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INTRODUCTION.

Nearly forty years have passed since the attempt to elucidate the human mind cast off the paradigm of objectivism into cognitive science. Linguistics, however, had never received until comparatively lately the idea of cognitivism in a proper way. Of course it is true that linguistics, led by Noam Chomsky, took part in the creation of cognitive science in 1956\(^1\). However, the dogma of the Chomsky theory that the linguistic ability is autonomous from the other cognitive abilities has long been repressing linguists to get the full perspective of mind. It is not until the end of 1970s that the linguists liberated from Chomskyan paradigm began to inquire into the very nature of language. Intensive research on such phenomena as category cognition, metaphor, metonymy, polysemy, historical change of word meaning etc.\(^2\) has revealed the deep rootedness of language into human experiences and the striking interrelationship between linguistic and other cognitive abilities. More and more linguists are nowadays getting interested in and symphalized with this conception, but we are still in the midst of the “Cognitive Revolution” (See Howard Gardner (1985)).

The purpose of this paper is to penetrate cognitivism more thoroughly into current linguistic research on event expressions. Owing to the pioneering accomplishments such as Leonard Talmy (1985), Willam Croft (1991) and Ronald W. Langacker (1987, 1991), the linguistic research has gained the BILLIARD-BALL MODEL, an event model which can account in a unified fashion for various facts of event expressions. There seems to be some part left unclear, however, about the BILLIARD-BALL MODEL. To put
the assertion more concretely, the interrelationship between the BILLIARD-BALL MODEL and our event conception processes is not completely evident. Therefore during this paper I would like to clarify this point and suggest a new event model complementary to the BILLIARD-BALL MODEL. I call it the MOLDGROWTH MODEL (KABIHAEMODEL in Japanese3). See (0.1) below.

(0.1) Two Types of Event Models4)
   a. BILLIARD-BALL MODEL (by Croft (1991), Langacker (1991))
   b. MOLDGROWTH MODEL (by Sadanobu)

Although the readers can know the two models in detail by reading through this paper, it would be helpful to outline briefly here the two models and one basic conception behind them (I call it FRAME-CUTOUT), before moving on to the argument. See Fig. 1.

As illustrated in Fig. 1, the BILLIARD-BALL MODEL consists of four elements: TIME, SPACE, OBJECT, and ENERGY. This model basically regards an event as a series of energy transfers from one object to another, and expresses the energy transfer by the collision of two balls. For example, when John broke a boulder with a hammer, this model regards the event as Fig. 2.
John hand hammer boulder

Figure 2. "John broke a boulder with a hammer."

The energy transfers from John to his hand, and in turn from his hand to the hammer, and then from the hammer to the boulder.

This model, originated with Talmy (1985), developed by Croft (1991) and Langacker (1991), but it is worth a mention to refer here to the difference between the two versions: strictly speaking, Croft's version is different from Langacker's (shown in Fig. 2). See Fig. 3.

According to Croft, the change of shape that happened to the boulder is also an energy transfer, a reflexive energy transfer from the boulder to the boulder itself. So he duplicates the boulder ball and adds the change to the chain. (I'll here avoid referring to his last arc in Fig. 3 for the sake of simplicity. This avoidance is irrelevant to our main subject.) In my opinion the difference is not so small as is considered generally, and Croft's version is better at differentiating causative events from merely transitive but non-causative events such as kicking the wall, but to argue this point would carry us too far away from the purpose of this paper. I shall adopt Croft's version as the BILLIARD-BALL MODEL during this paper, but the readers can think that the adoption doesn't influence the argument. Both versions regard events as
a series of energy transfers from object to object took part in some place in some time, and both versions express this by the collision of two balls.

Although the BILLIARD-BALL MODEL embodies human cognition, it seems to share some basic parts with Newtonian physics. The BILLIARD-BALL MODEL is useful to explain many aspects of event expressions, but our event conception can indeed diverge largely from such a faithful model to the real outer world. I shall in fact point out five cases below and suggest the MOLDGROWTH MODEL to explain such cases.

Before showing what the MOLDGROWTH MODEL is, it is helpful to explain the FRAME-CUTOUT, from which I claim both models are derived. See Fig. 4.

![Figure 4. FRAME-CUTOUT](image)

The FRAME-CUTOUT is not an event model but an event conception model from which the two event models just mentioned are derived. Let us now look at FRAME-CUTOUT in detail. See Fig. 5.

![Figure 5. FRAME-CUTOUT](image)

Every frame in Fig. 5. includes objects such as John and a hammer and expresses the state of the world at one moment, like a movie frame. Each
small change in the event is framed. If seen together as in a motion picture, it would look like a movie, much like the flip card stories made by children. By scanning this series of still frames, we can grasp various dynamic events, that is to say, various changes of states.

The key idea of the FRAME-CUTOUT is that all frames are not equally important for expressing events. In order to express an event, we do not have to gaze at the event every moment, without a blink. Only a few particular frames are important. If we can cut and extract these key frames from the series as in Fig. 5, we can interpolate between these key frames and express the event, just as we can interpolate two limited straight lines into a single one. (See Fig. 6.)

\[\text{Figure 6. Interpolation}\]

Of course I am not the first to have the idea that an event can be regarded as a sequence of states. The idea itself is basically shared with many researchers including Langacker (See Langacker (1987:ch.7), for example). It is just that I focus on the state from the perspective of the speaker’s event conception process and combine it with the event models. I owe this point greatly to Yukinori Takubo, whose original idea is partly expressed in Takubo (1993).

Now let us go on to the derivation of the two models. See Fig. 7.
We grasp an event by a series of several key frames, or, event slices. See Fig. 7 (a). If we focus on the object-to-object energy transfer, energy-bearing objects (the hammer in Frame 1 and the boulder in Frame 2) are highlighted, and non-energy-bearing objects (the boulder in Frame 1 and the hammer in Frame 2) as well as the two frames are neglected. In these frames the energy transfers from the hammer at one moment to the boulder at a future moment. This is none other than the BILLIARD-BALL MODEL.

Now see Fig. 7 (b). Conversely, if we do not focus on the object-to-object energy transfer, all objects are buried in frames and we take the event as a spontaneous change of state. This is what I call the MOLDGROWTH MODEL. According to this model, states themselves can convey energy and events are energy transfers from one state to another, which is to say, reflexive energy transfers by states⁹. In this case, we don't pay any attention to what object gives energy to what object in what way. We are satisfied with only the causal relation between two states, the one representing nothing and the other representing green mold.

Therefore, the higher a language's transitivity is, the more we focus on the Agent object in the initial frame and the Patient object in the last
frame, and so, we tend to conceive the event as shown by the BILLIARD-BALL MODEL. The lower a language’s transitivity is, the more we ignore the Agent object and Patient object, and so, we tend to conceive the event as shown by the MOLDGROWTH MODEL. This correlation between the transitivity and the two event models reminds us of one of the accomplishments of English-Japanese contrastive studies, suggested by Yoshihiko Ikegami (1981) as “SURU-language vs. NARU-language”. Let me show just one example of each. See (0.2).

(0.2) a. This experience taught John how to behave.
   b. この経験のおかげで、ジョンは身についた。
      kono keken -nookagede, jon-wa sahoo-ga minitsuita.
      this experience thanks to John-TOPIC manners-NOM got acquired
      “As for John, he became well-mannered, thanks to this experience.”

A single event is conceived as an action of “this experience” in English sentence (0.2a), and the same event is conceived as a change of state in Japanese sentence (0.2b). This sort of correspondence is very common, that is to say, English — action, and Japanese — state change. In this sense, Ikegami says that English has a strong character that is “SURU-language”, or DO-language, and Japanese is largely a “NARU-language”, or BECOME-language. See (0.3).

(0.3) a. SURU (DO) -language.................... (0.2a)
    b. NARU (BECOME) -language ........ (0.2b)

Therefore this paper will further clarify these ideas and give them more explanatory power in terms of the two event models mentioned above. To be certain, the BILLIARD-BALL MODEL is useful to explain many aspects of event expressions in SURU-languages, because SURU-languages consider events as actions of some objects. However, I believe that this model is not so effective concerning NARU-languages. In other words, the BILLIARD-BALL MODEL is the model for SURU-languages but not for NARU-languages. So what is a plausible model for NARU-languages? The
MOLDGROWTH MODEL is suggested. See Fig. 8 below.

