A Review Study on Instrument Subjects

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Abstract: Instrument subjects have been analyzed by many researchers. The occurrence of instrument subjects are related to how a person construes an event. This paper outlines the study of instrument subjects by reviewing three studies, namely Fillmore (1968), Schlesinger (1989, 1995), and Kusayama (2015). Fillmore (1968), the first study in this field, analyzes instrument subjects under the framework of case grammar, where noun phrases (NPs) are interpreted when they are assigned appropriate cases (e.g. Agent, Experiencer, Instrument, etc.). He proposes that an instrument object should be always viewed as Instrument in a sentence. In contrast, Schlesinger (1989, 1995) argues that an instrument could be regarded as Agent. He points out that an instrument subject is licensed depending on its agentivity. Kusayama (2015) clarifies the view in which an instrument can be Agent through personification by proposing that an instrument is personified when it has the properties of a causer and/or controller. This indicates that how participants of an event are interpreted in terms of personification depends upon the agentivity of the instrument subject. In addition, these studies show how an instrument subject is linguistically constrained. The study of instrument subjects, thus, contributes to understanding the relationship between human cognition and language.

Keywords: instrument subjects, agent, agentivity, cause, control, personification

1. Introduction

This paper is focuses on why an instrument subject sentence occurs in English.

(1) a. Carol hit the horse with the stick.
    b. The stick hit the horse.
    c. *The stick beat the horse.

(1a) is a typical sentence with a typical animate subject. (1b) has an instrument subject. (1c) also has an instrument subject but is considered unacceptable. This paper is concerned with the reason why there are differences in acceptability between 1a, b, and c. Syntactically and semantically, continuous efforts have been devoted to understanding how an instrument subject occurs in a sentence. There are three main studies of instrument subjects, namely Fillmore (1968), Schlesinger (1989, 1995), and Kusayama (2015). Research on instrument subjects must begin with these investigations because they outline the subject's important points in terms of each approach. This paper is divided into four parts. Section 2 reviews the case grammar by which an instrument subject was first analyzed. Section 3 considers the way in which Schlesinger (1989, 1995) unfolds his discussions to propose the Instrument as Agent. In section 4, Kusayama (2015) discloses the process of the personification. Finally, concluding remarks are presented in section 5.

2. Instrument subject within the Case Grammar Framework

In the literature of formal linguistics, the research on instrument subjects began with Fillmore (1968), who analyzes an instrument subject within his case grammar framework. According to Fillmore (1968), cases are divided into two types: surface cases and deep cases. Surface cases correspond to grammatical cases that can be marked with certain case markers, including prepositions. Deep cases, on the other hand, mean semantic/thematic roles (e.g. Agent, Instrument, Object) in the current theoretic term. A verb has its own case frame (i.e. semantic selection), which serves to limit the valence of the verb.

Combined with Chomsky's (1965) phrase structure rule, Fillmore's (1968) case grammar generates a base structure with a verb and its deep cases. More precisely, the deep structure in Fillmore's framework contains the following three characteristics: first, the sentence is separated into a

proposition and a modality; second, the proposition is composed of a verb and a series of cases ordered from right to left; third, prepositions or case markers are created in the deep structure. In what follows, we provide the details of each rule and show how they apply to derive a deep structure.

First, the sentence (S) contains a proposition (P) and a modality (M). The proposition is "a tenseless set of relationships involving verbs and nouns," and the modality contains "such modalities on the sentence-as-a-whole as negation, tense mood, and aspect" (Fillmore (1968:44). The first rule is shown below;

(2)　　Rule 1: $S \rightarrow M + P$　　　　　　　　　　　　　　　　　　(Fillmore, 1968, p. 45)

The proposition (P) contains a core verb (V) and a series of case-marked noun phrases (C). In a deep structure, there is the verb in the leftmost position and the relevant cases are ordered from right to left with the most likely subject choice. Fillmore argues "at least one case category must be chosen, and no case category appears more than once" (Fillmore, 1968, p. 45). The next rule is the following:

(3)　　Rule 2: $P \rightarrow V + C_1 + \ldots Cn$　　　　　　　　　　　　　　　(Fillmore, 1968, p. 45)

