# Information structure in spoken Japanese

## Particles, word order, and intonation

Natsuko Nakagawa

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# Acknowledgments

This work is based on my PhD thesis, *Information Structure in Spoken Japanese: Particles, Word Order, and Intonation*, submitted in 2016 to Graduate School of Human and Environmental Studies, Kyoto University. In 2005, I started as a graduate student of linguistics in Kyoto University, and more than 10 years have passed since then. I cannot believe that I concentrated on a single topic for this long time, and, on top of that, I cannot believe that many people patiently and kindly encouraged and helped me to finish the thesis.

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# Abstract

This thesis investigates the associations between information structure and linguistic forms in spoken Japanese mainly by analyzing spoken corpora. It proposes multi-dimensional annotation and analysis procedures of spoken corpora and explores the relationships between information structure and particles, word order, and intonation.

Particles, word order, and intonation in spoken Japanese have been investigated separately in different frameworks and different subfields in the literature; there was no unified theory to account for the whole phenomena. This thesis investigated the phenomena as a whole in a consistent way by annotating all target expressions in the same criteria and by employing the same analytical framework. Chapter 1 outlines the questions to be investigated and introduces the methodology of this thesis. Chapter 2 reviews the literature of Japanese linguistics as well as the literature on information structure in different languages. Chapter 3 proposes the analytical framework of the thesis. Major findings are discussed in Chapter 4, 5, and 6.

Chapter 4 analyzes the distributions of topic and case particles. It is made clear that so-called topic particles (*wa*, zero particles, *toiuno-wa*, and *kedo/ga* preceded by copula) are mainly sensitive to given-new taxonomy, whereas case particles (*ga*, *o*, and zero particles) are sensitive to both focushood and grammatical function. While the distinction between *wa* and *ga* attract much attention in traditional Japanese linguistics, the distribution of different kinds of topic and case particles, including zero particles, are analyzed in this thesis.

Chapter 5 studies word order: i.e., clause-initial, pre-predicate, and post-predicate noun phrases. Topical NPs appear either clause-initially or post-predicateively, while focal NPs appear pre-predicatively. Clause-initial and post-predicate NPs are different mainly in statuses in given-new taxonomy. The previous literature investigated clause-initial, pre-predicate, and post-predicate constructions in different frameworks; however, there was no unified account for word order in Japanese. The thesis outlines word order in spoken Japanese in a unified framework.

Chapter 6 investigates intonation. While the previous literature mainly con-

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centrates on contrastive focus, this thesis discusses in terms of both topic and focus. It turns out that intonation corresponds to a unit of processing and argues that information structure influences the form of intonation units.

Chapter 7 discusses theoretical implications of these findings. Finally, Chapter 8 summarizes the thesis and points out some remaining issues and possible future studies.

# 1 Introduction

## 1.1 Aims of the study

The goal of this study is twofold. First, I will investigate the relationships between information structure and linguistic forms in spoken Japanese. Second, I propose a method to investigate the relations between information structure and linguistic forms in any language using corpora.

Speakers of Japanese, like speakers of many other languages, infer the knowledge of other people and express their assumption about it using various linguistic and non-linguistic ways. Consider a piece of conversation of three people, A, B, and C from *the Chiba three-party conversation corpus* (Den & Enomoto 2007). In (1–A1), one of the participant, A, starts talking about *ano koohii-meekaa* 'that coffee machine'. B in B2 to B4 explains why A started to talk about it; it is related to the previous topic (too many people gathered in a small room). C just adds weak backchannel response in C5. In A6–A7, A asks C whether she knows the new coffee machine that arrived in building E. In C8–C11, C answers to A that C knows about it but has never tried it.[1]

(1)   A1:  ano **koohii-meekaa** sugoi-yo-ne
            that coffee-maker    great-FP-FP
            'That coffee machine is excellent, isn's it?'
      B2:  **koohii-meekaa**-o mi-tai
            coffee-maker-ACC see-want
            '(I) wanna see the coffee machine.'
      B3:  tukat-teru-no-o     mi-tai-tte     iu-no-to
            use-PFV-NMLZ-ACC see-want-QUOT say-NMLZ-and
            '(They) want to see (us) use (the coffee machine), and'
      B4:  koohii nom-e-nai     san-nin-gumi-mo          ita-kara
            coffee drink-CAP-NEG three-CL.person-group-also exist-because
            otya non-de-ta
            tea   drink-PROG-PAST

---

[1] Some of the utterances were omitted for the sake of simplicity.

> 'since there were also three people who cannot drink coffee, they
> drank tea.'

C5:  un
     uh-huh
     'Uh-huh.'

A6:  [to C] ii-too-no        sit-teru:
            E-building-GEN know-PROG
     '(Do you) know (that) in Building E?'

A7:  ano **koohii-meekaa**
     that coffee-maker
     'That coffee machine.'

C8:  un   un   un   un   un
     yeah yeah yeah yeah yeah
     'Yeah yeah!'

A9:  tukat-ta koto aru
     use-PAST thing exist
     'Have (you) used (it)?'

C10: atasi-sa: **are**-ga-ne:   ki-te-kara-ne:
     1SG-FP    that-NOM-FP come-and-since-FP
     'Since it arrived, I'

C11: moo     hotondo sagyoo sun-no-ga     nooha-beya-ni
     already almost  work   do-NMLZ-NOM brainwave-room-DAT
     nat-tyat-ta-kara-ne:
     become-PFV-PAST-because-FP
     'almost always work in the brainwave room, so...'      (chiba0932:
     172.39-191.46)

From this short conversation, observers (namely, we) can infer that A in A1 assumed that the other participants already know about the great coffee machine that was introduced in their lab. One can also infer that B in B2–B4 already knows about the coffee machine. In A6–A7, A appears to think that C might not know about the coffee machine. However, C in C8 explicitly denies that A's concern does not apply.

Why is it possible for us to infer the assumption of speakers about the knowledge of other participants'? In this case, linguistic expressions such as *ano (koohii meekaa)* 'that (coffee machine)' in A1 and *sit-teru:* '(do you) know...?' in A6 indicate A's assumption about the other participants' knowledge.

This thesis investigates more subtle linguistic expression in spoken Japanese: particles, word order, and intonation. Let us discuss the distinction between the

particles *ga* and *wa*, that has been discussed for a long time in the literature of Japanese linguistics. Examples (2-a) with the particle *ga* and (2-b) with *wa* express the same proposition 'A/the dog is running', where definiteness is not explicit in the original Japanese sentences. The expression *inu* 'dog' followed by *ga* in (2-a) can be interpreted to be either definite or indefinite, while that followed by *wa* in (2-b) can only be interpreted to be definite; from (2-b) we can infer that the speaker assumes the hearer already knows about the dog.

(2)  a.  inu-**ga**   hasit-teiru
         dog-NOM run-PROG
         'A/the dog is running.'
     b.  inu-**wa**   hasit-teiru
         dog-TOP run-PROG
         'The dog is running.'                                   (Constructed)

As will be discussed in Chapter 4, however, it is not the case that the NP coded by *wa* is always definite, nor is it the case that the NP coded by *ga* is always indefinite. What determines the usage of the particles? Moreover, the choice of particles interacts with other factors such as word order and intonation. This thesis investigates how information structure affects the choices of particles, word order, and intonation employing a corpus of spoken Japanese.

## 1.2 Background

Information structure in this thesis comprises "the utterance-internal structural and semantic properties reflecting the relation of an utterance to the discourse context, in terms of the discourse status of its content, the actual and attributed attentional status of the discourse participants, and the participants' prior and changing attitudes (knowledge, beliefs, intentions, expectations, etc.)" (Kruijff-Korbayová & Steedman 2003: 250). I assume that information structure is subordinate part of discourse structure, which is a clause-level unit and does not allow recursivity. Also, I suppose that information structure should be analyzed at the surface level rather than at the level of underlying semantics (or logical form).

There are two kinds of roots of studies on information structure (see Kruijff-Korbayová & Steedman (2003) for a useful survey). One started from studies on definite and indefinite descriptions by Russell (1905) and Strawson (1950; 1964). These studies triggered the discussion on presupposition and assertion, which has been at issue until the present time. Especially, they have influenced contemporary scholars of logics, formal semantics, and generative grammar (Chomsky

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1965; Jackendoff 1972; Selkirk 1984; Rooth 1985; Rizzi 1997; Erteschik-Shir 1997; 2007; Büring 2007; Ishihara 2011; Krifka & Misan 2012; Endo 2014). The other started from studies of Prague School (Mathesius 1928; 1929; Sgall 1967; Firbas 1975). Their studies have especially inspired functional linguistics (Bolinger 1965; Halliday 1967; Kuno 1973b; Gundel 1974; Chafe 1976; 1994; Prince 1981; Givón 1983; Tomlin 1986; Lambrecht 1994; Birner & Ward 1998; 2009). Some scholars were influenced by both of these traditions (Vallduví 1990; Steedman 1991; Vallduví & Vilkuna 1998). Almost independent of this tradition of European and American linguistics, the so-called topic particle *wa* in Japanese, often as opposed to the case particle *ga*, has gathered attention of Japanese linguists for a long time (Matsushita 1928; Yamada 1936; Tokieda 1950/2005; Mikami 1953/1972; 1960; Onoe 1981; Kinsui 1995; Kikuchi 1995; Noda 1996; Masuoka 2000; 2012). In addition to the issue of the usage of *wa*, the discussion on *wa* also elicited the question of the nature of subject because, on the surface, *wa* frequently alternates with *ga*, the so-called subject particle. See Chapter 2 for detail.

More recently, more studies investigate actual productions and understandings of language instead of acceptability judgements of constructed examples. Corpus-oriented studies (e.g., Calhoun et al. 2005; Götze et al. 2007; Chiarcos et al. 2011) inherit both of the traditions of information structure: the logic and the functional traditions. Other corpus-oriented studies such as Hajičová, Panevová & Sgall (2000), annotating Czech, are based on the Prague School theory. There are also questionnaires for eliciting expressions related to information structure cross-linguistically (Skopeteas et al. 2006). Cowles (2003) and Cowles & Ferreira (2012) investigate information structure mainly employing psycholinguistic experiments.

I am influenced most by the tradition of functional linguistics and corpus linguistics. Although I tried to include knowledge from studies of other traditions as much as possible, sometimes my assumptions might be difficult to understand for readers of other traditions. I assume that usage shapes a language (Givón 1976; Comrie 1983; 1989; Bybee & Hopper 2001) and am interested in how linguistic usage affects the shape of a language. In this thesis, I focus on the question of how the usage related to information structure affects linguistic form in Japanese.

## 1.3 Methodology

I investigate linguistic forms in spoken Japanese associated with information structure mainly by examining spoken corpora. It is well known that information structure phenomena are so subtle that slight change in contexts can affect

the judgement of the sentence in question; acceptability judgements from a single person (i.e., the author) are not reliable. This is the reason why I employ spoken corpora; the speakers produce utterances naturally without concentrating on information structure too much like linguists. Moreover, contexts are available in spoken corpora, which are crucial for observers to determine the information structure of a sentence. It is also well known, however, that information structure annotation is very hard. There are studies on annotating information structure in various corpora in different languages (Hajičová, Panevová & Sgall 2000; Calhoun et al. 2005; Götze et al. 2007; Ritz, Dipper & Götze 2008; Chiarcos et al. 2011). Some use syntactic information to decide the information structure of a sentence (Hajičová, Panevová & Sgall 2000); some use intonation (Calhoun et al. 2005); others use linguistic tests (Götze et al. 2007; Chiarcos et al. 2011). But many of the studies employ multiple features to decide the information structure of a sentence. For example, Götze et al. (2007), in annotating "aboutness topic", not only employ tests such as whether the NP in question can be the answer to the question "let me tell you something about X", but also employs morphological information of the NP such as referentiality, definiteness, genericity, etc. In the present work, I annotate multiple features of "topichood" and "focushood", rather than annotating homogeneous "topic" and "focus". I consider a topic as a cluster of features of presupposed, evoked, definite, specific, animate, etc., and a focus as a cluster of features of asserted, brand-new, indefinite, non-specific, inanimate, etc. I assume that they typically (frequently) have these features. Not all the features are necessarily present in topics or foci; there could be infrequent (i.e., atypical) topics which are indefinite or inanimate, or there could be foci which are definite or animate. See discussion in Chapter 3 for detail.

I sometimes employ acceptability judgements and production experiment to support my argument. I believe that, in the future, it is necessary to test all the hypotheses by multiple methods for a scientific investigation of language.

## 1.4 Overview

I outline chapters of this thesis. In Chapter 2, I provide an overview of the previous studies on information structure in across languages. I also describe basic features of Japanese and review studies on Japanese related to this thesis. In Chapter 3, I outline the framework employed in the thesis; the notions of topic, focus, and related features to them. Moreover, I introduce the nature of the corpora, the annotation procedure, and the methods to analyze the results. The following three chapters analyze linguistic forms in spoken Japanese in the framework of

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this thesis. Chapter 4 investigates particles, Chapter 5 analyzes word order, and Chapter 6 inquires intonation. In Chapter 7, I summarize the thesis and discuss theoretical aspects of the thesis.

# 2 Background

## 2.1 Introduction

This chapter provide an overview of various definitions of (or notions frequently associated with) topics (§2.2) and foci (§2.3). In each section, I first introduce the definition of topics and foci in this dissertation. Then I review the literature. Topic is roughly equivalent to "psychological subject" (von der Gabelentz 1869), "theme" (e.g., Daneš 1970; Halliday 2004), "ground", "background", and "link" (Vallduví 1994), although there are many (sometimes crucial) differences among these. In the same manner, focus is roughly equivalent to "psychological predicate", "rheme", "foreground", and "comment". Gundel (1974) and Kruijff-Korbayová & Steedman (2003) provide a useful summary of the history of these notions.

In reviewing the literature, I emphasize two aspects: the importance of the definition of topics and foci proposed in the dissertation and, at the same time, their heterogeneous characteristics. The present study argues that topics and foci in different languages form prototype categories with different features of different degrees. This position is similar to Firbas (1975) and Givón (1976), who viewed topic as gradient notion, although the proposed features are not exactly the same. Also, I only assume a single layer of information structure rather than assuming multiple layers such as the topic-comment vs. focus-background layers. While many researchers hypothesize multiple layers of information structure such as the topic-comment and focus-background layers, I rather suppose a flat layer of information structure with multiple features.

In §2.4, finally, I outline the literature on Japanese particles, word order, and intonation.

## 2.2 Topic

In this section, I give a brief overview of the definitions of topic. The notion of topic is controversial, and the history is complicated. I classify these complicated notions into several representative categories in the following subsections. Be-

fore the overview, I first introduce the definition of topic in this dissertation to make the discussion clear.

### 2.2.1 The definition of topic in this dissertation

Since I assume that information structure is a cognitive notion, I define the topic from a cognitive standpoint. The definition of topic is stated in (1).

(1)     Topic is a discourse element that the speaker assumes or presupposes to be shared (known or taken for granted) and uncontroversial in a given sentence both by the speaker and the hearer.

This definition follows and elaborates the idea of topics (*daimoku-tai* 'topic form') in Matsushita (1928), who states "the theme of judgement [topic] should not be changed before the judgement" (p. 774, translated by the current author). Also, he states that the topic is "determinate" (p. 775).

   In terms of the given-new taxonomy proposed by Prince (1981) shown in (2), topics defined in (1) include unused, declining (to be discussed below), inferable, and evoked elements (Lambrecht 1994: §4.4.2).[1] By the statement that topics are "shared", I mean that topics are either unused, declining, inferable, or evoked.

(2)
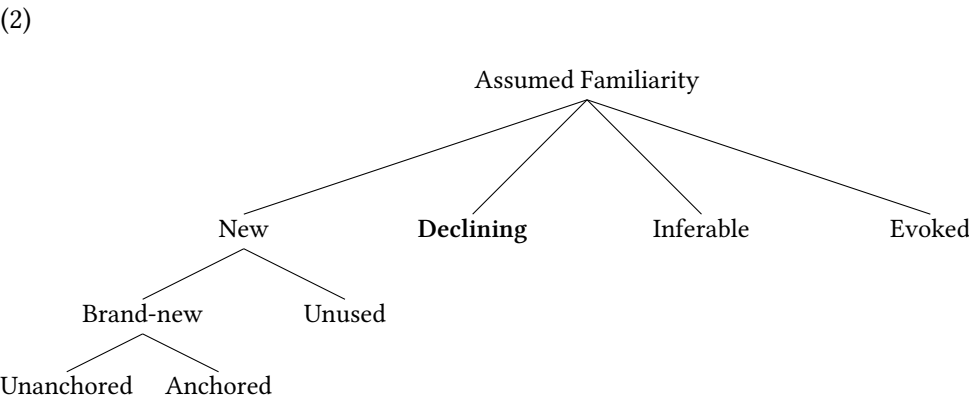


(modified from Prince 1981: 237)

   A new element refers to an entity the speaker first introduces into the dis-

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[1] Inferable elements are further divided into containing and non-containing inferable elements, and evoked elements are divided into textually and situationally evoked elements. I omit these distinctions since they are irrelevant to the discussion.

course; in other words, "[the speaker] tells the hearer to 'put it on the counter'" (Prince 1981: 235). A brand-new element refers to a new entity that "the hearer may have had to create" (ibid.). There are two types of brand-new elements: anchored and unanchored. "A discourse entity is Anchored if the NP representing it is linked, by means of another NP, or 'Anchor', properly contained in it, to some other discourse entity" (op.cit.: p. 236). According to Prince, "*a bus* [...] is Unanchored, or simply Brand-New, whereas *a guy I work with* [...], containing the NP *I*, is Brand-new Anchored, as the discourse entity the hearer creates for this particular guy will be immediately linked to his/her discourse entity for the speaker" (ibid.). An unused elements refers to an entity "the hearer may be assumed to have a corresponding entity in his/her own model and simply has to place it in (or copy it into) the discourse-model" (ibid.) such as *Noam Chomsky*. An NP refers to an evoked entity "if [the] NP is uttered whose entity is already in the discourse-model, or 'on the counter'" (ibid.). "A discourse entity is Inferable if the speaker assumes the hearer can infer it, via logical–or, more commonly, plausible–reasoning, from discourse entities already Evoked or from other Inferables" (ibid.).

In addition, I put declining elements in the taxonomy. A declining element refers to an entity which has been mentioned a while ago but is assumed to be declining in the hearer's mind because it has not been referred to for a while. Declining elements are assumed to be in semi-active state in terms of Chafe (1987; 1994). The referent of declining elements are in semi-active state especially through "deactivation from an earlier active state" (Chafe 1987: 29). Chafe's concept of semi-active also includes inferable entities. Since I want to distinguish inferable from declining, I make a new term.

Note that the condition where the speaker assumes the element to be shared is a necessary but not a sufficient condition of topic; if the element in question is a topic, a topic is assumed by the speaker to be shared with the hearer, but it is not necessarily the case that all shared elements are topics. The topic element must also be assumed to be uncontroversial, and I argue that this is a necessary and sufficient condition for topic, (see §3.3.1 for details).

Also note that the definition of topic in (1) includes heterogeneous elements in (2). Therefore, the definition (1) does not necessarily contradict the definitions proposed in the previous literature. Rather, it includes many of the previous definitions and restate them in terms of a cognitive viewpoint.

In the following sections, I provide a brief overview of the notions of topics in the previous literature by comparing them with the notion in the present thesis.

### 2.2.2 Aboutness

One of the representative definition of topic is that topics are what the sentence is about. This definition is employed by various linguists such as Matsushita (1928); Kuno (1972); Gundel (1974); Reinhart (1981); Dik (1978); Lambrecht (1994), and Erteschik-Shir (2007). Topic as things under discussion (e.g., Heycock 2008) is also classified here. Here I will discuss based on Reinhart (1981) because this is one of the most detailed and influential work.

According to Reinhart (1981), inspired by Strawson (1964), topics should be characterized in terms of *aboutness.* More precisely, "an expression will be understood as representing the topic if the assertion is understood as intending to expand our knowledge of this topic" (Reinhart 1981: p. 59).[2] Moreover, the truth value of a sentence is assessed with respect to the topic (ibid.). She proposes some tests to identify a topic in a sentence. The first one is an *as for/regarding* test; an expression X is a topic if it is felicitously paraphrased as {*as for/regarding*} X (p. 63, see also Kuno (1972; 1976); Gundel (1974)). Therefore, *Matilda* in (3-a) and *your second proposal* (3-b) are topics.

(3)   a.   **As for Matilda**, she can't stand Felix.
      b.   **Regarding your second proposal**, the board has found it unfeasible.
                                                        (Reinhart 1981: 59)

As she cautions, however, not all topics can be identified in this way because *as for* and *regarding* are typically used to change the current topic (Keenan & Schieffelin 1976; Duranti & Ochs 1979). For example, *as for this book* in (4) is awkward even though this is clearly a topic. This is because the book has already been the topic of the previous sentence.

(4)   Kracauer's book is probably the most famous ever written on the subject of the cinema. ??**As for this book**, many more people are familiar with its catchy title then[sic] are acquainted with its [turgid] text. (Reinhart 1981: p. 64)

Therefore, she proposes a "more reliable test", which embeds the sentence in question in *about* sentences. This is exemplified in (5), where the book is correctly identified as a topic.

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[2] Although Reinhart's idea of the definition of topic is basically from Strawson, the discussion is based on Reinhart (1981). This is because she notes that her "presentation of [the criteria of topics] may not be fully loyal to [Strawson's] original intentions" since "[Strawson's] criteria are introduced in a rather parsimonious manner" (p. 59).

(5)    He said **{about/of} the book** that many more people are familiar with its catchy title than are acquainted with its turgid text.    (op. cit., p. 65)

To formalize this intuition, Reinhart introduces the notion of possible pragmatic assertions. It is assumed that "each declarative sentence is associated with a set of possible pragmatic assertions (PPA), which means that that sentence can be used to introduce the content of any of these assertions into the context set" (p. 80). The context set of a given discourse at a given point is a set of propositions that both the speaker and the hearer have accepted to be true at this point (Stalnaker 1978). The set of PPA's of a given sentence S is defined in (6), where $\phi$ indicates the proposition expressed by S.

(6)    $PPA_{(S)} = \phi$ together with $[< \alpha, \phi >: \alpha$ is the interpretation of an NP expression in S]    (Reinhart 1981: pp. 80-81)

Assuming (6), the topic expression of a sentence S in a context C are defined as in (7).

(7)    Topic is "the expression corresponding to $\alpha_i$ in the pair $< \alpha_i, \phi >$ of $PPA_{(S)}$ which is selected in C ".    (op. cit., p. 81)

This is achieved in the following steps: (i) "if possible, the proposition $\phi$ expressed in S will be assessed by the hearer in C with respect to the subset of propositions already listed in the context set under $\alpha_i$", and (ii) "if $\phi$ is not rejected it will be added to the context set under the entry $\alpha_i$" (ibid.).

Since this definition of topic in terms of aboutness is attractive and seems to coincide with our intuition, many linguists adopt this definition (e.g., Lambrecht 1994; Erteschik-Shir 2007). However, I do not employ this definition although my criteria of topics in (1) and Reinhart's (7) are apparently very similar and the elements covered by these two definitions overlap most of the time. Given that I am interested in finding topic expressions in corpora, aboutness is not clear enough for my purpose. For example, Vallduví (1994) presents the following hypothetical mini-conversation between a newly-appointed White House butler (H$_1$) and the Foreign Office Secretary after returning from a trip to Europe (S$_0$).

(8)    H$_1$:    I'm arranging things for the presidents' dinner. Anything I should know?
        S$_0$:    Yes. [The president]$_{TOP}$ [hates the Delft china set]$_{FOC}$.

(Vallduví 1994: p. 9, 12)

In this example, Vallduví identifies *hates the Delft china set* as focus, whereas it passes the *about* test as shown in (9).

(9)   The Foreign Office Secretary said about **the Delft china set** that the president hates it.

Since I'm assuming that topics are in complementary relation with focus elements, the element in question is not a focus if it is a topic, and vice versa.

On the other hand, *no-* and *aha*-tests proposed in §3.3.1 correctly identify *the president* as a topic and *the Delft china set* as a focus. As shown in (10-$H_2$) and (11-$H_2$), the topic *the president* cannot be argued against or repeated as news, whereas the focus *the Delft china set* can be.

(10)   $H_1$:   I'm arranging things for the presidents' dinner. Anything I should know?
       $S_0$:   Yes. [The president]$_{TOP}$ [hates the Delft china set]$_{FOC}$.
       $H_2$:  ?No, **the first lady** hates the Delft china set.
       $H_2'$:   No, the president hates **Rockingham Pottery**.

(11)   $H_1$:   I'm arranging things for the presidents' dinner. Anything I should know?
       $S_0$:   Yes. [The president]$_{TOP}$ [hates the Delft china set]$_{FOC}$.
       $H_2$:  ?Aha, *the president*.
       $H_2'$:   Aha, **the Delft china set**.

Therefore, I conclude that the definition (1) identifies a topic better than the aboutness test, although aboutness captures some aspects of our intuition about topics.

### 2.2.3 Evokedness

Evoked information is commonly called "given" or "old" information. However, as pointed out in Prince (1981), "given" and "old" are too ambiguous terms. Following Prince, I use the term "evoked information" to indicate the referent that has been mentioned in the previous discourse or has been physically present in the speaker's and the hearer's attention and hence "in the consciousness of the addressee [(or the hearer)] at the time of utterance" (Chafe 1976: p. 30). The term "the focus (center) of attention", "anaphoric", "predictable" (Kuno 1972), and "active" (Portner 2007) are understood in the same way.

