucrat bribes easily.

The ungrammaticality of (88b) seems to be particularly mysterious, for the verb *bribe*, whose meaning is similar to the meaning of the predicate in (88c) in that both describe the event of "giving something to somebody as a bribe", can form acceptable middles.

These observations suggest that the kind of question-response test is not a foolproof criterion for predicting the occurrence of middle constructions. If so, we are obliged to reconsider, from a different viewpoint, the facts which have been treated as an advantage for the approach dependent on the response-question test: the contrast between *buy* and *sell* and the ineligibility of ditransitives. Probably it is this insufficiency that leads many researchers including Fagan to consider the notion of responsibility to be a secondary condition which supplements his or her own analysis.

It would be unwise, however, to argue that the notion of responsibility plays no role in middle formation. We should point out that the cause of the insufficiency lies in the measurement of responsibility, but not in the idea itself. Indeed, we can find no cases which cast doubt upon the existence of the condition that the subject of the middle must be

responsible for the described action. It will be possible to verify the notion of responsibility, if we find an accurate way to determine whether or not an entity can be responsible for the described event. Little attention has so far been given to this point. In the next section, we will briefly discuss the possibility that the notions we have dealt with in the previous section (i.e., pre-existence, volitionality, and characterization) are helpful in making clear the notion of responsibility.

7 Aspects of responsibility

7.1 Pre-existence and responsibility

In section 5.2, we have proposed the condition (PEC) that the subject of the middle must be pre-existent before the action of the verb because it is understood to affect the described event. We have seen that this condition can give a clear explanation of the contrast between *buy* and *sell*, with the idea of domain extension. We consider that the idea of pre-existence is closely connected with the notion of responsibility. In terms of the notion of responsibility, the pre-existence condition may be restated as follows: the subject of the middle should be pre-existent, otherwise it cannot be responsible for the action of the verb. In light of this idea, we can clearly understand the reason why some objects of verbs cannot be perceived as responsible for the described action. For example, objects of *buy* cannot have responsibility for that action because they are not pre-existent in buyer's domain of possession, as we have argued in 5.2.1. Thus, we may say that pre-existence is a factor requisite for bearing responsibility for the described event.

7.2 Characterization and responsibility

We have argued in section 5.3 that the subject of the middle (the patient) must be more characterized than the agent. Why is it so? The question is closely connected with the notion of responsibility. We assume that if an entity is characterized in some specific way, it can be highly responsible for the event in which it participates; conversely, an entity which is less characterized cannot have high responsibility. Under this assumption, characterization is taken to be a factor which enhances the degree of responsibility. With this in mind, let us consider the following examples:

(89) a.   John/ *Anyone can read the paper *carefully*.

b.   John/ Anyone can read the paper *easily*.

We say that *John* is understood to be more responsible than *anyone*, for the former is more specifically characterized than the latter. As we have stated before, adverbs like *carefully* characterize a certain trait in the agent. The presence of *carefully* plays the role of enhancing the degree of responsibility on the part of the agent. So the agent is required to be eligible for being responsible for that action. Based on the assumption that an entity

which is not characterized cannot bear (high) responsibility, we can understand why non-specific agents like *anyone* are excluded from the sentence with *carefully*, as shown in (89a); *anyone* is not characterized enough to bear responsibility for the action of careful reading. On the other hand, the adverb *easily* does not force the agent to be specific, as (89b) shows. It can be argued that *easily* can characterize the property of the patient (*the paper*) as well as the property of the agent. That is, *easily* has two functions: as an agent-specific modifier and as a patient-oriented modifier. Along this line, we can say that the adverb can enhance the degree of responsibility on the respective parts of the agent and the patient. In fact, when *John* is selected as the subject, the sentence can have two readings: one in which John's good ability to read is responsible for facilitating his action of reading the paper, the other in which the easiness of the object (*the paper*) is responsible for facilitating the event's actualization. It is interesting to note that this ambiguity disappears when the nonspecific agent (*anyone*) is selected: the sentence only implies that the property of the object is responsible for the easiness of reading the paper. This is because the non-specificity on the part of the agent prevents him or her from having the primary responsibility for that action.