In a deep structure, every case-marked noun phrase (C) includes a case marker (K) and a noun phrase (NP). The case marker (K) occurs as preposition, postposition, or case affix and means a universal element of language. The third rule is shown below:

(4)　　Rule 3: $C \rightarrow K + NP$　　　　　　　　　　　　　　　　　　(Fillmore, 1968, p. 55)

When the base structure for a sentence occurs, these three rules are applied in turn. After that, lexical insertion takes place. Verbs are selected from the lexicon to fit the case environment supplied by the generated structure. Noun phrases are given according to the sentence that is being created. Modalities such as tense, aspect, and certain optional adverbials are put into the modality. Each verb is categorized in the lexicon with its case frame features. For instance, a verb *break* has the following case frame, $+[\underline{\quad}O,I,A]$. This frame explains that the verb *break* may arise with an Object (O) and an Instrument (I). Both cases support the process of breaking and an Agent (A), who is an actor of the breaking. The blank in the case frame illustrates the environment for the verb (V). The plus sign and square brackets shows that this case frame is a feature of the verb.

Each case appears in the deep structure with its case marker and a noun phrase. In English, the case markers are prepositions, namely Agent has *by,* Instrument contains *with*, and Object includes Ø as the case marker. When the phrase structure rules are used, the lexical verb is entered below the V node and tense is listed under the modality constituent. The cases are aligned from right to left with their case markers. Figure (6) shows the structure of the sentence in (5).

(5) John　/broke　/the window　/with a hammer.
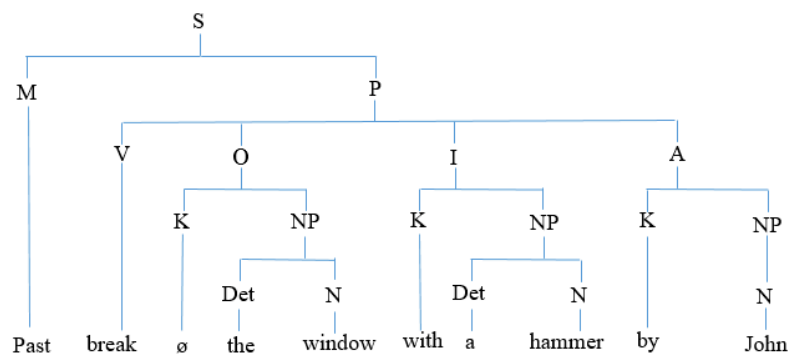　　　A　　V　　　O　　　　　　　I　　　　　　　　　　　　(Fillmore, 1968, p. 43)

Figure (6)　Deep structure **(**Fillmore, 1968, p. 43).

It is important to consider how the subject of a sentence is derived in terms of Fillmore's view. His subject choice hierarchy (7) illustrates the order of deep cases and allows the highest hierarchical position.

(7) <Subject Choice Hierarchy>
     Agent＞Experiencer＞Instrument＞Object＞Source＞Goal＞Location＞Time

<div align="right">(Fillmore, 1971, p. 42)</div>

Figure (6) shows that the most likely subject is located to the farthest right in the case frame, namely Agent. Within the O-I-A case frame, the process of subject choice takes place according to the subject choice rule. In (5), *John* is promoted to the subject position. When the Agent does not occur in the sentence in (5), the next case will be promoted to the subject position.

    The promotion process extends to the analysis of an instrument subject with Fillmore's case framework. In (5), the *with* phrase is Instrument case, *with a hammer*. If the Agent, *John*, disappears in the sentence, the Instrument, *a hammer*, becomes the subject in accord with Fillmore's subject choice hierarchy. Thus, the instrument subject sentence is derived as follows:

(8) A hammer   /broke/ the window.
    I   V   O   (Fillmore, 1968, p. 43, with modifications)

According to the hierarchy, the case following Agent is the Instrument, *a hammer*, which is promoted to the subject position. The instrument subject sentence is the result.

    To summarize it, Fillmore (1968) establishes case grammar to modify Chomsky's standard theory and introduces surface cases and deep cases. Surface cases are subject, object, possessive, and so on. In contrast, deep cases are Agent, Instrument, Object, and so on. Each deep case defines elements involved with a certain event. Fillmore's subject choice hierarchy determines which deep case should be in the subject position; accordingly, deep cases, which are semantic relations, determine the surface cases in a sentence. Fillmore (1968) construes that deep cases are independent of each other, but Schlesinger (1989) argues for the possibility of a continuum between deep cases. He explains how to analyze an instrument subject by regarding the Instrument as Agent.