Most researchers agree that evoked information is not the topic itself (Reinhart 1981; Gundel 1988; Lambrecht 1994: *inter alia*). As is well known, evoked elements

can be focus instead of topic as shown in (12-B).

(12)  A:  Who did Felix praise?
      B:  [Felix praised]$_{TOP}$ [himself.]$_{FOC}$
                    (Reinhart 1981: p. 72, style modified by the current author)

In (12-B), it is obvious that *himself* is evoked information since the referent is mentioned in the previous context and in the sentence in question itself. At the same time, it consists of focus because it is the answer to the *wh*-question (see also the discussion on focus in §2.3 below). Given that foci cannot be topics, *himself* in (12-B) is not a topic.

Moreover, as has been pointed out by many scholars (see Li 1976; Givón 1983; Halliday 2004: *inter alia*), topics are frequently evoked, but this is not always the case.

### 2.2.4 Subject

As pointed out in Li (1976), topics are frequently, but not always, subjects. For example, the whole utterance in (13-a-d) can be the answer to a question "what happened?", which indicates that the subjects in these utterances are also part of focus, not topic.

(13)      What happened?
      a.  [A man shot a lion.]$_{FOC}$
      b.  [It is snowing.]$_{FOC}$
      c.  [Someone came in.]$_{FOC}$
      d.  [The Mets beat the A's.]$_{FOC}$
                    (Gundel 1974: p. 49, modified by the current author)

Topics are not always subjects, either. Objects and other elements can be also topics. In (14), objects are topics. The information structure is annotated by the current author. It is necessary to specify the context to determine the detailed information structure.

(14)  a.  [Beans]$_{TOP}$ he won't eat.
      b.  [As for that dress]$_{TOP}$, I promise I won't wear [it.]$_{TOP}$
      c.  (What about) [beans]$_{TOP}$, does he like [them?]$_{TOP}$
                    (Gundel 1974: p. 27, modified by the current author)

However, it is also important to note that topics are frequently subjects (Li 1976).

### 2.2.5 Sentence-initial elements

Chomsky (1965) and Halliday (1967) characterize the topic as the sentence-initial element (more recently, see Hajičová, Panevová & Sgall (2000)). To define the topic in terms of linguistic form ruins the goal of this dissertation: i.e., to figure out the association between information structures (topic and focus) and linguistic forms (particles, word order, and intonation).

Moreover, there are cases where the sentence-initial elements are not topics. For example, sentences (13) in the last section are topicless sentences; therefore, the sentence-initial elements are not topics.

Also, topics sometimes do not appear sentence-initially.

(15)     (What about the proposal?) – [Archie rejected]$_{FOC}$ [{it/the proposal}.]$_{TOP}$

We will see topics which appear after the predicate in Chapter 5. As will be discussed in Chapter 5, topics frequently appear sentence-finally in casual spoken Japanese and many other languages; and post-predicate topics have their own characteristics.

## 2.3 Focus

In this section, I review the definitions of (or the notions closely associated with) focus. Like topic, focus is also a controversial notion and the literature disagrees with the definition as well as the properties of focus. Here again, I categorized different notions of focus into several representative groups in the following subsections. But first, I introduce my definition of focus in order for the discussion to be clear. Then, I give an overview of each definition of focus in the literature.

### 2.3.1 The definition of focus in this dissertation

Since I try to capture the phenomena of information structure in a single layer, I believe that topic and focus should be mutually exclusive rather than overlapping with each other as has been mentioned above. Therefore, I define the notion of focus as in (16) (see also the discussion in §3.3.2).

(16)     Focus is a discourse element that the speaker assumes to be news to the hearer and possibly controversial. S/he wants the hearer to learn the relation of the presupposition to the focus by his/her utterance. In other words, focus is an element that is asserted.

Like (1), this definition also follows and elaborates the idea of focus (*heisetsu-tai* 'plain form') in Matsushita (1928). He states that "whereas the theme of judgement [topic] should not be changed before the judgement, materials to be used for the judgement [focus] are indeterminate, variate, and free since the speaker uses these materials at his/her own choice" (p. 774, translated by the current author).

I believe the statement that the speaker "wants the hearer to learn the relation of the presupposition to the focus" in (16) is essentially the same as the definition of comment in Gundel (1988), which states as follows.

(17)    A predication, P, is the comment of a sentence, S, iff in using S the speaker intends P to be assessed relative to the topic of S.    (Gundel 1988: p. 210)

Lambrecht (1994) (based on Halliday 1967) also employs the same definition of focus as stated in (18).

(18)    [T]he focus of a sentence, or more precisely, the focus of the proposition expressed by a sentence in a given utterance context, is seen as the element of information whereby the presupposition and the assertion *differ* from each other. The focus is that portion of a proposition which cannot be taken for granted at the time of speech. It is the *unpredictable* or pragmatically *non-recoverable* element in an utterance.    (Lambrecht 1994: p. 207, underlined by the original author)

Unpredictability or non-recoverability (see also Kuno 1972) is also very similar to definition (16).

I use the term *assertion* in the sense proposed by Stalnaker (2004). He argues that, among possible worlds, a single world is chosen by assertion. I consider this to be equivalent to "being news to the hearer." The reason why I do not simply say "focus is the element being asserted" is that to single out a world from many possible worlds might be confusing with contrastiveness. As will be discussed in §2.3.3, focushood and contrastiveness are similar but different notions.

As has been pointed out in many studies (e.g., Matsushita 1928; Chomsky 1965; Gundel 1974), the answer corresponding to a *wh*-question is a typical focus. The following examples are from Lambrecht (1994: p. 121). The interpretation of information structure is of the current author and might slightly differ from Lambrecht's original intention.

(19)    Predicate focus
        Q:    What did the children do the next?

*2 Background*

A: [The children]$_{TOP}$ [went to school.]$_{FOC}$

(20)    Argument focus

Q:    Who went to school?

A:    [The children]$_{FOC}$ [went to school.]$_{TOP}$

(21)    Sentence focus

Q:    What happened?

A:    [The children went to school.]$_{FOC}$

Focus is news (or newsworthy in Mithun (1995)) for the hearer and can be repeated as what s/he learned from the current utterance. For example, in (22), the topic *John* in (22-A) cannot be repeated as news by B, whereas (part of) the focus *teacher* can be repeated by B′.

(22)    A:    [{As for/Regarding} John]$_{TOP}$, [he]$_{TOP}$ [is a teacher]$_{FOC}$.

B: ??Aha, **John**.

B′:    Aha, **a teacher**.

*No* tests based on Erteschik-Shir (2007) are also available. See dicsussion in §3.3.2. Identifying focus by *wh*-question-answer pairs ((19)-(21)) or the *aha* test (22) is based on the assumption that foci are news or newsworthy, while *no* tests like (12) in §3.3.2 are based on the assumption that foci can be controversial.

In the following sections, I review various notions associated with foci and how they relate to definition of foci in the present work.

### 2.3.2 Newness

Newsness is known to correlate with focushood (Li 1976; Givón 1983; Halliday 2004: *inter alia*). Although different researchers use the term *new* to mean different concepts, I use this term to indicate strictly "new" in terms of Prince (1981) or "what the speaker assumes he is introducing into the addressee's consciousness by what he says" (Chafe 1976: p. 30). Other newness, what is called "relational new" in Gundel (1988), is excluded from the current discussion. According to Gundel & Fretheim (2006: p. 177), relational newness is described as follows.

(23)    Y [focus] is new in relation to X [topic] in the sense that it is new information that is asserted, questioned, etc. about X. Relational [...] newsness thus reflects how the informational content of a particular event or state of affairs expressed by a sentence is represented and how its truth value is to be assessed.

The notion of "relational new" corresponds to focus in this dissertation and the notion of comment in Gundel (1988).

The literature agrees that not all foci are new. As discussed in §2.2.3, focus can be an evoked element. (12), repeated here as (24), is an example of this case; *himself* in (24-B) is evoked because the referent "Felix" has already been mentioned in the preceding utterance (24-A), and, at the same time, it serves as focus because it corresponds to the answer part of *wh*-question in (24-A).

(24)  A:  Who did Felix praise?
       B:  [Felix praised]$_{TOP}$ [himself.]$_{FOC}$
                     (Reinhart 1981: p. 72, style modified by the current author)

On the other hand, all new elements can be foci. It is well known that, in English, (specific or non-generic) indefinite noun phrases cannot be topics. For example, Gundel (1974), discussing the following examples, concludes that indefinite noun phrases cannot be topics. As shown in (25-a) and (26-a), indefinite noun phrases cannot be put in the frame *concerning* and *about*; nor can they appear in the frame *what about*.

(25)  a.  *Concerning a French king, he married his mother.
       b.  *What about a French king? – He married his mother.
                                                    (Gundel 1974: p. 54)

(26)  a.  *About a lion, Bill shot him.
       b.  *What about a lion? – Bill shot him.                (*ibid.*)

I argue that new elements that have been known to the hearer before the utterance, i.e., "unused" in terms of Prince (1981), can be either topic or foci. They are new in the sense that the speaker is introducing them into the hearer's consciousness by what s/he says; but they are given in the sense that they are assumed by the speaker to be shared with the hearer. In Chapter 5, I argue that in fact unused elements have characteristics of both topics and foci.

### 2.3.3 Contrastiveness

Many studies, especially in generative linguistics, associate focushood with contrastiveness (frequently accompanied with pitch peak). Here I discuss based on Rooth (1985; 1992), who was inspired by von Stechow (1991), since his theory is one of the most influential studies on focus as contrastive.

In his theory, alternative semantics, where focus is related to the intuitive notion of contrast, Rooth argues that the function of focus is to evoke alternatives;

in other words, the focused element is contrasted with the alternatives. For example, consider (27) in two cases where *Mary* is focused and *Sue* is focused.

(27)    Mary likes Sue.

The former case evokes the set of propositions of the form 'x likes Sue' as formalized in (28-a), whereas the latter case evokes the set of propositions of the form 'Mary likes y', as formalized in (28-b).

(28)    a.    $[\![_S \, [\text{Mary}]_F \text{ likes Sue}]\!]^f = \{\textbf{like}(\text{x},\textbf{s}) \mid \text{x} \in E\}$, where $E$ is the domain of individuals.
          b.    $[\![_S \, \text{Mary likes } [\text{Sue}]_F]\!]^f = \{\textbf{like}(\textbf{m},\text{y}) \mid \text{y} \in E\}$

(Rooth 1992: 76)

Among the member of these sets, Mary is chosen as the one who likes Sue in (28-a), and Sue is chosen as the one who Mary likes in (28-b).

Characterization and formalization of focus by alternative semantics is clear and seems to work well. However, characterizing foci as contrastive is problematic for our assumption; whereas we have assumed that topic and focus are mutually exclusive, there can be both contrastive topic and contrastive focus as has been pointed out in Vallduví & Vilkuna (1998). Especially problematic for us is the existence of contrastive topics. If contrastiveness is equal to focushood, one has to admit that contrastive topic is both topic and focus. Following Vallduví & Vilkuna (1998), I argue that this is very confusing for a theory of information structure and it is more plausible to assume that contrastiveness is a feature independent of both topichood and focushood. For example, as will be discussed in Chapter 4, the particle *wa* in Japanese is sensitive to some properties of topichood, whereas the particle *ga* is sensitive to some properties of focushood. In addition to this, these two particles are also sensitive to contrastiveness; these particles are obligatory for contrastiveness, while, in other cases, they are optional. Still, contrastive *wa* and *ga* are sensitive to topichood and focushood, respectively. Therefore, this dissertation assumes that contrastiveness is independent of topic and focus. However, it is highly likely that other languages work differently. Further study is needed to investigate whether contrastiveness is independent of topic and focus in all languages.

### 2.3.4 Pitch peak

Some studies assume that focus is a pitch peak. For example, (Chomsky 1970/1996: p. 100) states that "phrases that contain the intonation center [pitch peak in the

present work] may be interpreted as focus of utterance". As Gundel (1988: p. 230) reports, the association between a pitch peak and focus is found in typologically, genetically, and geographically diverse languages and concludes that this association seems to be universal. According to her, a focus is given a pitch peak at least in English, Guarani, Russian and Turkish with the only exception of Hixkaryana (see also the references in her work and Büring (2007)).[3]

As has been pointed out in previous studies on other languages (e.g., Jackendoff (1972: §6.2)), however, I do not employ the definition of focus as pitch peak because the goal of this study is to investigate the association between information structure and linguistic forms including intonation; the definition of focus as pitch peak spoils the goal of our study. Moreover, I will argue in Chapter 6 that elements other than focus are given pitch peak. For example, a topic that is reintroduced in the discourse are produced prominently (see also Gundel 1999). It is also well known that contrastiveness correlates with pitch peak. Therefore, regarding focus as elements with pitch peak causes a great confusion.

## 2.4 Characteristics of Japanese

In this section, I provide a rough overview of the typological characteristics of Japanese. Most of the literature on Japanese is based on written language; therefore, most part of this section (except for sound parts such as intonation) is also based on written Japanese. I discuss the difference between written and spoken Japanese where necessary.

### 2.4.1 General characteristics

Japanese is an SOV language with typical OV characteristics in terms of Dryer (2007); it has postpositions (which are called particles in this dissertation), genitives precede nouns, adverbial subordinators appear after the verbs, main verbs precede auxiliary verbs, question particles and complementizer appear after the verbs, subordinate clauses precede main clauses, and relative clauses precedes the nouns (Shibatani 1990; Masuoka & Takubo 1992). Moreover, nouns are preceded by adjectives and demonstratives, and verbs are followed by many kinds of suffixes indicating tense, modality, negation, passive, causative, and so on. (29) shows some examples of Japanese sentences. A stands for the agent-like argument of transitive clauses; S stands for the only argument of intransitive clauses; and P stands for the patient-like argument of transitive clauses.

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[3] See Downing (2012) for more exceptions.

(29)  a.  taroo-ga   hanako-ni   hon-o   yat-ta
         Taro-NOM Hanako-DAT book-ACC give-PAST
         'Taro gave a book to Hanako.'                    (A + DAT + P + V)

     b.  sono san-nin-no          ookina otoko
         that  three-CL.person-GEN big     man
         'those three big men'                            (Adj + N)

     c.  taroo-no   hon
         Taro-GEN book
         'Taro's book'                                    (GEN + N)

     d.  [taroo-ga  kat-ta]     hon
         Taro-NOM buy-PAST book
         'the book Taro bought'                           (Rel + N)

     e.  ik-e-nai
         go-CAP-NEG
         'cannot go'                                      (V + SFX1 + SFX2)

(Shibatani 1990: pp. 257–258, glosses modified by the current author)

The most relevant features of Japanese in this dissertation are the order of the subject, the object, and the verb and the order of nouns and particles. Also, as will be discussed in 2.4.3, arguments such as subjects and objects can be 'scrambled'; i.e., word orders other than the basic word order are found in both spoken and written Japanese.

The particles *ga* and *o*, which follow nouns, are considered to be a nominative particle and an accusative particle respectively in written Japanese, and accordingly Shibatani glossed them as such. As will be discussed below, however, zero particles are extensively used in spoken Japanese and the characterization of *ga* as the nominative marker and *o* as the accusative marker does not necessarily reflect the exact properties of these particles. Since the literature is mainly based on written Japanese, I keep the glosses of NOM for *ga* and ACC for *o* in this chapter. In the same way, I will use TOP for *wa* since most literature agrees that *wa* is a topic marker (no matter what it means), although, again, the zero particle is extensively used in the spoken language. But keep in mind that the glosses are tentative. I will not use NOM ACC, and TOP in the following chapters; instead, I just gloss *ga*, *o*, and *wa* for each particle.

Japanese extensively employs so-called zero pronouns. In (30), for example, pronouns such as 'I', 'him', and 'it' are not explicitly uttered.

(30)  a.  zyon-ga  ki-ta-node,  ai-ni  it-ta
          John-NOM come-PAST-since meet-DAT go-PAST
          "Since John came, (I) went to see (him),"

      b.  zyon-ga  dekire-ba suru-desyoo
          John-NOM can-if   do-will
          "If John can (do it), (he) will do (it)."          (Kuno 1973b: p. 17)

These omitted pronouns are sensitive to the information status of the referents
(see Kuno 1978: Chapter 1).

The language has five vowels and 15 consonants (although the number may
vary depending on the analysis). The syllable structures are relatively simple;
a syllable basically consists of a consonant and a vowel, whereas long vowels,
geminates, final nasal coda are possible. Also, /y/ ([j]) can appear between a
consonant and a vowel as in *kyoo* ([kjo:]) 'today' as opposed to *koo* ([ko:]) 'this
way'. The pitch accent plays an important role. The systems of pitch accent
vary among Japanese dialects, and here I review the accent system of Standard
Japanese (spoken around Tokyo), which is to be investigated in the present study.
First, in Standard Japanese, the pitch is either high or low, and the pitches of
the first and the second syllables are different. If the first syllable is high, the
second syllable is low, and vice versa. Second, the accent nucleus (indicated by
ˈ) specifies where the pitch falls. For example, [haˈɕi] 'chopsticks' indicates that
[ha] is high and [ɕi] is low. On the other hand, [haɕiˈ] 'bridge' indicates that [ha]
is low and [ɕi] is high. Words without nucleus accents are also possible as in
the case like [haɕi] 'edge', which is pronounced in the same way as 'bridge'. The
distinction between [haɕiˈ] 'bridge' and [haɕi] 'edge' can be made, for example,
by the following particles without accents. For example, when *ga* 'NOM' follows
[haɕiˈ] 'bridge', the pitch of *ga* is low because the accent nucleus specifies where
the pitch falls. On the other hand, when *ga* follows [haɕi] 'edge', *ga* is produced
in a high pitch. Thereby [haɕiˈ] 'bridge' and [haɕi] 'edge' can be distinguished
from each other. In addition to phonemes and pitch accents, there are also issues
on intonation, which will be discussed in the following section (§2.4.4) more in
detail since it is one of the main topics of this dissertation.

### 2.4.2 Particles

As has been mentioned above, nouns in Japanese are followed by various parti-
cles or postpositions. In general, they are believed to be clitics and indicate the

status of a noun in a clause.[4] In this section, I review the literature on *ga*, *o*, and *wa*, which are to be investigated in this dissertation. Note again that the literature is mainly on written Japanese. In §2.4.2.7, I present a review of the literature on zero particles, which are widely used in spoken Japanese in place of *ga*, *o*, and *wa*.

### 2.4.2.1 Case particles vs. adverbial particles

In the present thesis, I discuss two kinds of particles that attach to nouns: case and adverbial particles. Case particles such as *ga* and *o* code grammatical relations of nouns. For example, in (31), *ga*, following a noun *taroo*, codes nominative case, whereas *o*, following a noun *hon* 'book', codes accusative case.

(31) taroo-**ga** hanako-ni hon-**o** yat-ta
Taro-NOM Hanako-DAT book-ACC give-PAST
'Taro gave a book to Hanako.' (Shibatani 1990: pp. 257)

Adverbial particles, on the other hand, sometimes follow and sometimes replace with case particles and adds additional meaning to the sentence. The adverbial particle discussed in this dissertation is *wa*.[5] *Wa* can replace with *ga* and *o* and change the noun into "topic". It sometimes replaces with and sometimes follows *ni* 'DAT'. For example, each noun in (31) can be attached by *wa* in the following ways.

(32) a. taroo-**wa** hanako-ni hon-o yat-ta
Taro-NOM-TOP Hanako-DAT book-ACC give-PAST
'Regarding Taro, he gave a book to Hanako.'
b. hon-**wa** taroo-ga hanako-ni yat-ta
book-TOP Taro-TOP Hanako-DAT give-PAST
'Regarding the book, Taro gave it to Hanako.'
c. hanako-(ni)-**wa** taroo-ga hon-o yat-ta
Hanako-(DAT)-TOP Taro-TOP book-ACC give-PAST
'Regarding Hanako, Taro gave a book to her.'

There are complex interactions between *wa* attaching and word order (e.g., Kuroda

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[4] Although the equal sign (=) is usually used for clitic boundaries, I use the hyphen (-) and do not distinguish clitics from affixes for the sake of simplicity.

[5] There are other adverbial particles such as *mo* 'also' and *dake* 'only', which also follow or replace with case particles. As the glosses 'also' and 'only' suggests, they are translated like adverbs in English, which is part of the reason why they are called "adverbial" particles.

1979), which is to be discussed in Chapter 5.

### 2.4.2.2 *Ga*

Almost all studies agree that *ga* in contemporary Japanese is a case marker that codes nominative case (e.g., Yamada 1936; Kuno 1973b; A. Tanaka 1977; Shibatani 1990). *Ga* is also said to code the "subject" (e.g., Kuroda 1979: p. 164). It has some important characteristics in addition to coding nominative case; it can code genitive and object (in terms of this thesis, P). I do not introduce these usages since they are irrelevant to the present work. See, for example, (S. Ono 1975; Nishida 1977; Yasuda 1977; Kuno 1973b; Shibatani 2001).

Recent studies are more interested in the mapping between surface form (such as *ga* and *o*) and the semantic (or deep) structure of predicates. See Kondo (2003) for the survey of such studies.

**2.4.2.2.1 Exhaustive listing vs. neutral description**   Kuno (1973b) distinguishes two types of *ga*: exhaustive listing and neutral description. In terms of the present study, exhaustive listing corresponds to argument focus (or narrow focus), while neutral description corresponds to part of predicate focus and sentence focus (or broad focus), although whether the latter *ga* codes focus or not is controversial as will be discussed below. Examples (33-a-b) are instances of exhaustive listing and neutral description, respectively.

(33)   a.   **Exhaustive listing**
zyon-**ga**   gakusei-desu
John-NOM student-COP.PLT
'(Of all the people under discussion) John (and only John) is a student.'
'It is John who is a student.'

   b.   **Neutral description**
ame-**ga**   hutte i-masu
rain-NOM fall   PROG-PLT
"It is raining."                                   (Kuno 1973b: p. 38)

Kuno, following Kuroda (1979), proposes that *ga* of neutral description can only code the subject (As and Ss in this thesis) of action verbs, existential verbs, and adjectives/nominal adjectives that represent changing states, whereas *ga* of exhaustive listing can attach any kinds of nouns. This is not the topic of the present work, which does not examine the associations between information structure

and predicate types, although this is one of very important topics. See Masuoka (2000: Chapter 4), which extensively discusses this issue.

**2.4.2.2.2 *Ga* as focus marker**    Lastly but most importantly in the present work, *ga* is sometimes described as a focus marker. *Ga* of exhaustive listing in Kuno (1973b) corresponds to *ga* as a focus marker (Heycock 2008). *Ga* coding new (unpredictable) information (Kuno 1973a: Chapter 25) is also related to *ga* coding focus.

Noda (1995) classifies *ga* of exhaustive-listing into focus markers, or *toritate* particles, while he argues that *ga* of neutral description is a case marker.[6] *Toritate* can be literally translated as 'taking up' and intended to mean 'to make something remarkable'. *Toritate* particles are defined as particles that make part of a sentence or a phrase remarkable and emphasize that part (Miyata 1948: p. 178). *Toritate* particles include *mo* 'also', *sae* 'even', *dake* 'only', etc., which are in general classified into focus markers in other languages. Therefore, I concluded that *toritate* particles, including *ga* with exhaustive-listing readings, correspond to focus particles.[7]

Ono, Thomspon & Suzuki (2000) go further and claim that *ga* in natural conversation does not code As and Ss; rather, they claim that "*ga* is well characterized as marking that its NP is to be construed as a participant in the state-of-affairs named by the predicate in pragmatically highly marked situations" (p. 65). In other words, "*ga* is found in pragmatically highly marked situations where there is something unpredictable about the relationship between the *ga*-marked NP and the predicate such that an explicit signalling of that relationship becomes interactionally or cognitively relevant" (ibid.). Although it is not perfectly clear what they mean by "pragmatically marked situations", part of what they mean is that *ga* functions as a focus marker because they use *ga* of coding new or unpredictable information as a piece of evidence that supports their claim. In (34-b), for example, *ga* codes the answer to the question 'what club (are you going to) join?' in (34-a).

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[6] Tokieda (1950/2005) classifies some uses of *ga* into "particles which represents limitation" (p. 188ff.), which are also close to focus markers.

[7] However, many researchers also classify the so-called topic marker *wa* into *toritate* particles; some of them only include contrastive *wa* (Okutsu 1974; 1986; Numata 1986), others include both contrastive and non-contrastive *wa* (Miyata 1948; Shigeyuki Suzuki 1972; Teramura 1981; Noda 1995). Although I do not believe that *wa*, including contrastive *wa*, is a focus marker, the notions of focushood and contrastiveness are frequently confused, which should be discussed independently. Therefore, I regard *toritate* particles as focus markers in other languages.

(34)  a.  nani-ni    hai-n-da
          what-DAT enter-NMLZ-COP
          'What (club are you going) to join?'
      b.  handobooru-**ga** ii-kana-toka  omotte […]
          handball-NOM    good–Q-HDG think
          '(It's) hadnball (I want to join), (I) think.'