![Diagram]

Figure. 8

Of course, the correlation between the transitivity and the event models mentioned above is not absolute. Indeed English, Japanese, and many other languages use both models. Even if a language shows one phenomenon which proves the applicability of one model, it does not mean that the model is always effective for every kind of behavior of that language. Close investigations will be needed for every phenomenon, and for every language.

Now, I will discuss five phenomena that have had virtually no research conducted on them thus far, and demonstrate the usefulness of the FRAME-CUTOUT and the MOLDGROWTH MODEL. A list is given in Table 1 below, with brief examples and comments.

| #1  | Existential Forms Which Apparently Do Not Mean Existence  
|     | e.g. Sometimes there are people who are too loud.  
|     | [We all know that there are ALWAYS people who are too loud in the world!]  
| #2  | Apparently Redundant Frequency Expressions  
|     | e.g. He changed wives three times.  
|     | [For a considerable number of speakers, this sentence is OK, even if we are considering a total of three wives, not just four. That is illogical!]  
| #3  | Apparently Redundant Occurrence of a Causative Morph  
|     | e.g. She made make him sick.  
|     | [Yes, this English sentence is ungrammatical. It is a literal translation from Japanese.]  
| #4  | Apparent Lack of a Causative Morph  
|     | e.g. Become it apparent whether you are going or not!  
|     | [Again, this sentence is ungrammatical. It is just a literal translation from Japanese.]  
| #5  | Apparent Disassociation between Case Marking and Motion/Standstill  
|     | e.g. The ball hit the golf club.  
|     | [Many Japanese can use this sentence for a golf shot!]  

Table 1. Five Linguistic Phenomena and Examples
1. Existential Forms Which Apparently Do Not Mean Existence

Let us begin with the first phenomenon, Existential Forms Which Apparently Do Not Mean Existence. In the following argument, I shall simply show that the MOLDGROWTH MODEL based on the FRAME-CUTOUT is effective for explaining this phenomenon. See (1.1) below.

(1.1) 声の やたら 大きい 人って、 時々 いるよね？
voice-GENITIVE too big person-TOPIC sometimes exist don't they?
"Sometimes there are people who are too loud, aren't there?"

This sentence potentially has two interpretations. One interpretation refers to the literal existence of people who are too loud. Let us suppose that people who are too loud existed in 1991, but perished in 1992, and reappeared in 1993. This is an example of a situation where this interpretation holds true. Of course, this interpretation seldom works, because we all know keenly that there have ALWAYS, not SOMETIMES, been people who are too loud in the world since the beginning of human existence.

The other interpretation, which often works, refers to our experience of encountering people who are too loud. The predicate verb “いる (iru)” of sentence (1.1) means “to exist”, but in the case of this interpretation, (1.1) apparently refers to dynamic encountering events, not to any existence.

The key idea here is what I call personal space, shown in Fig. 9, that is a subjective area surrounding an experiencer.

![Figure 9. Experiencer's personal space](image)

Since personal space moves with the experiencer, he is always located at the
center of his personal space. So even objects which actually stand still can enter, exist, and exit an experiencer's personal space in accordance with his movement. In the case of the second encountering interpretation, (1.1) refers to the frequency of events which consist of the entering, the existence, and the exiting of the experiencer's personal space by people who are too loud.

Japanese language allows the frame to show the personal space, therefore enables us to conceive a series of such dynamic encountering events as a series of key frames which reflect the existence and absence of people who are too loud in the experiencer's personal space, as in Fig. 10. This is entirely the MOLDGROWTH MODEL.

![Diagram showing personal space and dynamic encountering events](image)

"Sometimes there are people who are too loud."

**Figure 10. Explanation of phenomenon #2 using the MOLDGROWTH MODEL**

The MOLDGROWTH MODEL can thus explain why Japanese speakers express a series of these dynamic encountering events by existential forms such as "いる (iru)".

Not every language always can show this phenomenon. English is like Japanese, but in Chinese, the same event cannot be expressed by (1.2a). (1.2a) only means the literal existence of people who are too loud. In order to express this series of encountering events in Chinese, an action verb such as "看倒 (kàndào)," i.e. "come across," is needed, like in (1.2b) below.
This tells us that Chinese has some difficulties in constructing an event from a series of key frames reflecting some experiencer's personal space. But the difficulty is just a relative one, cancellable by heightening the deicticity). Chinese speaker can say (1.3), for example, while looking outwards through the windowpane on the bus which is running.

(1.3) 刚才 道 左边 有 一 家 食堂.

"Just now I saw a restaurant on the left side of the road."
2. Apparently Redundant Frequency Expressions

In the argument of Phenomenon #1, we have seen that the MOLDGROWTH MODEL based on the FRAME-CUTOUT enables Japanese and English speakers to conceive a series of dynamic events as the energy transfer from one state to another state, which is also responsible for Phenomenon #2.

What I mean by the term "frequency expression" here is the expression which refers to the number of the actualization of an event. An example of this phenomenon is (2.1) below.

(2.1) 奥さんも 生涯で 3回 変わった。
okusan-mo shoogai-de san-kai kawatta.
wife-LOCATIVE life-three times changed
"His wife changed three times in his lifetime."

The total number of wives is four" arithmetic interpretation" BILLIARD-BALL MODEL
The total number of wives is three" anti-arithmetic interpretation" MOLDGROWTH MODEL

For a considerable number of Japanese speakers, (2.1) potentially has two different interpretations on the total number of his wives. (here I will ignore the case of polygamy, for the sake of simplicity.)

In the context of an arithmetic quiz, the total number of wives must be four. So I will call this an "arithmetic interpretation". However, in the context of everyday life, the total number of wives is usually three, as in (2.2) below.

(2.2) 彼は 自分が 結婚に 何を 望んでいるかが わかっていなかった。
karewa jibungu kekkonni nano nozondeirukaga wakatteinakatta.
"He didn't know what he wanted from a marriage."

奥さんも 生涯で 3回 変わった。
okusan-mo shoogai-de san-kai kawatta.
wife-LOCATIVE life-three times changed
"His wife changed three times in his lifetime."

This interpretation is not consistent with a normal arithmetic, so I will call this an "anti-arithmetic interpretation". From a "rational" point of view, the anti-arithmetic interpretation seems to count one more wife than there actually are. This is why I call the phenomenon Apparently Redundant
Frequency Expressions.

The reader may wonder that the anti-arithmetic interpretation disappears when we change the frequency expression “three times” in (2.2) into “once” or “twice”. Yes, the anti-arithmetic interpretation is possible only when the frequency expression is more than twice. I will explain this afterwards.

Now let us consider this phenomenon from the FRAME-CUTOUT perspective. See Fig. 11.

![Figure 11. Explanation from the FRAME-CUTOUT Perspective](image)

We extract key frames from a series, and interpolate them into the event. There may be intervals when he is single, but these frames are not extracted and instead they are completely ignored on the level of key frames. All the key frames must include a wife, and so it is possible for us to conceive the event by focusing on the energy transfers from wife to wife. I will refer to this transfer of energy as the passing of a torch from one wife to the next. This is a perfect example of the BILLIARD-BALL MODEL. See Fig. 12.

![Figure 12. Explanation using the BILLIARD-BALL MODEL](image)
However, in the BILLIARD-BALL MODEL, the number of actions from object to object is always less than the number of objects by one. So, if the frequency expression is "3回(sankai)" or "three times", the number of wives must be four. Therefore, the BILLIARD-BALL MODEL can explain the arithmetic interpretation, but it cannot explain the anti-arithmetic interpretation.

Now let us try an explanation of the anti-arithmetic interpretation by the MOLDGROWTH MODEL based on the FRAME-CUTOUT. The key idea here is what I call counting buffer, shown in Fig. 13, a cognitive memory box used to hold values.