Given this, we can answer the initial question: in the situation expressed by the middle, the patient is required to surpass the agent in specificity, because the patient in the middle is understood to be more responsible than the agent for the facility of the event's actualization. That is, the subject of the middle must be characterized enough to bear responsibility for that action. This also explains why the agent-oriented adverbs do not occur with the middle as in *This paper reads carefully/slowly*.

7.3 Volitionality and responsibility

As we have seen, in the event described by the middle, the implied agent must be understood to be less characterized and of course to be less volitional, since this construction requires responsibility on the part of the patient. This is why adverbs like *volitionally* never occur in the middle construction. Notice, however, that the implied agent in the middle must be able to play a volitional agent role in the event denoted by its transitive counterpart, as we have argued in section 5.1. But why is it that the verbs eligible for the middle must describe an action which is volitionally performable.

We would like first to assume that if an entity can perform an action volitionally, it can be highly responsible for that action. Under this assumption, volitionally-performability is also considered to be a factor which enhances the degree of responsibility. Notice, however, that, unlike the properties of pre-existence and characterization, only human entities can bear the property of volitionally-performability. Thus, it is ultimately the human agent alone that can be the most highly responsible for the action of the verb,

since it can possess all these three factors. Since the middle is subject to the VC, we can say that the middle presupposes the existence of the entity which has the highest responsibility. That is, the middle is never formed from the event which does not contain such an entity. Here we can return to the initial question in light of the notion of responsibility: why is it that the middle presupposes the existence of the most highly responsible entity which bears the three factors? To reply this question, I assume that the responsibility that the subject of the middle has is a relative concept in the sense that it is determined by the comparison with the responsibility which the agent has in actual events. As the object of comparison, responsibility on the part of the agent is necessarily involved in the event described by the middle, otherwise there arises no competition in responsibility between two entities (the agent and the patient) So volitionality is needed to warrant the existence of responsibility on the part of the agent.

7.4 Summary

Let me summarize the main points that have been made in this section. The notion of responsibility relating to the middle construction is clarified by the three semantic factors: (a) *pre-existence*, (b) *volitionality*, and (c) *characterization*. We take them to be the measurement of responsibility. If an entity has all these three factors, it is understood to be the most highly responsible for the described event. In the event described by the middle, the patient is understood to be more responsible for the described action than the human agent. In actual events, however, the patient cannot be more responsible than the agent, since the latter potentially surpasses the former in volitionality. When we talk about the easiness of an action, however, it is possible to say that the patient is (virtually) more responsible than the agent. Thus, in the event described by the middle, responsibility on the part of the patient is determined relatively to that of the agent. So the responsibility of the agent is inherently required because of the semantics of the middle. Volitionality is needed to warrant the existence of responsibility on the part of the agent. In order to get such relative responsibility, the patient should be understood to be *pre-existent* (the PEC) and be more specifically *characterized* than the agent (the POCC).

8 Concluding remarks

In this paper, we have reconsidered some previous analyses. Through a close look at the notions they have proposed, we have noticed that none of them provides a sufficient explanation for relevant cases. Instead we have proposed three necessary conditions based on the notions of pre-existence, volitionality and characterization. We have shown that these conditions, mutually complementary, explain the facts more adequately than any other previous analyses. It is important to note that these notions are not conceptually

disjoint; they are connected with each other under the notion of responsibility. It is expected that this paper not only contributes to the study of constrains on the middle construction, but also gives a fundamental insight into the issue of what the middle construction really is.