(Ono, Thomspon & Suzuki 2000: p. 70)

**2.4.2.2.3 Remaining issues**   It is indeed the case that *ga* codes sometimes nouns other than nominative as shown in (35). (See Chapter 4 for detailed discussion.) In (35-a), *ga* follows the postposition *kara* 'from (ABL)'; the noun cannot be nominative. In a similar manner, *ga* follows *to* 'with (COM)' in (35-b) and *made* 'til (LIM)' in (35-c).[8]

(35)  a.  kore-**kara**-**ga** hontoo-no zigoku-da
          this-ABL-*ga*   true-GEN   hell-COP
          'From this the true hell starts.'          (Vegeta in *Dragon Ball*[9] )
      b.  kotira-wa nihonsyu-**to**-**ga** au-desyoo
          this-TOP   sake-COM-*ga*    match-will
          'This one goes well with sake.'          (A review from *Tabelog*[10] )
      c.  ie-ni       kaeru-**made**-**ga** ensoku-desu
          home-DAT return-LIM-NOM excursion-COP.PLT
          'Until (you) arrive at home is the excursion. (Before you arrive at home, you are on the way of excursion.)'      (Common warning by school teachers)[11]

As will be discussed in detail in Chapter 4, this type of *ga* codes focus rather than nominative case. However, it is too extreme to claim that all kinds of *ga* do not code nominative. For example, it is never possible to replace *o* in (31) with *ga* no matter how much *hon* 'book' is focalized. It is clear that *ga* sometimes codes nominative, sometimes codes a focus, and sometimes codes both. Also, as will be outlined below, zero particles are extensively used in spoken Japanese. Therefore,

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[8] (35-b) is not acceptable for some people.
[9] Toriyama, Akira (1990) *Dragon Ball* 23, p. 149. Tokyo: Shueisha.
[10]  http://tabelog.com/ehime/A3801/A380101/38006535/dtlrvwlst/2992604/, last accessed on 03/23/2015
[11] I found 32,700 websites using this expression with Google exact search (searched on 06/17/2015).

the question is under what conditions *ga* codes focus, under what conditions it codes nominative, and when *ga* is used instead of zero particles. Also, what motivates *ga* to code a focus? It is not appropriate to discuss whether *ga* codes a focus or nominative case. I discuss these issues in Chapter 4.

### 2.4.2.3 *O*

There are fewer studies on the particle *o* and, as far as I notice, almost all studies agree that *o* is an accusative marker and code the patient-like argument in a transitive clause (e.g., Yamada 1936; Shibatani 1990). In this section, There are some non-canonical usages of the particle *o*: coding time and place of transferring (Yamada 1936).

**2.4.2.3.1 Remaining issues** Both of these non-canonical usages of *o* are a matter of the mapping between surface forms and semantic structures, as I discussed in the paragraph on *ga* of "object" marking. Therefore, I consider these issues to be independent of issues of information structure.

Like *ga*, zero particles are extensively used instead of *o* in spoken Japanese. It is therefore necessary to investigate the distribution of zero particles and *o*. I propose the conditions for zero particles and *o* in Chapter 4. I will outline the literature on zero particles in §2.4.2.7.

### 2.4.2.4 *Wa*

The adverbial particle *wa* has been widely discussed in the literature because the conditions where it appears are very complex and subtle.

In the early literature of modern linguistics on Japanese, *wa* was confused with a nominative marker because most of the time *wa* codes so-called nominative case in place of *ga*. According to Aoki (1992: 2), who studied more than 10,000 examples of *wa* in novels and essays, 76.7% of *wa* code nominative case, and 84.7% of *wa* attaching nouns code nominative case. Moreover, *wa* appears to "replace" with *ga*. For example, the sentences in (36-a) with *wa* and (36-b) with *ga* are truth-conditionally equivalent, and replacing one particle with the other does not affect the truth value of the sentence.

(36)  a.  zyon-**wa** gakusei-desu
          John-TOP student-COP.PLT
          'John is a student.'

      b.    zyon-**ga**   gakusei-desu
              John-NOM student-COP.PLT
              'John is a student.'                       (Kuno 1973b: p. 38)

In the same way, (37-a) and (37-b) are truth-conditionally equivalent.

(37)    a.    ame-**wa**  hutte i-masu-ga...
             rain-TOP fall    PROG-PLT-though
             'It is raining, but...'
      b.    ame-**ga**   hutte i-masu
             rain-NOM fall    PROG-PLT
             'It is raining.'                          (ibid.)

Therefore, *wa* was considered to code nominative case like *ga*.

Yamada (1936: p. 472ff.) pointed out that *wa* should be classified into adverbial particles (*kakari joshi*)[12] and should not be confused with case particles such as *ga*. However, since *wa* codes nominative case most of the time, *wa* has been analyzed as opposed to *ga*. The nature of *wa* has been so widely discussed, and I can only give a simplified overview of representative analyses of *wa* below, each of which captures a certain aspect of *wa*. Onoe (1977) is a useful survey of the history of studies on *wa*, and Noda (1996) is a good summary of contemporary studies. Here I focus on *wa* attaching nouns and put aside the other types of *wa*. For other types of *wa*, see, for example, Teramura (1991: Chapter 7).

The most popular analysis of *wa* is that *wa* is a topic marker, which was proposed by Matsushita (1928).[13] However, the definition topic itself is controversial in the literature as we have seen in §2.2. So, the question of what "a topic marker" is still remains. I will outline various aspects of *wa* proposed in the literature.

**2.4.2.4.1 Givenness**    The first characterization of *wa* is that *wa* codes given information (Chafe 1970: p. 233). Kuno (1973b) also makes a similar claim; *wa* codes anaphoric information, i.e., information that has been "entered into the registry of the present discourse" (p. 45). According to Kuno (1973b), for example, (38-a) is unacceptable because *ame* 'rain' has not been entered into the present registry, whereas (38-b) is acceptable because *wa*-coded *ame* 'rain' has been registered. Note that the first-mentioned *ame* was coded by *ga* in (38-b).

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[12] Yamada distinguishes *kakari joshi* from *fuku joshi*. Although the English term *adverbial particle* sounds closer to *fuku joshi*, I use the term *adverbial particle* to include both *kakari joshi* and *fuku joshi* because this distinction does not matter for now.

[13] According to Onoe (1977), this was first proposed in *Ayuishô* by Fujitani Nariakira (1778).

(38)  a.  *ame-**wa** hutte i-masu
          rain-TOP fall   PROG-PLT
          'Speaking of rain, it is falling.'
      b.  asa      hayaku ame-g̲a̲  huri dasi-ta... yoru-ni   natte-mo
          morning early   rain-NOM fall  start-PAST night-DAT become-also
          ame-**wa** hutte i-ta
          rain-TOP fall   PROG-PAST
          'It started raining early in the morning... Speaking of the rain, it was
          still falling even at night.'               (Kuno 1973b: p. 45)

The analysis that *wa* codes given information explains the fact that *wa* cannot attach to nouns such as *wh*-phrases like (39-a), quantified noun phrases like (39-b), and indefinite pronouns like (39-c). They represent new information and have not been entered into the registry of temporary discourse.

(39)  a.  *dare-**wa** ki-masi-ta-ka
          who-TOP come-PLT-PAST-Q
          'Who came?'                                 (Kuno 1973b: p. 37)
      b.  *oozei-no  hito-**wa**   paathii-ni ki-masi-ta
          many-GEN person-TOP party-DAT come-PLT-PAST
          'Speaking many people, they came to the party.'   (op.cit.: p. 45)
      c.  *dareka-**wa**   byooki-desu
          somebody-TOP sick-COP.PLT
          'Speaking of somebody, he is sick.'               (ibid.)

Although I believe that Kuno's observation well explains a condition of *wa*-coding, his claim needs to be supported by more natural data because his grammatical judgements are not always agreeable to many native speakers of Japanese. Moreover, as will be discussed in Chapter 4, 78 (41.1%) out of 190 cases of *wa* codes new (non-anaphoric) information, i.e., nouns without antecedents in the previous contexts. Most of them are neither generic nor contrastive and need explanation. I will discuss the conditions of the use of *wa* in Chapter 4.

**2.4.2.4.2 Generic *wa*** Kuroda (1972) and Kuno (1973b) argue that generic nouns can be always coded by *wa*.[14] According to Kuno (1972), this is because they are "in the permanent registry of discourse, and do not have to be reentered into the temporary registry for each discourse" (p. 41). For example, sentences in (40) are acceptable in an out-of-the-blue context.

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[14] Kuroda (1972) pays more attention to generic events rather than just nouns.

(40)  a.  kuzira-**wa** honyuu-doobutu-desu
       whale-TOP mammal-animal-COP.PLT
       'Speaking of whales, they are mammals. (A whale is a mammal.)'
       (Kuno 1973b: p. 44)
      b.  hito-**wa**  sinu (mono-desu)
       person-TOP die  (thing-COP.PLT)
       'Human beings die. (All humans are mortal.)'          (Constructed)

In Chapter 4, however, I will show that not all generic nouns can be felicitously coded by *wa* in an out-of-the-blue context. Instead, I propose that the generic condition of *wa*-coding is integrated into the givenness condition of *wa*.

**2.4.2.4.3 Contrastive *wa***  Kuno (1973b) distinguishes *wa* coding given (in his term, anaphoric) information from that coding contrastive information. He argues that the contrastive *wa* can code new (in his term, "non-anaphoric") information as shown in the contrast between (41-a) and (41-b). According to Kuno, *oozei-no hito* 'many people' in (41-a) is new and non-contrastive; therefore, the sentence is not acceptable. On the other hand, *oozei-no hito* 'many people' in (41-b) is new but contrasted with *omosiroi hito* 'interesting person'; in this case, the sentence is acceptable. The contrastive *wa* is typically accompanied by high pitch. Note that the acceptability judgements as well as examples are from Kuno and especially (41-b) is not acceptable to some people (including the current author).

(41)  a.  *oozei-no  hito-**wa**   paathii-ni ki-masi-ta
       many-GEN person-*EM* party-DAT come-PLT-PAST
       'Speaking many people, they came to the party.'   (Non-contrastive)
      b.  oozei-no  hito-**wa**   paathii-ni ki-masi-ta-ga
       many-GEN person-TOP party-DAT come-PLT-PAST-though
       omosiroi  hito-**wa**   hitori-mo  i-mase-n-desi-ta
       interesting people-TOP single-also exist-PLT-NEG-PLT-PAST
       'Many people came to the party indeed, but there was none who was interesting.'                       (Contrastive)
       (Kuno 1973b: p. 47)

The contrast between (42-a) and (42-b) is explained in the same way.

(42)  a.  *ame-**wa**  hutte i-masu
       rain-TOP fall  PROG-PLT
       'Speaking of rain, it is falling.'                (Non-contrastive)

b.  ame-**wa** hutte i-masu-ga      taisita koto-wa    ari-mase-n
    rain-TOP fall   PROG-PLT-though serious matter-TOP exist-PLT-NEG
    'It is raining, but it is not much.'                    (Contrastive)
                                                        (Kuno 1973b: p. 46)

While some studies like Kuno (1973b) assume that the contrastive *wa* and non-contrastive *wa* are independent and mutually exclusive, others like Teramura (1991) speculate that they are governed by the same condition(s). Teramura (1991) claims that the basic property of *wa* is to contrast one with the other(s) and the non-contrastive *wa* appears when the contrasted elements are not noticed.

Hara (2008) shows that the contrastive *wa* always induces scalar implicatures as in (43-a) and proposes a formal analysis of the contrastive *wa*. Furthermore, Hara (2006) argues that the implicatures induced by the contrastive *wa* are conventional implicatures, rather than conversational implicatures.

(43)  a.  nanninka-**wa**    ki-ta
          some.people-TOP come-PAST
          'Some people came.'
          (Implicature: it is possible that it is not the case that everyone came.)
      b.  #minna-**wa**    ki-ta
          everyone-TOP come-PAST
          'Everyone came.'
          (No implicature possible.)
                                                        (Hara 2006: p. 36)

The present thesis does not aim at investigating detailed characteristics of the contrastive *wa*; rather, I am more interested in capturing various aspects of *wa* as a whole, including contrastive *wa*, and giving a unified explanation of *wa*. Therefore, issues like the syntactic position of the contrastive *wa*, the interaction between contrast and negation or quantifiers, and their formal analyses are outside of the scope of this dissertation. In Chapter 4, I will argue that the contrastive and non-contrastive *wa* can be explained consistently in a single principle along the lines with Teramura (1991).

**2.4.2.4.4 Characterization of *wa* based on judgement types**    Kuroda (1972), inspired by Branz Brentano and Anton Marty, proposed the distinction between *wa* vs. *ga* based on the categorical vs. thetic judgements. According to Kuroda, "the categorical judgement is assumed to consist of two separate acts, one, the act of recognition of that which is to be made the subject, and the other, the act of af-

firming or denying what is expressed by the predicate about the subject" (p. 154). On the other hand, the thetic judgement "represents simply the recognition or rejection of material of a judgement" (ibid.). Kuroda argues that sentences with *wa* like (44-a) correspond to the categorical judgement and those with *ga* like (44-b) correspond to the thetic judgement.

(44)   a.   inu-**wa**  neko-o  oikakete iru
           dog-TOP cat-ACC chase     PROG
           'The dog is chasing a/the cat.'                    (Categorical judgement)
       b.   inu-**ga**    neko-o  oikakete iru
           dog-NOM cat-ACC chase     PROG
           'A/The dog is chasing a/the cat.'                    (Thetic judgement)
                                                        (Kuroda 1972: p. 161)

The categorical judgement roughly corresponds to the predicate-focus structure, and the thetic judgement corresponds to the sentence-focus structure.

I assume that some part of judgement types can be reduced into particles. Therefore, the theory of judgement types and particles are compatible and complement each other. In the present thesis, I only focus on the distinction among particles and leave the rest for future studies.

**2.4.2.4.5 Cohesion** Clancy & Downing (1987), analyzing spoken narratives, suggest that "*wa*-marking is not necessary to establish thematic status, nor does *wa*-marking, when it appears, necessarily indicate that the participant in question is thematic, to the extent that thematicity can be equated with the measures that [they] have considered, i.e., the frequency of appearance, persistence, or ability to elicit zero switch reference" (p. 24), contrary to other studies such as Maynard (1980). They conclude that "the primary function of *wa* is to serve as a local cohesive device, linking textual elements of varying degrees of contrastivity" (p. 46) because "the majority of *wa* uses in [their] data, whether thematic or locally contrastive or both, occurred on switch subjects, i.e., references to participants who by definition had been non-subjects when last mentioned" (ibid.).

I investigated whether this generalization applies to my data, CSJ (*the Corpus of Spontaneous Japanese*), which is also spoken narratives as will be explained in the next chapter. First, I extracted all *wa*-coded NPs and pronouns and their antecedent NPs and pronouns. Then, I categorized the antecedents into so-called subjects (*ga*-coded NPs), objects (*o*-coded NPs), and datives (*ni*-coded NPs) and counted their numbers. As a result, it turned out that 13 subjects, 11 objects, and 10 datives are the antecedents of *wa*-coded NPs or pronouns. Although the

numbers are very small and it is inappropriate to generalize based on them, it is clear that Clancy and Downing's claim does not hold in my data.

Moreover, (Y. Watanabe 1989), analyzing corpora, argues that *wa* codes important and definite nouns, contrary to (Clancy & Downing 1987) Therefore, it is necessary to re-examine their claim.

**2.4.2.4.6 Isolation**    It has been pointed out that *wa* isolates the *wa*-marked nouns from the rest of a sentence. Onoe (1977) reports that this issue was observed in the 19th century in studies like *Colloquial Japanese* by Brown (1863) and *Japansche Spraakleer* by Hoffmann (1868). Onoe (1981: p. 103), supporting this view, argues that a sentence with *ga* as in (45-a) expresses a unified situation, whereas that with *wa* as in (45-b) isolates or separates the noun from the predicate, in this case *sora* 'sky' from *aoi* 'blue', and then associates these two.

(45)   a.   sora-**ga**  aoi
            sky-NOM blue
            'The sky is blue.'
       b.   sora-**wa** aoi
            sky-TOP blue
            'The sky is blue.'

He further argues that *wa* "drastically confirms the thetic judgement 'the sky is blue'" (ibid.).

While I believe that this characterization captures some aspect of *wa*, it needs to be captured in a theory and supported by more data.[15] For example, *ga* in (45-a) also separates *sora* from *aoi* because there is a phrase boundary. Where does the intuition of *wa*'s "isolation" come from? In Chapter 6, I argue that there is an intonation boundary between a topic and a focus; therefore, topics including *wa*-coded elements are intonationally separated from foci.

**2.4.2.4.7 Remaining issues**    As I have mentioned above, the aim of this study is to give a consistent explanation of *wa*-coding, rather than to give a detailed model of some aspect of *wa*. The characteristics of *wa* summarized above reflect some aspects of *wa*. I will propose the conditions of *wa*-coding capturing *wa* as a whole. As I also stated above, the properties of predicates and sentence types are outside of the scope of this study. However, I believe that characterizing the particle *wa* helps us to understand other unexplained features in the future.

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[15] Onoe seems to think that the existence of the contrastive *wa* supports *wa*'s "isolation" function. However, the connection between isolation and contrastiveness is not clear to me.

### 2.4.2.5 *Toiuno-wa*

In this section, I discuss the marker *toiuno-wa*, which is to be investigated in the present thesis. It consists of at least four morphemes as shown in (46).

(46)  to    iu-no-wa
      QUOT call-one-*wa*

The first morpheme *to* is a quotation marker, and *iu* corresponds to 'call' (or, more closely, 'heißen' in German). (47) is an example of how *to* and *iu*, which is realized as *to ii*, are used.

(47)  hasi-wa       tyuugoku-go-de      nan-**to**    **ii**-masu-ka
      chopstick-TOP China-language-in what-QUOT call-PLT-Q
      'How do you call "chopsticks" in Chinese?'   (Masuoka & Takubo 1992: p. 81)

The morpheme *no* is a nominalizer which corresponds to 'one' (as in *this one*) in English. It can be used when restrictively modified nouns are repeated or are clear from the context (p. 160).

(48)  kono seetaa-wa   tiisai-node      ookii-**no**-to kaete       kudasai
      this   sweater-TOP small-because big-one-with exchange please
      'Since this sweater is too small, please exchange this with bigger one.' (op. cit.: p. 160)

Masuoka & Takubo (1992) point out that the combination of noun + *to iu* + *mono* ('thing') is used when the speaker is talking about the category in general, rather than a specific referent of the noun. For example, *kyoosi* 'teacher' in (49-a) simply refers to specific teachers, whereas *kyoosi* followed by *-to iu mono* in (49-b) refers to teachers in general rather than specific teachers.

(49)  a.  sotugyoo-paatii-ni-wa       **kyoosi**-ga    20-mei seito-ga
          graduation-party-DAT-TOP teacher-NOM 20-CL   student-NOM
          140-mei syusseki si-ta
          140-CL attend    do-PAST
          'In the graduation party, 20 teachers and 140 students participated.'
          (Specific teachers)
      b.  **kyoosi-to**    **iu**  **mono**-wa tuneni aizyoo-o mot-te
          teacher-QUOT call thing-TOP always love-ACC have-and

> seeto-o      mitibika-nakere-ba nara-nai
> student-ACC lead-NEG-COND      become-NEG
> 'Teachers always must lead their students with love.'    (Teachers in
> general)

> (op. cit.: p. 34)

This also applies to *no*; *no* also refers to some category in general rather than a specific entity. In fact, *mono* in (49-b) can be replaced with *no* without changing the meaning. The morpheme *wa* is the same *wa* discussed in the previous section.

Unless I discuss the compositional meanings of *to iu no-wa*, I put no space in *toiuno* because sometimes it is reduced into *(t)teno*, *t(y)uuno*, or even [tɯːnə]. I separate *wa* to keep the relationships between *toiuno-wa* and *wa* transparent, although *wa* sometimes merges into *toiuno* and realizes as [tɯːnəː], [tːɛnaː], [tsɯːnaː], etc.

Whereas other combinations such as *toiuno-ga* and *toiuno-o* are possible, I focus on *toiuno-wa* because other combinations are rare in the corpus. Since there are only a few studies on *toiuno-wa* itself, I also include studies on *toiu* (without *no-wa*) in the following overview.

**2.4.2.5.1 Basic usage**    According to Takubo (1989), the combination of *toiu* and basic category nouns (such as *hito* 'person' and *mono* 'thing') is sometimes used to introduce proper names that the hearer is assumed not to know.

(50)    kinoo      tanaka siroo-**toiu hito**-ni      ai-masi-ta
      yesterday Tanaka Shiro-called person-DAT meet-PLT-PAST
      'Yesterday I met a person called Shiro Tanaka.'      (Takubo 1989: p. 218)

Similarly, Nihongo Kijutsu Bumpô Kenkyû Kai (2009) describes *toiuno-wa* as "presenting an expression as a topic and explaining the meaning or attributing a noun to a specific referent" (p. 230). (51-a) exemplifies the former, and (51-b) exemplifies the latter.

(51)    a.    dokukinhoo-**toiuno**-**wa** dokusen-kinsi-hoo-no    ryaku-dearu
            *dokukinhoo-toiuno-wa*    monopoly-ban-law-GEN abbreviation-COP
            'The expression *dokukinhoo* stands for *dokusen-kinsi-hoo* (competition law).'
      b.    satoo-san-**toiuno**-**wa** eigyoo-bu-no      satoo-san-desu-ka
            Sato-HON-*toiuno-wa*  sales-section-GEN Sato-HON-COP-Q

zinzi-bu-no satoo-san-desu-ka

personnel-section-GEN Sato-HON-COP-Q

'Which do you mean by "Mr.Sato", the person in the sales section or the person in the personnel section?' (Nihongo Kijutsu Bumpô Kenkyû Kai 2009: p. 230)

Sentences with *toiuno-wa* also express the topics' general properties or the judgement of what they should be. (52-a) is an example of the former, and (52-b) is that of the latter.

(52)  a.  suzuki-**tteiuno-wa** aaiu yatu-da-yo
Suzuki-*toiuno-wa*  that.kind guy-COP-FP
'Suzuki is that kind of guy.'

b.  kagaku-**toiuno-wa** honrai heewa-no tame-ni yakudateru-beki
science-*toiuno-wa*  essentially peace-GEN sake-for use-should
mono-da
thing-COP
'We should use science for the sake of peace.' (op.cit.: p. 231)

**2.4.2.5.2 Characterization of *toiuno-wa* based on predication types** Masuoka (2012), inspired by Sakuma (1941), analyzes the association between predication types and the marker *toiuno-wa* and concludes that *toiuno-wa* is a topic marker only for property predication (or individual-level predication), as opposed to event predication (or stage-level predication). Property predication states a property of a referent (Masuoka 1987; 2008a). The property is unbound by space or time. Masuoka states that property predication corresponds to individual-level predication proposed in Carlson (1977).[16] (53) exemplifies property predication. They are true regardless of time and space and hence they are unbound by time and space.

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[16]However, property predication and individual-level predication are not exactly the same because according to Masuoka (2008b), the following examples are classified into property predication, which are typically considered to be stage-level predication rather than individual-level predication.

(i)  a.  That person is busy.
b.  My friend {has been to / went to} France many times.

(Masuoka 2008b: p. 5–6, translated by the current author)

Masuoka states that they are atypical property predication. Anyway, I do not step into the issue of predicate types in the present study.

(53)  a.  Japan is an island country.
      b.  That person is kind.

$\qquad$ (Masuoka 2008b: p. 4, translated by the current author)

On the other hand, event predication describes an event bound by time and space like (54).

(54)  A child smiled. $\qquad$ (op.cit.: p. 5)

This corresponds to stage-level predication in Carlson (1977).

To see that *toiuno-wa* is a marker only for property predication, compare the following examples. In (55-a), which expresses event predication bound by space and time, *toiuno-wa* cannot be felicitously used, while, in (55-b), which express property predication unbound by space and time, *toiuno-wa* can be used.

(55)  a.  *satiko-**toiuno-wa** uso-o   tui-ta
          Sachiko-*toiuno-wa* lie-ACC commit-PAST
          'Regarding Sachiko, she lied.' $\qquad$ (Masuoka 2012: p. 96)
      b.  satiko-**toiuno-wa**   uso-tuki-da
          Sachiko-*toiuno-wa* lie-commiter-COP
          'Regarding Sachiko, she is a liar.' $\qquad$ (Constructed)

**2.4.2.5.3 Remaining issue**   Masuoka's characterization of *toiuno-wa* well captures an aspect of this marker. In the present work, I will discuss *toiuno-wa* from different perspectives and do not go into detail about predication types. I also aim at describing the relationships among other topic markers such as *wa* and *kedo*/*ga*, which is to be discussed below.

### 2.4.2.6  *Kedo* and *ga*

Sometimes conjunctions can be used as topic markers. The present thesis discusses *kedo* and *ga* preceded by a copula, both of which correspond to 'although' or 'whereas' in English. *Kedo* and *ga* are different mainly in styles; *kedo* can be used in both casual and formal styles, while *ga* is mainly used in a formal style. *Ga* in (56-a) and *kedo* in (56-b), preceded by copulas, function as topic markers in the sense that they newly introduce topics in the beginning of a discourse or a paragraph, or they are used to state different aspects of the current topic (Koide 1984; Takahashi 1999). Intuitively, 'that issue' in (56-a) and 'Yamada' in (56-b) are considered to be newly introduced.

(56)  a.  rei-no      ken-desu-**ga**         nantoka  nari-sou-desu
          that-GEN issue-COP.PLT-though whatever become-will-COP.PLT
          'Regarding that issue, (I) guess (I) figured the way out.'

      b.  yamada-no   koto-da-**kedo** ano mama hot-toi-te     ii-no-kana
          Yamada-GEN issue-COP      that way   leave-let-and good-NMLZ-Q
          'Regarding Yamada, is it OK to just leave him?'     (Niwa 2006: 283)

Note that the so-called nominative *ga* is different from the conjunctive *ga* in various ways. For example, the conjunctive *ga* does not directly follow nouns as shown in (56-a); nouns must be followed by the copula (*desu*) as shown in (56-a) and (57-a). On the other hand, the so-called case marker *ga* can directly follow nouns as shown in (57-b).

