On the Properties of Japanese Case Marker '-ga': An LFG Account

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1. Introduction

In this article, we deal with the particle "-ga" in Japanese in its exclusive focus usage within the framework of Lexical Functional Grammar (henceforth LFG).   This particle has two functions; first, as the nominative case marker, and second, as an exclusive focus marker. (Kuno 1973).   In this article, we propose that the difference can be properly accounted for through the notion of discourse configurationality represented in the constituent structure of Japanese, viz. the difference of the functional annotations on the node under which a constituent with the particle comes results in the difference of the discourse function the constituent has.   Thanks to this syntactic specification of discourse function, the particle "-ga" has neither discourse nor grammatical function specification by itself.   The functional uncertainty of the constituent with the particle can be resolved by the formal architecture provided in the framework of LFG.   In this article, we first review long distance dependency in English, focusing on how discourse functions such as topic and focus are represented in the language within a non-derivational, parallel architecture of grammar.   Next, we deal with how long distance dependency in Japanese works to resolve the functional uncertainty of the constituent with the particle "-ga", while providing the phrase-structure rules to represent Japanese sentences.

2.0 Long Distance Dependency in English
2.1 Phrase-structure rules for English with respect to discourse functions
In English, interrogative sentences or topicalized sentences involve long distance dependencies.

(1)
a. Which book do you think Sarah would prefer?
b. That evidence, Sarah told me she had discovered.

The initial phrase in these sentences has a discourse function and a grammatical function at the same time.   In interrogative sentences such as (1a), the initial phrase is

the focus of the question, while it also has a grammatical function which the verb subcategorizes for (in the sentence above, the initial phrase has a grammatical function OBJECT of the verb 'prefer').   In topicalized sentences such as (1b), the initial phrase is the topic of the sentence, and it also has a grammatical function which the verb subcategorizes for (in the sentence above, the initial phrase has a grammatical function OBJECT of the verb 'discover').

In the transformational (or derivational) grammar, these kinds of sentences are analyzed to involve movement of a constituent from one position in the constituent structure to another ("wh movement" or "A' movement").   In Lexical-Functional Grammar, which does not posit any 'movement' of constituents, these kinds of sentences are analyzed to have the initial phrase as the filler and the position that the phrase could take in their declarative counterparts as the gap (*trace* in Government and Binding Theory).

In English, the filler is assigned with a discourse function; FOCUS or TOPIC. Unlike transformational grammar, the filler is inserted at the initial position of the constituent structure and there is no movement of constituents in the structure.   The initial position assigns the phrase with discourse functions, and this assignment is represented in the annotated phrase structure rules shown below:

(2)
CP→   XP   C'
      ($\uparrow$DF)=$\downarrow$ $\uparrow$=$\downarrow$
      ($\downarrow$PRON)=WH

(3)
IP or S →   XP   IP or S
              ($\uparrow$DF)=$\downarrow$ $\uparrow$=$\downarrow$

DF is an abbreviation of discourse functions, either focus or topic.   The identification of which discourse function a given phrase might have is an important issue, but I leave it open here, only pointing out that the function annotation only specifies that the phrase has a discourse function and the identification of discourse function depends on the information from various sources other than c-structure.   We will come back to this issue later, when we look at the topicalization of Japanese.   The arrows are metavariables; those pointing up mean the functional structure (henceforce f-structure) of the mother node of the node they are annotated, while those pointing down the node

they are annotated.　The annotation $(\uparrow DF)=\downarrow$ means that, as for the functional structure which corresponds to the CP, its DF is the functional structure corresponding to the node XP.　$(\downarrow PRON)=WH$ means that the pronoun in the f-structure corresponding to the XP must be wh- pronoun.　$\uparrow=\downarrow$ means that the f-structure corresponding to the CP equals that corresponding to C'.　As these rules specify, wh-phrases are inserted into the Spec of CP position, and other topicalized or focused phrases are adjoined to IP or S.　Wh phrases are the focus of interrogative sentences, while they are the topic of relative clauses.
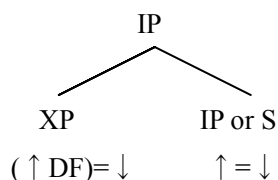
　　　From the first rule, we can have the skeletal constituent structure below:

(4)

```
              CP
          /        \
      XP             C'
 (↑DF)=↓           ↑=↓
 (↓PRON)=WH
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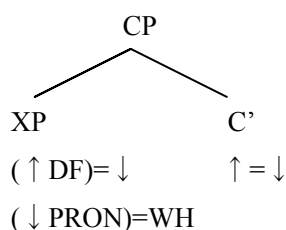
From the second rule, we can have the following structure:

(5)

```
           IP
         /     \
     XP         IP or S
 (↑DF)=↓        ↑=↓
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Let us see how each node corresponds to an f-structure.　From the skeletal constituent structure, we have three f-structures.

(6)

```
            CPf1
          /      \
     XPf2         C'f3
 (↑DF)=↓         ↑=↓
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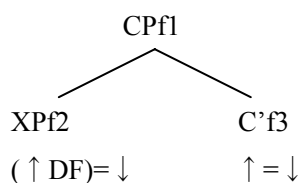
(↓ PRON)=WH

These metavariables are instantiated by the name of the f-structure; we have (f1DF)=f2, (f2PRON)=WH, and f1=f3:

(7)
f1[DF   f2[   ]]
f2[PRON   WH]
f3[   ]

Through the equations, these f-structures are unified as follows:
(8)
f1, f3 [DF f2[PRON   WH]]

Thus far, the assignment of discourse function on the constituent is partly represented, not by positing movement of constituents, but through the functional annotations on the nodes conditioning the local correspondence between c-and f-structure.   The information necessary for constructing the f-structure of the whole sentence will be provided from other parts of constituents down the node XP and C'.   For example, the constituents under the node XP correspond to f-structures, and they are all unified to the f-structure f2, which is also the value of the attribute DF of the f-structure of the sentence as a whole.

2.2 Functional uncertainty
Though the assignment of discourse functions are represented through the functional annotations on the phrase structure rules, it remains to be explained how the filler is assigned with the appropriate grammatical function which is subcategorized for by the verb.   If the constituent with a discourse function is left without any grammatical function, then the grammatical function which the verb subcategorizes for remains to be unspecified, hence the f-structure of the sentence as a whole violates the completeness condition.

This problem can also be resolved through functional annotation and correspondence between c- and f-structure; in general, the fact that the filler has both a discourse function and a grammatical function can be expressed that the value of the attribute DF of the whole sentence is also the value of the appropriate grammatical function of the same sentence.   This is represented in the annotation below:

(9)

(↑DF)=(↑GF)

However, there can be more than one complement boundaries between the filler and the gap. Consider the examples below:

(10)

a. What did you read ___?

b. What do you think you read?

c. Who do you think read this book?

d. What did you claim you thought I read?

The annotation above cannot account for the long distance dependency between the filler and the gap in these sentences. To solve this problem, the annotation must contain the information that there can be any number of complement boundaries between the filler and the gap (represented by a Kleene star *).

(11)

(↑DF)=(↑COMP* GF)

The set of grammatical functions between a filler and a gap is called Path. The COMP* GF in the equation above can be replaced by Path, and the language-specific characteristics of long distance dependencies of a language can be represented through defining its Path, in other words, through defining which grammatical functions the Path of the language contains. For example, if a language does not allow topicalization of OBJ, then the equation contains this information. For a detailed account of Path and the , see Dalrymple (2001: 402).

Some restrictions on long distance dependency such as islands can also be accounted for as conditions of the functional annotations on the relevant node of the c-structure, which I do not deal with in this presentation.

3.0 Long Distance Dependencies in Japanese

The LFG account of long distance dependencies in English -- functional annotations on the nodes of c-structure and functional correspondence between c-structure and f-structure -- can be applied to other languages. In so doing, we will be able to identify