Notes

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[1] Some, but not all, advantages of Tenny's approach discussed in section 2.2.1 can be explained by the approach dependent on "undergoing change". For example, in *hit the wall* versus *hit down the wall* and *pound the metal* versus *pound the metal flat*, only the latter predicates can form an acceptable middle, which can be attributed to the fact that the addition of a particle or a resultative phrase produces an eventuality that specifies a change in the state of entities described in the objects position.

[2] (31a) is contrary to the idea presented by Endo (1986). Endo suggests that middle constructions are licensed if and only if the associated verbs select a single obligatory argument other than a subject argument. His idea is based on the following facts:

(i) a. *The books put on the shelf properly.
    b. The books positioned on the table properly.
    c. John put books *(on the shelf).
    d. John positioned books (on the table).

As the examples above show, *put* selects two arguments other than the external one, whereas *position* a single argument. According to Endo, this difference explains why *position* but not *put* can form an acceptable middle. His approach, however, cannot account for the acceptability of (31a), for *convert* lexically requires two internal arguments (*e.g., John converted the couch *(into bed)*).

[3] As for (46a), Rice (1987: 240) points out that the definite/indefinite distinction between the subjects affects the acceptability of the middle construction as in the following:

(i) a.   The five miles run easily.

     b. ??Five miles run easily.

This fact is also beyond the scope of the syntactic notion of transitivity.

[4]In his lecture note, Nakau (1989) appropriately defines the notion of pre-existence as follows:

(i) An entity is pre-existent, and the expression describing that entity forms a pre-established (or inherently anaphoric) domain if and only if it is perceived, with respect to the associated situation, to be present there in advance of the occurrence of that situation.

Our idea of pre-existence is basically dependent on this definition.

[5] Notice, as we have seen, that not all intransitives are excluded from the middle construction: e.g. *The chair sits on easily* (see (48)). We suspect that the prepositions which can occur with the middle does not characterize the event in an agent-oriented way so much as do the preposition *at, up*, or *to*. A Full discussion of this topic is, however, beyond the scope of this paper.

[6] More complicated is the fact that not all resultatives occur with the middle construction: e.g. *These tigers shoot dead easily.* (see also (29) and (51)) We cannot discuss in detail, however, how to deal with the problem, for the lack of space; it is too involved a subject to be treated in this brief paper (see the discussion in Kusayama (1996) for details). We now leave the problem untouched.

[7] There is good evidence in favor of the idea that goal phrases characterize the event in an agent-oriented way. My informants pointed out that the addition of goal phrases brings about the intentional implication. Comparing the predicates *walk on* and *walk to*, it is observed that the latter tends to require a more volitional action than the latter:

(i) a.   John unintentionally walked *on the street.*

     b. ?John unintentionally walked *to the station.*

Thus, it is not too far from the truth to say that goal phrases enhance specificity on the part of the agent.

[8] In Kusayama (1993), I have argued that the observation that the object of *sell* can be responsible for the denoted action is reflected in the argument selection of the verb *sell*.

(i) a.   John sold the book.

    b.   His name on the cover sells the book.

    c.   It is not the low price but their quality which sells our goods.

    d.   It is the good salesman that sells our goods.

Because both the seller and the properties of the object can be responsible for whether the object sells well or not, the subject of *sell* in its transitive form can be either a person (*John*)

or the properties of the object *(his name on the cover)*. (id) is a good example: the sentence is ambiguous between the readings that the good salesman is selling and that the goodness of the salesman is the trigger for the situation. On the other hand, the action of buying can be influenced by an actor (buyer) alone because, as stated before, ultimately it is one's financial situation that allows us to buy something, whatever the properties of the object are. So the verb *buy*, unlike *sell*, does not allow any property of objects in the subject position.

> (ii) a. John bought a book.
>
> b. *His name on the cover buys the book.
>
> c. *It is not the low price but their quality which buys our goods.
>
> d. It is the rich man that buys our goods.

The observation above indicates that the subject of *buy* must be a human agent. It is interesting to note that the sentence in (iid), unlike the example in (id), has no ambiguous interpretation: it simply means that the rich man is buying.

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