(57)  a.  taroo-wa sensei-**desu**-**ga**         hanako-wa   kangosi-desu
          Taro-TOP teacher-COP.PLT-though Hanako-TOP nurse-COP
          'Taro is a teacher, while Hanako is a nurce.'        (Conjunctive *ga*)

      b.  sensei-**ga**     ki-masi-ta-yo
          teacher-NOM come-PLT-PAST-FP
          'The teacher has come.'                              (Nominative *ga*)

Also note that *ga* and *kedo* as topic markers are different from conjunctive *ga* and *kedo*. Conjunctive *ga* and *kedo* by definition follow clauses instead of phrases; on the other hand, the topic marker *ga* and *kedo* cannot follow clauses. Since *kedo*- or *ga*-coded NPs like *rei-no ken* 'that issue' in (56-a) and *yamada-no koto* 'yamada's issue' in (56-b) appear to be the predicate of copular sentences, there should be subjects of copular sentences. However, no subjects can be added in sentences like (56).

**2.4.2.6.1 Remaining issue**   The characterization of *kedo* and *ga* as topic markers which introduce topics well predicts the distributions of these markers. In Chapter 4, I aim at capturing these markers as well as other topic particles from a unified point of view.

### 2.4.2.7  Zero particle

While overt particles almost always follow nouns in written Japanese, zero particles are ubiquitous in spoken Japanese. All kinds of core arguments (A, S, and P) can be basically coded by zero particles (Ø) as exemplified in (58).

(58)      *Ga* **vs. Ø**

a.  taroo-**{Ø/ga}**  kaet-teru-no-**{Ø/o}**  sitte  iru?
    Taro-{Ø/NOM} return-PROG-{Ø/ACC} know be
    'Do (you) know that Taro is back?'                         (A & P)
    ***O* vs. Ø**
b.  ima  kono hon-**{Ø/o}**     yon-deru-nen
    now this   book-{Ø/ACC} read-PROG-PAR
    'Now (I'm) reading this book.'                              (P)
    ***Wa* vs. Ø**
c.  kimi-**{Ø/wa}** dare-ga    suki?
    2SG-{Ø/TOP}  who-NOM like
    'Who do you like?'                                          (S)

(Shibatani 1990: pp. 367-368, glosses modified)

Although I employ the symbol Ø for a zero particle and use expressions like "zero-coding" and "zero particles", I do not claim the existence of Ø or zero particles, which are just a matter of notation and are equivalent to "bare NPs" or "NPs are not followed by any particle". For the sake of clarity, however, I rather use the symbol Ø and express bare nouns as "zero-coding". Also, I do not step into the discussion of whether zero particles are in fact zero or are simply omitted. I assume that each production of zero particle in everyday usage is governed by unique and complex conditions. When somebody says "the particle X can be replaced with Ø in this context," I consider it to mean "the conditions of producing X and Ø in this context is not predictable in the current model".

In this section, I review conditions of zero-coding proposed in the literature. Note that other parts of §2.4.2 focus on written Japanese, while this part focuses on spoken Japanese. Shimojo (2006) and Fry (2001) are useful surveys of the previous literature and I rely on them to review the literature here.

**2.4.2.7.1 Socio-linguistic factors**   Tsutsui (1984) points out that zero particles are acceptable in less formal situations. Also, it is reported that zero particles are used differently in different dialects (e.g., Sasaki 2006; Nakagawa 2013). I discuss zero particles in casual forms spoken around Tokyo to control the effects of stylistic and dialect differences.

**2.4.2.7.2 Word and sentence length**   Tsutsui (1984: p. 98ff.) also proposes that zero particles following monosyllabic nouns are less natural than those following multisyllabic nouns. Fry (2001: p. 123) reports that 40% of the multisyllabic words

are zero-coded, while 27% of the monosyllabic words are zero-coded.[17] Moreover, Jorden (1974: p. 44) has claimed that zero-coding is frequent especially in short sentences. Fry (2001: p. 122ff.), by comparing short utterances with less than 10 words and long utterances with more than or equal to 10 words, found that zero particles appear significantly in short utterances. Henceforth, I focus on overt vs. zero particles following multisyllabic NPs in short sentences to avoid this factor.

**2.4.2.7.3 Contrast and narrow focus**    Contrasted elements are always followed by *wa* (Tsutsui 1984: p. 53ff.). In (59-a), for example, *boku* 'I' and *biru* 'Bill' are contrasted, which cannot felicitously be followed by zero particles.

(59)   a.   boku-{**wa**/\*Ø} oyoi-da-kedo        biru-{**wa**/\*Ø} oyoga-nakat-ta-yo
            1SG-{TOP/Ø}    swim-PAST-though Bill-{*wa*/Ø}    swim-NEG-PAST-FP
            'I swam, but Bill didn't swim.'
       b.   boku-{**wa**/Ø} biiru-{**wa**/\*Ø} nomu-kedo    sake-{*wa*/\*Ø} noma-nai
            1SG-{*wa*/Ø}    beer-{*wa*/Ø}    drink-though sake-{*wa*/Ø}    drink-NEG
            'I drink beer but not sake.'        (Modified from Tsutsui (1984: p. 54))[18]

As Tsutsui (1984: p. 93ff.) has also pointed out, zero particles cannot felicitously be used in the narrow-focus context (the argument focus structure or "exclusivity" in Tsutsui's term), Instead, overt particles are obligatory (see also Fujii & Ono (2000)). As shown in (60-B), where *suteeki* 'steak' is focused, for example, the overt particle *o* is natural, while the zero particle Ø is not.

(60)   A:   Did you eat spaghetti in the restaurant?
       B:   boku-wa suteeki-{**o**/\*Ø} tabe-ta-n-da-yo
            1SG-TOP   steak-{*o*/Ø}    eat-PAST-NMLZ-FP
            'I ate steak (not spaghetti).'        (Tsutsui 1984: p. 93, context added)

In a similar manner, *hon* 'book' in (61-B) can be naturally followed by *ga*, but not Ø because *hon* is narrow-focused.

(61)   A:   Which book is interesting?

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[17] However, his results are more complex; the difference between the zero-coding ratios of multisyllabic words and monosyllabic words are significant for As and Ss; but not for Ps.

[18] Many of Tsutsui's examples employ formal and polite forms rather than casual forms. Therefore, I henceforth modified all of his examples cited in the present study into casual forms to exclude the effect of formality.

> B: kono hon-{**ga/\*Ø**} omosiroi-yo
> this book-{*ga/\*Ø*} interesting-FP
> 'This book is interesting.' (op.cit.: p. 94, context added)

Based on these facts, Shimojo (2006), following Lee (2002), proposes that the function of zero particles is to "withhold[...] reference to other referents which are potentially related to the proposition denoted by the sentence" (p. 131).

On the other hand, Matsuda (1996) and Fry (2001) report the tendency that *wh*-word Ps (such as *nani* 'what' and *dare* 'who') are more likely to be zero-coded than non-*wh*-word Ps. Fry found that 71% of the *wh*-Ps are zero-coded, whereas 51% of the non-*wh*-Ps are zero-coded. As exemplified in (62), zero-coded *wh*-Ps are not rare.[19]

(62)  a.  de   satosi  ima  **nani-Ø**  si-ten-no
          then Satoshi now  what-Ø do-PROG-Q
          'So, what are you doing now, Satoshi?'          (chiba1232:
          349.08-349.98)
      b.  **nani-Ø** turu-no
          what-Ø fish-Q
          'What do you fish?'          (chiba0732: 491.59-492.07)

The fact that *wh*-words are more likely to be zero-coded than non-*wh*-words contradicts Tsutsui's observation because, in general, *wh*-question is considered to be in narrow focus. Similarly, Niwa (2006: Chapter 10) reports that objects corresponding to the answer to *wh*-questions are acceptable, which is also considered to be in narrow focus and is a counter-example of Tsutsui's claim. As shown in the example (63-A), the object *kootya* 'tea' corresponding to the answer to a *wh*-question can be coded by either *o* or Ø.

(63)  Q:  Which do you wanna drink, coffee or tea?
      A:  zyaa **kootya-{o/Ø}** nomu-wa
          then tea-*o/Ø*          drink-FP
          'Then, (I) drink tea.'          (Niwa 2006: 291)

More complicatedly, *wh*-subjects can be zero-coded, while subjects corresponding to the answer to a *wh*-question cannot be zero-coded (Niwa 2006). As exemplified in (64), the *wh*-subject *dare* 'who' can be either zero-coded or *ga*-coded, but the subject corresponding to the answer cannot be felicitously zero-coded.

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[19] However, I did not find any examples of *dare* as P in *the Chiba three-party conversation corpus*.

(64)  a.  ima **dare-{ga/Ø}** ki-teta-no?
          now who-*ga/Ø*   come-PFV-Q
          'Who came a moment ago?'
      b.  **taroo-{ga/?Ø}** ki-teta-n-da
          Taro-*{ga/Ø}*   come-PFV-NMLZ-COP
          'Taro came.'                                    (Niwa 2006: 291)

Fry (2003) reports that the ratio of zero particles coding *wh*-words for As and Ss (25%) is lower than the ratio of zero-coding for non-*wh*-As and Ss (32%), although the difference is not significant in a $\chi^2$-test.

**2.4.2.7.4 Word order**  Tsutsui (1984: p. 108ff.) argues that zero particles can be used naturally "if the NP [...] is preceded by the subject of the sentence and immediately followed by the predicate" (p. 108). As instantiated in (65), Tsutsui claims that the zero-coded NP *eigo* 'English' in (65-a) is natural because it is preceded by the subject *boku* 'I' and immediately followed by the predicate *umai* 'good', while the zero-coding in (65-b) is unnatural because it is not immediately followed by the predicate.

(65)  a.  boku-{wa/Ø} hanako-yori **eigo-{ga/Ø}**   umai-yo
          1SG-*{wa/Ø}*   Hanako-than English-*{ga/Ø}* good-FP
          'I'm better at English than Hanako.'
      b.  boku-{wa/Ø} **eigo-{ga/??Ø}**  hanako-yori  umai-yo
          1SG-*{wa/Ø}*   English-*{ga/Ø}* Hanako-than good-FP
          'I'm better at English than Hanako.'        (Tsutsui 1984: p. 110)

This is supported by Matsuda (1996) and Fry (2001). Fry (2001: p. 124), for example, found that 58% of the verb-adjacent Ps are zero-coded, whereas 41% of the non-verb-adjacent Ps are zero-coded.

   Niwa (2006: p. 291ff.) points out that verb-adjacent NPs can be more naturally zero-coded when the NPs are non-topic (focus).[20] On the other hand, Niwa also found that clause-initial NPs can be naturally zero-coded when the NPs are topics. Compare (66) and (67). *Sugoi kawaii ko* 'very cute girl' in (66) is in focus because the NP is indefinite and is treated as news. In this case, the verb-adjacent NP can be felicitously zero-coded as in (66-a), whereas the non-verb-adjacent NP cannot naturally be zero-coded (66-b).

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[20] There may be elements in a sentence that are neither topic nor focus. The present study, however, assumes that all core arguments are either topic or focus; therefore, if an element is not a topic, it is assumed that it is a focus.

(66)  a.  oi  keiri-ka-ni              **sugoi kawaii ko**-{**ga/Ø**}
          hey accounting-section-DAT very   cute    girl-{*ga/Ø*}
          hait-ta-zo
          enter-PAST-FP
          'Hey, a very cute girl joined the accounting section.'

      b.  oi  **sugoi kawaii ko**-{**ga/?Ø**} keiri-ka-ni
          hey very   cute    girl-{*ga/Ø*} accounting-section-DAT
          hait-ta-zo
          enter-PAST-FP
          'Hey, a very cute girl joined the accounting section.'      (Niwa 2006:
          293)

On the contrary, *ano ko* 'that girl' in (67) is topical because the NP is definite
and the participants have discussed her. In this case, both the verb-adjacent and
non-verb-adjacent NPs can be felicitously zero-coded.

(67)  (People have discussed a female newcomer *ano ko* 'that girl'.)

      a.  oi  keiri-ka-ni              **ano ko**-{**ga/Ø**}  hait-ta-zo
          hey accounting-section-DAT that girl-{*ga/Ø*} enter-PAST-FP
          'Hey, that girl joined the accounting section.'

      b.  oi  **ano ko**-{**ga/Ø**}  keiri-ka-ni              hait-ta-zo
          hey that girl-{*ga/Ø*} accounting-section-DAT enter-PAST-FP
          'Hey, that girl joined the accounting section.'                (ibid.)

**2.4.2.7.5 Types of predicates**  Tateishi (1989) argues that zero particles are nat-
ural only inside V′. The subjects of a stage-level predicate or an unaccusative
predicate can be naturally zero-coded because they realize inside V′. On the
other hand, the subjects of an individual-level predicate or an unergative pred-
icate are realized outside V′ (see also Kageyama 1993: pp. 56–57). As shown by
the contrast between (68) and (69), the subjects of unaccusative predicates (68)
can naturally be either zero- or *ga*-coded, while those of unergative predicates
(69) can only be coded by *ga*; zero-coding results in anomaly.

(68)  Unaccusative predicate

      a.  tanaka-san-{**ga/Ø**}   nakunat-ta-no        sira-nakat-ta
          Tanaka-HON-{*ga/Ø*} pass.away-PAST-NMLZ know-NEG-PAST
          '(I) didn't know that Mr. Tanaka passed away.'

      b.  terebi-no nyuusu-de tankaa-{**ga/Ø**} tinbotu suru tokoro
          TV-GEN   news-at   tanker-{*ga/Ø*} sink    do   place

mi-ta-yo
see-PAST-FP
'(I) saw a tanker sinking in the TV news.' (Kageyama 1993: p. 56)

(69) Unergative predicate

a. kodomo-tati-{**ga/?*Ø**} sawagu-no     mi-ta   koto nai
child-PL-{*ga/Ø*}        mess.around-NMLZ see-PAST thing not.exist
'(I've) never seen the children messing around.'

b. kanzya-{**ga/?*Ø**} abare-ta-no         sit-te-masu-ka
patient-{*ga/Ø*}    go.violent-PAST-NMLZ know-PROG-PLT-Q
'Did (you) know that the patient went violent?'          (ibid.)

Yatabe (1999) points out that there are counter-examples of Tateishi's general-ization, citing an example from Niwa (1989). The predicate *happyoo suru* 'make a presentation' is an ergative predicate and it is possible to zero-code the agent of this action as shown in (70).

(70) kondo     gengo-gakkai-de        yamada-san-{**ga/Ø**} happyoo
next.time linguistic-conference-LOC Yamada-HON-{*ga/Ø*} presentation
suru-n-da-tte
do-NMLZ-COP-QUOT
'I heard that Mr. Yamada is going to make a presentation in the next lin-guistic conference.'                                      (Niwa 1989:
p. 49)

Note, however, that this example is topical zero-coding, rather than focal zero-coding and these two might be different from each other.

Yatabe also argues against Tateishi's claim that zero particle cannot naturally follow the subject of an individual-level predicate. Although I do not step into this discussion because it is outside scope of the present study, I suggest that this also attributes to the distinction between topic vs. focus zero particles.

**2.4.2.7.6 Types of nouns**    The hierarchy of features proposed in Silverstein (1976; 1981) also plays a crucial role in zero-codings of spoken Japanese. Minashima (2001) reports that indefinite or inanimate objects are more likely to be zero-coded than definite or animate objects. The results in Fry (2001: p. 128ff.) support Minashima's generalization.[21] Kurumada & Jaeger (2013; 2015), by conducting

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[21] In Fry's data, zero-codings of animate and inanimate objects are not significantly different. He speculates that this might be because of the small number of animate objects in his corpus.

experiments on speaker's choice between overt vs. zero particles, also report that speakers are more likely to attach the overt particle (*o*) to animate objects. On the other hand, Fry (2001: p. 128ff.) reports that "strongly definite" subjects (proper nouns and personal pronouns) are more likely to be zero-coded than other kinds of subjects. Also, animate subjects are more likely to be zero-coded than inanimate subjects. Fry points out that this tendency follow the typological generalization proposed in Comrie (1979; 1983).

Niwa (2006) suggests that the predictability of nouns influences the coding of particles. Compare (71-a) and (71-b), for example. The only difference between these two examples is the one that might fall from the sky; in (71-a), rain might fall, while, in (71-b), hail might fall, which is more surprising. In (71-a), both the overt particle *ga* and the zero particle are acceptable. But, in (71-b), only the overt particle is acceptable.

(71)    (The sky looks threatening.)

    a.   **ame-{ga/Ø}** huru-kamosirenai-n-da-tte
         rain-{*ga/Ø*} fall-POT-NMLZ-COP-QUOT
         'I heard that it might rain.'

    b.   **hyoo-{ga/?Ø}** huru-kamosirenai-n-da-tte
         hail-{*ga/Ø*}    fall-POT-NMLZ-COP-QUOT
         'I heard that it might hail.'          (Niwa 2006: 290)

Kurumada & Jaeger (2013) argues that "Japanese speakers prefer to produce an object NP without case marking when grammatical function of a noun is made more predictable given the semantics of the noun (e.g., animacy) and the other linguistic elements in the sentence (e.g., plausibility of [grammatical-function]-assignment given the subject, object, and verb)" (p. 863, see also Kurumada & Jaeger (2015)). For example, doctors are more likely to do something to patients, rather than vice versa. Therefore, the case (72-a) is more predictable than the case (72-b), and *isya* in (72-b) is more likely to be overtly coded than *kanzya* in (72-a).

(72)   a.   isya-ga     **kanzya-{o/Ø}** byoositu-de    teate si-ta
        doctor-NOM patient-{*o/Ø*}  hospital.room-in treat do-PAST
        'The/a doctor treated the/a patient in a hospital room.'

      b.   kanzya-ga **isya-{o/Ø}**  byoositu-de    mat-ta
        patient-NOM doctor-{*o/Ø*} hospital.room-in wait-PAST
        'The/a patient waited for the/a doctor in a hospital room.'
                  (Translated from Kurumada & Jaeger (2013: p. 860))

They argue that their study "constitutes strong support for the view that language production is optimized to maximize the efficiency of information transmission", referring Levy & Jaeger (2007) and Jaeger (2010).

**2.4.2.7.7 Other pragmatic factors**   Makino & Tsutsui (1986) and Backhouse (1993) point out that NPs in interrogatives tend to be zero-coded. This is supported by Fry (2001), who studied in a large corpus. For example, in (73) from the corpus of Fry (2001), *pen*, whose existence is in question, is zero-coded.

(73)  nanka kami-to  pen-Ø aru?
      um   paper-and pen-Ø exist
      'Um, do you have pen and paper?'                    (Fry 2001: p. 120)

Sentences of this type have especially gathered attention because the zero particle in this sentence is not optional; *wa* and *ga* (and, of course, *o*) cannot be used in this context. According to Onoe (1987), these obligatory zero particles typically appear in sentences like the following.

(74)  a.   kore-Ø oisii-yo
           this-Ø  good-FP
           'This is delicious.'
      b.   huzi-san-Ø      mi-eru?
           Fuji-mountain–Ø see-CAP
           'Can you see Mt. Fuji? (Is Mt. Fuji visible to you?)'
      c.   rosia-go-Ø        yom-eru?
           Russia-language-Ø read-CAP
           'Can you read Russian? (Is Russian readable to you?)'   (Onoe 1987:
           p. 48)

Also, Tsutsui (1984: p. 118ff.) observes that zero particles code information the hearer expects to hear. As shown in the contrast between (75) and (76), the zero particle (as well as *ga* in this case) can naturally code *basu* 'bus' (75) if the speaker and the hearer are waiting for a bus and hence the hearer expects to hear the word *basu* 'bus'; on the other hand, zero-coded *basu* (76) is unnatural because the hearer does not expect to hear *basu*.

(75)       Situation: the speaker and the hearer are waiting for a bus, and the
           speaker sees the bus coming.
           a  basu-{**ga/Ø**} ki-ta
           oh bus-{*ga/Ø*}   come-PAST

'Oh here comes a bus.'                                    (Tsutsui 1984: p. 120)

(76)  Situation: the speaker sees a bus coming in a place where there is no
      bus service.
      a   basu-{**ga/*Ø**} ki-ta
      oh bus-{*ga/Ø*}    come-PAST
      'Oh here comes a bus.'                              (ibid.)

Some researchers argue that discourse structures affect the selection of *wa*
vs. Ø. Satoko Suzuki (1995), analyzing casual interviews, claims that "relatively
speaking, zero-marked phrases tend to represent minor [discourse] boundaries
in contrast to major boundaries represented by *wa*-phrases" (p. 615). On the other
hand, Kurosaki (2003), investigating scenarios of TV dramas, argues that zero
particles are employed to introduce new topics (see also Niwa 2006), which im-
plies that zero particles appear in a major discourse boundaries. For now, I sup-
pose that it is extremely difficult to identify discourse boundaries in a reliable
way, let alone the difference between major and minor boundaries. Therefore,
we need to wait for breakthroughs in this area.

**2.4.2.7.8 Remaining issues**    As we can see from the outline of studies on zero
particles, factors that affect zero- vs. overt-codings are complex, and some re-
sults are contradictory. A theory that explains zero-coding is necessary. This
thesis proposes a unified theory that predicts zero-coding in terms of informa-
tion structure based on Nakagawa (2013). Along the lines of Comrie (1979; 1983),
I propose a frequency account of zero- vs. overt-codings of particles. I believe
that this account is congruent with the theory proposed in Levy & Jaeger (2007);
Kurumada & Jaeger (2013) and Kurumada & Jaeger (2015).

### 2.4.3 Word order

While Japanese basic word order is APV (or SOV in more popular term), other
variations are also possible. Example (77-a) shows the basic word order, and ex-
amples (77-b–f) show other possibilities. According to Shibatani (1990: p. 260),
not all possibilities are equally natural in out-of-the-blue contexts, as shown by
'?' before the sentence.

(77)  a.  taroo-ga   hanako-ni   sono hon-o    yat-ta
          Taro-NOM Hanako-DAT that  book-ACC give-PAST
          'Taro gave a book to Hanako.'              (A + DAT + P + V)

  b. hanako-ni taroo-ga sono hon-o  yat-ta
    Hanako-DAT Taro-NOM that book-ACC give-PAST

                   (DAT + A + P + V)

  c. sono hon-o  taroo-ga hanako-ni yat-ta
    that book-ACC Taro-NOM Hanako-DAT give-PAST

                   (P + A + DAT + V)

  d. taroo-ga sono hon-o  hanako-ni  yat-ta
    Taro-NOM that book-ACC Hanako-DAT give-PAST

                   (A + P + DAT + V)

  e. ?hanako-ni  sono hon-o  taroo-ga yat-ta
    Hanako-DAT that book-ACC Taro-NOM give-PAST

                   (DAT + P + A + V)

  f. ?sono hon-o  hanako-ni  taroo-ga yat-ta
    that book-ACC Hanako-DAT Taro-NOM give-PAST

                   (P + DAT + A + V)

                   (Shibatani 1990: 260)

In spoken Japanese, which is the main topic of this dissertation, NPs (and adverbs) sometimes appear post-predicatively as exemplified in (78-b).

(78) a. **taroo-ga** ki-ta
    Taro-NOM come-PAST
    'Taro came.'                   (S + V)

  b. ki-ta-yo   **taroo-ga**
    come-PAST-FP Taro-NOM
    'Lit. Came, Taro.'                (V + S)

               (Shibatani 1990: p. 258–259)

  Different theories are interested in different aspects of word order phenomena in Japanese. Generative linguists and psycholinguists, as far as I notice, mainly interested in 'scrambling': word order variations of subjects, objects, datives, and possibly other arguments, all of which appear before the predicates. More recently, generative linguists are also interested in 'left periphery', which is deeply related to information structure. Some construction grammarians study dative-alternation-like phenomena in Japanese.[22] Functional linguists and, more

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[22] I do not discuss dative alternation in this study. See Nakamoto, Lee & Kuroda (2006), who found that a choice between DAT+P+V and P+DAT+V is determined by the meaning of a sentence as a whole. More specifically, they showed that P+DAT+V is preferred for caused motion. On the other hand, their results also show that "there is an overall tendency for Japanese speakers to prefer [DAT+P+V] order to [P+DAT+V]" (p. 1). They argue that "the strength of

recently, interactional linguists are interested in post-predicate construction, partially because they are mainly working on spoken language, and post-predicate construction in Japanese only appear in spoken language. On the other hand, traditional Japanese linguists have not discussed word order phenomena that I am interested in (except for Noda (1983)). Instead of word order variations, they concentrate on affix ordering and dependency relations (see e.g., Saeki (1998)).

I outline previous studies on basic word order and other variations in the following sections. Note that different approaches are skewed to different sections for the reasons stated above.

#### 2.4.3.1 Basic word order

As far as I know, all the Japanese linguists agree that the basic word order in Japanese is SOV (APV in terms of this study). For example, Shibatani (1990) states that "Japanese is an 'ideal' SOV (Subject-Object-Verb) language in the sense that the word order of 'dependent-head' is consistently maintained with regard to all types of constituent" (p. 257).