3. Instrument as Agent

    Schlesinger (1989) fundamentally questions Fillmore's concept by considering a continuum in deep cases. What Agent indicates is "the case of the typically animate perceived instigator of the action identified by the verb" (Fillmore, 1968, p. 46). Schlesinger (1989) thinks that although an instrument is not a typical Agent, Instrument belongs on a continuum with Agent; therefore, the Instrument may be regarded as the Agent. We can notice degrees of agentivity for an instrument subject; that is, some instrument subjects may have more agentivity than others. For example,

(9)   a.   The car swerved and ran into a lamppost.
         b.   The bicycle swerved and ran into a lamppost.
         c.   The roller skates swerved and ran into a lamppost.

<div align="right">(Schlesinger, 1989, p. 193)</div>

Instinctively, we notice that (9a), (9b), and (9c) have different levels of acceptability. (9a) sounds the best of the three, and (9b) sounds better than (9c). The graduated acceptability of these instrument subjects means that the subjects have varying degrees of membership in the Agent category. Schlesinger (1989) indicates degrees of Agent in an instrument subject by considering the continuum between Agent and Instrument. He sets two conditions to appreciate the acceptability of an instrument subject.

    Schlesinger (1989) introduces two naturalness conditions. Naturalness Condition 1 states that "moving the instrument into subject position results in a natural-sounding sentence" (Schlesinger, 1989, p. 190);

(10) <Naturalness Condition 1>
    When the event is not instigated by a person agent, or when the agent is unknown or no longer
    on the scene, the instrument by means of which the action is performed or which is involved in
    the event may be naturally expressed as the subject.   (Schlesinger, 1989, p. 190)

That is, according to Naturalness Condition 1, the existence of an instrument subject depends on whether a person as Agent is in a sentence. Here are some examples:

(11)   a.   The World War II mine wounded him when he stepped on it.
          b.   A pile of rubble barred his access.
          c.   The letter of introduction opened all doors to him.

(Schlesinger, 1989, p. 190)

In (11a), the event describes the fact that some soldiers during the World War II buried a mine, which later wounded a man. In other words, when the man was wounded, the soldiers were not present. In (11b), a person piled a lot of rubble somewhere, for example on a road, and a man could not pass it. The person who piled the rubble was not on the road when the passer encountered the obstacle. In (11c), the person who had written the letter of introduction was not present when the man gained acceptance using the letter. In this way, Naturalness Condition 1 allows an instrument subject to naturally move to the subject position. Naturalness Condition 2 is as follows:

(12) < Naturalness Condition 2>
    To the extent that attention is drawn to the instrument by means of which an action is performed and away from the instigator of the action, the former will be naturally expressed as the sentence subject.   (Schlesinger, 1989, p. 191)

Simply, Naturalness Condition 2 states that an instrument subject is created when more attention is paid to the instrument in a sentence. Here are some examples:

(13)   a.   The pencil draws lines.
          b.   This pencil draws very thin lines.
(14)   a.   The spray kills the cockroaches.
          b.   This spray kills cockroaches instantly.

(Schlesinger, 1989, p. 191)

Compared with *the pencil* in (13a), *this pencil* in (13b) has a property of drawing very thin lines. Readers' attention is drawn to the characteristic of the pencil in (13b). Similarly, (14a) describes what the spray can do, but (14b) adds the word *instantly* to the sentence. Due to the instant quality, we tend to focus on the characteristic of this spray, therefore (14b) sounds more natural than (14a). That is, the more our attention is drawn to an instrument, the more natural an instrument subject sounds.

Naturalness Condition 1/2 allow an instrument subject that has degrees of membership in Agent. Agent and Instrument exist on a continuum, although Fillmore (1968) analyzes each case independently. In other words, these conditions are filled when an instrument as subject moves up on the scale of agentivity. Schlesinger (1989) proposes two constraints to determine when an instrument subject contains higher agentivity.

