

Functions of Japanese Postpositional Word “wa” and “ga” from cognitive point of view

Takashi Ikeda
Faculty of Engineering,
Gifu University
1-1 Yanagido, Gifu, 501-11 Japan

1 Preface

Japanese postpositional function word “wa” and “ga” plays an important role in Japanese. But its usages are rather complicated. It seems very difficult for a foreigner to have a good command of Japanese. For example, both;

“ame-ga fut-te-iru”

and

“ame-wa fut-te-iru”

can be simply translated into English;

“it is raining”.

However these two expressions have different meaning and are used in different situation.

Both “wa” and “ga” can indicate “subject”. “wa” also can indicate “object” or adnominal and other cases. “ga” can also indicate “object”. Both “wa” and “ga” can appear simultaneously in one sentence at several places.

There have been many discussions about what “wa” and “ga” is. Susumu Kuno investigated the uses of “wa” and “ga” in his book[1]. He classified the usages of “wa” and “ga” as follows.

- (a) “wa” for the theme of a sentence: “Speaking of ..., ”

John-wa gakusei-desu.

[Speaking of John, he is a student.]

- (b) “wa” for contrasts: “X ..., but ...”

Ame-wa futte-imasu-ga ...

[It is raining, but ...]

- (c) “ga” for neutral descriptions of actions or temporary states.
Ame-ga futte-imasu. ‘It is raining’
- (d) “ga” for exhaustive listing. “X and only X ...”
John-ga gakusei-desu.
[(Of all the people under discussion) John (and only John) is a student.]

All these discussions concerning “wa” and “ga” so far including Kuno’s one are phenomenological ones where various uses of “wa” and “ga” are merely listed and ordered, and where exists various exceptions. There have been few discussions concerning the intrinsic functions of them which explain the mechanism that yield those linguistic uses.

In this paper, the simple principles on cognitive level on the functions of “wa” and “ga” are proposed and some requisits as a natural consequence of this principle are introduced. We can elucidate the mechanism that yields the linguistic phenomena concerning “wa” and “ga” based on these principles and requisits. Some of them are described bellow.

2 The intrinsic function of “wa” and “ga” on cognitive level

We assume that the intrinsic functions of “wa” and “ga” as follows.

Function of “wa”:

In {W-wa V}, W-wa is a declaration of a current topic world by the speaker as;

“I will from now describe the world W. Please pay attention to W”.

Function of “ga”:

In {G-ga P}, G is a key entity in the current topic world on which the speaker focuses his eyes in order to make a description of the current topic world.

A man’s memory contains a world model which is the result of all kinds of cognition including the relationships among them. A target for cognition is the actual world or the world model itself, and cognition is done with some *highlighted part of it in its viewfield*. Utterance is a linguistic expression of the contents of cognition. The *current topic world* above which corresponds to this viewfield is the target that the utterance is aiming to represent. It may be a physical scene just in front of a man or an entity in his or her world model, or it may be a highlighted area related to it in the world model.

The reason why an utterance by a person can be understood by another person is that they have a common world model and they talk while keeping a common topic world in their viewfields. The listener receives the contents of the utterance, and constructs or reconstructs the contents of the topic world in his or her world model, or responds to it by some action.

When we describe a world with language, which is a one dimensional description device, and if the description is not on the current topic world as a whole, we have no other choice but to describe the world by a repetition of focussing our eyes on one entity in the current topic world and telling about the entity. Here, "ga" indicates the entity on which we are focused our eyes in order to make a description of the current topic world.

The following propositions are requirements of our cognitive level view on "wa" and "ga" above from the very nature of things.

Requisit:1

When "wa" is used, the listener must be able to direct attention to W.

Requisit:2

When "wa" is used, the listener must be able to benefit from his attention to W.

Requisit:3

The uses of "ga" presumes some topic world which are to be described.

Requisit:4

The sentence of {G-ga P} must be worthwhile as a description for the topic world.