(79) a. taroo-ga ki-ta
Taro-NOM come-PAST
'Taro came.'                                                    (S + V)

b. taroo-wa ki-ta-ka
Taro-TOP come-PAST-Q
'Did Taro came?'                                         (S (Topic) + V)

c. taroo-ga hon-o kat-ta
Taro-NOM book-ACC buy-PAST
'Taro bought a book.'                                          (A + P + V)

d. taroo-ga hanako-ni hon-o yat-ta
Taro-NOM Hanako-DAT book-ACC give-PAST
'Taro gave a book to Hanako.'                          (A + DAT + P + V)

e. taroo-ga nani-o kat-ta-ka sira-nai
Taro-NOM what-ACC buy-PAST-Q know-NEG
'(I) don't know what Taro bought.'                          (Clause + V)

(Shibatani 1990: p. 257–258)

Chujo (1983) conducted a sentence-comprehension experiment and reports that it takes longer to judge the grammaticality of PAV order than APV order.[23] It

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the preference is not constant among different supralexical meanings " (ibid.).

[23] There is one exceptional case; if P is human and is not followed by the particle *o*, the time

is also confirmed that the order PAV is more difficult to process than the basic order APV in other experiments such as phrase-by-phrase reading tasks (Miyamoto & Takahashi 2001), eye-movement experiments (Mazuka, Itoh & Kondo 2001), and ERP experiments (Ueno & Kluender 2003).

In my data from *the Corpus of Spontaneous Japanese*, which is to be explained in the next chapter, 39 examples appear in APV order, whereas 9 examples in PAV order. Therefore, APV is the basic (most frequent) word order in the corpus.[24] Note, however, that these numbers are very small compared to examples where a single full NP appears in a clause; 644 examples appear in the SV order, 336 examples appear in the PV order (without A), and 526 examples appear in the DAT + V order.[25] Infrequency of two or more full NPs within the same clause has already been reported in Japanese (Matsumoto 2003) and other languages (Du Bois 1987; Dryer 1997), which is also supported in my data.

#### 2.4.3.2 Clause-initial elements

Although NPs that appear clause-initially can also be called "preposed" or "scrambled" NPs, I call them clause-initial NPs because terms like "preposing" and "scrambling" assume the movement of NPs. Some even call all clause-initial NPs "topicalized" NPs, but I do not employ this term either because the term already attributes special function to the clause-initial NPs, which is under discussion in this study. On the other hand, the term "clause-initial" does not assume movements and any functions of clause-initial NPs.

**2.4.3.2.1 Topic** Functional linguists and recent generative grammarians who are working on cartography agree that topic-like NPs appear clause initially. As has traditionally been pointed out, topics, which correlate with given information, tend to appear clause-initially (Mathesius 1928; Firbas 1964; Daneš 1970; Kuno 1978). These topics function as "anchor" that associates the previous and up-coming utterances. Generative grammarians (e.g., Endo 2014) agree that topics appear clause-initially. They assume the universal hierarchy (80) proposed in Rizzi (2004) and argue that Japanese also follow this hierarchy. In generative grammar, it is assumed that a language (structure) is assumed to be uniform unless there is strong counter-evidence (the Uniformity Principle: Chomsky 2001: p. 2).

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difference between APV and PAV disappears.

[24] Other non-verb-final orders such as VAP or AVP are extremely rare.

[25] However, the AV pattern appears only in 8 examples.

(80)    Force Top\* Int Top\* Focus Mod\* Top\* Fin IP            (Rizzi 2004: p. 242)

"Force" stands for clause types such as declarative, interrogative, and imperative; "Top" for topic, "Int" for higher *wh*-elements (Rizzi 2001); "Mod" for modifier such as adverbs; and "Fin" for finiteness.

Ferreira & Yoshita (2003) conducted a production experiment and found that Japanese speakers produced given arguments before new arguments, especially "when the previous mention of the given argument involved the same lexical content" (p. 688). Imamura (2017) employed *the Balanced Corpus of Contemporary Written Japanese* (BCCWJ) and concludes that "the direct objects in OSV [non-canonical "scrambled" word order] and *wa*-marked entities are generally given information. Yet, word order changes from SOV [canonical word order] to OSV do not influence the cataphoric prominence of a referent" (p. 78).

**2.4.3.2.2 Weight**    Another important factor that affects word order is the weight of NP. Yamashita & Chang (2001) pointed out that In Japanese, heavy NPs tend to precede light NPs, whereas, in SVO languages like English, light NPs are reported to precede heavy NPs (e.g., Arnold et al. 2000). They also report that topics and subjects tend to precede other NPs and the weight and topichood of a NP competes to decide the order of NPs (see also Kondo & Yamashita 2008).

**2.4.3.2.3 Remaining issue**    The previous literature agrees that topics, correlating with given information, appear clause-initially. This is also motivated from cognitive perspective. The results of Chapter 5, however, show that not all given elements appear clause-initially. Moreover, there are post-predicate elements which correspond to topics in Japanese. It is also necessary to explain why some topics appear after the predicate. In Chapter 5, I will show that sharedness, rather than givenness in general, affects word order in Japanese and that activation status determines whether NPs appear clause-initially or post-predicatively. Also, whether the referent in question is mentioned in the following discourse or not affects word order in addition to the effect of particles, contrary to the finding of Imamura (2017).

**2.4.3.3 Post-predicate elements**

I call NPs that appear after the predicate post-predicate or postposed NPs. As has been stated earlier, they appear mainly in the spoken language. Whereas adverbs and noun-modifying phrases are also postposed frequently in conversation, the present study only discusses postposed NPs, which are exemplified in (81).

(81)  a.  yurusite kun-nai-yo **syatyoo-ga**
          allow    give-NEG-FP president-NOM
          '(He) would not allow (us to do such a thing), the president.' (Ono &
          Suzuki 1992: 431)
      b.  omosiroi-kamo     **haikei-ga**
          interesting-may.be background-NOM
          'It's interesting, the background.' (Nakagawa, Asao & Nagaya 2008:
          9)

**2.4.3.3.1 Afterthought**  Some researchers consider postposed elements to be
"afterthought" (Shibatani 1990: 259): a clarification for an omitted element. Kuno
(1978); Hinds (1982) and Ono & Suzuki (1992) also make a similar point. However,
it has been pointed out that some postposed elements are produced in a coher-
ent intonation contour without pause (Ono & Suzuki (1992: 436); T. Ono (2007:
§2)), which suggests the possibility that the speaker does not have time to plan
to produce the postposed part; rather, the postposed part has been planned as
such.

**2.4.3.3.2 Non-focus**  Takami (1995b), modifying Kuno (1978), propose that non-
focus NPs can be postposed. When the focus NPs are postposed, the sentences
are not acceptable as shown in (82), where the *wh*-word *nani* 'what' in (82-a) and
*mizu* 'water' in (82-b) are considered to be foci.

(82)  a.  *ato       iti-nen-de                teinen-nan-desu-ka **dare-ga**
          remaining one-year-within-ATT-PLT-Q who-NOM


          'Is (he) going to retire within a year, who?'      (Takami 1995b: 160)
      b.  ??boku-wa nomi-tai    **mizu-ga**
          1SG-TOP   drink-want water-NOM
          'I want to drink, water.'                          (op.cit.: p. 161)

Takami (1995a) argues that the NPs in the following examples can be postposed
because they are not the most important information, although they are part of
focus.

(83)  a.  akegata yatto   umare-masi-ta **otoko-no ko-ga**
          dawn    finally born-PLT-PAST male-GEN child-NOM
          'At dawn, (he) was finally born, a male baby.'

b.  taroo-wa hanako-ni  katte yat-ta-yo  **zyuk-karatto-no**
    Taro-TOP Hanako-DAT buy   give-PAST-FP 10-carat-GEN
    **daiya-no    yubiwa-o**
    diamond-GEN ring-ACC
    'Taro gave Hanako, a 10-carat diamond ring.'   (Takami 1995a: 236)

I suppose that Takami's important information is equal to focus. In (83), part of the focus is postposed, but they are not "the most focalized part"; so the sentences in (83) are acceptable. Therefore, Takami's generalization that foci (or the most focalized part) cannot be postposed still holds.

Fujii (1991) argues that pragmatically important parts (such as focus and contrast) are uttered first, which results in postposed constructions. I consider this argument to be similar to Takami's argument and include Fujii in this section of postposed elements as non-focus.

**2.4.3.3.3 Emphasis** Hinds (1982) argues that some postposed elements adds emphasis to the utterance. Ono & Suzuki (1992: 437) also point out postposed elements that "strengthen the speaker's stance toward the proposition."

Although it is not clear how to identify "emphasis", their argument is important at least in two ways. First, when the postposed elements are produced in a coherent contour with the predicate, they are similar to final particles such as *ne* and *yo*. For example, in (84), the postposed element *watasi* 'I' follows the final particle *yo*.

(84)  sukii itte ki-masi-ta-**yo**    **watasi**
      ski  go  come-PLT-PAST-FP 1SG
      '(I) went skiing, me.'                        (Ono & Suzuki 1992: 438)

Given that final particles can appear in a row (e.g., *oisii **yo ne*** 'good, isn't it?'), it is no wonder that postposed elements behave like final particles and add some kind of the speaker's attitude toward the proposition like final particles.

Second, as Ono & Suzuki (1992) pointed out, the implicatures of some postposed construction are dramatically different from the corresponding pre-predicate construction. For example, compare (85-a) and (85-b). They are composed of exactly the same elements; only the orders are different. In (85-a), *sore* 'that' is postposed; in (85-b), *sore* is in the basic position. Therefore, they are expected to convey exactly the same meaning. However, (85-a) is not a simple question; rather it is closer to a rhetorical question implying that the speaker doesn't like *sore*. On the other hand, (85-b) is a simple neutral question.

(85)  a.  nani **sore**
          what that
          'What!?'                                      (op.cit.: p. 440)
      b.  **sore** nani
          that  what
          'What's that?'

Based on the evidence discussed above, T. Ono (2007) claims that the postposed construction has already been grammaticalized and is part of Japanese grammar.

**2.4.3.3.4 Activation cost**  Nakagawa, Asao & Nagaya (2008) divided postposed NPs into two types based on intonation, following Ono & Suzuki (1992): the postposed element uttered within the same intonation contour with the predicate (single-contour type) and that uttered separately from the predicate (double-contour type). They measured the Referential Distance (RD) between the postposed element in question and and its immediate antecedent by inter-pausal unit. The RD approximates the activation cost of the referent. Smaller RD indicates that the referent has been previously mentioned relatively recently and hence the activation cost is low; larger RD indicates that it has been previously mentioned less recently and hence the activation cost is high.

Nakagawa et al. found that the RD of the single-contour type is much smaller than that of the double-contour type. They argue that the activation cost of the single-contour type is small and the referent is discussed currently as a topic. On the other hand, they report that the double-contour type is contributed by multiple factors.

**2.4.3.3.5 Preferred interactional structure**  H. Tanaka (2005) argues that interactional factors affect word order in Japanese conversation. In sequences of conversation, there are preferred and dispreferred organizations (Schegloff, Jefferson & Sacks 1977; Heritage 1984; Pomerants 1984). Preferred organizations are, for example, an assessment followed by agreement and a request followed by acceptance. On the other hand, dispreferred organizations include an assessment followed by disagreement and a request followed by refusal. Preferred second parts such as agreement to an assessment and acceptance to a request are simple, direct, and are uttered without delay. On the other hand, dispreferred second parts such as disagreement to an assessment and a refusal to a request are complex, indirect, and are uttered with delay. Levinson (1983: p. 332ff.) compares preferred vs. dispreferred organizations to unmarkedness vs. markedness

in morphology.

Based on this argument, H. Tanaka (2005) found that the preferred second part begins with the predicate, followed by NPs (and other adverbs and adverbial clauses), while the dispreferred second part ends with the predicate, preceded by NPs (and other elements). Tanaka argues that this contrast is observed because the predicate expresses the conclusion such as agreement, disagreement, acceptance, and refusal.

Let us see the following example of an assessment-agreement sequence. In (86), Chikako (C), Keiko (K), and Emiko (E) are talking about current fashion trends, which revived from their youth. First, Chikako comments that the current fashion is exactly the same as the fashion trends of their youth. Then Keiko immediately agrees with Chikako by uttering the predicate followed by an NP. Note that the sign "=" indicates that there is no pause between utterances.

(86)　C:　ima-no　katati-to　ma̱ttaku onnazi.=
　　　　　　now-GEN form-COM exactly　same
　　　　　　'(It's) exactly the same shape as the ones in the vogue now.'
　　　K:　=｜onnazi-yo｜↓ =[**eri-mo**
　　　　　　same-FP　　　collar-also
　　　　　　'(It's) the same, the collar too.'
　　　E:　　　　　　　　[a! honto::.
　　　　　　　　　　　　oh really
　　　　　　　　　　　　'Oh re::ally.'　　　　　　　(H. Tanaka 2005: 406)

On the other hand, in the next example of an dispreferred second part, the speaker delays the predicate expressing refusal by putting a lot of NPs and adverbs before the predicate. Before the second part (87),[26] the speaker was asked about the content of an advertisement in a magazine.

(87)　a.　sono <**nakami**>-**made** tyotto-ne
　　　　　its　　content-even　a.bit-FP
　　　　　'When it comes down to its contents, sort of...'
　　　b.　**kookoku-no~** gn >**ga-tte-no-wa**　　tyotto
　　　　　advert-GEN　　DF NOM-QUOT-NMLZ-TOP a.bit
　　　　　'when it comes to (the content) of the advert, sort of...'

---

[26] I modified the transcription symbol "- (hyphen)" to "~ (tilde)" because hyphens are used to express morphological boundaries in this study. The tilde (originally, a hyphen) indicates a sudden stop of an utterance (typically a word) on the way to utter it. I would not explain other transcription symbols here because they are irrelevant to the current discussion. For more detail on transcription symbols, see Jefferson (2004) and Hepburn & Bolden (2013).

    c.   **kotira-de-wa**
           here-LOC-TOP
           'on our side...'

    d.    wakara-nai -n-desu-keredomo<, .hhhh
           know-NEG-NMLZ-PLT-though
           '(we) have no knowledge of.'            (op.cit.: p. 413)

The speaker could have simply say "we have no knowledge of (it)" because all other NPs are clear from the context. However, the speaker chose to utter NPs (and adverbs) instead of omitting them presumably to delay the conclusion.

**2.4.3.3.6 Remaining issue**     Postposed constructions are well studied in various theories. However, few studies examine the difference between postposed NPs and other NPs such as clause-initial and pre-predicate NPs. H. Tanaka (2005) does not explain why speakers sometimes produce post-predicate elements and sometimes not. In Capter 5, I will investigate these three kinds of NPs in terms of information structure, especially activation cost. Also, I will discuss possibile raison d'être of post-predicate elements.

### 2.4.3.4 Pre-predicate elements

I call NPs that appear immediately before the predicate pre-predicate elements. The discussion on the basic word order implies that Ps most frequently appear pre-predicatively and this is the basic order. Therefore, I assume that almost all theories assume that Ps appear pre-predicatively as basic word order and I provide a review of other characteristics of NPs that appear pre-predicatively.

**2.4.3.4.1 Unaccusativity**     Since Perlmutter (1978), it is widely assumed that there are two types of intransitive verbs: unergative verbs, which involves an agent, and unaccusative verbs, which involves only a patient (theme). Especially among generative linguists, it is also assumed that the argument of an unergative verb syntactically appears in the same position as the subject (A) of transitive clauses, while the argument of an unaccusative verb appear in the same position as the object (P) of transitive clauses. Kageyama (1993), who applied this idea to Japanese, provides rich examples to support the surface structures of Japanese sentences. As can be seen in examples (88) to (90), the argument of an unergative verb *otoko-no ko* 'boy' in (89) appears in the same position as the subject (A) of a transitive verb *kodomo* 'child' in (88), whereas the argument of an unaccusative verb *ki-no eda* 'tree branch' in (90) appears in the same position as the object (P) of a

transitive verb *ki-no eda* in (88).
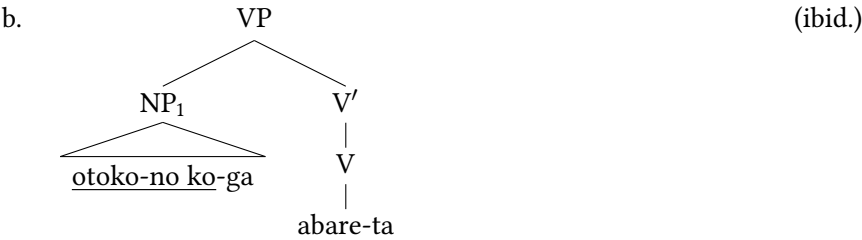
(88) **Transitive verb**

    a.    <u>kodomo</u>-ga **ki-no**   **eda**-o      ot-ta
         child-NOM   tree-GEN branch-ACC break-PAST
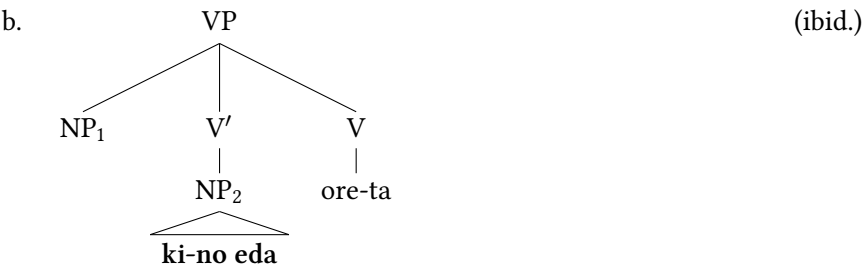         'A child broke a tree branch.'

    b.                    (Kageyama 1993: 46)
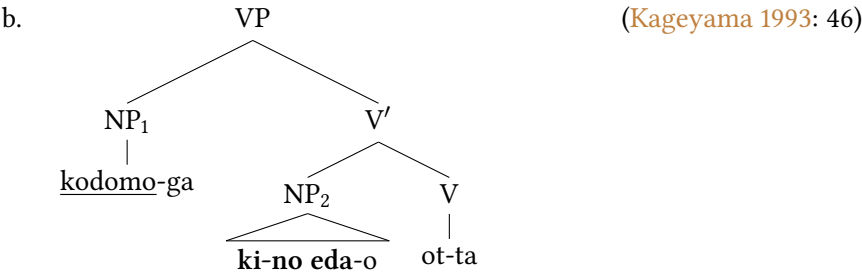


(89) **Intransitive (Unergative) verb**

    a.    <u>otoko-no</u> **ko**-ga     abare-ta
         male-GEN child-NOM go.violent-PAST
         'A boy went violent.'

    b.                    (ibid.)



(90) **Intransitive (Unaccusative) verb**

    a.    **ki-no**   **eda**-ga     ore-ta
         tree-GEN branch-NOM break-PAST
         'A tree branch broke.'

    b.                    (ibid.)



The important point for our interest is that the argument of unaccusative verbs

and the object (P) of transitive verbs structurally appear closer to the verb; i.e., they appear pre-predicatively since Japanese is basically a verb-final language.

**2.4.3.4.2 Focus** Kuno (1978) and Takami (1995a) point out that pre-predicate elements are focus ("most important information"). Endo (2014: §4.2.) also states that foci appear pre-predicatively. Compare the following examples. In (91-a), where 'Boston' appears pre-predicatively preceded by 'Hanako', responding only to Boston is felicitous as in (91-A), while responding only to Hanako is not as in (91-A′).

(91)   Q:   ziroo-wa **hanako-to bosuton-ni** it-ta?
            Jiro-TOP Hanako-with Boston-DAT go-PAST
            'Did Jiro went to Boston with Hanako?'
      A:   un     **bosuton-ni** it-ta-yo
            yeah Boston-DAT go-PAST-FP
            'Yeah, I went to Boston.'
      A′: *un   **hanako-to**   it-ta-yo
            yeah Hanako-with go-PAST-FP
            'Yeah, I went with Hanako.'           (Kuno 1978: 52)

In (92), on the other hand, where 'Hanako' appears pre-predicatively preceded by 'Boston', responding only to Hanako is a natural answer as in (92-A′), while responding only to Boston is not as in (92-A).

(92)   Q:   ziroo-wa **bosuton-ni hanako-to** it-ta?
            Jiro-TOP Boston-DAT Hanako-with go-PAST
            'Did Jiro went to Boston with Hanako?'
      A:   *un   **bosuton-ni** it-ta-yo
            yeah Boston-DAT go-PAST-FP
            'Yeah, I went to Boston.'
      A′:   un   **hanako-to**   it-ta-yo
            yeah Hanako-with go-PAST-FP
            'Yeah, I went with Hanako.'           (Kuno 1978: 54)

This implies that focus appear pre-predicatively. The results in Chapter 5 basically support this observation.

**2.4.3.4.3 Remaining issue** The observations discussed in the literature above implies that Ps, the arguments of the unaccusative verbs, and foci appear pre-predicatively. The results in Chapter 5 shows that both patienthood and newness

contribute to word order in Japanese. The next question is what kind of theory allows both patient and new elements to appear pre-predicatively. Throughout this thesis, I aim at showing plausibility of the theory that captures multiple variables at the same time, i.e., the theory of competing motivations (Du Bois 1985).

### 2.4.4 Intonation

I employ the term intonation and prosody roughly in the same way. Here I outline studies on associations between intonation and some functions including information structure. For detailed phonetic descriptions and analyses of Japanese intonation, see Beckman & Pierrehumbert (1986); Pierrehumbert & Beckman (1988); Sugito (1994b); Venditti (2000); Igarashi, Kikuchi & Maekawa (2006); Igarashi (2015). Also, this thesis discusses a unit smaller than a clause; it does not discuss discourse structure although there are many interesting interactions between intonation and discourse structure (e.g., Nakajima & Allen 1993; Venditti & Swerts 1996; Murai & Yamashita 1999; Koiso, Yoneyama & Maki 2003; Okubo, Kikuchi & Shirai 2003; Koiso & Ishimoto 2012). I focus on studies on intonation units and information structure.

#### 2.4.4.1 Definition of Intonation unit

Before reviewing the previous literature, I briefly discuss how an intonation unit is defined. The definition of an intonation unit depends a labeling system for Japanese prosodic information called X-JToBI, which has already been annotated in *the Corpus of Spontaneous Japanese* to be used in this study. I discuss X-JToBI in the following paragraph, then I will introduce intonation units.

**2.4.4.1.1 X-JToBI and intonational phrase**    X-JToBI (Maekawa et al. 2002; Igarashi, Kikuchi & Maekawa 2006) is based on J-ToBI proposed in Venditti (1997; 2000), which itself is modified from ToBI (Tones and Break Indices), a labeling system for English prosody (Silverman et al. 1992; Pitrelli, Beckman & Hirschberg 1994; Beckman & Elam 1997).

Here I mainly discuss the break indices (BI) tier of X-JToBI since this is the most relevant feature for intonation units. The BI labelings are determined by human annotators and represent the strength of prosodic boundaries (Maekawa et al. 2002; Igarashi, Kikuchi & Maekawa 2006). BI labelings basically consist of 1, 2,

and 3.[27] 1 corresponds to a word boundary, 2 corresponds to an accentual-phrase boundary, and 3 corresponds to an intonational-phrase boundary. An intonational phrase consists of more than or equal to one accentual phrase. An accentual phrase consists of a pitch contour with a single $F_0$ peak. Intonational-phrase boundaries are the place where a pitch reset occurs; if the pitch range of the current accentual phrase is smaller than the next accentual phrase, an intonational-phrase boundary is identified in the current accentual-phrase boundary.

I introduce an example of intonational-phrase boundary (the label 3), which is the most relevant to our study. Figure 2.1 shows the pitch contour of the utterance (93).

(93)  aoi  yane-no ie-ga    mieru
      blue roof-GEN house-NOM visible
      'A house with the blue roof is visible.'

The vertical lines in the figure across the pitch contour indicate the peak and the bottom of $F_0$. A contour with a single pitch peak corresponds to a single accentual phrase. Comparing the first (*aoi* 'blue') and the second (*yane-no* 'roof-GEN') accentual phrases, the pitch range of the second accentual phrase is smaller than the first one; i.e., downstepping occurs in the second accentual phrase. Downstepping, a.k.a. catathesis, is "a phonological process by which the [pitch] range is compressed after a lexical accent" (Venditti (2000: 17), see Poser (1984); Beckman & Pierrehumbert (1986); Pierrehumbert & Beckman (1988); Kubozono (1993)). In Figure 2.1, the first accentual-phrase boundary is not an intonational-phase boundary. On the other hand, comparing the second (*yane-no* 'roof-GEN') and the third (*ie-ga* 'house-NOM') accentual phrases, the second pitch range is smaller than the third one. Therefore, the second accentual-phrase boundary is an intonational-phrase boundary.

**2.4.4.1.2 Intonation unit**    Based on X-JToBI, Den et al. (2010); Den, Maruyama & Koiso (2011) propose the definition of intonation unit, which I will employ in this study. They call it short utterance-unit as opposed to long utterance-unit, but I use the term "intonation unit (IU)" throughout this thesis since I do not discuss long utterance-unit. An intonation-unit boundary is identified where there is an intonational phrase (the boundary labelled as 3 in CSJ) discussed above, a

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[27] In addition, there are diacritics m, -, p. There are also labels for disfluency; word fragments, fillers, and so on. See Igarashi, Kikuchi & Maekawa (2006) for detailed description.
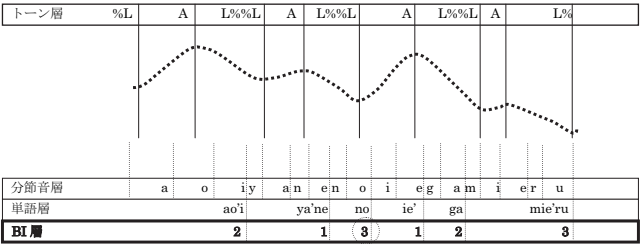
Figure 2.1: An example of annotation of BI (Igarashi, Kikuchi & Maekawa 2006: p. 412)

clause boundary,[28] or a pause equal to or more than 0.1 seconds. As discussed in Enomoto et al. (2004), it is difficult for human annotators to agree in deciding intonation-unit boundaries based on the system proposed in Du Bois et al. (1992) and Iwasaki (2008). Den and his colleagues made it possible to identify intonation units in spontaneous speech consistently across annotators.