First, the Deliberation Constraint is related to awareness in a sentence. According to (Schlesinger, 1989, p. 195), "(w)hen the action demands too much deliberation, agentivization of the instrument is blocked." For example,

(15)   a.   The pen makes lines on the paper.
          b. *The pen writes a letter.
(16)   a.   The black king moves to H4.
          b. *The chess pieces play a short game.
(17)   a.   The stick hit the horse.
          b. *The stick beat the horse.

(Schlesinger, 1989, p. 195–6)

Each verb may imply different degrees of deliberation and intentionality, and the difference determines the acceptability of agentive instruments. The verbs in (15), (16), and (17) give every instrument subject

agentivity. However, there are limits to our ability to view the instruments as Agent, and (15b), (16b), and (17b) overstep those limits. The verbs *writes*, *play,* and *beat* in the (b) sentences require human consciousness. Notice that it is not just the verb but also the event as a whole that determines the acceptability of agentivization. Here are examples;

    (18)   a.   The chisel was cutting sandalwood.
               b.   *The chisel was cutting sandalwood into a statuette.
    (19)   a.   The pen is scribbling fast.
               b.   *The pen is scribbling a poem.

<div align="right">(Schlesinger, 1989, p. 196)</div>

The difference between (18a) and (18b) lies in the phrase *into a statuette*. The phrase *into a statuette* raises the degree of agentivity in (18b); therefore, *the chisel* cannot be the subject. Likewise, *fast* in (19a) is replaced with *a poem* in (19b), and *a poem* in (19b) does not allow *the pen* to be the subject because it requires too much agentivity.

        Other examples describe the strength of the Deliberation Constraint. According to degrees of agentivity, the more complex an instrument subject is, the more likely the subject becomes a prototypical Agent. A machine, therefore, seems to work well in the subject position. But the Deliberation Constraint is sometimes so strong that even a machine cannot become a subject.

    (20)   a.   The computer computed the area of the building.
               b. ? The computer showed that the theory was not supported by the data.

<div align="right">(Schlesinger, 1989, p. 197)</div>

Even *the computer*, a complex machine, cannot easily occur in (20b): the instrument cannot bear the agentivity from the event in (20b). Even if the instrument subject is complex, the Deliberation Constraint always works.

        Second, the Mediation Constraint is related to a *with* phrase in a sentence. This constraint means that while a person as Agent can act by using objects as Instruments, an instrument as Agent cannot occur when there are *with* phrases. For example,

    (21)   a. *The tape recorder made an announcement with two loudspeakers.
               b. *The rifle wounded the president with two bullets.
               c. *The hammer made a hole in the wall with a chisel.

<div align="right">(Schlesinger, 1989, p. 197)</div>

(21 a, b, and c) are not acceptable, because as Fillmore (1968: 43) states, only "one representative of a given case relationship may appear in the same simple sentence." All the sentences in (21) have two Instruments, which is why they are not acceptable. Schlesinger (1989), however, gives another analysis in terms of Instrument as Agent. That is to say, these sentences are unacceptable because these events show that the instrument subjects as Agents use objects, and they cannot bear the agentivity from the *with* phrases. However, the Mediation Constraint is not always applicable.

    (22)   a.   The bike scraped the tree with its front wheel.
               b.   The front wheel scraped the tree with its rim.
               c.   The torch woke him with its large lightbeam.
               d.   The cruiser bombarded the coast with heavy shells.

<div align="right">(Schlesinger, 1989, p. 198)</div>

In (22), all sentences are acceptable even though the instruments in the subject positions have *with* phrases. As for (22a), *its front wheel* was not used by *the bike* as the Instrument. *Its front wheel* only moved as a part of *the bike*, as if a person whose hands are full opened a door with his or her elbow. It corresponds to (22b). *The front wheel* as Agent does not manipulate *its rim* as Instrument. *The front wheel* just moves along with its parts. Such use of a part does not demand as high a degree of agentivity as is demanded for the use of a separate object as a tool. Similarly, in (22c and d), *with* phrases are not proper parts but instruments that are intimately correlated with Agent. In (22c), *its large lightbeam* is a

natural element of *the torch*. In (22d), *heavy shells* are always equipped with *the cruiser*. The Mediation Constraint is not applied to an instrument in a subject position with a *with* phrase that indicates a part or instrument that is well associated with the instrument as Agent.

