1. Introduction

Japanese has a variety of modals for root, epistemic and speech-act modality such as -sinakerebanaranai, -daroo and -yoo. Since Rizzi (1997) revealed that CP consists of a set of distinct functional projections as shown in (1) below and the so-called cartographic research program started, much research has been done on the structure of the right periphery in Japanese.


Modals in Japanese have been studied along the same research lines. However, research has been done mainly on modals in root sentences (i.e. main clauses) (cf. Hasegawa 2007), there have yet been few studies focusing on modals in other types of clauses such as embedded clauses. In this paper, we will contribute to further understanding of the cartography of Japanese modality by focusing on one of the embedded clause types, RCs. The aim of this paper is to investigate the cartography of modality in terms of the occurrence of modals in relative clauses (RCs) in Japanese.

This paper is organized as follows. Section 2 outlines types of Japanese modals and reviews previous research on modals in main clauses. In Section 3, we will turn to modals in two types of embedded clauses: koto-clauses and RCs. Section 4 presents the syntactic structure of RCs proposed by Akaso and Haraguchi (2010). In Section 5, we will examine the occurrence of modals in RCs based on the structure presented in Section 4 and then propose a cartographic hypothesis of modals in Japanese. Finally, Section 6 summarizes the paper.

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2. Modal Forms in Main Clauses

2.1. Genuine-modals and Quasi-modals

It has been argued by traditional Japanese linguists that Japanese modals are roughly classified into two types, Genuine-modals and Quasi-modals, as shown in (2).

(2) a. G(enuine)-modals: -mai ‘won’t’, -daroo ‘will’, -mashoo ‘shall’, etc.
    b. Q(uasi)-modals: -kamosirenai ‘may’, -beki ‘should’, -ni-tigainai ‘must’, etc.

This classification of modals is based on Nitta’s (1991) observation that G-modals are distinguished from Q-modals by a number of formal criteria. For example, as shown in (3), the G-modal -mai ‘won’t’ cannot be morphologically tensed or negated, while the Q-modal -kamosirenai ‘may’ can.¹

    Taro-Top pizza-Acc eat won’t / won’t-Past / won’t-not
    ‘Taro won’t/wouldn’t/won’t not eat pizza.’
    Taro-Top book-Acc read may / may-Past / may-not
    ‘Taro may/might/may not read books.’

In addition, Inoue (2007) argues that both G-modals and Q-modals have their own projections. Compare (4a) and (4b) below.

(4) a. Shacho-ga kokoni kuru-bekidat-ta-daroo.
    President-Nom here come-have to (Q-mod)-Past-will (G-mod)
    ‘The president would have to come here.’
    President-Nom here come-will (G-mod)-have to (Q-mod)-Past

¹ G-modals are also characterized by the fact that only one G-modal may appear within a single clause.

(i) * Hanako-wa kuru-daroo-mai.
    Hanako-Top come-G.mod-G.mod
    ‘It is probable that Hanako won’t come.’

Unlike G-modals, Q-modals can consecutively appear in a single clause.
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‘The president would have to come here.’

c.

The G-modal -daroo follows the tensed Q-modal -bekidat-ta in (4a), while the reverse order in (4b) results in ungrammaticality. Since Q-modals can be tensed and followed by G-modals, it can be assumed that Q-modalP is within IP and G-modalP above IP. This is illustrated in the tree diagram (4c) above.

2.2. Two Subcategories of G-modals

In the previous section, we have seen that Japanese modals are classified into G-modals and Q-modals. G-modals can be further classified into two subcategories from semantic and pragmatic viewpoints: E(pistemic)-modals and U(tterance)-modals. Some examples of each type of modal are listed in (5) below.

(5) a. E-modals: -daroo ‘will’, -mai ‘won’t’, -deshoo ‘will’


According to Inoue’s (2007) definitions of these modals, E-modals express the speaker’s recognition of the content of the proposition and U-modals the speaker’s attitudes toward the utterance (communication, interrogative, imperative etc.) Based on this idea, Ueda (2008) further claims that E-modals have the T-type property, which indicates how to construe a proposition, and that U-modals have the C-type property, which determines the sentence type. We will review Ueda’s research in the next section and see how the classification of E-modals and U-modals is structurally realized.

3. Modal Forms in Embedded Clauses

3.1. Koto-clauses

Although there are yet few studies focusing on modals in embedded clauses from a generative syntactic viewpoint, Ueda (2008) is one of the few studies focusing on modals in
embedded clauses from a generative syntactic viewpoint. She examines whether E-modals and U-modals can be embedded within *koto*-clauses, as in (6) below.