In the following section, however, I review studies on various kinds of intonation units including those of Du Bois et al. (1992); Maekawa et al. (2002); Iwasaki (2008); Den, Maruyama & Koiso (2011). Also, whereas prominence marking, down-stepping, and boundary pitch movements are more popular topics than intonation units, I review those studies in relation to the current study. See Venditti, Maekawa & Beckman (2008) for an overview of such studies.

### 2.4.4.2 Intonation unit and related phenomena

In this section, I present a review of the literature on the association between prosodic unit and related characteristics of language. Note again that the review includes various kinds of prosodic units based on slightly different definitions, although they agree in many cases.

**2.4.4.2.1 Prominence and downstepping** Prominence and downstepping are crucial features to determine intonation unit. It is well known that a focus receives prominence (pitch peak). Pierrehumbert & Beckman (1988: 99–101) report that "sequences with focus on the noun almost always had an intermediate phrase [i.e., intonational phrase] boundary between the adjective and the noun[...] an intermediate phrase boundary blocks catathesis [i.e., downstep-

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[28] To be more precise, this is a long utterance-unit boundary. See Den, Maruyama & Koiso (2011) for the definition of this unit.

ping]", through production experiments, where subjects were asked to produce a sequence of an adjective and a noun with different focus positions. Target sentences and contexts Pierrehumbert and Beckman used are the one like (94). The capital letters indicate that they are in focus, and the bold-faced letters indicate that they are the targets of analysis.

(94)  Q:  [In America,] are there sweet beans or carrots like there are in Japan?
      A:  amai   NINZIN-wa ari-masu-ga      **amai   MAME**-wa
          sweet carrot-TOP    exist-PLT-though sweet bean-TOP
          ari-mase-n
          exist-PLT-NEG
          'There are sweet CARROTS, but there aren't sweet BEANS.'
                                              (Pierrehumbert & Beckman 1988: 59)

Pierrehumbert and Beckman showed that there is an intonational phrase (i.e., intermediate phrase) boundary between the adjective (*amai* 'sweet' in (94-A)) and the noun (*mame* 'bean' in (94-b)) when the noun is focused as in (94). Although the results are complicated, they conclude that their generalization applies to both accented and unaccented words.[29]

**2.4.4.2.2 Focus projection**  There has been a cross-linguistic question of how human beings distinguish broad focus and narrow focus: the issue of focus projection. This has been investigated based on English, German and Dutch (Selkirk 1984; Gussenhoven 1983). Ito (2002), who investigated this question in Japanese, compared the response time and acceptability of each of the intonation types like (95-A1-A3) followed by a broad focus question like (95-Q). The capital letters indicate the phrases whose pitch range is expanded.

(95)  Q:  yokoyama-kun-wa   boonasu morat-tara doo  suru-no
          Yokoyama-HON-TOP bonus    get-COND   how do-Q
          'What will Mr.Yokoyama do when he gets a bonus?'

---

[29] Kubozono (2007) compared two definitions of downstepping (syntagmatic and paradigmatic) and investigated whether a pitch reset occurs before the focus. He found conflicting results; from syntagmatic perspective, the focus receives higher pitch than the preceding phrase, which indicates that downstepping is blocked. From paradigmatic perspective, on the other hand, he had to conclude that downstepping is not blocked before the focus. The present study employs the definition of syntagmatic downstepping and assume that the conclusions in Pierrehumbert & Beckman (1988) and Kubozono (2007) do not contradict with each other. See Kubozono (2007) for detailed discussion on this issue.

A1: kare-wa **DAIBINGU-o HAZIMERU-n-da-yo**
3SG-TOP diving-ACC    begin-NMLZ-COP-FP
'He starts (scuba) diving.'

A2: kare-wa **DAIBINGU-o hazimeru-n-da-yo**
3SG-TOP diving-ACC    begin-NMLZ-COP-FP
'He starts (scuba) diving.'

A3: kare-wa **daibingu-o HAZIMERU-n-da-yo**
3SG-TOP diving-ACC begin-NMLZ-COP-FP
'He starts (scuba) diving.'                          (Ito 2002: 412)

Ito found that "though dual prominence [like (95-A1)] is preferred for answers to broad focus questions, utterances with a single intonational prominence on the object [like (95-A2)] may be comprehended equally quickly as those with dual prominence" (op.cit.: p. 413), whereas A1 is significantly more acceptable than A2. Also, she reports that the response time and acceptability of the A3-type do not significantly differ from those of A1 and A2. She concluded that "it is possible that the relation between argument structure and intonational focus marking is not universal" (ibid.).

Kori (2011) investigated intonation of broad and narrow focus and reports that, by default, only the first word receives pitch peak and the following word is suppressed, although some speakers put prominence on the second word too. (96-a) is the target sentence that he asked participants to read aloud and (96-b-c) are contexts. In (96-b-c), both *aoi* 'blue' and *mahuraa* 'scarf' is focused because both of them contrast with 'red' and 'gloves' or 'sweater', respectively. In (96-d), *aoi* 'blue' is narrowly focused because only *aoi* 'blue' contrasts with 'red' and 'scarf' is not contrasted.

(96)   a.   **aoi   mahuraa**-dat-ta-n-desu
blue scarf-COP-PAST-NMLZ-COP.PLT
'(It) was a blue scarf.'
b.   I ordered <u>red gloves</u>, but I received **a blue scarf**.        (Broad focus)
c.   I ordered <u>a red sweater</u>, but I received **a blue scarf**.    (Broad focus)
d.   I ordered <u>a red scarf</u>, but I received **a blue scarf**.    (Narrow focus)

Kori concludes that the default intonation for broad focus is to suppress the second word (*mahuraa* 'scarf' in this case) because most of the participants produced the sentences as such, although some participants chose the sentence with prominence both on *aoi* 'blue' and *mahuraa* 'scarf' when they were asked to choose a good sentence.

**2.4.4.2.3 Functional and cognitive motivations for intonation unit** Iwasaki (1993), applying Du Bois et al. (1992) and Chafe (1994) style of IU identification to Japanese, argues that a Japanese intonation unit corresponds to a phrase rather than a clause, while Chafe (1987; 1994) reports that an English IU often corresponds to a clause. According to Iwasaki's survey, clausal IUs in Japanese are 42.2%, whereas phrasal IUs are 57.8%. Their intonation unit is a "stretch of speech uttered under a single coherent intonation contour" (Du Bois et al. 1992: 17). Iwasaki (1993: 39) states that the beginning of an IU "is often, though not always, marked by a pause, hesitation noises, and/or resetting of the baseline pitch level", whereas the ending of an IU "is often, again though not always, marked by a lengthening of the last syllable." Iwasaki (1993) provides (97) as an example of intonation units in Japanese corresponding to a phrase. Each line in (97) corresponds to a single intonation unit and (97-a-e) as a whole consist of a single proposition "I heard that broadcast at home with my family."

(97)  a.  atasi-wa-ne:*
          1SG-TOP-FP
          'I, you know...'
      b.  uti-de      kii-ta-no-ne?
          home-LOC hear-PAST-NMLZ-FP
          'heard at home, you know...'
      c.  sono are-wa-ne?
          that  that-TOP-FP
          'that thing, you know...'
      d.  hoosoo-wa-ne?
          broadcast-TOP-FP
          'that broadcast, you know,'
      e.  kazoku-de.
          family-with
          'with my family.'                           (Iwasaki 1993: 40)

The pitch and intensity of (98) are shown in Figure 2.2 from Iwasaki (2008: 109), where he explains the same example with the figure. The IU (98-a) ends with a final vowel lengthening, whereas boundary pitch movements are observed in the ending of IUs (98-b-d), which are indicated by "?". (98-e) ends with a final lowering, indicated by ".".

Iwasaki divided kinds of "functional components" into four types.

(98)    **Four functional components**

a. **Lead (LD)** such as fillers, which have no substantial meaning
b. **Ideation (ID)**, which conveys the content of speech
c. **Cohesion (CO)** such as conjunctives and *wa*, which relates the previous and the current IUs
d. **Interaction (IT)** such as *ne* 'FP' and *yo* 'FP', which is associated with communication

Based on this, he showed the similarities among IUs. For example, (99-a) is an IU which only contains an NP followed by particles, and (99-b) is an IU which only contains a VP also followed by particles. The structures of these two IUs are essentially the same in terms of functional components, although they are different in terms of grammatical structure.

(99) a. [mami-ni-dake] [-wa] [-ne]
      Mami-DAT-only -TOP -FP
      **ID**            **CO**   **IT**
    b. [ik-ase-ta-rasii] [-no] [-yo]
      go-CAUS-REP     -NMLZ -FP
      **ID**             **CO**   **IT**
      '(I heard that she) let only Mami go.'

Iwasaki analyzed his data based on his classification and found that more than 80% of the IUs consist of two or less functional components. He states that "this might be due to the limitation of work that the speaker can handle within one IU. […] Japanese speakers […] are faced with a constraint which permits them to exercise up to two functions per intonation unit" (p. 49).
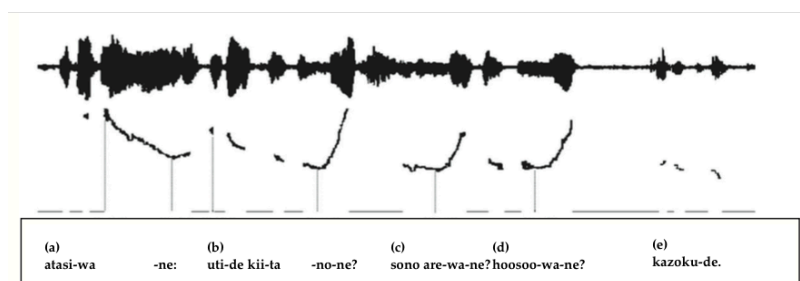


Figure 2.2: An example of intonation unit (Iwasaki 2008: 109)

On the contrary, Matsumoto (2000: 68) reports that "one clause comprises an average of 1.2 IUs" and argues that "the clause is the syntactic exponent of

Japanese substantive IU". Instead, she proposes "one new NP per IU" constraint in Japanese, comparing it to one new idea at a time constraint in Chafe (1987; 1994). However, Matsumoto (2003: §5.6) also reports that one new or given NP per IU is preferred in Japanese conversation. Therefore, new as well as given NPs appear in an intonation unit without other NPs.

Nakagawa, Yokomori & Asao (2010) focused on the difference between phrasal IUs and clausal IUs and analyzed them in terms of information structure. They measured referential distance and persistence (Givón 1983) and concluded that one of the functions of phrasal IUs is to introduce or re-introduce important topics in discourse. They compare this function of phrasal IUs to left-dislocations observed in many languages.

**2.4.4.2.4 Remaining issues**    Most studies on phonetics and phonology concentrate on foci rather than topics. Among foci, most of the studies (except for those on focus projection) concentrate on narrow focus rather than broad focus. Moreover, almost all of them are experimental studies rather than corpus studies. On the other hand, this dissertation focuses on the difference between broad foci and topics in spontaneous speech, although it also employs a production experiment.

Functionalists such as Iwasaki (1993); Matsumoto (2000; 2003) and Nakagawa, Yokomori & Asao (2010) have methodological issues since they rely on the impressionistic definition of intonation units. This study, on the contrary, is based on strict definitions of intonation units and aims at revealing associations between intonation and information structure.

The results in Chapter 6 show that an intonation unit corresponds to a unit of information structure such as topic and focus, which frequently but not always overlaps with a unit of syntactic structure.

**2.4.4.3 Pause**

Sugito (1994a) showed that pauses appear before pitch reset through perceptual experiment. She recorded trained announcers' reading news and have subjects listen to the recording. She found that, when pauses were eliminated, subjects perceive the voice as though two people were overlapping with each other where there are pitch resets and there are supposed to be pauses. According to her, it is in fact impossible to reset pitch without pauses and vocal cords are tensed 0.1 seconds before speech production. Therefore, I assume that pause correlate with pitch reset.

## 2.5 Summary

In this chapter, I outlined the previous literature on topics and foci, and characteristics of Japanese related to this study, and enumerated remaining questions to be investigated.

In Chapters 4 to 6, I investigate the associations between information structure and particles, word order, and intonation in spoken Japanese. Before getting into these chapters, I introduce the framework this study employs in the next chapter.

# 3 Framework

## 3.1 Introduction

In this chapter I will describe the framework the current work employs. First, in §3.2, I introduce the theory of conceptual space assumed throughout this thesis. Then, I will describe the definition of topic and focus of this study and features which have been proposed to be associated with information structure phenomena (§3.3). Finally, §3.4 explains the characteristics of the corpus to be investigated and how to annotate features correlating with topic and focus.

To investigate cognitive motivations of some linguistic category (e.g., topic and focus), it is possible to use a variety of clues such as generalizations about typological tendencies, models of language processing, theories of language change and language contact, language acquisition process, and language production data, as well as traditional grammaticality and acceptability judgements of sentences. The present study mainly employs language production data (a.k.a. corpora) and the acceptability of sentences because these two directly reflects the intuition and cognition of adult native speakers of Japanese. Sometimes I also use production experiments to obtain enough amount of data under controlled contexts. It is necessary to investigate other kinds of clues such as typological tendencies, language processing models, and language acquisition processes of many other languages to reveal how cognition is reflected in human language in general. I hope that this study contributes to this larger goal.

This study restricts itself to investigating only standard Japanese, since large spoken corpora are available in this language. There are few empirical studies on information structure in spoken Japanese, while there are at least preliminary empirical studies in other languages such as some European languages and languages in Africa (e.g., Cowles 2003; Dipper et al. 2004; Dipper, Götze & Skopeteas 207; Ritz, Dipper & Götze 2008; Skopeteas et al. 2006; Cook & Bildhauer 2011; Chiarcos et al. 2011). Another reason is that a large spoken corpus of standard spoken Japanese is available. The corpus is called *the Corpus of Spontaneous Japanese* (CSJ), which is morphologically analysed and annotated with a variety of information such as accentual phrases, intonation, parts of speech, de-

pendent structures in addition to basic transcriptions of speech (Maekawa 2003; Maekawa, Kikuchi & Tsukahara 2004). I will describe characteristics of the corpus in §3.4.3.

## 3.2 Conceptual space and semantic map

Throughout this study, I assume a theory of conceptual space (Croft 2001; Haspelmath 2003). A conceptual space is a multi-dimensional model of concept sensitive to some linguistic function(s). As Croft (2001: 93) states, "conceptual space is a structured representation of functional structures and their relationships to each other. [...] Conceptual space is also multidimensional, that is, there are many different semantic, pragmatic, and discourse-functional dimensions that define any region of conceptual space". It is claimed to be universal. An example of conceptual space is shown in Figure 3.1. This is a conceptual space of parts of speech. The horizontal dimension given in capital letters indicates "the constructions used for the propositional acts of reference, modification, and predication" (Croft 2001: p. 93). The vertical dimension indicates the semantic classes of "the words that fill the relevant roles in the propositional act constructions" (op.cit.: p. 94).

Whereas "the conceptual space is the underlying conceptual structure, [...] a semantic map is a map of language-specific categories on the conceptual space" (p. 94). While conceptual space is supposed to be universal, semantic maps are language-specific. Figure 3.2 is an example of semantic map of parts of speech specific to Japanese. The dimensions are suppressed for the purpose of convenience. The figure shows that nouns such as *hon* 'book' accompany *no* to modify another nouns and *da* for predication. Adjectives such as *yasu* 'cheap' accompany *i* for both modification and predication. Some nominal adjectives between 'book' and 'cheap' such as *heewa* 'peace(ful)' and *kenkoo* 'health(y)' accompany both *no* and *na* for modification and *da* for predication. They are different from but similar to nouns such as 'book'. Some nominal adjectives such as *atataka* 'warm' and *tiisa* 'small' accompany both *na* and *i* for modification, and 'warm' allows both *da* and *i* to follow in predication. This indicates that they are similar to adjectives rather than nouns. The nominal adjective *kirei* 'pretty' is in between; it only allows *na* for modification and *da* for predication.

"The hypothesis of typological theory, including Radical Construction Grammar, is that most grammatical domains will yield universals of the form-function mapping that can be represented as a coherent conceptual space" (p. 96), which is explicitly stated in (1).
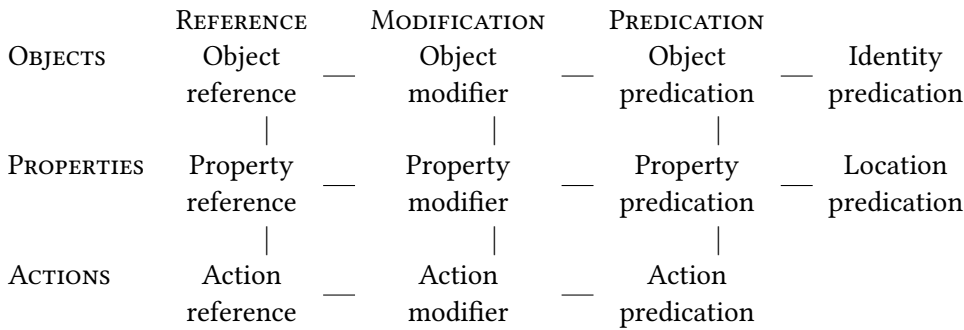
| | REFERENCE | | MODIFICATION | | PREDICATION | | |
|---|---|---|---|---|---|---|---|
| OBJECTS | Object reference | — | Object modifier | — | Object predication | — | Identity predication |
| | \| | | \| | | \| | | |
| PROPERTIES | Property reference | — | Property modifier | — | Property predication | — | Location predication |
| | \| | | \| | | \| | | |
| ACTIONS | Action reference | — | Action modifier | — | Action predication | | |

Figure 3.1: Conceptual space for parts of speech (Croft 2001: 92)

| | | MODIFICATION | PREDICATION |
|---|---|---|---|
| OBJECTS | 'book' | *no* | *da* |
| ⋮ | 'peace(ful)' | *no*/*na* | *da* |
| ⋮ | 'health(y)' | *no*/*na* | *da* |
| ⋮ | 'pretty' | *na* | *da* |
| ⋮ | 'warm' | *na*/*i* | *da*/*i* |
| ⋮ | 'small' | *na*/*i* | *i* |
| PROPERTIES | 'cheap' | *i* | *i* |

Figure 3.2: The semantic map for the Japanese Nominal, Nominal Adjective, and Adjective constructions (Croft 2001: 95)

(1)  **Semantic Map Connectivity Hypothesis**: any relevant language-specific and construction-specific category should map onto a **connected region** in conceptual space. (ibid.)

Japanese parts of speech in Figure 3.2 supports this hypothesis. For example, morphemes such as *no* and *na* map onto different but connected regions on the conceptual space. If the adjective suffix *i* could also attach to *hon* 'book', but not to *kirei* 'pretty', for example, this is a counter-example of the hypothesis.

There are also conceptual spaces for information structure, and this thesis aims at describing semantic maps of information structure in Japanese. In terms of the theory of conceptual space, each feature that has been proposed to correlate with information structure (to be discussed in the next section) is considered to be a dimension of the conceptual space. Hence, the question of this thesis

can be restated as follows: what dimensions Japanese is sensitive to, and how linguistic forms (i.e., particles, word order, and intonation) in Japanese map onto the semantic map of information structure in Japanese.

In the following section, I outline the definitions of topic and focus in this thesis and features correlating with topic and focus, which are considered to be dimensions of conceptual space for information structure.

## 3.3 Topic, focus, and correlating features

It has been pointed out that there is a correlation between a topic and a referent that is activated, definite, specific, animate, and agent, and inferable and between a focus and a referent that is inactivated, indefinite, non-specific, inanimate, and patient (Givón 1976; E. L. Keenan 1976; Comrie 1979; 1983). They form a prototype category; e.g., topics are typically (i.e., frequently) but not always definite or animate, and foci are typically but not always indefinite or inanimate. I propose that the feature *presupposed* is a necessary feature of topic, while the feature *asserted* is a necessary feature of focus. On the other hand, other features correlate with topic and focus respectively but are not necessarily topic and focus themselves. The features correlates with topic and focus are summarized in (2).

|     |     | topic        | focus         |
| --- | --- | ------------ | ------------- |
|     | a.  | presupposed  | asserted      |
|     | b.  | evoked       | brand-new     |
|     | c.  | definite     | indefinite    |
| (2) | d.  | specific     | non-specific  |
|     | e.  | animate      | inanimate     |
|     | f.  | agent        | patient       |
|     | g.  | inferable    | non-inferable |

As will be shown in the following chapters, topic and focus are heterogeneous and have complex features proposed in (2).

In this section, I will define each term in (2).

### 3.3.1 Topic

A linguistic form is considered to represent topic if it has the characteristics as in (1) in §2.2.1, here repeated as (3).

(3)     Topic is a discourse element that the speaker assumes or presupposes to
        be shared (known or taken for granted) and uncontroversial in a given
        sentence both by the speaker and the hearer.

Since the proposition that "the speaker assumes or presupposed to be shared
both by the speaker and the hearer" is too long and complicated, this statement is
sometimes shortened as "shared by the speaker and the hearer" to mean the same
thing. Remember that the statement is always the speaker's assumption and
hence avoids the paradox pointed out in Clark & Marshall (1981). The topic is by
definition presupposed to be shared both by the speaker and the hearer. By "topic
is shared", I mean that topics are either evoked, inferable, declining, or unused
in terms of the given-new taxonomy (2) in §2.2.1. By "topic is presupposed", I
mean that the speaker assumes that the hearer takes it for granted the fact that
the referent or the proposition being mentioned is known or accepted both by
the speaker and the hearer. See also the discussion in §2.2.1.

   Also, the notion of *uncontroversial* is important; topics cannot be questioned or
argued against in a normal manner. For instance, English noun phrases preceded
by *as for* or *regarding* cannot be questioned or argued against. Assuming that
expressions like *regarding* and *as for* introduce topic expressions (Kuno 1972;
1976; Gundel 1974), this supports the idea that topics cannot be questioned or
argued against. In (4), for example, *John* preceded by *as for* or *regarding* cannot
be felicitously argued against as shown in (4-B2,B2′), whereas *a teacher*, which
is considered to be focus, can be argued against as in (4-B2″).

(4)     A1:  Do you remember the guys we met at the last night's party? Their
             names are Karl and John, I guess. Karl is doing linguistics at the grad
             school of our university. I forgot what languages he speaks.
             [{As for/Regarding} John]$_{TOP}$, [he]$_{TOP}$ [is a teacher]$_{FOC}$.
        B2:??No, **Rob** is a teacher.
        B2′??No, {as for/regarding} **Rob**, he is a teacher.
        B2″: No, John is **an engineer**.

In other words, topic expressions cannot be corrected by the next speaker in a
normal manner. I call this type of test *no*-test (see also the lie-test in Erteschik-
Shir (2007): p. 39)).

   Careful readers might think that it is perfectly natural to produce an utterance
like (5) which is very similar to (4-B2), speculating that the *no*-test is a flawed
test. The capital letters in (5) indicates that they are stressed.

(5)     B2:  No, ROB is a teacher, not JOHN.

However, this does not mean that the test is flawed. Note that the participants of this conversation would not be satisfied only with (5); John's information needs to be provided. Therefore, a "complete" conversation is something like (6).

(6)    A1:  [{As for/Regarding} John]$_{TOP}$, [he]$_{TOP}$ [is a teacher]$_{FOC}$.    (=(4))
             B2:  No, ROB is a teacher, not JOHN.    (=(5))
             A3:  Then what is John?
             B4:  I guess he is an engineer.

This suggests that once B says *no*, he must provide an alternative to a focus (as long as s/he knows). I am inclined to label *ROB* in (6-B2) as focus and think that the existence of examples like (5-B) does not spoil the *no*-test.

It is also unnatural to overtly receive topics as news because overt acceptance indicates that they could be controversial. For instance, as shown in (7-B2), topics cannot be repeated as news by the next speaker who has heard the utterance (7-A1), whereas there is no problem to repeat the focus as news as in (7-B2′).

(7)    A1:  [{As for/Regarding} John]$_{TOP}$, [he]$_{TOP}$ [is a teacher]$_{FOC}$.
             B2:??Aha, **John**.
             B2′:  Aha, **a teacher**.

I call this test *aha*-test. *Aha*-test is a natural consequence of the fact that the truth value of a sentence is assessed with respect to topic (Strawson 1964).

Let us see specific examples of topics. For instance, as will be shown in Chapter 4, preposed zero-coded elements (elements without any overt particles) correspond to topics in Japanese because the referent that the preposed element refer to is presupposed to be shared between the speaker and the hearer as *nezumi* 'mouse' in (8), where Ø indicates "a zero particle".

(8)    Context: Y and H are roommates, who are bothered by a mouse running in their room and eating their leftovers. The cat they keep finally caught the mouse while H was out. When H is back, Y wants to let H know this news.
        Y:  **nezumi**-Ø neko-ga tukamae-ta-yo
            nezumi-Ø cat-*ga*   catch-PAST-FP
            'The cat caught (the) mouse.'