Schlesinger (1995) carries out further analysis of Instrument as Agent. He determines the features of Agent: CHANGE, CAUSE, and CONTROL. An Agent with all three of these features is prototypical. In particular, CAUSE is an essential condition for the subjectivization of an instrument. Hence, the instruments in (23b) and (24b) cannot become subjects because they do not have CAUSE.

(23)　a.　The boy drank the juice with a straw.
　　　 b.　* A straw drank the juice.
(24)　a.　They built the house with bricks.
　　　 b.　* Bricks built the house.

(Schlesinger, 1995, p. 92)

Schlesinger (1995) defines CONTROL as including intention and volition, while CAUSE does not. Schlesinger (1989) introduces the degree of CONTROL, rather than degree of agentivity. An instrument subject needs CAUSE to be accepted in a sentence. In addition to this feature, there are four determinants that control the acceptability of subjectivized instruments in terms of the degree of CONTROL, namely *complexity, essential property, independence,* and *saliency*.

(25)　a.　The dishwasher cleaned the dishes. (*Complexity*)
　　　 b.　The rag cleaned the dishes.
(26)　a.　The magic key opened the door. (*Essential property*)
　　　 b.　The key opened the door.
(27)　a.　The letter of introduction opened all doors to him. (*Independence*)
　　　 b.　The pencil drew lines.
(28)　a.　This is the baton that conducted Copland's symphony on its opening night. (*Saliency*)
　　　 b.　*The baton conducted Copland's symphony.

(Schlesinger, 1995, p. 98–99, with modifications)

The dishwasher in (25a) is more complex than *the rag* in (25b). The word, *magic*, added to the subject in (26a) implies special characteristics. *The letter of introduction* in (27a) has an independent power to provide a person with opportunities. The expression "*this is the baton*" in (28a) raises its saliency. These subjects in the (a) sentences from (25) to (28) have more CONTROL and thus are more suitable than those in (b) sentences. As for the Deliberation Constraint and the Mediation Constraint, the degrees of agentivity in Schlesinger (1989) is replaced by the degree of CONTROL in Schlesinger (1995). That is, in Schlesinger (1995) an instrument is not allowed to be subjectivized by two constraints when the predicate of a sentence requires higher degrees of CONTROL.

4. Agent, Causer, and Controller

Schlesinger (1989, 1995) makes use of the continuum between each case, and regards Instrument as Agent. In other words, when an instrument occurs in the subject position, it must be recognized as Agent in the event that the predicate presents. This is personification and provides the basis for an instrument subject. Kusayama (2015) adopts this personification in an instrument subject and further explains the details of an instrument subject sentence. According to him, there are theoretical and empirical issues concerning how an instrument is personified and certified as Agent.

Kusayama (2015) uses a classification proposed by Rappaport & Levin (1992) to support the personification applied to an instrument subject. The classification has intermediary instruments and facilitating instruments. Intermediary Instruments are things that act instead of a person, while facilitating instruments only support human action. The distinction between intermediary and facilitating instruments supports the personification in an instrument subject.

(29) Intermediary instruments
　　　 a.　This knife cut the meat.　　　 \<knife = cutter\>
　　　 b.　This gadget opens the can.　　　 \<gadget = opener\>

        c.   The crane loaded the truck.   <crane = loader>

(30) Facilitating instruments
        a. *The spoon ate spaghetti.   <spoon ≠ eater>
        b. *The straw drank the juice.   <straw ≠ drinker>
        c. *The pitchfork loaded the truck. <pitchfork ≠ loader>

<div align="right">(Kusayama, 2015, p. 87)</div>

As Rappaport & Levin (1992) points out, a suffix, *-er*, added to a principal verb can represent actors and instruments in (29), although it cannot do so in (30). In (29a), the word *this knife* is equal to *cutter*. In (29b), *this gadget* indicates *opener*. *The crane* means *loader* in (29c). On the other hand, the facilitating instruments in (30) cannot show events like the sentences in (29). In (30a), *the spoon* cannot eat spaghetti, therefore it is not *eater*. *The straw* in (30b) is unable to drink *the juice*: it is not *drinker*. In (30c), only a person can load the truck, thus *the pitchfork* cannot be *loader*. This difference between (29) and (30) shows that the instrument subjects can occur in (29) because the personification is applied to (29) and not to (30). It is, however, not enough to explain why the difference occurs. Kusayama (2015) states that we can instinctively understand that the intermediary instruments in (29) are recognized as Agent through personification, but we cannot explain why the facilitating instruments in (30) cannot be personified.