![Figure 13. Counting Buffer](image)

The counting buffer is empty at first, and we can register any kind of value in this memory box as in Fig. 13(a). Imagine that we register the value of "his wife". If we register value "Ann", it is held in the counting buffer as in (b). But when we register the next value as "Betty" as in (c), the counting buffer has two different ways of dealing with the old value "Ann". One way is simply to hold "Ann" as well as "Betty" as in (d). The other way is to hold only "Betty" and abandon "Ann". It is determined by our cognitive operation, which way is selected. In the case of our phenomenon, no women can hold more than one role (that is to say, we cannot get the anti-arithmetic interpretation of (2.1) if the first wife is identical with the third wife, for example), therefore the former way like in (d) is selected.

Now I claim that what the anti-arithmetic interpretation specifies is not the number of the torch-passings from wife to wife, but the number of
state-changes in the counting buffer. See Fig. 14.

What is essential here is that the counting buffer is empty and its initial state is "zero". So, if there are three wives, Ann, Betty, and Cathy, the value of the counting buffer changes first from "zero" into "Ann", then from "Ann" into "Ann+Betty", and finally from "Ann+Betty" into "Ann+Betty+Cathy", three times in total.

Note that the first frame in Fig. 14 does not reflect his single state in the real world. It is sure (in our society) that he is single at birth, but the frames which reflect his single state are not extracted from the series, so they do not appear as key frames. The first frame in Fig. 14 specifies the initial state in the counting buffer. See (2.3) below.

(2.3) いえも 一生で 3回 変わった。
house-TOPIC life-LOCATIVE three times changed
"His house changed three times in his lifetime".

Let us imagine that the speaker believes that he fortunately was not homeless from birth to death. In this case, there is no state like his single state mentioned above. But (2.3) has an anti-arithmetic interpretation as well as (2.2). This is why I suggest the idea of counting buffers besides the MOLDGROWTH MODEL. What is relevant to the anti-arithmetic interpretation is not his state in the extra-linguistic world, but the state of the counting buffer. Although the second, third, and fourth frames in Fig. 14 are made by registering the real world value of his wife, all the four frames in Fig. 14 reflect the states of the counting buffer, not the states of the
extra-linguistic world.

Now let us suppose that there are only three wives. We extract three frames from a series, and register the three values of his wives in the counting buffer as in Fig. 15.

Since the initial state of the counting buffer is empty, there are four different states of the counting buffer, and so it changes three times in total.

I think the reader will be able to see by these arguments above that the anti-arithmetic interpretation is as rational as the arithmetic one. The only difference is that the arithmetic interpretation specifies the number of actions, whereas the anti-arithmetic interpretation specifies the number of state-changes of the counting buffer. The arithmetic interpretation is explainable by the BILLIARD-BALL MODEL, and the anti-arithmetic interpretation is explainable by the MOLDGROWTH MODEL.

If we accept the MOLDGROWTH MODEL together with the counting buffer, at least two points are automatically explained. First, let us see (2.4) and (2.5) below.
When we shorten the time span as in (2.4), or heighten the predicate transitivity as in (2.5), the anti-arithmetic interpretation becomes a little weaker. We can easily explain this from our arguments above: in such sentences, the torch-passing action from wife to wife gets our attention and each wife becomes highlighted from the frames, which makes the event conception shown by the BILLIARD-BALL MODEL easier, and the event conception shown by the MOLDGROWTH MODEL more difficult.

Second, the predicate verb which allows the anti-arithmetic interpretation is extremely restricted. Only two verbs, "変える (kawaru)" i.e. "change (intransitive)" and "変える (kaeru)" i.e. "change (transitive)" allow this interpretation, and (2.6), unlike (2.3), does not have the anti-arithmetic interpretation because of the disappearance of the verb "変わ る (kawaru)".

We can easily explain this from our arguments: it is only those verbs that can express the state change of the counting buffer. Neither of these points would be explainable if we resorted the other analyses such as lexical decomposition of "変わ る (kawaru)" into [change [from state 1] [to state 2]].

Though English speakers seldom use intransitive sentences like (2.2), the English translation of (2.5) is ambiguous for a considerable number of English speakers, so there is hardly any difference between Japanese and
English. But not every language equally shows this phenomenon. For example, (2.7), one Chinese translation of (2.5) has only the arithmetic interpretation.

(2.7) 他 一辈子 换 了 三次 爱人.
tā yībèizi huàn le sān cì àiren.
he in lifetime change PERFECT three times wife
“He changed wives three times in his lifetime.”

As well as the first phenomenon discussed in the previous section, this tells us that Chinese has some difficulties in constructing an event from key frames reflecting subjective situations (the counting buffer, in this case).

There remains a question, why we cannot get the anti-arithmetic interpretation if the frequency expression is “once” or “twice”. My answer is as follows.

As we tend to feel that the anti-arithmetic interpretation is anti-arithmetic, this interpretation is not so strong as the arithmetic interpretation. In order for us to be able to use the anti-arithmetic interpretation, there must be some factor that forces us to focus on the change of values, rather than on the energy transfer from object to object. I think this factor is the succession of changes.

In Fig. 16(a), there is only one change from object X to Y, and this change is neither preceded nor succeeded by anything. In this case, the change is so concrete that we cannot but conceive the change as the energy transfer from X to Y. This is the event conception as shown by the BILLIARD-BALL MODEL, and so we can use only the arithmetic interpretation.

In Fig. 16(b), on the contrary, there is a succession of changes. That is, the resultant object of the first change, Y, is the initial object of the second
change. In this case, there is no object that is concerned with all these changes playing the same role, so we are prone to conceive the event not as the change of an object but as the change of value of an abstract role, thus we can use the anti-arithmetic interpretation.

The arithmetic interpretation requires only one change, so it works whenever there is a change. The anti-arithmetic interpretation needs a succession of changes, so it works only when there is a succession of changes, which means there are more than two objects. This is why the anti-arithmetic interpretation is possible only when the frequency expression is more than "twice", that is to say, frequency expressions such as "three times" or "four times".
3. Apparently Redundant Occurrence of a Causative Morph

We have seen two phenomena so far. Both of them are more or less concerned with the frequency of events, and in this sense they can both be taken as “OUTSIDE-EVENT-PHENOMENA”. Throughout these phenomena, the Japanese and English languages behave alike. However, there is a discrepancy when we turn our attention to “INSIDE-EVENT-PHENOMENA”.

Here are two INSIDE-EVENT-PHENOMENA concerned with voice, Phenomena #3 and #4, both of which show an “extraordinary” occurrence of a causative morph. Before the discussion, let us see the “ordinary” voice correspondence among predicates. This is exemplified in (3.1) below.

(3.1) a. 暗くなる.
shachoo-ga kuraku na ru.
the boss-NOMINATIVE dark become NON-PAST
"The boss makes the room dark."

b. 暗くする.
jon-ga kuraku su ru.
John-NOMINATIVE dark make NON-PAST
"John darkens the room."

c. 社長が部屋を暗くさせる.
shachoo-ga kuraku su ru.
the boss-NOMINATIVE the room-ACCUSATIVE dark make CAUSATIVE NON-PAST
"The boss makes John darken the room."

When John actualizes the event expressed by intransitive NARU-sentence (3.1a), John’s action can be expressed by transitive SURU-sentence (3.1b). And when the boss actualizes John’s event, the boss’s action can be expressed by causative SASERU-sentence (3.1c). Including the causative morph ASE, SASERU in (3.1c) is a causative form of SURU. This is the “ordinary” voice correspondence.

We can also add NARASERU-sentence to this “ordinary” voice correspondence, NARASERU is a causative form of NARU, and NARASERU-sentence is the productive causative sentence of NARU-sentence. But its usage is rather restricted. So I will omit it here.

We can explain this “ordinary” voice correspondence, in terms of the
BILLIARD-BALL MODEL, as in Fig. 17. Henceforth, we will use the BILLIARD-BALL MODEL by Croft for the sake of simplicity, but the choice of models doesn’t matter.

Figure 17. Explanation of (3.1) using the BILLIARD-BALL MODEL

However, there are a lot of “extraordinary” SASERU-sentences which break this “ordinary” voice correspondence and we cannot explain such “extraordinary” SASERU-sentences by the BILLIARD-BALL MODEL. See (3.2).