The referent 'mouse' is interpreted to be shared between the speaker and the hearer; when the mouse is not shared between the speaker and the hearer as in (9), the utterance is infelicitous as shown in the contrast between (9-Y) and (9-Y′).

(9)   Context: Y and his cat is relaxing in the living room. H comes into the room.

    H:   Anything fun today?

    Y: ??**nezumi-Ø** neko-ga tukamae-ta-yo
        mouse-Ø  cat-*ga*   catch-PAST-FP
        Intended: 'The cat caught a mouse.'            (=(8-Y))

    Y′:   neko-ga **nezumi-Ø** tukamae-ta-yo
        cat-*ga*   mouse-Ø   catch-PAST-FP
        'The cat caught a mouse.'

When the mouse is not shared between the speaker (Y) and the hearer (H), the preposed *nezumi* 'mouse' is infelicitous as in (9-Y), while *nezumi* in the pre-predicate position is felicitous as in (9-Y′).

Some readers might think that preposed zero-coded elements do not necessarily correspond to topics; Instead, readers might suspect that they correspond to foci because *nezumi* 'mouse' in (8) is somehow "new" to the discourse, or, more precisely, it is not activated before the time of utterance (8-Y). However, as discussed below, foci do not have such constraint that an element be assumed to be shared by the speaker and the hearer. Typically, foci are indefinite referents that are not shared as specified in (2). Since the preposed zero-coded elements in Japanese do not refer to indefinite referents as shown in (9), I categorize them as topics.

### 3.3.2 Focus

A linguistic form is considered to represent focus if it has the characteristics as in (16) in §2.3.1, repeated here as (10) for convenience.

(10)   Focus is a discourse element that the speaker assume to be news to the hearer and possibly controversial. S/he wants the hearer to learn the relation of the presupposition to the focus by his/her utterance. In other words, focus is an element that is asserted.

A focused discourse element is news in the sense that the hearer is assumed not to know the relationships between the element and the presupposition. For example, see the following example (11).

(11)   Q:   Who broke the window?

> A:   hanako-ga  wat-ta-n-da-yo
>      Hanako-*ga* break-PAST-NMLZ-COP-FP
>      'HANAKO broke (it).'
>      Presupposition: "x broke the window."
>      Assertion: "x = Hanako"

In (11-A), *hanako* is shared in the sense that her existence and identity are known by the speaker and the hearer. However, *hanako* is also news in relation to the presupposition "x broke the window" at the time of utterance (11-Q). The speaker of (11-A) lets the hearer learn the proposition that is assumed to be news: "x = Hanako." *Hanako* is focus because this is the part where the assertion is different from the presupposition.

I also emphasize that the speaker thinks that the focus might be *controversial*. This implies that another participant of the conversation can potentially argue against the focus statement. Therefore, the focus can be felicitously negated by the next speaker, whereas the topic is not. This is exemplified in (**??**), repeated here as (12).

(12)  A:   Do you remember the guys we met at the last night's party? Their names are Karl and John, I guess. Karl is doing linguistics at the grad school of our university. I forgot what languages he speaks.
           [{As for/Regarding} John]$_{TOP}$, [he]$_{TOP}$ [is a teacher]$_{FOC}$.
      B: ??No, **Rob** is a teacher.
      B′: ??No, {as for/regarding} **Rob**, he is a teacher.
      B″:  No, John is **an engineer**.

As shown in (12), (part of) the focus *a teacher* can be negated smoothly, whereas the topic *John* cannot be negated felicitously. The concept of controversialness is more hearer-oriented and interactional than the previous notions such as assertions, unpredictability, and unrecoverablity. See also the discussion in §2.3.

### 3.3.3 Information structure in a sentence

Here I discuss types of information structure. Following Lambrecht (1994), I distinguish three types of information structures within a sentence: **predicate-focus structure** (topic-comment structure), **sentence-focus structure**, and **argument-focus structure**.

In **the predicate-focus structure** or the topic-comment structure, the predicate is focused as the name suggests. The predicate may include so-called complement

of the predicate. This is exemplified as in (13-A) for English, where the capital letters represent prominence in English.

(13)     Predicate-focus structure
         Q:   (What did the children do next?)
         A:   [The children]$_T$ [went to SCHOOL]$_F$.        (Lambrecht 1994: p. 121)

(14-A) is an example of predicate-focus structure in Japanese.

(14)     Q:   What is Hanako doing?
         A:   [**Hanako**-wa]$_T$ [syoosetu-o yon-deru]$_F$-yo
              Hanako-*wa*       novel-*o*      read-PROG-FP
              'Hanako is reading a novel.'

In **the sentence-focus structure**, the whole sentence is focused. This is exemplified in (15-A) for English, where, again, the capital letters indicate stress.

(15)     Sentence-focus structure
         Q:   What happened?
         A:   [The CHILDREN went to SCHOOL]$_F$!        (Lambrecht 1994: p. 121)

A Japanese example of sentence-focus structure is shown in (16-A).

(16)     Sentence-focus structure
         Q:   What happened?
         A:   [hanako-ga syoosetu(-o) yon-deru]$_F$-yo
              Hanako-*ga* novel-*o*      read-PROG-FP
              'Hanako is reading a novel!'

In sentence-focus structure, there is no explicit topic and all the arguments (e.g., *the children* and *school* in (16-A)) are part of focus. However, if one assumes stage topics (Erteschik-Shir 1997; 2007), the distinction between the predicate-focus and the sentence-focus structures may not be clear. In (17-a), for example, *kyoo* 'today' might function as topic in the sense that the truth value of the sentence is evaluated with respect to the specific time 'today' (although, in this thesis, I do not examine stage topics in detail).

(17)     a.   [**kyoo**-wa]$_{T?}$ [hanako-ga syoosetu(-o) yon-deru]$_F$-yo
              today-*wa*    Hanako-*ga* novel(-*o*)    read-PROG-FP
              'Today Hanako is reading a novel.'

      b.    [**Hanako**-wa]$_T$ [syoosetu-o yon-deru]$_F$-yo
           Hanako-*wa*    novel-*o*    read-PROG-FP
           'Hanako is reading a novel.'

Note that, in terms of information structure, (17-a) is similar to (17-b), which have predicate-focus structure. The predicate-focus and sentence-focus structures are similar in that the predicate is in the domain of focus. For this reason, I sometimes put the predicate-focus and sentence-focus structures into the same category and refer to them as **broad focus structure**.

In **the argument-focus structure**, elements other than predicates are focused. This is exemplified in (18-A) for English and (19-A) for Japanese. This structure is sometimes referred to as **narrow focus structure** as opposed to broad focus structure because the domain of focus is limited to arguments or other elements except for predicates.

(18)    Argument-focus structure

      Q:   Who went to school?
      A:   [The CHILDREN]$_F$ [went to school]$_T$.    (Lambrecht 1994: p. 121)

(19)    Argument-focus structure

      Q:   Who is reading a book?
      A:   [hanako-ga]$_F$ [syoosetu(-o) yon-deru]$_T$-yo
          Hanako-*ga*   book(-*o*)    read-PROG-FP
          'Hanako is reading a book.'

I distinguish two types of components constituting of a information structure: discourse element and discourse referent, each of which is defined as in (20):

(20)    a.   **(Discourse) element**: A unit of linguistic form (including zero pronoun) that is uttered by the participants in discourse.
      b.   **(Discourse) referent**: An entity or proposition that a discourse element refers to (if a referent is a proposition, it is also called **proposition**).

### 3.3.4 Other features correlating with topic/focus

This section discusses the definition of features which have been proposed to correlate with topic and focus. Although I do not necessarily annotate all the features in my corpus, I discuss all of them since, in some place or other, they are relevant to my thesis.

### 3.3.4.1 Activation cost

The activation cost of a referent is the assumed cost for the hearer to activate the referent in question. An active referent is a referent that the speaker assumes to be in the attention of the hearer (and hence the activation cost is low), while an inactive referent is a referent that the speaker does not assume to be in the attention of the hearer (and hence the activation cost is high) (see also Chafe 1994: inter alia).[1] Typically, referents are assumed to be brought into the hearer's attention by mentioning them or putting them in the hearer's area of visual perception.

A topic referent is often, but not always, activated in the hearer's mind. In (8), the referent 'mouse' is not necessarily considered to be active in H's mind. Although the mouse kept bothering Y and H sometimes when they were in their room, it is not appropriate for the speaker to assume that the mouse is in H's attention even in school when the speaker happened to talk to H.

According to Dryer (1996), focus is an element that is not activated. While this generalization well captures the focus as stressed linguistic element, I will not employ this definition of focus in this study because if *nezumi* 'mouse' in (8) is focus, one has to come up with the explanation why it is assumed to be shared between the speaker and the hearer, which is typically not the case with focus. According to this study's account, on the other hand, *nezumi* 'mouse' in (8) is topic because the the characteristics are along the line with topic correlation features in (2) and a special account for why *nezumi* 'mouse' is shared is not necessary. For detailed discussion of the relationships between focus and stress, see Lambrecht (1994: Chapter 5).

A focus referent, on the other hand, is typically assumed not to be active in the hearer's mind. As Lambrecht (1994) has pointed out, the most frequent focus structure is predicate-focus structure as in (21-A,B), where elements included in the predicate focus are typically not active in the hearer's mind.

(21)  Q:  What did you guys do today?
       A:  [watasi-wa]$_T$ [tomodati-to resutoran-de  supagetii tabe-ta]$_F$-yo
           1.SG-*wa*      friend-with  restaurant-LOC spagetti  eat-PAST-FP
           'I ate spagetti with (a) friend in (a) restaurant.'
       B:  [boku-wa]$_T$ [uti-de    hon yon-de-ta]$_F$-yo
           1.SG-*wa*      home-LOC book read-PROG-PAST-FP
           'I was reading (a) book at home.'

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[1] I am using the term *attention* rather than *consciousness* because I believe the speaker's ability to evaluate the hearer's state of mind is eventually related to joint attention (Tomasello 1999).

In (21), it is reasonable to assume that Q did not have 'friend', 'restaurant', 'spagetti', 'home', and 'book' in his/her attention at the time of utterance (21-Q).

There is another type of activation status: *semi-active*. I use the term *declining* specifically for the referent that has been active but starts to decline because other referents are also activated. Declining elements are in semi-active state.

### 3.3.4.2 Definiteness

A definite referent is a referent that is unique in the domain of discourse, while an indefinite referent is a referent that is not unique in the domain of discourse.

The expression that "Topic is a discourse element that the speaker assumes or presupposes to be shared (known or taken for granted) and uncontroversial in a given sentence both by the speaker and the hearer" in (3) might lead to the interpretation that topic is definite. As has been pointed out in the literature (Givón 1976; E. L. Keenan 1976; Comrie 1979; 1983), topics tend to be definite. However, this is not a necessary nor sufficient feature of topic. Let us discuss the following example (22).[2]

(22)    Context: Y told H that he had never seen and eaten mangoes. H told Y that they are delicious. Several days later, Y finally ate a mango.

   Y:    **mangoo** konoaida      miyako-zima-de      tabe-ta-yo
         mango    the.other.day   Miyako-island-LOC   eat-PAST-FP
         '(I) ate (a) mango (we talked about) in Miyako island the other day.'

In (22) 'mango' is indefinite because the mango Y ate is not unique in the domain of discourse; H cannot uniquely identify which mango Y ate.[3] However, the element *mangoo* 'mango' is preposed because it has been discussed and hence is assumed to be shared between the speaker and the hearer, which makes it possible for *mangoo* to appear clause-initially as will be discussed in Chapter 5. I include this type of example like *mangoo* in unused, extending the term "unused" in Prince (1981).

However, some indefinite referents are difficult to be topics than others. For example, expressions such as *dareka* 'somebody' and *oozee-no hito* 'many people' are difficult to be topics judging from the fact that they cannot be followed by

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[2] I am grateful to Yoshihiko Asao for pointing out this type of example.

[3] Yuji Togo and one of the reviewers (Morimoto) cast doubt on my claim that *mangoo* in (22) is indefinite; Rather, they suggest that it could be generic. I am reluctant to accept this view because this *mangoo* seems to refer to a specific (non-generic) mango that Y ate, as indicated by the past tense of the predicate *tabe-ta* 'eat-PAST'.

*wa*, but can be followed by *ga* in Japanese as shown in (23) (Kuno 1973b: p. 37 ff.). As will be shown in Chapter 4, *wa* codes the element whose referent is assumed to be active in the hearer's mind; *wa* codes active topics. On the other hand, as will also be shown in Chapter 4, *ga* codes focus elements.

(23)   a.   **dareka-{??wa/ga}** byooki-desu
             somebody-*wa/ga* sick-COP.PLT
             'Speaking of somebody, he is sick.'
       b.   **oozee-no hito-{??wa/ga}** paatii-ni ki-masi-ta
             many-GEN person-*wa/ga* party-to come-PLT-PAST
             'Speaking of many people, they came to the party.'

A focus referent, on the other hand, tend to be indefinite rather than definite (Givón 1976; E. L. Keenan 1976; Comrie 1979; 1983; Du Bois 1987). As has been mentioned above, the most frequent focus structure is predicate-focus structure like (21) and it is reasonable to assume that Q in (21) cannot identify the referents included in the predicate focus such as 'friend', 'restaurant', 'spagetti', and 'book'.

It is natural for topic referents to be frequently definite. The participants typically talk about the person or the thing whose identity are known by them. Or sometimes they talk about people or something in more general terms. This is an exceptional case known as generic referent and requires special account. On the other hand, it is natural for focus referents to be frequently indefinite because, intuitively, an element that is not known by the hearer in relation to presupposition is typically not shared between the speaker and the hearer.

### 3.3.4.3 Specificity

A specific referent is fixed, namely, the speaker has one particular referent in his/her mind; while a non-specific referent is not fixed, i.e., the speaker does not have one particular referent (Karttunen 1969; Enç 1991; Abbott 1994). Turkish unambiguously codes specific and non-specific objects: if the NP is coded by the accusative case marker *-(y)i* (or *-(y)u*), it is interpreted as specific as in (24-a), while, if the NP is not overtly coded, it is interpreted as non-specific as in (24-b).

(24)   a.   Ali bir  piyano-yu kiralamak istiyor
             Ali one piano-ACC to.rent    wants
             'Ali wants to rent a certain piano.'
       b.   Ali bir  piyano kiralamak istiyor
             Ali one piano  to.rent      wants

'Ali wants to rent a (non-specific) piano.'           (Enç 1991: p. 4-5)

Specific referents like 'piano' in (24-a) are fixed in the sense that the speaker wants to rent a particular piano in his/her mind. Non-specific referents like 'piano' in (24-b) are not fixed in the sense that the speaker does not care which piano s/he could rent; any piano works in (24-b).

Topics are frequently but not always specific. Consider the following example (25), which is slightly modified from (22).

(25)     Context: Y told H that he had never seen and eaten mangoes. H told Y
         that they are delicious. Several days later, Y finally got a chance to eat a
         mango.

         Y:   **mangoo** raisyuu    miyako-zima-de    taberu-yo
              mango    next.week Miyako-island-LOC eat-FP
              '(I will) eat (a) mango (we talked about) in Miyako island next week.'

In this case, *mangoo* is non-specific because speaker Y does not know which mango he will eat. However, it is topic at the same time for the same reason discussed in association with (22).

There is a concept that is related to but distinct from non-specificity: genericity. Generic referents do not represent an individual entity, but do represent a concept or a category. On the other hand, non-specific referents still represent an individual entity. According to Kuno (1972), generic referents are always available as topic. In (26), the element *kuzira* corresponds to a generic referent as topic.

(26)     **kuzira**-wa honyuudoobutu-desu
         whale-*wa* mammal-COP.PLT
         'A whale is a mammal.'                          (Kuno 1972: p. 270)

When participants talk about generic referents, the referent that is presupposed to be shared is the concept itself. Therefore, generic referents are always shared (unless the hearer has never heard the expression in question). As will be shown in Chapter 4, however, *wa* codes the element whose referent is assumed to be active or semi-acitve inferable in the hearer's mind and not all generic elements can be coded by *wa*.

Foci, on the other hand, can be either specific or non-specific, but tend to be non-specific. In (27-A), the speaker may or may not have a particular book in his/her mind.

(27)   Q:   What are you going to do tomorrow?
       A:   [I]$_T$'m going to [read **a book** tomorrow]$_F$.

In the example above, the specificity of the book in question is not important. Instead, the whole event of reading a book is more relevant to the question.

### 3.3.4.4 Animacy

An animate referent is a living entity such as human beings, cats, and dogs, while an inanimate referent is a non-living entity such as computers, books, and love. Snakes, bugs, plants, and flowers are somewhere in between.

   Topic tends to be animate, while focus tends to be inanimate (Givón 1976; E. L. Keenan 1976; Comrie 1979; 1983; Du Bois 1987). Although this study does not discuss much on animacy, it is relevant to some aspects of the distinction between zero vs. overt particles, as briefly mentioned in Chapter 4.

### 3.3.4.5 Agentivity

I employ the prototypes of the agent and the patient discussed in Dowty (1991: inter alia). An agent is a referent that typically has volition, has sentience, causes an event or change of state in another participant, or moves. On the other hand, a patient is a referent that typically undergoes a change of state, corresponds to an incremental theme, is causally affected by another participant, or stationary relative to movement of another participant.

   Agentivity or subjecthood is often discussed in association with topic (Li 1976: inter alia). However, it is inaccurate to assume that topic is limited to an agent or that an agent is always topic. It is important to keep in mind that topic correlates with agent or subject but being an agent or subject itself is neither necessary nor sufficient condition to be topic. Focus, on the other hand, correlates with patients. In the same way as topic, however, it is inaccurate to assume that all foci are patients. The relationships between topic/focus and agentivity are discussed in Chapter 4, in association with the distinction between zero vs. overt particles.

### 3.3.4.6 Inferability

The term *inferable* is borrowed from Prince (1981) though many other scholars have discussed similar concepts (e.g., Haviland & Clark 1974; Chafe 1994). A discourse referent is inferable "if the speaker assumes the hearer can infer it, via logical – or, more commonly, plausible – reasoning, from [discourse referents]

already [active] or from other inferables" (Prince 1981: p. 236).[4] A referent is inferable typically through the part-whole or metonymic relationships between the referent and another referent that has been already active. Inferable referents can be topic by being assumed to be shared between the speaker and the hearer, or can be focus.

## 3.4 Methodology

In this section, I will discuss the methods in this study, based on the definitions and assumptions of the topic and the focus specified in the last section. This study employs acceptability judgements, production experiments, and corpus annotation, to be discussed in the following sections.

### 3.4.1 Topic and focus in acceptability judgements

In acceptability judgements, I sometimes employ the *hee* test, where the element in question is focus if it can be repeated after the expression *hee* 'really', while it is not if it cannot. See also the discussions in §2.2.1, 2.3.1, 3.3.1, and 3.3.2. The *hee*-test is exemplified in (28).[5]

(28)    Taro:kinoo-sa      [ore]$_T$ [hebi  mi-ta-n-da]$_F$-yo
              yesterday-FP 1SG     snake see-PAST-NMLZ-COP-FP
              'Yesterday [I]$_T$ [saw a snake]$_F$!'
        Jiro: hee,   {??kinoo   / ??taroo / hebi   (mi-ta-n-da)}!
              really yesterday / Taro     / snake (see-PAST-NMLZ-COP)
              'Really, yesterday? / you? / (saw) a snake?'

Let us assume that in (28–Taro) it is presupposed that something happened to Taro yesterday. Since something must always happen to Taro all the time, this presupposition is appropriate even in an out-of-the-blue context. Therefore, *ore* '1SG' is interpreted as topic, while *hebi mi-ta-n-da* 'snake see-PAST-NMLZ-COP' is interpreted as focus in this particular context. Given this situation, the hearer of (28–Taro) can respond to this utterance as in (28–Jiro): while the focus part *hebi mi-ta-n-da* 'snake see-PAST-NMLZ-COP' can be felicitously repeated followed by *hee* 'really', the topic part *ore* '1SG', which corresponds to *taroo* in (28–Jiro), cannot be repeated felicitously. Topics are identified negatively in this test. The

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[4] The terms are replaced according to this study's terminology.

[5]  Read Jiro's utterance in (28) with exclamative intonation. Question intonation always works regardless of whether the element in question is topic or focus.

assumption of this *hee* test is that topics can never be taken as "news" or "a surprise" since they are assumed to be shared between the speaker and the hearer, while foci are expected to be "news" or "surprise" to the hearer.

The expression *kinoo* 'yesterday' cannot be repeated either. I assume that this is because *kinoo* 'yesterday' is also a part of presupposition. However, I am neutral as to whether or not *kinoo* 'yesterday' is a topic in the same sense that *ore* '1SG' is a topic. It is a kind of stage topic discussed in 3.3.3. In this study I restrict myself to investigating elements which constitute arguments of sentences and do not discuss much about stage topics.

In grammaticality judgements, contexts will be provided in order for topics to be typical topics (presupposed, definite, etc.) and for foci to be typical foci (asserted, indefinite, etc.). Examples of contexts which prompt different focus structures are provided in (29) to (31), where the target expression is *koinu(-o) yuzut-ta* 'gave a/the puppy'.

(29) **Predicate-focus context**: Yesterday the speaker and his/her friend found an abandoned puppy on the street. The speaker brought it to his/her home. Today, the speaker tells the friend what happened to the puppy.

    A:   sooieba    [**koinu**]$_T$ [**yuzut-ta**]$_F$-yo
          by.the.way puppy   give-PAST-FP
          'By the way, (I) gave the puppy (to somebody).'

(30) **Sentence-focus context**: the speaker and his/her friend are working in an animal shelter. The friend was absent yesterday and wants to know what happened yesterday.

    A:   kinoo-wa    [**koinu yuzut-ta**]$_F$-yo
          yesterday-*wa* puppy  give-PAST-FP
          'Yesterday (we) gave a puppy.'

(31) **Argument-focus context**
    Q:   What did you give to him?
    A:   [**koinu-o**]$_F$ [**yuzut-ta**]$_T$-yo
          puppy-*o*    give-PAST-FP
          '(I) gave the/a puppy.'

In predicate-focus contexts like (29), typically the referent of the discourse element in question has already appeared in the context preceding the target expression; in this example, *koinu* 'puppy' has appeared in the context and the speaker and the hearer share the identity of the puppy. Therefore, *koinu* 'puppy' is easily

presupposed and is interpreted as topic. The speaker intends to tell the hearer what happened to the puppy because this news is not shared with the hearer. The readers may wonder why I do not simply use a question like 'what happened to the puppy?', which typically prompts predicate-focus structure. This question, however, prompts to omit the element *koinu* 'puppy' because it appears in the immediate context. This is the reason why the context which prompts predicate-focus structure like (29) appears to be complicated.

In sentence-focus contexts like ((30)), on the other hand, typically the referent is not shared; in A of (30), *koinu* 'puppy' appears out-of-the-blue. The whole utterance is interpreted as news or focus. In this case, A of (30) can be easily preceded by questions like 'what happened yesterday?'.

Argument-focus contexts like (31) are typically *what*- or *who*-questions that prompt a single argument as answer. In (31), the question prompts to *koinu* 'puppy' as answer. 'A gave (something)' is presupposed.

### 3.4.2 Assumptions in experiments

In production experiments, I asked Japanese native speakers to read aloud sentences preceded by different contexts: the context where the sentence is interpreted as different types of focus structures. The contexts that prompt different types of focus structures are designed in the same way as discussed in the last section.

### 3.4.3 Corpus annotation and analysis

In analyzing spontaneous speech, it is relatively difficult to apply the definition of the topic and the focus discussed above because clean contexts are not available unlike constructed examples. For this reason, I will provide the definitions of topic and focus for the corpus investigation based on the assumptions of the topic and focus discussed in §3.3. The basic idea is that, since it is difficult to determine whether some discourse referent is presupposed or not, I will use information status to approximate given-new taxonomy (§3.4.3.3) of the referent instead of the *presupposed* vs. *asserted* distinction. The activation status of the referent in question is approximated by whether the referent has antecedent or not.

Firstly, I will discuss the characteristics of the corpus (§3.4.3.1) and the procedure of annotating anaphoric relations (§3.4.3.2). Then the annotations of relevant features will be discussed (§3.4.3.3).

### 3.4.3.1 Corpus

This study investigates 12 core data of simulated public speaking from *the Corpus of Spontaneous Japanese* (CSJ: Maekawa 2003; Maekawa, Kikuchi & Tsukahara 2004). The data list and basic information are summarized in Table 3.1. The data to be investigated are randomly chosen out of 107 core data of simulated public speaking. Simulated public speaking is a type of speech where the speakers talk about everyday topics such as 'my most delightful memory' or 'if I live in a deserted island'. I use the RDB version of CSJ (Koiso, Den & Maekawa 2012) to search the corpus.

Table 3.1: Corpus used in this study

| ID | Speaker gender (age) | Theme | Length (sec) |
|---|---|---|---|
| S00F0014 | F (30-34) | Travel to Hawaii | 1269 |
| S00F0209 | F (25-29) | Being a pianist | 619 |
| S00M0199 | M (30-34) | Kosovo War | 580 |
| S00M0221 | M (25-29) | Working at Sarakin | 654 |
| S01F0038 | F (40-44) | Luck in getting jobs | 628 |
| S01F0151 | F (30-34) | Trek in Himalayas | 765 |
| S01M0182 | M (40-44) | Boxing | 644 |
| S02M0198 | M (20-24) | Dog's death | 762 |
| S02M1698 | M (65-69) | Dog's death | 649 |
| S02F0100 | F (20-24) | Rare disease | 740 |
| S03F0072 | F (35-39) | A year in Iran | 816 |
| S05M1236 | M (30-34) | Memories in Mobara | 832 |

The core data of CSJ has rich information of various kinds. I used the information in (32) to generate information relevant for this study.