(6) a.  [watashi-ga Taro-ni tegami-o okuru-daroo-koto]-wa, …
     I-Nom Taro-to letter-Acc send-E.mod-NL-Top
     ‘That I will send the letter to Taro is…’

b.  *[watashi-ga Taro-ni tegami-o okur-oo-koto]-wa, …
     I-Nom Taro-to letter-Acc send-U.mod-NL-Top
     ‘That I shall send the letter to Taro is …’

While the E-modal *-daroo* can appear in a *koto*-clause as in (6a), the U-modal *-(y)oo* cannot as demonstrated in (6b). Based on this observation and Inoue’s (2007) assumption that modals have their own projections, Ueda (2008) proposes that U-modalP is higher than E-modalP, as shown in (7) below.

(7)  

\[
\begin{array}{c}
\text{CP} \\
U\text{-modalP} \\
E\text{-modalP} \\
TP \\
vP …
\end{array}
\]

In (7), both U-modalP and E-modalP appear within CP, but their precise positions in multiple CP layers in the sense of Rizzi (1997) are not detectable.

3.2. Relative Clauses

The other type of embedded clause which we will focus on in terms of the occurrence of modals is RCs. Consider the examples in (8) and (9) below.

(8) a.  *Taro-ga taberu-deshoo oyatsu
     Taro-Nom eat-E.mod snack

Jayaseelan (2011) also shows that modals cannot appear in Malayalam RCs.

(i)  * [ ňaan ___ kaaN-um-a ] kuTTi
     I see-FUT-REL child
     Intended meaning: ‘(the) child that I will see’

We are indebted to Y. Miyamoto (p.c.) for pointing out this relevant data.

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2 Jayaseelan (2011) also shows that modals cannot appear in Malayalam RCs.
‘the snacks that Taro will probably eat’

b. *Taro-ga kau- mai hon
   Taro-Nom buy-E.mod book
   ‘the book that Taro won’t buy’

(9) a. *Taro-ga taberu-na oyatsu
       Taro-Nom eat-U.mod snack
   ‘the snacks that Taro must not eat’

b. *Taro-ga kai-mashoo hon
   Taro-Nom buy-U.mod book
   ‘the book that Taro shall buy’

(8) shows that E-modals cannot be embedded in RCs, and (9) shows that U-modals, either.³ Unlike the examples of koto-clauses in (6), where E-modals are allowed to be embedded but U-modals are not, neither E-modals nor U-modals are allowed to be embedded in RCs. This difference between koto-clauses and RCs in terms of occurrence of modals suggests that the CP size of RCs should be smaller than that of koto-clauses.

4. The Structure of Relative Clauses

In this section, we will introduce the previous research on the structure of RCs by Akaso & Haraguchi (2010), who deal with Nominative Genitive Conversion (NGC) in Japanese. NGC is a phenomenon where the case of a subject alternates between nominative and genitive. Let us look at examples of NGC first.

(10) a. Taro-ga/no non-da kusuri
       Taro-Nom/Gen take-Past medicine
       ‘the medicine that only Taro took’

b. Gakusei-ga/no kat-ta hon
   students-Nom/Gen buy-Past book
   ‘the book that students bought’

³ Some native speakers of Japanese allow the E-modal -daroo to be embedded in RCs. In fact, many people seem to feel that -de aroo, a variant form of -daroo, is more acceptable in RCs than -daroo, as shown in (ii).

(ii) Taroo-ga taberu- de aroo oyatsu
     Taroo-Nom eat-E.mod snack
     ‘the snacks Taro will eat’
It has been noted that there is a restriction called Transitivity restriction on NGC. That is, when the main verb of an RC is transitive and followed by an object, its subject may only be in nominative, and NGC is not possible. Akaso and Haraguchi (2010) discovered another restriction on NGC and they propose that the size of the syntactic structure is different between RCs with a nominative subject and RCs with a genitive subject. Let us look at their important examples.

(11) a. Taro-dake-ga/*no non-da kusuri
Taro-only-Nom/Gen take-Past medicine
‘the medicine that only Taro took’
b. Gakusei-bakari-ga/*no kat-ta hon
students-only-Nom/Gen buy-Past book
‘the book that only students bought’
c. Kokosei-nomi-ga/*no eran-da manga
high school students-only-Nom/Gen choose-Past comics
‘the comics that only high school students chose’
d. Taro-sae-ga/*no tabe-ta keki
Taro-even-Nom/Gen eat-Past cake
‘the cake that even Taro ate’

The gramaticality of RCs with a genitive subject is degraded. Based on this observation, Akaso and Haraguchi (2010) propose that RCs with a nominative subject are FocPs while RCs with a genitive subject are TPs, as illustrated in (12).