(3.2) a.  메아리가  悲しく  なる。  
Mary-NOMINATIVE  sad  become NON-PAST  
"Mary becomes sad."

b.  ジョンが  메アリを  悲しく  する。  
John-NOMINATIVE  Mary-ACCUSATIVE  sad  make NON-PAST  
"John makes Mary sad."

c.  ジョンが  メアリを  悲しく  させる。  
John-NOMINATIVE  Mary-ACCUSATIVE  sad  make CAUSATIVE NON-PAST  
"(Lit.) John makes Mary sad."

For a considerable number of Japanese speakers, when John actualizes the event expressed by intransitive NARU-sentence (3.2a), his action is usually expressed by SASERU-sentence (3.2c), rather than SURU-sentence (3.2b). As (3.3) is unnatural,

(3.3)  ??  메ア리가  悲しく  する。  
Mary-NOMINATIVE  sad  make NON-PAST  
the verb phrase “悲しくする(kanashikusuru)” is not an intransitive phrase but a transitive one. Therefore, the causative morph ASE seems redundant.
This is why I call this phenomenon the Apparently Redundant Occurrence of a Causative Morph.

Though there seem to be a few speakers who do not accept these "extraordinary" SASERU-sentences like (3.2c), we can find them everywhere, so it is not right that these sentences be considered simply errors. Let us look at a few more examples of formal written language. Below we can examine three varieties of the "extraordinary" SASERU-sentences.

(3.4) a. sonoki-ni s as e nai de
in love-DATIVE make CAUSATIVE NEGATIVE IMPERATIVE
"(Lit.) Don't make me be in love with you.”

b. Saeko-TOPIC more face-ACCUSATIVE red make CAUSATIVE POLITE PAST
"(Lit.) Saeko made make her face blush more.”

(3.4a) is from a popular song, expressing a speaker's uncontrolled affection for someone, as it deepens more and more. (3.4b) is from a novel, and (3.4c) is from a magazine. We can even find an example (3.5) in an approximately 200-year-old pornographic "UKIYOUE" novel, which was not created in a linguist's laboratory.

(3.5) omae-no tashara odoogu-o kooyuu henoko-ni s as e ta
you-GENITIVE tough cock-ACCUSATIVE such pensa-DATIVE make CAUSATIVE PAST

so it is not right that these “extraordinary” SASERU-sentences be only recently accepted.

The state whose actualization is expressed by the “extraordinary”
SASERU-sentence is often a psychological one, as in (3.4a), or a physiological one, as in (3.4b) and (3.5). The number of examples like (3.4c), where the actualized state is neither a psychological nor physiological one, is relatively small.

Five ways seem possible to analyse these "extraordinary" SASERU-sentences, as shown in (3.6),

(3.6) Five ways which seem possible to analyse the "Extraordinary" SASERU-sentence

A: A noun phrase is omitted because it is the same as the causer noun phrase.
B: A noun phrase is omitted because it is the same as the cause noun phrase.
C: A noun phrase is omitted because it is not so important.
D: SASERU is not the causative form of SURU, but a causative auxiliary itself.
E: The causative morph ASE in SASERU expresses the energy transfer from state to state.

but closer examination shows that A, B, C, and D are invalid and only E is right.

Let us examine Analysis A first, which derives the "extraordinary" SASERU-sentence such as (3.7a) from (3.7b) by an omission operation of the noun phrase which is the same as the causer noun phrase.

(3.7)a. (3.2c)

John-NOMINATIVE Mary-ACCUSATIVE sad
"(Lit.) John makes Mary sad."

b. John-DATIVE Mary-ACCUSATIVE sad
"John makes himself make Mary sad."

Analysis A has at least three defects. First, sentence (3.7b) is unnatural, so this analysis forces us to make a natural sentence from an unnatural sentence by omission, which is strange. Second, Analysis A assumes the omission operation of a noun phrase, but the speakers do not have any feeling of omission. Third, there are examples which Analysis A cannot account for. For example, see (3.8) below.
As the complement sentence of “extraordinary” SASERU-sentence (3.8a), Analysis A assumes (3.8b), but (3.8b) is quite strange for all speakers, whereas (3.8a) is OK for at least some speakers. Therefore we cannot adopt Analysis A.

Now let us examine Analysis B, which derives the “extraordinary” SASERU-sentence such as (3.9a) from (3.9b) by an omission operation of the noun phrase which is the same as the cause noun phrase.

(3.9)a. = (3.2c)

All the three defects of Analysis A just mentioned also apply to Analysis B. First, (3.9b) is unnatural, so this analysis forces us to make a natural sentence from an unnatural sentence, which is strange. Second, the speakers do not have any feeling that these “extraordinary” SASERU-sentences lack noun phrases. Third, there are examples which Analysis B cannot account for. For example, see (3.10) below.
As the complement sentence of "extraordinary" SASERU-sentence (3.10a), Analysis B assumes (3.10b), but (3.10b) is semantically contradictory and strange, whereas (3.10a) is OK. Therefore we cannot adopt Analysis B.

As well as Analyses A and B, Analysis C regards the "extraordinary" SASERU-sentence as the omission of a noun phrase. But unlike Analyses A and B, Analysis C does not specify the noun phrase any more. According to this analysis, the referent of the omitted noun phrase can be best described as "someone suitable", and its expression is omitted because the speaker admits little importance to it. See (3.11) below.

(3.11) すく 原因 を 調べ させ ます から、お待ち下さい。
sugu gomin-o shirabe sase masu kara omachikudasai.
right now cause-ACCUSATIVE investigate CAUSATIVE POLITE therefore please wait
"I would make (someone) investigate the cause right now, so wait a moment, please".

(3.11) is perfectly natural as a boss’s words in order to detain an infuriated consumer who is going out of the company straight to the consumer center to complain about some trouble, although the boss does not express the person who is made to investigate the cause of the trouble. This omission occurs because the boss does not care who the person in charge is. Indeed it is quite possible that the boss never know the person at all. Likewise, Analysis C derives the "extraordinary" SASERU-sentence (3.12a) from (3.12b) by an omission operation of the noun phrase which is unimportant.
Analysis C looks better than Analyses A and B. Though (3.12b) sounds a little unnatural, it is not so bad as (3.7b) and (3.9b). But again, a closer look shows that this analysis is invalid. The speakers of the “extraordinary” SASERU-sentence such as (3.12a) do not have any feeling of omission. That is to say, they cannot supplement the noun phrase which according to Analysis C is omitted by the speakers themselves. In this respect, there can be drawn a clear line between the “extraordinary” SASERU-sentences and sentences such as (3.11), where the speaker can supplement the noun phrase such as “John”, “Tom”, or at least “someone suitable”.

So what about Analysis D? This analysis is what Shigeyuki Kuroda (1990) supported. Unlike Analyses A, B, and C, Kuroda does not try to identify the “extraordinary” SASERU with the “ordinary” SASERU. Instead of that, he denies the voice correspondence between SURU and “extraordinary” SASERU. That is to say, he argues that the “extraordinary” SASERU is not the causative form of SURU any more, but a causative auxiliary itself.

Kuroda’s analysis has at least two defects. First, his analysis cannot explain all the “extraordinary” SASERU’s concerning free/bound distinction. By a common view, Japanese auxiliaries are bound by definition, but we can insert particles such as WA immediately before the “extraordinary” SASERU’s in the sentences mentioned so far as in (3.13), which means these “extraordinary” SASERU’s are not bound but free.
(3.13) a. = (3.2c)  

<table>
<thead>
<tr>
<th>John NOMINATIVE</th>
<th>Mary ACCUSATIVE</th>
<th>make CAUSATIVE NON-PAST</th>
</tr>
</thead>
<tbody>
<tr>
<td>JOHN makes make Mary sad.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Taking this into consideration, Kuroda argues that the "extraordinary" SASERU-sentence is a special case where the causative auxiliary "SASERU" is free. However, some "extraordinary" SASERU's are in fact not free but bound, as in (3.14).

(3.14)  

a.  

<table>
<thead>
<tr>
<th>Thatsinger NOMINATIVE</th>
<th>this program LOCATIVE</th>
<th>appear NON-PAST</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;That singer appears on this program.&quot;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

b.  