On the surface, it seems that this characterization of the function of "wa" is equivalent to the conventional explanation for "wa" as a topic marker. But it is not simply a marker for setting off the topic or subject in a grammatical sense. It is a declaration by the speaker that directs the listener's attention to an item about which the speaker is going to reveal information. We want to stress that "wa" has a very active function in the process of cognition.

And what we want to emphasize in the characterization of the function of "ga" described above is that, in the Japanese sentence of {G-ga P}, the description is *on the current topic world, and not on G*. In other words, the primary matter which the speaker is trying to describe is the current topic world, and not G itself. The speaker is trying to describe the current topic world via G.

Based on these principles and requisits, we can elucidate the mechanism that yields the various linguistic phenomena concerning “wa” and “ga”. Some of them are described in the following section.

3 Mechanism of some phenomena around “wa” and “ga”

3.1 “ga” for exhaustive listing

Kuno provides the following analysis for “ga” for neutral description and for exhaustive listing[1, pp.32].

“ga” for neutral description can be allowed only when the predicate verb indicates an action, an existence or a temporary state. If the predicate verb indicates a constant state or a habitual action, it is interpreted only as an exhaustive listing.

Here we consider the mechanism of how an interpretation of “ga” as an exhaustive listing occurs.

- (1) Taro-ga gakusei-desu.
[(Of all the people under discussion,) Taro (and only Taro) is a student.]
- (2) Ame-ga fut-te-i-masu.
[It is raining.]

As the *requisit:3* described in the previous section indicates, description (1) presumes a topic world which includes “Taro”. It may very well be that this topic world is a scene in which there are several persons including “Taro”. And, because of the *requisit:4*, the description must be worthwhile as a description of the topic world (the scene). If description (1) is interpreted simply as describing an attribute or a characteristic of “Taro”, it is a description of “Taro”, and not of the topic world (the scene). On the contrary, the interpretation, as an exhaustive listing, that {Only Taro in the scene is a student.} is a description of the scene, and not of “Taro”. That is, a description as a constant state or a habitual action is a description of an entity itself and not a description of the scene.

Description (2) does not describe an attribute nor the characteristics of “ame [rain]”, but simply describes the situation of the scene. This is an interpretation as a neutral description. Example (2) may allow the interpretation of exhaustive listing that {Not snow, but rain is falling}, but this type of interpretation associated with emphasis is generally possible with an arbitrary

sentence element. But in the case of example (1), it is inevitably interpreted as an exhaustive listing because it must be a description of a topic world, as described above.

Kuno [1, pp.34] provides the following examples as exceptions to the above-described analysis.

- (3) Taro-ga kanemochi-desu.

[A person who is rich is Taro.]

- (4) Kono kuni-de-wa mina-ga kanemochi-desu.

[All people are rich in this country.]

In both of the cases above, the predicate is “kanemochi-desu”, which indicates a constant state. Example (3) is interpreted as exhaustive listing following the above analysis, while example (4) is interpreted as a neutral description. That is, example (4) is an exception to the above analysis. Kuno analyzes this as being the phenomenon when a quantitative word such as “all” is included in a sentence, and he shows following examples.

- (5) watashi-no Kodomo-ga onna-desu.

[Of the persons who are now spoken of, it is me whose child is a girl.]

- (6) watashi-no kurasu-de-wa 5-nin-ga otoko-de, 6 nin-ga onna-desu.

[In my class, 5 persons are boys, and 6 persons are girls.]

- (7) Taro-ga dokushin-desu.

[The person who is single is Taro.]

- (8) Daibubun-no gakusei-ga dokushin-desu.

[Most of the students are single.]

From our point of view, examples (4), (6) and (8) can be interpreted consistently not as exceptions. Because the examples (4), (6), and (8) include a quantitative expression, they can naturally be interpreted as a description of the topic world (a scene that includes quantified entities). For this reason, if the principle that {“ga” indicates a key entity in the topic world to make a description of that world.} is applied, we can interpret examples (4), (6) and (8) as not being exceptions. In the case of examples (3), (5), and (7), we have no other choice but to interpret them as exhaustive listing in order to have descriptions of the topic worlds. In any case, they can all be considered to be descriptions of individual topic worlds.