      Why does the personification work in (29) but not (30)? Kusayama (2015) points out that if the process of personification is not clear, it is impossible to explain the acceptability in the next examples:

(31)   a. *Bricks built the house. (Schlesinger, 1995, p. 99)
          b. *Those new bricks constructed a house. (Levin, 1993, p. 82)
          c. That whole-wheat flour bakes wonderful bread. (Levin, 1993, p. 82)

If we only focus on whether personification works or not, it is impossible to explain the difference between (31a, b) and (31c). In (31a,b), it is not the instrument *bricks* but a person who builds a house. The same thing can be said for (31c). That is, *that whole-wheat flour* does not bake the wonderful bread, but a person. By adding the suffix *-er* to the principal verbs, it becomes obvious that *bricks* and *builder* are not the same and *that whole-wheat* is not equal to *baker*. In this sense, instinctively all subjects in (31) are not acceptable and should not be personified; only sentence (31c) is acceptable.

      Likewise, *ingredients* are not qualified to become an Agent according to Schlesinger (1995), therefore *that whole-wheat flour* in (31c) should not be acceptable either, because the subject is also an *ingredient*, like *bricks* in (31a,b). The difference between the sentences in (31) demonstrates the necessity of uncovering the process of personification in an instrument subject.

      Kusayama (2015) focuses on a transitive verb that represents a causative event with an instrument so that we can understand how an instrument subject can be personified and how it can obtain Agent in that sentence. He combines Agent role and prototype theory which includes a core prototype example and family resemblance examples. In the analysis of Agent applied to prototype theory, Agent tends to have many characteristics, such as the following:

(32)   a.   An Agent is responsible for an event.
         b.   An Agent controls an event by a conscious and spontaneous action.
         c.   The influence given to the Patient results from an Agent's intention.
         d.   An agent causes a Patient to change to some degree.
         e.   An Agent's action to a Patient is physical.
         f.   An Agent is against Patient.

<div align="right">(Kusayama, 2015, p. 89–90, English translation is mine)</div>

This analysis causes an Agent to be vague because it has too many features to understand which features are best explain an Agent. Vagueness about Agent features may impede establishment of the principle to determine what an Agent is. Kusayama (2015) classifies two Agent features to make the prototypical analysis work in principle since the Agent is clearer when there are fewer possibilities for features.

      This guideline referring to only two features of Agents adopts Jackendoff's approach, exemplified in a semantic analysis of *climb*. Jackendoff (1985, 2012) treats the verb *climb* and selects

two basic meanings, (A) clambering and (B) going upward, to determine its use range, although it has many meanings. If *climb* is used to mean either (A) or (B), it works as a verb. Some possible meanings include

(33)   a.   The bear climbed up the tree. [A/B]
        b.   The bear climbed down the tree. [A/*B]
        c.   The snake climbed up the tree. [*A/B]
        d.   *The snake climbed down the tree. [*A/*B]

(Kusayama, 2015, p. 91)

In (33a), *the bear* used its limbs and went up. In other words, *climb* in (33a) has both (A) and (B) meanings and is the most prototypical use of *climb*. In (33b, c), the verb has only one meaning, which indicates a peripheral use. *The bear* in (33b) went down by using its limbs, but *the snake* in (33c) went up the tree without limbs. In (33d), neither (A) nor (B) applies, hence the verb cannot be accepted. Kusayama (2015) makes use of Jackendoff's prototypical analysis to arrange Agent features.

      Kusayama (2015) applies Jackendoff's guideline to the definition of Agent in a causative event and assumes two criteria of meaning.

(34) <Agent conditions>
     When an entity that takes part in a certain event is recognized as Agent, the entity should embody one of the following criterion.
     <A criterion>: The entity is recognized as <Causer>, which causes a relevant event.
     <B criterion>: The entity is recognized as <Controller>, which the feasibility of a relevant event depends on.