<table>
<thead>
<tr>
<th>Thatsinger NOMINATIVE</th>
<th>this program LOCATIVE</th>
<th>appear CAUSATIVE NON-PAST</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;(Lit.) The manager makes that singer on this program.&quot;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

c.  

<table>
<thead>
<tr>
<th>Thatsinger NOMINATIVE</th>
<th>this program LOCATIVE</th>
<th>appear CAUSATIVE NON-PAST</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;(Lit.) The manager makes that singer on this program.&quot;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Though (3.14a) is not a NARU-sentence, (3.14b) expresses a manager's actualization of the event expressed by (3.14a), and (3.14b) is nothing but an "extraordinary" SASERU-sentence. The "extraordinary" SASERU in (3.14b) is bound, because we cannot insert particles such as WA immediately before SASERU, as in (3.14c).

There is another defect which Kuroda's analysis has. Let us see (3.15) below.
Before pointing out the second defect of Kuroda's analysis, I think I must give a short explanation of (3.15a) lest the readers become confused. In (3.15a), SURU is an intransitive verb, meaning "become". As we have seen, the Japanese verb SURU is basically a transitive verb, but it changes into an intransitive verb in accordance with the words which precede it. Note that this intransitive usage of SURU does not undermine our discussion. In examples discussed so far, the verb SURU does not have an intransitive (at least a relevant intransitive) usage, as we have already ascertained the unnaturalness of (3.3).

Now, for most Japanese speakers, the meaning of (3.15b) is virtually the same as that of (3.15a). So, in (3.15b), one passive morph seems redundant, exactly parallel with our causative phenomenon. If Kuroda's analysis for our phenomenon were right, the "extraordinary" SARERU would be a passive auxiliary itself, just as the "extraordinary" SASERU would be a causative auxiliary. However the passive auxiliary is not SARERU but (R)ARERU, at least by a common view. Even if we admit this "extraordinary" SARERU as a passive auxiliary, the problem of the free/bound distinction arises again, because we can insert particles immediately before SASERU in (3.15b). Therefore, we cannot accept Kuroda's analysis. "Extraordinary" SASERU is a causative form of a transitive verb SURU.

To conclude, all four ways of analysing the "extraordinary" SASERU-
sentences are incorrect. See (3.16) below.

(3.16) Five ways which seem possible to analyse the “Extraordinary” SASERU-sentence
A: A noun phrase is omitted because it is the same as the causee noun phrase.
B: A noun phrase is omitted because it is the same as the causee noun phrase.
C: A noun phrase is omitted because it is not so important.
D: SASERU is not the causative form of SURU, but a causative auxiliary itself.
E: The causative morph ASE in SASERU expresses the energy transfer from state to state.

What is most important for the argument is the failure of Analyses A, B and C, which try to identify “extraordinary” SASERU with “ordinary” SASERU. In order to justify this identification, they try to find a missing noun phrase, that is to say, a missing ball in the BILLIARD-BALL MODEL. The failure of these three ways tells us that we cannot explain the “extraordinary” SASERU at all as long as we use only the BILLIARD-BALL MODEL. The BILLIARD-BALL MODEL can explain lexical causative SURU-sentences such as (3.17a) and also productive causative NARASERU-sentences such as (3.17b), as in Fig. 18, but it cannot explain “extraordinary” SASERU-sentences such as (3.17c).

(3.17)
a. 親父は 僕を、自分と 同じ プロレスラーに たかった みたいだね。
oyaji-wa boku-o, jibun-to onaji puroresurari-ni takatta mitai-dane.
dad-TOPIC I-ACCUSATIVE self-with same pro-wrestler-DATIVE make want PAST I think
“(Lit.) I think dad wanted to make me a pro-wrestler as good as he was.”

b. 親父は 僕を、自分と 同じ プロレスラーに ならせ たかった みたいだね。
oyaji-wa boku-o, jibun-to onaji puroresurari-ni narase takatta mitai-dane.
dad-TOPIC I-ACCUSATIVE self-with same pro-wrestler-DATIVE become CAUSATIVES want PAST I think
“(Lit.) I think dad wanted to make me become a pro-wrestler as good as he was.”

c. 親父は 僕を、自分と 同じ プロレスラーに させて たかった みたいだね。
oyaji-wa boku-o, jibun-to onaji puroresurari-ni sazase takatta mitai-dane.
dad-TOPIC I-ACCUSATIVE self-with same pro-wrestler-DATIVE make CAUSATIVES want PAST I think
“(Lit.) I think dad wanted to make me a pro-wrestler as well as he.”

Figure 18. Explanation of (3.17ab) using the BILLIARD-BALL MODEL
So let us try Analysis E, which is my analysis. This analysis explains the "extraordinary" SASERU-sentences such as (3.17c) using both the BILLIARD-BALL MODEL and my MOLDGROWTH MODEL. Fig. 19 is an example using this combined analysis.

Figure 19. Explanation of (3.17c) using the MOLDGROWTH MODEL as well as the BILLIARD-BALL MODEL

In Figure 19, there are four frames extracted from a series, three of which are also extracted in the case of lexical causative SURU-sentence (3.17a) and productive causative NARASERU-sentence (3.15b). The three frames are those, the one representing the initial state “I am not a pro-wrestler”, the one representing the final state, “I am a pro-wrestler,” and the one representing the intermediate state “Dad’s urging is finished.” Besides these three frames, there is also extracted one more frame representing the intermediate state, “My mind is made up,” so four frames in total.

The extraction of these four frames is motivated by the differences between the processes connecting these frames. Let us see all the processes in order. The first process, which connects the first and the second frames, is the process which dad can control. Of course, dad does not have to necessarily control this process, but he potentially CAN. The second process, which connects the second and the third frames, is my mind-internal process. Through this process, my mind is made up, and I myself cannot have a control over this process, let alone dad. The third process, which connects the third and the fourth frames, is the process of my making efforts in order to become a pro-wrestler. This process is controlled by me. The first and second processes are drastically different from each other, and so are the second and third, which justifies the extraction of these four frames connected by
three processes.

This analysis tells us the answer of the questions (3.18a) and (3.18b).

(3.18)a. Why does the “extraordinary” SASERU often appear in the sentences expressing the actualization of psychological or physiological states?

b. What is the nuance of the “extraordinary” SASERU-sentences?

According to this analysis, the essence of our phenomena lies in the second process in Fig. 19, which is an energy transfer from state to state, carried by no object. This process manifests an agnostic view that things can somehow happen without any particular reason, that results cannot completely be ascribed to a cause. We can easily have this agnostic view on the actualization of psychological or physiological states, that nothing can perfectly determine human mental or physical conditions. Indeed, we are sometimes not sad when we should be, and we are sometimes sad when we cannot find any reason for it. We get sick or remain healthy without any particular cause. Nothing can ignite our psychological or physiological mechanisms without fail. See Figs. 20 and 21 below. This is the answer of question (3.18a).

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**Figure 20. Explanation of (3.2c) using the MOLDGROWTH MODEL as well as the BILLIARD-BALL MODEL**

**Figure 21. Explanation of (3.4c) using the MOLDGROWTH MODEL as well as the BILLIARD-BALL MODEL**

Note that neither the first nor the second process in Fig. 18 includes the second process in Fig. 19. The first process of Fig. 18 is the same as that of
Fig. 19, and the second process in Fig. 18 is identical to the third process in Fig. 19. Since we are arguing on the level of the event conception, not on the level of the event itself, we do not have to look for the process in Fig. 18 which corresponds to the second process in Fig. 19. It is just that we do not recognize such an agnostic process in the case of Fig. 18. Now the answer of (3.18b) is apparent. Compared with the lexical causative SURU-sentences such as (3.17a) and the productive causative NARASERU-sentences such as (3.17b), the causer's urging is most indirect in the "extraordinary" SASERU-sentences such as (3.17c). This is due to the "extraordinary" SASERU-sentences having the three processes from the initial state to the final state.