both the universal and language-particular characters of the formalism concerning long distance dependency, within the framework of parallel structures.   Since natural languages have a wide variety of long distance dependencies, just providing an account on the English version of long distance dependency is not enough, and it is highly possible that the functional annotations for English cannot account for the long distance dependency in other languages.   Therefore, the basic idea of functional correspondence in English we have seen so far must be augmented to cover the variety, with some modifications on the rules and equations necessary.

Unlike English, Interrogative sentences in Japanese do not involve long distance dependencies; the focus of question is expressed by interrogative pronouns, and they appear in the same position as non-interrogative elements.   On the other hand, topicalization of Japanese raises interesting issues worth analyzing.   Among them, this article takes up the issues of discourse configurationality of Japanese, its structural and lexical marking of discourse functions, and disambiguation of particles which are used to mark different kinds of discourse functions.

3.1 The particle '-wa'
The particle '-wa' in Japanese has two functions, and the difference of them seems to be the result of the structural positions the phrase with the particle can take.   First of all, the examples below are   non-topicalized, no-focus sentences:

(12)
a. Watashi-ga   kono hon-wo   yonda.
   I -part;NOM   this book-part;ACC   read.PST
   'I read this book.'

b. Kono hon-wo   watashi-ga   yonda.
   this book-part;ACC I-part;TOP   read.PST
   'I read this book.'

Both of these sentences denote the same event, though the orders of constituents are different.   Since the particle '-ga' and '-wo' specifies the grammatical functions 'SUBJ' and 'OBJ', respectively (as for '-ga', we need to revise this definition, since it can also be used as a focus marker.   We will soon deal with issue in this article).   With their grammatical function lexically specified, these constituents can scramble

freely[1].

     Sentences with topicalization and focus, however, raise the same issues as those in English.   Consider the examples below, in which the particles '-ga' and '-wo' are replaced by '-wa':

(13)

a. Watashi-wa   kono hon-wa   yonda.

   I   -part;TOP   this book-part;FOC   read.PST

   'As for me, I read this book,(but not others).'

b. Kono hon-wa   watashi-wa   yonda.

   this book-part;TOP   I -part;FOC   read.PST

   'As for this book, I read it (but others didn't).'

Note: TOP means the topic of the sentence, while FOC means the focus of the sentence.

At the first sight, the particle '-wa' seems to have two discourse functions and no specific grammatical function.   First, it serves as a topic marker when it appears at the left end of the c-structure; a constituent with '-wa' in this function cannot scramble with other NPs under S.   Second, it serves as a contrastive focus marker when it appears under the S of a sentence with a topic; a constituent with '-wa' in this function can scramble with other NPs under S, but not with the topicalized phrase with '-wa'.   In both cases, the grammatical functions of these constituents are not provided by the particle.   It does not seem a serious problem, since we can infer which is the agent and which is the theme from the referent of each constituent in these examples.   However, it is not always the case; in the example below, it is not evident which is the agent and which is the patient:

(14)

Taro-wa   Hanako-wa   tataita.

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[1] However, there seems to be a grade of acceptability of the constituent order; in colloquial language, it may be possible that a constituent follows the verb, such as "Kono hon-wo yonda, watashi-ga". This definitely sounds ungrammatical to my ear, but not all the native speaker of Japanese will agree to this judgment.   As such, grammaticality judgment of a sentence cannot escape from a pit of subjectivity, and the acceptability of constituent order depends on many factors other than the well-formedness of constituent structure.   Therefore, it is necessary to project some research based on data large enough to draw any significant conclusion.   This article can be marked as the theoretical basis for such research.

Taro-TOP   Hanako-FOC   beat:PST

'As for Taro, he beat Hanako (but not others).'