(Kusayama, 2015, p. 92, English translation is mine)

In the following, Kusayama (2015) focuses on Agent, <Causer> and <Controller>. Agent conditions in (34) suggest that Agent should have two subordinate roles, <Causer> and <Controller>, which is why an entity should be recognized as Agent when it assumes the role of <Causer> or <Controller>. The following indicates the possible combinations of roles:

(35)   a. $AGENT^1$: <Causer / Controller>
        b. $AGENT^2$: <Causer / *Controller>
        c. $AGENT^3$: <*Causer / Controller>
        d. $AGENT^4$: <*Causer /*Controller>

(Kusayama, 2015, p. 93)

In (35), prototypical theory presents the combinations from (a) to (d). The most prototypical Agent in (35) is $AGENT^1$ which is both <Causer> and <Controller>. $AGENT^2$ and $AGENT^3$ are Peripheral Agents since each has only one subordinate role. $AGENT^4$ does not embody either of them and cannot be recognized as Agent. That is to say, $AGENT^1$, $AGENT^2$, and $AGENT^3$ are recognized as Agent. The definitions of <Causer> and <Controller> need to be explained before Agent can be applied to an instrument subject as personification.

      To analyze an instrument subject using Agent conditions, <Causer> and <Controller> must be understood. The conditions are the following:

(36)   <Causer condition>
     An entity is a <Causer> when the entity contains autonomous energy and capacity for causing an altered event and when the energy and capacity are recognized as the cause triggering the relevant event.
(37)   <Controller condition>
     An entity is a <Controller> when the entity has a particular movement and attribution which exist beforehand to accomplish a relevant altered event and when the entity that embodies the particular movement and attribution is recognized as involved with the feasibility until the end.

(Kusayama, 2015, p. 93, English translation is mine)

Here are concrete examples for the Agent combinations (36) and (37).

(38)   a.   <u>Mary</u> opened the door with the key.
                  <Causer / Controller>
        b.   <u>The wind</u> broke the window.
                  <Causer /*Controller>
        c.   <u>This knife</u> cut the bread.
                  <*Causer / Controller>
        d. * <u>The spoon</u> eats spaghetti.
                  <*Causer / *Controller>

(Kusayama, 2015, p. 94)

In (38a), the subject *Mary* is a person. Under conditions (36) and (37), *Mary* has autonomous energy and capacity for causing an altered event. Moreover, *Mary* in (38a) has moves to open the door, thus *Mary* is also <Controller>, which means that a particular movement is involved with the feasibility of an event. In that sense, (38a) is both <Causer> and <Controller>. In (38b), *the wind* has pressure, which contains autonomous energy, and is therefore identified as a <Causer>. However, it is not a <Controller> because *the wind* pressure lacks a special energy directed toward realizing the opening of the door. In (38c), *this knife* is not <Causer>, because it does not have autonomous energy and capacity for causing an altered event. But the instrument is <Controller> because the attribution of *this knife* is involved with the feasibility of whether it cuts or not until the end. *This knife* is made to cut something, and therefore it is necessarily equipped with the property beforehand to realize the action of cutting. In (38d), the instrument *the spoon* is neither <Causer> nor <Controller>. It is not a <Causer> because it has no energy or capacity. *The spoon* is a facilitating instrument and responsible for carrying food but not for continuing through to the end of the action by eating. In other words, the instrument in (38d) cannot eat and hence *the spoon* is not identified as a <Controller>.

The analysis of (38c, d) shows the distinction between intermediary instruments and facilitating instruments. The process of personification of an instrument can be explained in principle by the existence of "the final involvement" in <Controller>. "The final involvement" means that the attribution of the subject enables the subject to be involved with an object until the end. Intermediary instruments are recognized as Agent since they are associated with "the final involvement" in <Controller>. Facilitating instruments, however, cannot be regarded as Agent because they are neither <Causer> nor <Controller>. By examining process of personification, (29) and (30) can be distinguished and the acceptability of (31) explained. Here again are the examples from (Kusayama, 2015, p. 88);

(39)   a. *Bricks built the house. (Schlesinger, 1995, p. 99)
        b. *Those new bricks constructed a house. (Levin, 1993, p. 82)
        c. That whole-wheat flour bakes wonderful bread. (Levin, 1993, p. 82)