Though the second agnostic process is carried by no objects, there are three processes in the "extraordinary" SASERU-sentences, like "ordinary" SASERU-sentences. So, motivated by this analogy, we express the conceived event which includes such an agnostic process by the "extraordinary" SASERU-sentences.

The agnostic view mentioned above basically means the inability to manipulate events. So when there is only a state-change that is not manipulated, the agnostic process is not recognized. Therefore we do not have the "extraordinary" SURU-sentence whose meaning is virtually the same as that of the NARU-sentence. This is why SASERU in question lacks the voice correspondence and seems redundant.

In the end, the apparently redundant occurrence of a causative morph in the "extraordinary" SASERU-sentence is not in fact the redundant occurrence in the "extraordinary" sentence. It has the legitimate cognitive and pragmatic motivation explained by the combination of the BILLIARD-BALL MODEL and my MOLDGROWTH MODEL.

The combination of both models as in Figs. 19 through 21 may tempt us to regard the state as a special kind of object and the MOLDGROWTH
MODEL as a special kind of the BILLIARD-BALL MODEL. This is indeed the point which Masayoshi Shibatani once made strongly to me, but I will refrain to do so here for at least three reasons. First, unlike regarding events as objects, regarding states as objects seems unnatural, since the state, the world’s situation at one moment, hardly looks like the object. Second, the energy transfer itself distinguishes states from objects. Concretely, the energy transfers directly from object to object, or from state to state, but it cannot transfer directly from object to state nor from state to object. Third, regarding states as objects does not have any motivation, since we have already seen that the BILLIARD-BALL MODEL is not the primitive model but the derivated model from the FRAME-CUTOUT. In this respect, I think rather the BILLIARD-BALL MODEL should be regarded as a special kind of the MOLDGROWTH MODEL, the special case where the energy in a state is maldistributed in one object’s location.

It is not yet clear whether other languages show this phenomenon. English generally does not show it, but there may remain a small possibility of analysing idioms such as (3.19) shown below as the counterpart of the Japanese “extraordinary” SASERU-sentences.

(3.19)

We can hardly imagine that pre-historic age when we had to make do without television.

[from an entrance examination, Keio University, 1985]
4. Apparent Lack of a Causative Morph

We have just seen the Apparent Redundant Occurrence of a Causative Morpheme, and here is the reverse phenomenon which I call the Apparent Lack of a Causative Morph. The FRAME-CUTOUT is necessary in order to explain it. See (4.1) below.

(4.1a) 行く のか 行かない のかが はっきり す る。
iku noka ikanai noka-ga hakkiri su ru.
"(Lit.) Whether somebody is going or not becomes apparent."

(4.1b)  Watashi-wa 行く のか 行かない のを はっきり す る。
watashi-wa iku noka ikanai noka-o hakkiri su ru.
"(Lit.) I become it apparent whether somebody is going or not."

(4.1c) 行く のか 行かない のを はっきり さ せ る！
iku noka ikanai noka-o hakkiri sai se ru!
"(Lit.) Make it apparent whether somebody is going or not!"

(4.1d) 行く のか 行かない のを はっきり し ろ！
iku noka ikanai noka-o hakkiri shi ro！
"(Lit.) Become it apparent whether somebody is going or not!"

(4.1a) is natural but (4.1b) is unnatural, so the verb phrase "hakkirisuru" has an intransitive usage but does not have a transitive one, at least not a prototypical transitive usage. However, in commanding the actualization of the event expressed by SURU-sentence (4.1a), a considerable number of Japanese speakers can use not only SASERU-sentence (4.1c) but also SURU-sentence (4.1d). So (4.1d) breaks the "ordinary" voice correspondence mentioned in the previous section. This is why I call it Apparent Lack of a Causative Morph.

As Fig. 22 shows, the BILLIARD-BALL MODEL can explain (4.1c) but cannot explain (4.1d).
Since there are no less than three balls in Fig. 16, the BILLIARD-BALL MODEL cannot but have two processes, the one is the process of BECOME and the other is the process of CAUSATIVE.

Now let us focus on the ambiguity of SURU-sentence (4.1a), which has two interpretations, shown below.

(4.2)a. Inner Interpretation: whether somebody is going or not is determined inwardly, and it becomes apparent to himself/herself.

b. Outer Interpretation: whether somebody is going or not is manifested, and it becomes apparent to everyone.

SASERU sentence (4.1c) has both of these interpretations, as well as (4.1a), but "extraordinary" SURU-sentence (4.1d) usually has only the outer interpretation (4.2b).

In the case of inner interpretation (4.2a), the first process in Fig. 22 expresses the action of expelling the other subjects from one's mind and concentrating on the determination of whether somebody is going or not. This does not guarantee actualization of the second process, as we often fail to determine problems no matter how hard we concentrate on them. On the contrary, in outer interpretation (4.2b), the first process in Fig. 22 expresses the action of saying whether somebody is going or not. This necessarily and immediately actualizes the second process.

Now let us see Fig. 22 in terms of the FRAME-CUTOUT. This is Fig. 23 shown overleaf.
In the case of outer interpretation (4.2b), it is relatively easy for us to merge the first and second processes in Fig. 23 into a single process as in Fig. 24 and express the event by SURU-sentence (4.1c), which is analogically motivated not from the number of objects but from the number of processes. This is why the "extraordinary" SURU-sentence (4.1d) is natural.

So why is SURU-sentence (4.1b), unlike SURU-sentence (4.1d), unnatural? Let us recall Phenomenon #3. In Phenomenon #3, a key frame which is usually not extracted into the BILLIARD-BALL MODEL is extracted, but the other key frames in the BILLIARD-BALL MODEL are extracted. On the contrary, Phenomenon #4 essentially is neglecting a key frame usually extracted into the BILLIARD-BALL MODEL and it gives more transformation to the BILLIARD-BALL MODEL. So it is more difficult for Phenomenon #4 to occur. Indeed, the number of examples is not so large. For Phenomenon #4 to occur, the support of illocutionary force is often needed. The illocutionary force of (4.1d) is a willy-nilly, prompt command and it increases the hearer's agentivity in his requested action and makes it easier to regard the whole event as a hearer's action.
5. Apparent Disassociation between Case Marking and Motion/Standstill

So far we have seen four linguistic phenomena shown in the Japanese language. All of them prove the effectiveness of the FRAME-CUTOUT, from which the MOLDGROWTH MODEL as well as the BILLIARD-BALL MODEL are derived. As for the first two phenomena, English behaves like Japanese, but as for the remaining two phenomena, a discrepancy arises. I think this is natural, first because English has a strong tendency of SURU-language, and second because the remaining two phenomena are nearer to the nucleus of the sentence. See Fig. 25 below.

What I mean by nucleus is that it is the most essential part of the sentence. In order to express the event, we usually have to use noun phrases which refer to the objects, and verb phrases which refer to the relationships between the objects. This means that that the nearer we approach to the sentence nucleus, the more we are forced to focus on the energy transfer from object to object. Thus we conceive the event as shown by the BILLIARD-BALL MODEL, rather than as shown by the MOLDGROWTH MODEL. This is why I made the distinction between these phenomena, by calling the first two OUTSIDE-EVENT-PHENOMENA and the remaining two INSIDE-EVENT-PHENOMENA.

Now, here is another INSIDE-EVENT-PHENOMENON, Phenomenon #5, which is concerned with case markings of noun phrases, therefore still nearer to the sentence nucleus. From this we can expect that English does not behave like Japanese concerning this phenomenon, and it is true.

Before showing this phenomenon, I will first give the reader a brief
explanation of Japanese case markers GA and NI. See (5.1) below.

(5.1) ジョンが 図書館に 行った。
jon-ga toshokan-ni i tta.
"John-NOMINATIVE library-DATIVE go PAST"

"John went to the library"

As shown in (5.1), it is often the case that GA marks the noun phrase which expresses the moving object and NI marks the noun phrase which expresses the destination which is still. But there are exceptions. See (5.2) below.

(5.2) 荷物が 水に 浸か った。
nimotsu-ga mizu-ni tsuka tta.
luggage-NOMINATIVE water-DATIVE become soaked PAST
"The luggage was becoming soaked."