3.2 The acceptability of "wa" sentence

While there is no problem to accept the contrastive sentence (9), it is difficult to accept sentence (10).

- (9) Ame-wa fut-te-i-masu-ga, yuki-wa fut-te-i-mase-n.
[Although it is raining, it is not snowing.]

- (10) Ame-wa fut-te-i-masu.
[It is raining.]

As the reason for this phenomena, Kuno gave the following rule[1, pp.30].

The topic must be an anaphoric noun phrase or a generic noun phrase, but there is no such restriction on a noun phrase that comes before "wa" for contrast.

Based on this rule, Kuno explains that contrastive sentence (9) is acceptable, but (10) is unacceptable unless "ame [rain]" is anaphoric.

Because we assert by the *requisit:1* that an entity indicated by "wa" must be an entity that the listener can direct attention to, the condition in the above rule which says the noun phrase must be anaphoric or generic, which is equivalent to our assertion, must be satisfied not only in the case for theme but also in the case for contrast. That is, we can not agree with Kuno's formulation.

First, even in the case of contrastive sentence (9), noun "ame [rain]" and "yuki [snow]" should be considered to be the entities which the listener can direct attention to. As mentioned in the previous section, contrastive sentence (9) derive upper common topic world which include both "ame [rain]" and "yuki [snow]". In this sense, "ame [rain]" and "yuki [snow]" in (9) are entities which the listener can direct his attention to. This is also the case for "wa" in the following example (11) which is not necessarily a contrastive sentence like (9) but easily acceptable sentence.

- (11) Ame-wa fut-te-iru-si, kaze-mo tsuyoi.
[It is raining, and besides the wind is blowing strong.]

Next, it can not be the reason for (10) being unacceptable that (10) is presented in isolate from context and "ame [rain]" can not be an anaphorical. In fact, although the following examples are presented in isolate from context, they are acceptable with no problem.

- (12) Ame-wa fut-te-i-mase-n.
[It is not raining.]

- (13) Ame-wa hageshiku fut-te-i-masu.
[It is raining heavily.]
- (14) Ame-wa mada fut-te-i-masu.
[It is still raining.]
- (15) Ame-wa mou fut-te-i-mase-n.
[It is not raining any more.]

We assert that the reason for (10) being unacceptable is that, contrary to the *requisit:4* presented in the previous section, the listener who directed his attention to "ame [rain]" cannot easily call to his mind a context where the description "fut-te-iru [be raining]" can be valuable. This is because when "ame [rain]" is recollected, it is usually rain as an instance, i.e. rain which is just falling. Therefore the fact of "fut-te-iru [be raining]" can be taken for granted as a matter of course. So it can not be valuable informations.

Actually, in a context where this fact (i.e. be raining) cannot be taken for granted as a matter of course, for example in a context where someone has just asked "Ame-wa fut-te-i-masu-ka? [Is it raining?]", sentence (10) can be accepted without any problems.

In example (12), "ame (rain)" is not rain as an instance but is rain as general class because raining is denied. Therefore the description [it is not raining.] is taken to be valuable.

In (13), (14) and (15), the value of the descriptions exists not in whether it is raining or not but in their modifier [heavily/still/any more]. These modifications do not express anything which belong to a matter of course, but bring new valuable informations to a listener.

Thus, (12) to (15) easily meet the *requisit:4*, and therefore they are easily acceptable even if they are presented in isolate from context.

In this way, we assert that an acceptability of "wa" sentence depends on whether there is some context or a listener can call his mind some context where the listener can find any value in the description when he pays his attention to the topic world which is indicated by "wa". In the case of contrastive expression, we can say that an upper common topic world mentioned in the previous section served for such context.