(12) a. Nominative Subject       b. Genitive Subject

They assume that Focus Particles such as ‘-dake’, ‘-bakari’, ‘-nomi’ and ‘-sae’ must be licensed by a Focus head in the CP zone, along with Rizzi’s (1997) cartographic approach. The structure of RCs with a nominative subject has a Focus head that licenses Focus Particles,
but RCs with a genitive subject do not have a Focus head. Therefore, RCs with a genitive subject may be grammatical only when no Focus Particle appears inside.

Adopting Akaso and Haraguchi’s idea that the structure of RCs with a nominative subject is a FocP, we examine the structure of modal phrases in terms of RCs in the next section.

5. Proposal

Section 5 investigates the hierarchy of the three modals that we saw in Section 2: U-, E- and Q-modals. Let us examine the relation between FocP, which we discussed in Section 4, and E-modalP in RCs. Consider the examples in (13).

(13) a. * Taro-\textit{dake}-ga nomu \textit{-deshoo} kusuri
Taro-only -Nom take -E.mod. medicine
‘the medicine that only Taro will take’
b.* Gakusei-\textit{bakari} -ga kau-\textit{mai} hon
students-only -Nom buy-E.mod. book
‘the book that only students don’t buy’

Here, the RCs contain a nominative subject followed by a Focus Particle, and an E-modal. The ungrammaticality of these examples suggests that the position of E-modalP is higher than that of FocP as illustrated in (14).

(14) \[
\text{CP} \left[ \left[ \text{TP} \left[ \ldots \right] \right] \text{FocP} \right] \text{E-modalP} \]

This is because that as we saw in (11) in section 4, a nominative subject with a Focus Particle is grammatical, but when an E-modal is added to the RC, the grammaticality degrades as in (13).

As for Q-modals, they can appear in RCs regardless of whether the subject of RCs is nominative or genitive subjects.

(15) a. Taro-\textit{ga/no} yomu \textit{-ni-tigainai} hon
Taro-Nom/Gen read -must book
‘the book that Taro must read’
b. Taro-\textit{ga/no} miru \textit{-beki} eiga
Taro-Nom/Gen watch -should movie
‘the movie that Taro should watch’
This data of (15) supports Inoue (2007) in that the positions of Q-modals are inside IP, since Q-modalPs can appear in RCs with a nominative subject and RCs with a genitive subject. This is illustrated as in (16).

(16) \[ \text{CP} \left[ \text{IP} \left[ {\ldots v{\ldots}} \right] \text{Q-modalP} \text{FocP} \text{E-modalP} \right] \]

Lastly, we examine koto-clauses with a Topic phrase. As we saw in subsection 3.1, koto-clauses are compatible with E-modals. However, koto-clauses with a Topic phrase are degraded as shown in (17).

(17) * [Watashi -wa Taro -ni tegami -o okuru -daroo -koto]-wa …
I -Top Taro -to letter -Acc send -E-mod. -NL -Top
‘That I shall send the letter to Taro is …’

This suggests that koto-clauses are smaller than TopP.

(18) \[ \text{CP} \left[ \text{TP} \left[ {\ldots v{\ldots}} \right] \text{koto} \right] \text{TopP} \] \]

In this section, we have investigated the positions of U-, E- and Q-modals. The cartography of modality that we propose is summarized as follows:

(19) The cartography of modals

\[
\text{U-modalP} \quad \text{E-modalP} \\
\begin{array}{c}
\text{FocP} \\
\text{TP} \\
\text{Q-modalP}
\end{array}
\]

U- and E-modalPs are higher than FocP, since they cannot appear in RCs. Q-modalP, however, is lower than U- and E-modalPs since Q-modals may occur in RCs.
6. Summary

We have examined the hierarchy of U-, E-, and Q-modalPs, in terms of RCs. U-modalP is higher than U- and E-modalPs since it doesn’t appear in RCs. With respect to E-modalP, we have proposed that it is in the CP domain and is higher than FocP. Finally, since Q-modals are allowed in RCs regardless of whether the subject of RCs is nominative or genitive, positions of the Q-modalP should be inside TP.

References