We can use this sentence in the situation that the water level did not move and someone dropped the luggage into the water. In this case, the case marking by GA and NI is the same as the case of (5.1) above. However, we can also use (5.2) even in the situation shown by Fig. 26.

\[
\begin{align*}
\text{a.} & \quad \text{ceiling} \\
& \quad \text{rope} \\
& \quad \text{luggage} \\
& \quad \text{water} \\[5pt]
\text{b.} & \quad \text{---} \quad \text{---} \\
& \quad \text{---} \quad \text{---} \\
& \quad \text{---} \quad \text{---} \\
& \quad \text{---} \quad \text{---}
\end{align*}
\]

Figure 26.

In, Fig. 26, the luggage did not move, as it is hung by a rope from the ceiling. The shift from state (a) to state (b) is due to the rise in the water level. In this case, the object expressed by the GA-noun phrase is not the moving water, but the luggage, which was not moving. The object expressed by the NI-noun phrase is the water. Let us look at another exception.
We can use this sentence in the situation where he ran behind the bus. But we can use the same sentence even in the situation like Fig. 27.

In Fig. 27, he didn’t move. The shift from state (a) to state (b) is due to the movement of the bus. In this case, the object expressed by the GA-noun phrase is not the moving bus, but the man who was standing still. The object expressed by the NI-noun phrase is the bus.

These exceptions illustrate the case marking system shown in (5.4) below concerning the difference between GA and NI.

For example, the verb "浸かる (tsukaru)", i.e. "become soaked" specifies the change of moisture as being significant. So it does not matter which object moved and which object didn’t. What is important is which object undergoes the change of moisture. The verb "隠れる (kakureru)", i.e. "become hidden" specifies the change of visibility as being significant. So what is important is which object undertakes the change of visibility.

Now, let us look at Phenomenon #5. Verbs which apparently specify the change of location as being significant like "go" sometimes seem to cancel this apparent specification. See (5.5) below.
(5.5)a. クラブが ボールに 当たった。
kurabu-ga booru-ni ata tta.
club-NOMINATIVE ball-DATIVE hit PAST
“(Lit.) The golf club hit the ball.”

b. ボールが クラブに 当たった。
booru-ga kurabu-ni ata tta.
ball-NOMINATIVE club-DATIVE hit PAST
“(Lit.) The ball hit the golf club.”

For expressing a golfshot, many Japanese can use not only (5.5a) but also (5.5b). This is why I call the phenomenon Apparent Disassociation between Case Marking and Motion/Standstill. I did not say “all Japanese speakers”, because there are some Japanese speakers who do not accept the use of (5.5b) for expressing a golfshot. But they are relatively small in number, as far as my research has indicated. Let me show some examples which were not created in a linguist’s laboratory. See (5.6) below.

(5.6)
a. クラブ・フェイスの 真実に 球が 当たることが 第一。
kurabu-kesu no masin-ni tama-ga daichi.
club face-GENITIVE center-DATIVE thing-NOMINATIVE most important
“It is most important that (Lit.) the ball must hit the center of the clubface.”
[from a golf instruction book Kihon Besuto Gorufu by Hiroshi Imai 1991]

b. 一九五四年 十月三〇日。 アメリカの アラバマ州に すむ ホッジス 夫人は
senkyuuhyakujunigounen juichigatsujuuniguni, amerika-no arabanashuu-ni suumu hojitsu huji-n-va
飯食を 終えた 午後のひととき いつものように 居間の 長椅子に 体を 横たえて 午睡を
chuushoku-o oeta gogonchitotoki itsumonoyouchi ima-no nagaisu-ni karada-o yokotaete hirun-o
とっていた。すると、そこに バリバリドリン と すさまじい 音がして。 夫人は びっくり仰天
totteita, suruto, sokoni baribaridoshin to susamaji oto-ga shita, huji-va bokurigyouoten
して とびきた。[中略] それから そこそして 腰に 痛みを 感じた。[中略]
shte tobiokita. [omission] sorekara sukoshishite keshi-ni itami-o kanjita. [omission]

“On February 30th 1954, Mrs. Hodges, who lives in Alabama State in U.S.A had finished lunch and like always laid down on the lounge room sofa and was taking a nap. Then with a crunch and a thump, there was a tremendous sound and astonished. Mrs. Hodges jumped up. [omission] After a little while, she felt a pain in her waist. [omission]”

イン石に ぶつかった けがをした という 記録は。 現在までのところ これ一つである。
imakino butsukatta keiwa-to shita toonyu kirokuwa, genzaimadenotokoro korehitotsuudaru.
meteorite-DATIVE hit and got injured that record to this day only one
“Today there is only one record of (Lit.) somebody hitting a meteorite and getting injured.”
[from a book Uchuu no Nazo Omoshirouyuru Zatsugaku Chishiki by Chuuta Tsubouchi et al. (eds.) 1990]
When the ball is mistakenly hit into the woods, (the player must then hit the ball out of woods, therefore swing the golf club in the wood despite the obstructing foliage, so) it is quite often that (Lit.) the branches and small trees hit the golf club. As the swing is very delicate, on the up-swing, even just a little contact will break the correct rhythm and lead to a bad shot.

(5.6a) is an example of the verb "当たる (ataru)", and (5.6b) "ぶつかる (butsukaru)", and (5.6c) "触れる (fururu)", all are verbs of impact.

Three ways seem possible to analyse these sentences, as shown in (5.7) below,

(5.7) Three ways which seem possible to analyze the sentences with "strange" case markings
A: The speaker conceives a moving object as not moving, and a static object as moving.
B: The predicate verbs are in fact passive verbs, meaning "to be hit" instead of "to hit".
C: The predicate verbs are high in symmetry.

but closer examination shows that A and B are invalid and only C is right.

Let us examine Analysis A first, which tries to preserve both the case marking system (5.4) and the assumption that these verbs in question specify the change of location as being significant. In order to do so, Analysis A attributes the "strangeness" of the case marking in question to the "strangeness" of motion/standstill cognition by the speaker.

Indeed, on a train which is standing still, we do sometimes feel that we are starting to move, when we see through the window another train begin to move. In this case, the reversal conception of motion/standstill comes about because we focus on the next train moving. Analysis A says that it may be possible to get this reversal conception that the golf club did not move and that the ball moved toward it, when we focus on the moving club.

This analysis is not right. In the case of expressing the collision of Mrs.
Hodges and a meteorite, when we use such sentences with "strange" case markings as "ホッジス夫人がイン石にぶつかった（hojjisuhujin-ga inseki-ni butsukatta）", we usually focus on Mrs. Hodges on the sofa rather than the moving meteorite. Why can we say so without focusing on the moving meteorite? No matter how hard we focus on the library, we can never say "The library went to John." instead of "John went to the library." Why cannot we? Analysis A gives no answer for these questions. Therefore we cannot adopt Analysis A.

Analysis B regards the verbs in question as passive verbs. For example, "ATARU" does not mean "to hit" but means "to be hit". Indeed, non-literal English translations of the examples above will use a passive form "to be hit". However, this analysis doesn't explain our phenomenon. At best, it is a paraphrase. If the verbs such as "ATARU" are passive ones, why are not the verbs such as "IKU", i.e. "go" passive ones? Analysis B gives no answer for this question. Therefore we cannot adopt Analysis B.

Now let us try Analysis C, which is my analysis, which pays attention to the fact that the verbs in question have a strong power to impose an equal position on the two objects in the event. In other words, these verbs deal with the two objects equally. I will call this characteristic of the verbs in question "high symmetry". We can prove this level of symmetry by testing the paraphrasability in sentences with a coordinated noun phrase structure. See (5.8) below.

(5.8) a. Xが Yに 当たった.
   X-NOMINATIVE Y-DATIVE hit PAST
   "X hit Y."

   b. Xと Yが 当たった.
   X-and Y-NOMINATIVE hit PAST
   "X and Y hit each other."

(5.8a) is generally paraphrasable with (5.8b), as in (5.9) overleaf.
On the contrary, these verbs which don't show "strange" case markings don't allow such a paraphrase. See (5.10) below.

When the objects X and Y are too different from each other, the paraphrase is in fact rather strange, as in (5.11) below.