Kitahara[3, pp. 76] also points out that "wa" for topic and "wa" for contrast are based on the same essential quality, but adds that the basic function of "wa" is selection and presentation ("*toritate*" in Japanese). Then selection from an unspecific plural number of objects forms the topic (that is, items that are not selected are not treated as problems), and selection from specific contrastive elements forms the contrast (that is, items that are not selected are treated as problems). In this explanation, however, there is

no way to account for the fact that (10) is unnatural but that there is no such unnaturalness in (9) or (12) to (15).

3.3 “wa/ga” and embedded adnominal sentence

3.3.1 “wa” and scope of an embedded adnominal sentence

Usually, it is considered that “wa” is governed by a predicate at the end of a sentence[2, pp.8], and that it can not be governed by a predicate in an adnominalized sentence.

- (16) Hanako-ga tsukut-ta keeki-wo tabe-ta.
 [(Someone) ate the cake that Hanako made.]
- (17) Hanako-wa tsukut-ta keeki-wo tabe-ta.
 [Hanako ate the cake that (someone) made.]

In this example, the aforementioned statement applies. Looking at the next example, however, we can see the statement does not apply in general.

- (18) Tabako-wa suu-ga sake-wa noma-nai yujin-ga tazune-te-ki-ta.
 [A friend who smokes cigarettes but does not drink alcohol visited me.]
- (19) Tabako-wa suwa-nai seinen-ga yoi.
 [A youth who does not smoke cigarettes is good.]

Phenomena that thus appear in an adnominal sentence can be explained in the following manner. The key point is the obvious fact that the adnominal sentence describes the substantive that it modifies. That is, the topic world for the adnominal sentence is the substantive it modifies. For example, the topic world of the adnominal sentence of (17) is “keeki [cake]” and not “Hanako”. If Hanako were the topic world of the description “tsukut-ta [made]”, it would have to be a sub topic world of “keeki [cake]”. In other words, the interpretation of “Hanako-wa” in (17) as being in the adnominal sentence is the equivalent to the interpretation of the following (20).

- (20) (dareka-ga) keeki{sono keeki-wa Hanako-wa tsukut-ta}-wo tabe-ta.
 [(someone) ate the cake {as for the cake, Hanako made it.}.]

The reason that “Hanako-wa” of sentence (17) cannot be interpreted as an element in the adnominal sentence is the same as the reason why an appropriate interpretation cannot be found inside {} of sentence (20). As for the sentence inside {}, it is a sentence with multiple “wa”. Therefore, as mentioned in the previous section, the description on “Hanako” must become a description on the cake. The reason why the sentence inside {} in (20) is

difficult to accept is that it is difficult to call one's mind a context which is adequate to such interpretation.

On the other hand, it is easy to find appropriate interpretations for the following (21) and (22) which correspond to still another interpretation for (16) and (17).

- (21) (dareka-ga) keeki{sono keeki-wa Hanako-ga tsukut-ta}-wo tabe-ta.
 [(Someone) ate the cake {which was made by Hanako}.]
 (22) Hanako-wa keeki{sono keeki-wa (dareka-ga) tsukut-ta}-wo tabe-ta.
 [Hanako ate the cake {which (someone) made}.]

The phenomena that the "Hanako-ga" of (16) is governed by "tsukut-ta" in the adnominal sentence, and the "Hanako-wa" of (17) is governed by "tabe-ta" at the end of the sentence can be explained as indicated above.

With (18) and (19), on the other hand, the interpretation of "wa" as an element in the adnominal sentence is equivalent to an interpretation of the following (23) and (24), and these are easily acceptable.

- (23) Yujin{sono yuujin-wa tabako-wa suu-ga, sake-wa noma-nai}-ga tazune-te ki-ta.
 [A friend {who smokes cigarettes but does not drink sake} visited me.]
 (24) Seinen{sono seinen-wa tabako-wa suwa-nai}-ga yoi.
 [The youth {who does not smoke cigarettes} is good.]

Moreover, the "tabako [cigarettes]" is difficult to correspond in the predicates "tazune-te ki-ta [visited me]" and "yoi [is good]" semantically. Consequently, in (18) and (19), "tabako-wa" are both governed by adnominal predicate without any problems.