'As for Taro, Hanako (but not others) beat him.'

These facts seem to suggest that the case marker '-wa' has neither only one discourse function nor only one grammatical function, and its function depends on the position where it appears in the c-structure.

In the description of an actual event, it is obvious who did what from various sources.   The hearer can infer from the context who instigated the event and who suffered from it.   In the sentence above, some pause after the first constituent may help the hearer to identify it as the topic of the sentence.   What is of issue here, however, is the mental representation of grammatical knowledge in which a pair of sentences with the same syntax and lexical items can have two different interpretations.

3.2 Functional annotations for the marking of discourse functions in Japanese
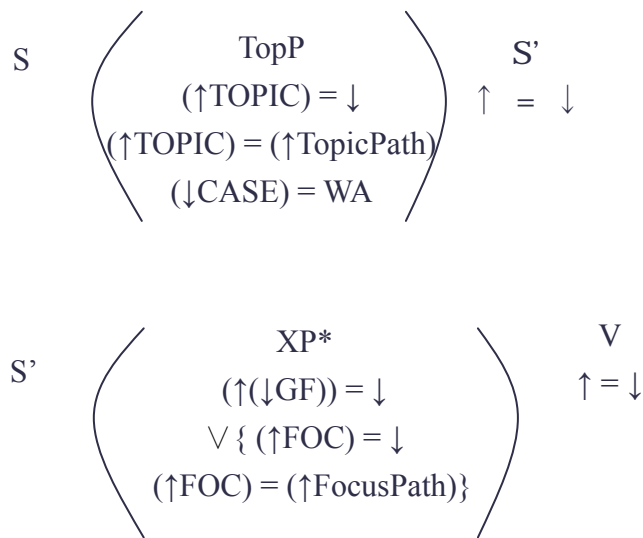
The idea of functional annotations we have already seen in section 2 can be applied to explain the data from Japanese, in particular, how are discourse and grammatical functions assigned to the constituents.   the c-structures of these sentences above are shown below:

(15)
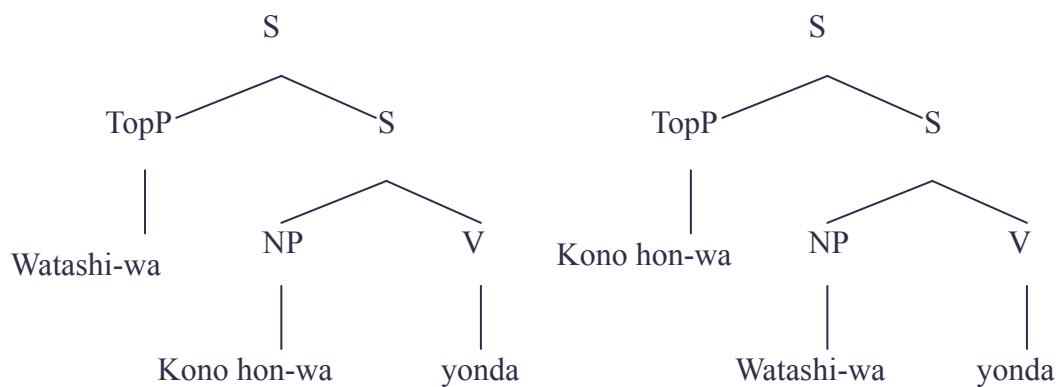
The preliminary phrase structure rules of Japanese with functional annotations are shown below:

(16)

$$S \quad \left\langle \begin{array}{c} \text{TopP} \\ (\uparrow\text{TOPIC}) = \downarrow \\ (\uparrow\text{TOPIC}) = (\uparrow\text{TopicPath}) \\ (\downarrow\text{CASE}) = \text{WA} \end{array} \right\rangle \quad \begin{array}{c} \text{S'} \\ \uparrow = \downarrow \end{array}$$

$$\text{S'} \quad \left\langle \begin{array}{c} \text{XP*} \\ (\uparrow(\downarrow\text{GF})) = \downarrow \\ \vee \{ (\uparrow\text{FOC}) = \downarrow \\ (\uparrow\text{FOC}) = (\uparrow\text{FocusPath})\} \end{array} \right\rangle \quad \begin{array}{c} \text{V} \\ \uparrow = \downarrow \end{array}$$

What is of importance here is their exocentricity. They have a bar-level category S', and the constituents other than TopP can appear in any orders without changing the grammatical relationship among them, and TopP must appear at the left end of the constituent structure. TopP is one level up above other constituents. This analysis explains the observed phenomenon that TopP cannot scramble with other constituents. As such, Japanese is one of the discourse-configurational languages, in which discourse functions are syntactically represented.

The third equation on the TopP of the first rule declares that the TopP must has the –wa case; this study goes along with the assumption of Japanese linguistics in transformational framework that the particle is a case marker and that the syntactic category TopP plays a role in the case assignment of topicalized phrase. LFG account differs from transformational framework in that the topicalized element is inserted under the TopP at the base generation and there is no movement from the position where theta-role is assigned to the element; the topicalized phrase comes directly under the TopP with the case marker –wa.

In both rules, functional uncertainty is resolved by the functional equation; (↑TOPIC) = (↑TopicPath) for topicalization and (↑FOCUS) = (↑FocusPath) for focus. The definition of each Path is an important issue, but we leave it aside for future investigation.

The second rule has three issues to be mentioned. First, the grammatical function of an XP is not specified in the equation in itself, but it is provided lexically from the constituents under the XP. That is, the grammatical function under XP is represented by the particle in the constituent. In the examples above, the particles '-ga' and '-wo' contains the relevant lexical information on the grammatical function of the constituent it is attached to. Second, the functional annotations on focusing are optional, as they are connected with a disjunction ∨. This is because an XP is not always focused. As in the examples above, there can be a constituent with the particle '-ga' or '-wo', non-focusing particles (the particle '-ga' has another function: a marker for exclusive focus Here, we talk about this particle as a nominative case marker, and the case in which this particle is used as an exclusive focus marker will be analyzed below). In this non-focused case, the grammatical function of a constituent is