But this does not mean that the verb "当たる (ataru)" shows low symmetry, because it is caused by another factor, which is, the sentences with a co-ordinated noun phrase structure dislikes that the objects X and Y are too different from each other. So we can assume the verbs in question are high in symmetry.
When a verb is high in symmetry, it gives an equal position to the two objects in the event. In other words, highly symmetrical verbs do not accept the BILLIARD-BALL MODEL. They accept only the MOLDGROWTH MODEL. See Fig. 28.

The BILLIARD-BALL MODEL, as in Fig. 28(a), differentiates between the two objects by regarding one as the source of energy and the other as the receptor of energy. So it is not compatible with the high symmetry of verbs in question.

See Fig. 28(b). On the contrary, in the MOLDGROWTH MODEL, neither of the objects is concerned with the energy transfer, therefore this model does not differentiate between the two objects at all. It is compatible with the high symmetry of the verbs in question.

As the MOLDGROWTH MODEL does not have any change other than the spontaneous change of states, the highly symmetrical verbs do not specify any kind of change as being significant for case markings. So both the location and condition changes that the objects undergo through the event, can motivate the case markings. That is to say, there is an ongoing struggle between the location change and the condition change, concerning case
markings of noun phrases.

The location change is visible for some period, so it's usually stronger than the condition change. Therefore, we usually give dominance to the location change and mark the case of noun phrase in accordance with the degree of location change to which the two objects undergo through the event, which means, we tend to mark a noun phrase expressing a moving object by GA, and a noun phrase expressing a static object by NI.

However, if we focus on the static object, and pay attention to what will become of it, the condition change which the static object undergoes is highly estimated, and so it can overcome the location change which the moving object undergoes. When it does overcome the location change, we mark a noun phrase expressing a static object by GA, and mark a noun phrase expressing a moving object by NI. This the case marking in the "unusual" way.

In playing golf, we tend to focus on the ball rather than on the golf club. We pay attention to what will become of the ball. The golf club is only a tool for making the ball fly. As a result of it, the condition change that the ball has the power to fly can be highly estimated and then it can overcome the location change which the golf club undergoes through the event.

In Mrs. Hodges' case, we tend to pay attention to the change of the animate object rather that of the inanimate object. So any conceivable change in Mrs. Hodges' condition can overcome the change which a meteorite undergoes.

Analysis C can account for at least three aspects of our phenomenon, which seems difficult to be accounted for by Analyses A and B.

First, as mentioned just above, Analysis C can account for the fact that the sentences with this "strange" case markings tend to be more acceptable when the static object is animate and the moving object is not.

Second, it can account for the fact that the higher a sentence's transitivity is, the less acceptable these "strange" case markings are. See (5.12).
In (5.12), the former half is an example of the "unusual" intransitive sentence, though the GA noun phrase is omitted. the latter half is an example of the "unusual" transitive sentence, and O is used instead of GA to mark the noun phrase which expresses the static ball. The acceptability of the latter half is relatively lower for some speakers than that of its intransitive counterpart.

Third, Analysis C can account for the difference between Japanese and English. Unlike Japanese, English does not show this phenomena, because it does not allow the MOLDGROWTH MODEL concerning the INSIDE-EVENT-PHENOMENA. Most English verbs of contact are low in symmetry as in (5.13).

(5.13) a. *The club and the ball hit.
   b. *The club and the ball touched.
   c. The club and the ball collided.

and even such highly symmetrical verbs as "collide" avoid using the MOLDGROWTH MODEL by assuming the bi-directional energy transfers from object to object.

In the end, a "strange" case marking is in fact not strange. It has a conitive and pragmatic motivation which is explicable by the MOLDGROWTH MODEL.

Incidentally, there are similar kinds of phenomenon. For example, see (5.14).
When we finished pouring the liquid into the glass, we can say both (5.14a) and (5.14b). But, for the sake of simplicity, I will refrain from referring to them. For closer look at these phenomena, see Sadanobu (1991b).
6. CONCLUSION

We have discussed five linguistic phenomena that have had virtually no research conducted on them. We have tried to present here a general cognitive-pragmatic explanation for them, using the two event models concerned with our event conception. They are the BILLIARD-BALL MODEL, and the MOLDGROWTH MODEL, both of which are derived from the primitive event conception model, FRAME-CUTOUT. Throughout the arguments, the seven points below were shown.

(6.1) In addition to TIME, SPACE, OBJECT, and ENERGY, we should add STATE as an element of our event model. We slice an event into a series of frames each of which reflects the state of the world at one moment, extract several key frames from the series, and interpolate them. This is what we call the FRAME-CUTOUT. Both the BILLIARD-BALL MODEL and the MOLDGROWTH MODEL are derived from the FRAME-CUTOUT.

(6.2) The BILLIARD-BALL MODEL shows an event conception of an event being a series of energy transfers from object to object. This model is derived through highlighting the energy-bearing-objects in a series of key frames and neglecting all the rest. It realizes the essentialness of SURU-language, which expresses an event as an action of some object.

(6.3) The MOLDGROWTH MODEL shows an event conception of an event being a series of reflexive energy transfers by states. This model is derived through highlighting key frames and neglecting all the objects in them. It realizes the essentialness of NARU-language, which expresses an event as a spontaneous change of some state.

(6.4) The usage of these two models are basically concerned with the transitivity of the linguistic expression. The higher the transitivity, the more we tend to conceive the event as shown by the BILLIARD-BALL MODEL. The lower it is, the more we tend to conceive the event as shown by the MOLDGROWTH MODEL.

(6.5) The usage of these two models are also concerned with the notion of the sentence nucleus. This notion consists of the verb and the obligatory noun phrases which the verb requires. The sentence nucleus correlates with our conception of objects and energy transfers between them, so at the area of the sentence nucleus, it is relatively difficult to use the expression motivated by the conception shown by the MOLDGROWTH MODEL.
(6.6) English, having a strong character of SURU-language, does not show any phenomenon that proves the applicability of the MOLDGROWTH MODEL at the area of the sentence nucleus. But it does show some phenomena of this model at the area far from the sentence nucleus. To some extent, English also has a character of NARU-language 8).

(6.7) The five linguistic phenomena discussed in this paper seem irrational at first glance, but they are in fact rational and natural. Each of them has the cognitive and pragmatic motivation explained by the MOLDGROWTH MODEL based on the FRAME-CUTOUT.

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NOTES.

1) Here I am referring to the symposium held at MIT. See Howard Gardner (1985) for further details.


3) I am indebted to Satoshi Kinsui for his advice on the name of KABIHAEMODEL.

4) STAGE MODEL, which is Langacker's another event model, is irrelevant to our subject, so we do not refer to it.

5) My claim that states themselves can convey energy might sound strange if we take the concept of energy faithful to its origin, Aristotle's "Energeia". But this strangeness, if ever, is irrelevant to the main subject.

6) The effect of the deicticity on Chinese sentences itself cannot be discussed here for lack of space.

7) It is possible to pursue this question in more general and inclusive fashion, but to follow up this matter further would take us beyond the scope of this paper. See Sadanobu (in preparation).

8) I argued in Section 1 and 2 that Chinese has character of SURU-language, so-called "rationality" much more than English. On the other hand, Masayuki Nakagawa (1992) argues in detail that Chinese has both the characters of SURU-language and NARU-language and should be located between English and Japanese. Although much more investigation is needed for Chinese, I in fact think that the conception of the opposition, SURU-language vs. NARU-language, should be argued on two different levels and so Nakagawa (1992)'s argument is completely compatible with mine as follows: what I argued is that Chinese prefers the BILLIARD-BALL MODEL to the MOLDGROWTH MODEL much
more than English and Japanese. What is argued by Nakagawa (1992) is that Chinese uses the transitive BILLIARD-BALL MODEL and the intransitive BILLIARD-BALL MODEL equally, not placing too much importance on the transitive one like English nor on the intransitive one like Japanese.

REFERENCES.
Lakoff, George, and Mark Johnson. 1980. Metaphors We Live By. Chicago:
The University of Chicago Press. [渡部昇一・楠瀬淳三・下谷和幸（trans.）1986.『レトリックと人生』．東京：大修館書店。]