According to Kusayama (2015), *bricks* in (39a, b) cannot be regarded as Agent because they have neither the autonomous energy of a <Causer> nor the final involvement of a <Controller>. Not the *bricks* but a person builds the house. In contrast, *that whole-wheat flour* in (39c) is associated with the event until the end because the attribution of *that whole-wheat flour* is involved with realizing the changes in the dough through baking, although a person partially works the dough. Because of its final involvement, <Controller> is added to the *ingredient* subject in (39c). Therefore, the sentence in (39c) is personified as Agent and is acceptable. Kusayama (2015) uncovers how the process of personification works for an instrument subject and why the acceptability of the sentence in (39) differ.

5. Concluding Remarks

The analysis of an instrument subject starts from Fillmore's case grammar. In his framework, deep cases, which means thematic roles, determine surface cases through a subject choice hierarchy system. When an Agent case does not appear in a sentence, an Instrument case can be promoted to the

subject position. Fillmore (1968) analyzes an instrument subject as Instrument case. Schlesinger (1989) reconsiders an instrument subject and construes the relation between Instrument and Agent case as a continuum. He regards Instrument as Agent and introduces Naturalness Conditions 1 and 2, which are conditions that an instrument must fill to sound natural in the subject position. Moreover, he defines the Deliberation Constraint and the Mediation Constraint, which constrain the acceptability of an instrument subject when the subject cannot bear the degree of agentivity requested from a verb and a predicate in a sentence. Schlesinger (1995) deepens the study and states that the Agent case contains three features, CHANGE, CAUSE, and CONTROL. According to him, an instrument subject must include CAUSE, and the acceptability of the instrument subject depends on degrees of CONTROL instead of agentivity. Kusayama (2015) examines the process of personification for how Agent is applied to an instrument subject by redefining Agent. He proposes that Agent has two features, <Causer> and <Controller>, and that "the final involvement" element in <Controller> determines whether the personification can work. He provides theoretical explanation about the process of personification. Through following the history of an instrument subject, we can say that these analyses are related to how a person construes an event by using personification. It is important to research whether there is another process of personification, to examine how the personification relates to language limitations, and to determine other elements of personification.

References

Cook, Walter A. (1989). *Case grammar theory*. Washington D.C.: Georgetown University Press.

Fillmore, Charles J. (1968). The Case for Case. In Emmon Bach and Robert T. Harms (Eds.), *Universals in linguistic theory* (pp. 1−88). New York: Rinehart and Winston.

Fillmore, Charles J. (1971). Some Problems for Case Grammar. In Richard O'Brien (Ed.), *Monograph series on languages and linguistics* 24 (pp. 35−56). Washington D.C: Georgetown University Press.

Kusayama, Manabu. (2015). Dosashu to shihaisha to dogushugokobun (Instrumental Subjects as Agent and Controller), *Transactions of the Institute of Humanities* (The Institute of Humanities, Kanto Gakuin University), *39*, 81–114.

Levin, B., & M. Rappaport. (1988). Non-event -er Nominals: A Probe into Argument Structure. *Linguistics*, 26, 1067−1083.

Levin, B. (1993). *English verb classes and alternation: a preliminary investigation.* London: University of Chicago Press.

Nishimura, Yoshiki. (1993). Agentivity and Causation in Cognitive Linguistics. *Kansai Linguistic Society*, 13, 161−171.

Nishimura, Yoshiki. (1998). Koisha to Shieki Kobun. Nakau Minoru and Yoshiki Nishimura (Eds.), *Kobun to Jisho Kozo* (pp. 107−203). Tokyo: Kenkyusha.

Rappaport Hovav, M., & B. Levin. (1992). − er Nominals: Implications for a Theory of Argument Structure. In Stowell and E. Wehrli (Eds.), *SYNTAX and SEMANTICS VOLUME 26* (pp. 127−153). London: Academic Press Limited.

Schlesinger, Izchak M. (1989). Instruments as Agents: On the Nature of Semantic Relations. *Journal of Linguistics, 25(1)*, 189−210.

Schlesinger, Izchak M. (1995). *Cognitive space and linguistic case*. New York: Cambridge University Press.