Still another factor must be considered with regard to the relationship between "wa" and an embedded adnominal sentence. In the interpretation of (20), the shift of topic world goes from "keeki [cake]" to "Hanako", but in actual sentence, "Hanako" is presented firstly and then "keeki [cake]" is presented. A similar reversal in the sequence of change of topic world takes place with (23) and (24). Accordingly, with (20), (23) and (24), since the interpretation must be carried on against the actual presentation order, it is required that there be some kind of strong linkage relationship between the noun with "wa" and the adnominal predicate. In (23) and (24), the relationships between "tabako [cigarettes]" and "suu [smoke]", and between "sake [alcohol]" and "nomu [drink]" contribute to the acceptability of the interpretation. On the other hand, with (20), such special relation between "Hanako" and "tsukuru [make]" is hard to be found. This naturalness of presentation order of the topic world is considered the reason why "wa" in general corresponds with the end of the sentence.

- (25) Seinen-wa suwa-nai tabako-ga yoi.
[Cigarettes not smoked by youth are good.]
- (26) Kodomo-wa yuufuku-na oya-ga yoi.
[For children wealthy parents are good.]
[For parents wealthy children are good.]
- (27) Kodomo-wa genki-na oya-ga yoi.
[For children healthy parents are good.]
[For parents healthy children are good.]

The "seinen-wa [youth]" of (25) is governed by adnominal predicate "suwa-nai [does not smoke]", but it is a little more difficult to take such an interpretation than in the case of (19) where noun with "wa" is also governed by adnominal predicate. The reason of this difficulty is that the linkage relationship between "seinen [youth]" and "suu [smoke]" is weaker than the linkage relationship between "tabako [cigarette]" and "suu [smoke]". With sentence (26), two interpretations are possible, but the one that link "oya [parents]" with "yuufuku-na [wealthy]" is easier to accept than the one that link "kodomo [children]" with "yuufuku-na [wealthy]". (27) can have two interpretations as well, but in this case, it is also easy to consider that "kodomo-wa [children]" corresponds with adnominal predicate "genki-na" because the relationship between "kodomo [children]" and "genki [healthy]" is strong.

3.3.2 Interpretation of exhaustive listing for "ga" and adnominal embedded sentence

It has been pointed out that, in an adnominal embedded sentence, an interpretation of exhaustive listing is impossible[1, pp.33], but the reason is not provided.

- (28) Taro-ga tabe-ta ringo-wa kusat-te-i-ta.
[The apple Taro ate had been rotten.]
- (29) Taro-ga ringo-wo tabe-ta.
[Taro ate an apple.]
[The person who ate an apple was Taro.]
- (30) Taro-ga tokui-na suiei-wa jiyugata-da.
[Taro's favorite swimming style is a free style.]
- (31) Taro-ga suiei-ga tokui-da.
[The person who is good at swimming is Taro.]

The "Taro-ga" in example (29) also allows an interpretation of exhaustive listing {The person who ate an apple was Taro.}, but example (28) does not allow it. The "Taro-ga" in example (31) allows only an interpretation of an exhaustive listing, but example (30) does not allow it.

The reasons can be stated as follows .

It is clear that an adnominal embedded sentence is a sentence describing the modified noun. The embedded sentence in example (28) is a description of {ringo [an apple]} and that of (30) is of {suiei [swimming]}, and in either case "Taro" is the key entity needed to make a description of {ringo [an apple]} or {suiei [swimming]}. In other words, it is clear that a topic world described by an embedded sentence is a world of the modified noun, and it cannot be a scene including the entity indicated by "ga" as in example (31). For this reason, an interpretation as exhaustive listing which interprets an embedded sentence as a description of a scene which includes an entity indicated by "ga" is impossible.

3.4 "ga" and existential sentence

An existential sentence that states existence or non-existence of an entity naturally presumes a scene in which existence or non-existence of the entity becomes an issue.

In order to focus one's eyes on an entity which exists in a scene and to state that the entity exists as a description of the scene, generally "ga" is used.