specified by the information registered in these particles, and the information goes up to the S according to the functional equations, and therefore there is no need to specify the grammatical function via long-distance dependency. Third, unlike the equation on the TopP, it is not declared which case marker is required for an XP to be focused. This is because there are various types of focus and they are represented in different particles, and further specification of functional annotation for them is the main topic of this article. One of them is '-wa' for contrastive focus as has already been mentioned, and the particle '-ga' is also used to represent exclusive focus appearing under an XP.

3.3 The particle '-ga' as a marker for exclusive focus

The particle '-ga' has two functions. First, it is used as the nominative case marker, as in the example above. Second, it is also used as a marker for exclusive focus. Therefore, a sentence with this particle can have two interpretations:

(17)

Watashi ga kyaputen de aru

"I am the captain"

"Nobody else but I am the captain."

It is important to point out the difference between '-wa' as a topic marker or a contrastive focus marker, and '-ga' as a marker for exclusive focus: an constituent with

'-wa' can have various kinds of grammatical functions, while an constituent with '-ga' as a marker for exclusive focus typically has the grammatical function SUBJ, or other functions if the verbal predicate has the meaning of particular types;

(18)

-ga: particle
($\uparrow$ CASE)=GA
($\uparrow$ GF) = SUBJ

By making the lexical entry of particle as minimally specified as possible while enriching the annotations on the syntactic nodes, we can make an consistent account of Japanese, since it is often the case that particles are dropped in the utterances in a real situation. The enriched annotations for long-distance dependencies of focused or topicalized constituents will be employed to determine which grammatical function a constituent without any particle might have, and constituents without any particle can be analyzed to be only caseless.   If the lexical entries of verbal predicates do not have any constraining equations for the case of their argument, then particle dropping does not yield any ungrammaticality. Rather, dropping the particle of a constituent can be analyzed as a way of representing the discourse properties of the referent of the constituent. In particular, the functional annotation ($\uparrow$FOC) = $\downarrow$ and ($\uparrow$FOC) = ($\uparrow$FocusPath) are generalized to

($\uparrow$DF) = $\downarrow$ and ($\uparrow$DF) = ($\uparrow$DFPath), and for the case of particle dropping, the DF is specified to BACKGROUND, and then the constituent without any particle serves to represent the background of the discourse, and the grammatical function of the constituent is determined via the long-distance dependency equations.

The equation ($\uparrow$ GF) = SUBJ is optional; the status of the referent of the relevant constituent in a given discourse is to be determined by the information provided from sources other than lexicon or syntax, viz. information structure, hence neither lexicon nor syntax does not have any constraint on which option to take in a given sentence.   If, on the other hand, a certain type of verbal predicate exclusively takes a constituent with the particle '-ga' as an exclusive focus marker, then this property must be declaratively specified lexically in the lexical entry of such kind of verbal predicates.

4. Conclusion

In this article, we dealt with the particle "-ga" in Japanese in its exclusive focus usage

within the framework of LFG. Since a constituent with this particle can have two different functions, it seems impossible to postulate that this particle has a unique functional specification. In this article, it is proposed that the difference of functions comes from the position where the constituent with the particle appears, and that the framework of LFG, in particular the functional annotations on the node of constituent structure, represents this idea properly. The result of this study will be applied to represent within the same architecture the behaviors of other particles of Japanese which serve to express various types of discourse functions.

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