- (32) Taro-ga iru.
[Taro is (here).]

- (33) Ensan-ga aru.
[Hydrochloric acid exists (here).]

In contrast to this, "wa" is used to indicate that the entity itself is a current topic world, or, in other words, it is used when existence or non-existence is stated as a description of the entity.

- (34) Taro-wa iru.
[As for Taro, he is (here).]

- (35) Ensan-wa aru.
[As for hydrochloric acid, it does exist (here).]

- (36) Taro-wa i-nai.
[As for Taro, he is not (here).]

(37) Ensan-wa nai.

[As for hydrochrolic acid, it does not exist (here).]

When a speaker declares that an entity does not exist in a scene, it is impossible for the speaker to fix his or her attention on the entity because it does not exist in the scene. Accordingly, as shown in the above examples, (36) and (37), "wa" is used to indicate the entity in an negative existential sentence.

However, there are cases where "ga" is used in an negative existential sentence.

(38) Taro-ga i-nai.

[Taro is not (here).]

(39) Ensan-ga nai.

[Hydrochrolic acid does not exist (here).]

Different from descriptions with "wa", these sentences express not only the non-existence itself but also the feeling of the speaker such as "Taro is absent. What should we do?" or "Taro is absent. It is lucky."

The reason these sentences can be interpreted in such ways can be explained as follows. As the speaker has a specific feeling, such as an expectation or fear, about the existence of the entity (Taro), an imaginary scene including the entity has been made up in the speaker's mind, and this imaginary scene is superimposed over an actual scene. The topic world in examples (38) and (39) is an actual scene, but the speaker's attention has been fixed not on an entity in an actual scene, but on an entity in the superimposed imaginary world. Thus, the utterance in these cases can be considered as describing an actual scene with an imaginary scene superimposed on it and thus it includes the feeling of the speaker.

Of course, we can sense the speaker's feeling also in other types of sentences. For instance, the affirmative existential sentence of {Taro-ga iru. [Taro is (here).]} can be interpreted as a sentence which includes the speaker's feeling (affirmative or negative confirmation), for instance, that "Taro is here. How happy we are!" or that "Taro is here. How unfortunate we are!", according to the situation. What we stated above is, however, that a negative existential sentence with "ga" can be interpreted only in that way, and that the reason can be stated by our explanatory principle for the functions of "ga".

4. Conclusion

In this paper, we proposed simple principles on cognitive level on the functions of “wa” and “ga”, and introduce some requisits as a natural consequence of the principles. Based on these principles and requisits, we can elucidate the mechanism that yields the “wa” and “ga” linguistic phenomena. This paper describes some of them.

In treating the Japanese language, it is vital to grasp the fundamental roles of function words. Especially the problems concerning “wa” and “ga” are some of the central problems in Japanese grammar, and have been discussed for a long time. We are confident that analysis of these linguistic phenomena from a cognitive point of view (aside from phenomenological approach) is very important.

Also these investigations will be important to construct more advanced natural language processing system in the future. To build robust analyzing system capable of handling any types of input sentences and generation systems that output more *natural* sentences, rules at the phenomenological level alone will not be sufficient. It will need considerations from the fundamental level of cognition as in this paper.

References

- [1] S.Kuno, “Nihon Bunpou Kenkyuu [Study of Japanese Grammar]”, Taishukan Shoten, 1973.
- [2] A.Mikami, “Nihongo-no ronri [Logic of Japanese]”, Kuroshio Shuppan, 1963.
- [3] Y.Kitahara, “Bun-no kozo [Structure of Sentence]”, Iwanami Koza Nihongo 6 (Chapter 2), 1976.
- [4] T.Ikeda, “On the Function of the Japanese Postpositional Word “wa” From the Cognitive Point of View”, Bulletin of The Electrotechnical Laboratory”, vol[54]no[8], 1990
- [5] T.Ikeda, “On the Japanese Function Word “ga” – Its Function from the Cognitive Point of View –”, Transactions of the Institute of Electronics, Information and Communication Engineers, J72-D2, 1989.