(32)    a.    Utterance time
           b.    Dependency relation
           c.    Phrase & clause boundary
           d.    Intonation

Relevant variables will be explained in each chapter.

#### 3.4.3.2 Annotation of anaphoric relations

The information of anaphoric relations is used to identify topic and focus. Anaphoric relations are identified in the following way. The basic procedures have been proposed in Iida et al. (2007) and Nakagawa & Den (2012).

(33) a. **Identification of grammatical function, discourse elements, and zero pronoun**
    b. **Classification of discourse elements**: Discourse elements are classified into categories based on what they refer to.
    c. **Identification of anaphoric relations**: The link between the anaphor and the antecedent is annotated.

First, I identified the grammatical function of clauses (a in (33)), namely A, S, vs. P. This is necessary in order to determine discourse elements and zero pronouns to be investigated. In Japanese, pronouns such as *watashi* '1SG', *anata* '2SG', and *kare* '3SG' are rare; the most frequent pronoun is the zero pronoun. In (34), for example, the speaker indicated by $\emptyset_{Sp}$ and 'the dog' indicated by $\emptyset_i$ are zero pronouns, assuming that they appear immediately before the predicates. As shown in (34-d), two zero pronouns $\emptyset_{Sp}$ and $\emptyset_i$ can appear in the same clause; still, native speakers have no trouble in understanding the utterance.

(34) a. yo-nen-kan amerika-de sigoto-o $\emptyset_{Sp}$ si-teru aida
     four-year-for America-LOC work-*o* $\emptyset_{Sp}$ do-PROG during
     'While (I) was working for four years,'
   b. aa zutto kono inu$_i$-to issyoni eii $\emptyset_{Sp}$ sun-de
     FL all.the.time this dog-with together FL $\emptyset_{Sp}$ live-and
     '(I) lived with this dog all the time.'
   c. sikamo oo tabi-o $\emptyset_{Sp}$ suru toki-mo
     moreover FL travel-*o* $\emptyset_{Sp}$ do time-also
     'Moreover, also when (I) travel,'
   d. kuruma-ni $\emptyset_{Sp}$ $\emptyset_i$ nose-te
     car-LOC $\emptyset_{Sp}$ $\emptyset_i$ put-and
     '(I) put (the dog) in my car.'
   e. ee amerika-o tabi $\emptyset_{Sp}$ si-ta-to
     FL America-ACC travel $\emptyset_{Sp}$ do-PAST-Q
     '(I) traveled America.' (S02M1698: 182.88-195.87)

I identified 7697 discourse elements (5234 NPs, 655 overt pronouns, and 1808 zero pronouns) from the corpus.

Second, I classified discourse elements into 13 categories depending on what they refer to b in (33): common referent, connective, speaker, hearer, time, filler, exophora, question, quantifier, degree words, proposition, and other. Although there are many categories, only common referents are relevant for the purpose of this study. Other categories were annotated for future studies. Also, I limit my analyses to A, S, P, and Ex (to be discussed below). Datives are also added for comparison. This process leaves us 2301 elements (1662 NPs, 80 overt pronouns, and 559 zero pronouns). However, I occasionally use data which include other kinds of elements for detailed analysis.

Third, I identified the anaphoric relation for each discourse elements (c in (33)). A unique ID number is given for the set of discourse elements which refer to the same entity. In (35), for example, *syoo-doobutu* 'a small animal' in line a, Ø in line c, e, and f refer to the small animal introduced in line a. All of them are given the ID number 1 because they refer to the same entity. The element *syoo-doobutu* 'a small animal' is called the **antecedent** of the **anaphor** Ø in line c. In the same way, the element Ø in line c is the antecedent of the **anaphor** Ø in line e. The element *watasi* refers to another entity, the speaker, and is given another ID number 2.

|   |   |   | ID |
|---|---|---|---|
|  | a. | **syoo-doobutu**-ga koo tyokotyoko-to <br>    ki-ta-n-desu-ne <br> '**A small animal** came (towards us) with small steps.' | 1 |
|  | b. | de saisyo koo <br> 'and at first, so...' | – |
| (35) | c. | ano sotira-no soto-no-hoo-kara <br>    Ø nozoi-ta-mon-desu-kara <br> 'uh **it** looked at us from that direction, so' | 1 |
|  | d. | watasi-wa saisyo <br> 'At first, I...' | 2 |
|  | e. | Ø risu-kana-to omot-ta-n-desu <br> '(I) thoguht that **it** was a squirrel.' | 1 |
|  | f. | [...] sat-to Ø nige-tyai-masi-te <br> '**it** quickly ran away, and' | 1 |

(S00F0014: 619.51-631.71)

Using the anaphoric relations and various information in the corpus, I generated other relevant features to be discussed in the next section.

### 3.4.3.3 Annotation of topichood and focushood

**3.4.3.3.1 Approximation to given-new taxonomy**    The status of a referent in
the given-new taxonomy is approximated by whether the expression referring
to the referent has an antecedent or not. An expression that has an antecedent is
called **anaphoric** element, while an expression that does not have an antecedent
is called **non-anaphoric** element. I use the term information status to refer to
the status of a referent being anaphoric or non-anaphoric. Note that the terms
anaphoric vs. non-anaphoric are used in Chapter 4, 5, and 6 only to refer to cor-
pus counts. The referent of anaphoric elements is assumed to be either evoked
or declining in terms of given-new taxonomy and active or semi-active in terms
of activation status. On the other hand, the referent of non-anaphoric elements
is inferable, unused, or new in terms of given-new taxonomy and semi-active
or inactive in terms of activation status. I prefer to use the terms of the given-
new taxonomy over activation status because they are more fine-grained. The
correspondence among activation statuses, given-new taxonomy, and corpus an-
notations are shown in Table 3.2. The distinction between inferable, declining,
unused, and brand-new is judged manually when necessary. By "shared", I mean
the referent is evoked, declining, inferable, or unused in terms of given-new tax-
onomy.

Table 3.2: Activation status, given-new taxonomy, and corpus annota-
tion

| Activation status | Given-new taxonomy | Corpus annotation |
|---|---|---|
| Active | Evoked | Anaphoric |
| Semi-active | Declining | |
| Semi-active | Inferable | |
| Inactive | Unused | Non-anaphoric |
| Inactive | Brand-new | |

(Shared = Evoked, Declining, Inferable, Unused)

**3.4.3.3.2 Grammatical function**    Following Comrie (1978) and Dixon (1979), I
distinguish S, A, and P in grammatical function. S is the only argument of in-
transitive clause, A is the agent-like argument of transitive clause, and P is the
patient-like argument of transitive clause. For now, I simply distinguish A and P
based on whether the argument in question is or can be coded by *ga* or *o*. When
it can be coded by *ga*, it is A; when it can be coded by *o*, it is P. Furthermore, I

sometimes distinguish agent S and patient S if needed.

In addition to S, A, and P, I identify non-argument elements (Ex). Non-argument elements are those which appear to be part of the clause but do not have direct relationships with the predicate. A typical example is shown in (36).

(36)  **zoo-wa**    hana-ga nagai
      elephant-*wa* nose-*ga* long
      'The elephant, the nose is long (The elephant has a long nose).'  (Mikami 1960)

As exemplified in (36), the element *zoo* 'elephant' is considered to be Ex. *Hana* 'nose' is the only argument of the predicate (S), and *zoo* 'elephant' does not have direct relationships with the predicate *nagai* 'long'; still, *zoo* 'elephant' looks like part of the clause and needs some label, which happens to be "Ex".

Although Ex is frequently coded by so-called topic markers such as *wa* and *toiuno-wa*, *wa*- and *toiuno-wa*-coded elements are not always labelled as Ex. If they are considered to be S, A, or P, they are labelled as such. For example, in the case where *hana* 'nose' is coded by *wa* like (37), *nose* is labelled as S, instead of Ex.

(37)  zoo-no      hana-wa nagai
      elephant-GEN nose-*wa* long
      'The elephant's nose is long.'

**3.4.3.3.3 Other features**  Ideally, it is necessary to annotate all the variables proposed in (2), but it is impossible to annotate all of them partially because of the limitation of time and labor and partially because of the lack of clear criteria to annotate them consistently. For example, definiteness and specificity are difficult to annotate consistently. Multiple annotators are needed for reliable and objective analyses. Animacy could be simpler, but I have not annotated this feature throughout the corpus just because of the limitation of time and labor. The previous literature indicates that these features play little role in Japanese grammar. These features will be discussed when necessary.

## 3.5 Summary

In this chapter, I discussed the framework employed in this thesis and the method of corpus annotation and analysis. In the next three chapters, different aspects

*3 Framework*

of spoken Japanese grammar (i.e., particles, word order, and intonation) will be analyzed based on the framework and methodology discussed in this chapter.

# 4 Particles

## 4.1 Introduction

In this section, I will describe so-called topic particles coding different kinds of topics (§4.2) and so-called case particles coding different kinds of foci and grammatical functions (§4.3). Table 4.1 summarises kinds of so-called topic particles and case particles coding topics and focus in different statuses of given-new taxonomy. The activation status is also specified in the table to show the correspondence, although I mainly use the terms of given-new taxonomy. Different topic particles attach to elements in different statuses of given-new taxonomy, while case particles are not sensitive to the given-new taxonomy. Instead, case particles are sensitive to the grammatical functions and the broad vs. narrow focus distinction, which is summarized in Table 4.2. The morpheme COP indicates copula.

Table 4.1: Topic particle vs. activation status and given-new taxonomy

| Activation status | Given-new taxonomy | Topic | Focus |
|---|---|---|---|
| Active | Evoked | *toiuno-wa, wa*, Ø | |
| Semi-active | Inferable | *wa*, Ø | |
| Semi-active | Declining | COP-*kedo/ga*, Ø | case particles, Ø |
| Inactive | Unused | | |
| Inactive | Brand-new | – | |

I argue that these tables are a kind of semantic map (Croft 2001; Haspelmath 2003). By arguing that Table 4.1 and 4.2 are examples of semantic maps, I postulate that the scales of given-new taxonomy (the column) and the topic vs. focus distinction (the row) in Table 4.1 and the contrast vs. non-contrast distinction (the column) and the grammatical function (the row) in 4.2 are cognitively real and continuous in the way they are ordered in the tables. This argument and the Semantic Map Connectivity Hypothesis (1) in §3.2 lead us to our hypotheses (1).

Table 4.2: Case particle vs. grammatical function

|  | A | S | | P |
|---|---|---|---|---|
|  |  | Agent | Patient |  |
| Non-Contrastive Focus | *ga* | *ga* | *ga*, Ø | Ø |
| Contrastive Focus |  |  |  |  |
| or Formal Speech | *ga* | *ga* | *ga* | *o* |

(1) **Semantic Map Connectivity Hypothesis of Information Structure**: Since the scales of given-new taxonomy and the topic vs. focus distinction in Table 4.1 and the contrast vs. non-contrast distinction and the grammatical function in 4.2 are cognitively continuous, the particles map onto a connected region in the conceptual space.

The semantic maps in Table 4.1 and 4.2 support the hypothesis (1) because all of the particles are in connected regions. In the following sections, I will show the details of the distributions of these particles with specific examples.

## 4.2 So-called topic particles

As shown in Table 4.1, evoked elements are coded by *Toiuno-wa* or *wa*, while inferable elements are coded by *wa*. Declining and unused elements are coded by a copula followed by *kedo* 'though' or *ga* 'though'. The zero particle (indicated by Ø) can code elements in the given-new taxonomy. The statuses in the given-new taxonomy have corresponding activation statuses in the hearer's mind assumed by the speaker. I propose that inferable and declining elements and unused and brand-new elements are in different activation statuses in the assumed hearer's mind.

Table 4.3 and Figure 4.1 show the distributions of elements in different information status coded by different particles in our corpus. Overall, the topic particles *toiuno-wa* and *wa* codes more ratio of anaphoric elements than the case particles *ga* and *o*. The particles *mo* and *ni* are included here for comparison. In the corpus, the markers *wa*, *toiuno-wa*, and *mo* are the most frequent topic markers and *ga*, *o*, and *ni* are the most frequent case markers (except for *no* 'GEN'). Note that "anaphoric" in the present work just means "the element in question has the co-referential antecedent" and "non-anaphoric" means "it does not." Elements with bridging antecedents are included in "non-anaphoric." See §3.4.3.2

for the detail of the procedure of annotation. A linear mixed effects model was employed to predict information status.[1] I included particles (*toiuno-wa, wa, mo, ga, o, ni*), word order (`nth` in CSJ, see §5.1 for the definition of this annotation), and intonation (phrasal vs. clausal IU, see §6.1 for the definitions) as fixed effects, and speakers (`TalkID`) as a random effect. The model with the effects of particles, word order, and intonation is significantly different from the model without each of those effects (likelihood ratio test, $p < 0.001$ a model without particles, $p < 0.01$ that without word order, and $p < 0.05$ without intonation).[2] The least-squares mean for each level of the particles was calculated, and the pairwise comparisons among particles were conducted. The results of this pairwise comparison is shown in Table 4.4, which only includes the pairs of interest and those whose p-values are less than 0.5.[3] The contrast of `ga - o`, whose estimate is $-0.465$, indicates that the least-squares mean of the odds ratio of anaphoric elements coded by *ga* is significantly less than the least-squares mean of the odds ratio of those coded by *o*; in other words, anaphoric elements are more likely to be coded by *o* than by *ga*. Similarly, anaphoric elements are more likely to be coded by *wa* than by *ga*, by *ni*, and by *mo*. The difference between the particles *o* and *wa*/*toiuno-wa* is not statistically significant. As will be discussed in 4.4.2, this is because *wa* (and presumably *toiuno-wa*) prefers to code anaphoric As over anaphoric Ps. Also, the difference between *toiuno-wa* and *ga* is not statistically significant because of the effect of intonation; most of the *toiuno-wa* coded elements are in phrasal IUs (see Chapter 6).

The statistical analysis shows that *toiuno-wa* codes as much ratio of anaphoric elements as *wa* does. However, detailed qualitative analysis in §4.2.1 reveals that in fact the referents of *toiuno-wa*-coded elements are evoked; the referent of non-anaphoric elements coded by *toiuno-wa* has been introduced implicitly in the previous contexts. On the other hand, the referent of *wa*-coded elements have not necessarily been introduced in the previous contexts; they can be inferable elements. The zero marker Ø does not appear frequently enough in the corpus because CSJ consists of formal speeches. As has already been pointed out in Tsutsui (1984) and discussed in §2.4.2.7, zero markers tend not to appear in formal speeches. There are not enough examples for copula followed by *ga* or *kedo* (7 examples) and I refrain from generalizing by this small amount of data. Instead, I will employ grammatical judgements and analyze these examples qualitatively,

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[1] I used R for the statistical analysis of the thesis. `https://www.r-project.org` The packages `lme4` and `lsmeans` were employed.

[2] The effects of word order and intonation are to be discussed in Chapter 5 and 6, respectively.

[3] The p-values are adjusted using Tukey method for comparing a family of multiple estimates.

which is also supported by the observations in the previous literature.

I also calculated the persistence of each element. Persistence, which is proposed in Givón (1983) to measure topichood, is the number of times the referent is mentioned after it is mentioned by the expression in question. The persistence of elements are shown in Table 4.5. The table shows the count of persistent and non-persistent elements; the persistent elements are mentioned at least once in the following discourse after it is mentioned, while non-persistent elements are not mentioned in the following discourse. See 3.4.3.2 for the procedure of annotation. A linear mixed effects model was applied to predict persistence (persistent vs. non-persistent). I used particles (*toiuno-wa, wa, mo, ga, o, ni*), word order (nth in CSJ), and intonation (phrasal vs. clausal IU) as fixed effects and speakers (TalkID) as a random effect. The model with the effects of particles, word order, and intonation is significantly different from the model without either of the effects of particles and word order (likelihood ratio test, $p < 0.001$ a model without particles, $p < 0.01$ that without word order). However, that with the effects of particles, word order, and intonation is not significantly different from that without the effect of intonation ($p = 0.423$). The least-squares means were calculated, and the pairwise comparisons among particles were conducted. The results of this pairwise comparison is shown in Table 4.6, which only includes the pairs of interest and those whose p-values are less than 0.5. Although the effect of particles are significant, this effect mainly appears to come from the contribution of *ni* in contrast with *toiuno-wa*, *wa*, and *o*, which is not of interest in the present work. One notable contrast is the effect of *toiuno-wa* in contrast to *ga*. The result suggests that *toiuno-wa* is more likely to code persistent elements than *ga*. Figure 4.2 shows how many times the referent in question is mentioned after the NPs or pronouns coded by each particle were mentioned. Numbers more than or equal to 5 are compressed as "5+".

Table 4.3: Particle vs. information status

|  | *toiuno-wa* | *wa* | *mo* | *ga* | *o* | *ni* |
|---|---|---|---|---|---|---|
| Anaphoric | 39 | 112 | 45 | 172 | 163 | 179 |
|  | (57.4%) | (58.9%) | (38.1%) | (38.1%) | (47.9%) | (40.2%) |
| Non-anaphoric | 29 | 78 | 73 | 280 | 177 | 266 |
|  | (42.6%) | (41.1%) | (61.9%) | (61.9%) | (52.1%) | (59.8%) |
| Sum | 68 | 190 | 118 | 452 | 340 | 445 |
|  | (100%) | (100%) | (100%) | (100%) | (100%) | (100%) |
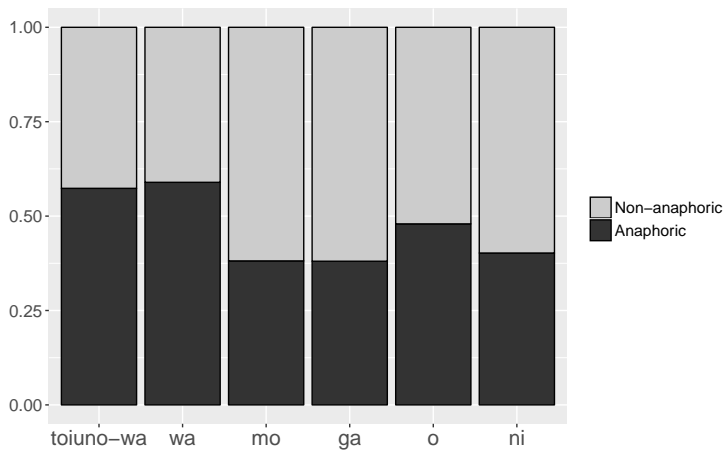
Figure 4.1: Particle vs. information status (ratio)

Table 4.4: The results of pairwise comparison among the least-squares means (information status)

| contrast | estimate | SE | z.ratio | p.value | |
|---|---|---|---|---|---|
| ga - o | −0.465 | 0.149 | −3.120 | 0.022 | * |
| ga - wa | −0.748 | 0.182 | −4.096 | < 0.001 | *** |
| ga - toiuno-wa | −0.659 | 0.274 | −2.409 | 0.153 | |
| o - wa | −0.282 | 0.193 | −1.463 | 0.688 | |
| o - toiuno-wa | −0.194 | 0.282 | −0.688 | 0.983 | |
| ni - wa | −0.661 | 0.184 | −3.602 | 0.004 | ** |
| wa - toiuno-wa | 0.089 | 0.293 | 0.302 | 1.000 | |
| wa - mo | 0.759 | 0.244 | 3.107 | 0.023 | * |

(0 ≤ '***' ≤ 0.001 ≤ '**' ≤ 0.01 ≤ '*' ≤ 0.05 '.' ≤ 0.1 ≤ ' ' 1)

Elements coded by so-called topic markers cannot be repeated as news as shown in hypothetical conversation between A and B in the following examples. As in (2) and (3), the *toiuno-wa*-coded elements *mooningu thii* 'morning tea'[4] and *eberesuto-kaidoo* 'the Everest Trail' cannot be repeated as news, while the

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[4] As discussed in §4.2.1, there are some formal variations of *toiuno-wa* and, *tteno-wa* is one of these variations.

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Table 4.5: Particle vs. persistence

|  | *toiuno-wa* | *wa* | *mo* | *ga* | *o* | *ni* |
|---|---|---|---|---|---|---|
| Persistent | 45 | 107 | 53 | 209 | 175 | 184 |
|  | (66.2%) | (56.3%) | (44.9%) | (46.2%) | (51.5%) | (41.3%) |
| Non-persistent | 23 | 83 | 65 | 243 | 165 | 261 |
|  | (33.8%) | (43.7%) | (55.1%) | (53.7%) | (48.5%) | (58.7%) |
| Sum | 68 | 190 | 118 | 452 | 340 | 445 |
|  | (100%) | (100%) | (100%) | (100%) | (100%) | (100%) |
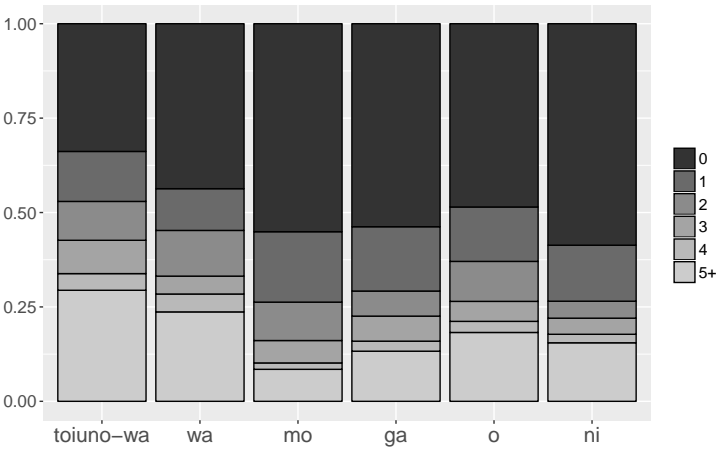


Figure 4.2: Particle vs. # of mention (ratio)

case-marker-coded elements *kootya-ka koohii-ka* 'tea or coffee', *tibetto* 'Tibet', *nepparu* 'Nepal', and *kooeki-ro* 'trading road' can be repeated as news.

(2) A: (i) kono **mooningu-thii-tteno-wa**
       this morning-tea-*toiuno-wa*
       '(In) this morning tea (time)'
   (ii) ma **kootya-ka koohii-ka-tteiuno-o**
       FL black.tea-or coffee-or-QUOT-*o*
       erab-eru-n-desu-keredomo
       choose-can-NMLZ-PLT-though

Table 4.6: The results of pairwise comparison among the least-squares means (persistence)

| contrast | estimate | SE | z.ratio | p.value | |
|---|---|---|---|---|---|
| ga - o | −0.215 | 0.146 | −1.473 | 0.6817 | |
| ga - wa | −0.349 | 0.178 | −1.960 | 0.3657 | |
| ga - toiuno-wa | −0.802 | 0.281 | −2.856 | 0.0491 | * |
| o - wa | −0.134 | 0.187 | −0.714 | 0.9804 | |
| o - toiuno-wa | −0.587 | 0.287 | −2.044 | 0.3171 | |
| o - ni | 0.440 | 0.148 | 2.978 | 0.0345 | * |
| ni - wa | −0.574 | 0.180 | −3.189 | 0.0179 | * |
| ni - toiuno-wa | −1.027 | 0.282 | −3.642 | 0.0037 | ** |
| wa - toiuno-wa | −0.453 | 0.302 | −1.501 | 0.6635 | |

$(0 \leq \text{`***'} \leq 0.001 \leq \text{`**'} \leq 0.01 \leq \text{`*'} \leq 0.05 \text{`.'} \leq 0.1 \leq \text{` '} 1)$

'(you) can choose tea or coffee.'     (S01F0151: 297.23-300.44)

B:     hee, {**??moo-ningu-thii(-wa)**/ **kootya-ka koohii-o**}
        Oh, {morning tea/tea or coffee}

(3)     A:     (i)     kono **eberesuto-kaidoo-toiuno-wa**
                this   Everest-road-QUOT-*wa*
                'This Everest Trail is'

        (ii)    **tibetto-to nepaaru-no kooeki-ro-ni**-mo     nat-te
                Tibet-and Nepal-GEN   trade-road-for-also become-and
                ori-masi-te
                PLT-PLT-and
                'also used for trading between Tibet and Nepal.'     (S01F0151:
                105.73-110.29)

        B:     hee, {**??eberesuto-kaidoo(-wa)/tibetto-to/nepaaru-to** / **kooeki-ro-ni(-mo)**}
                Oh, {Everest Trail/Tibet/Nepal/trading road}

As shown in (4), the element *thii-taimu* 'tea time' coded by copula + *kedo*[5] or the *wa*-coded element *takai tokoro* 'places of high elevation' cannot be repeated as news, while the *ga*-coded elements can be repeated as news.

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[5] Again there are some variations of this marker and I will discuss this in §4.2.3.

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(4) A: (i) de  kono **thii-taimu-nan-desu-keredomo**
           and this  tea-time-NMLZ-COP.PLT-though
           'And at this tea time,'
        (ii) kono hyookoo-no  **takai tokoro-de-wa**
           this  elevation-GEN high  place-LOC-*wa*
           koozanbyoo-toiu    hizyooni **kikennna  kanoosee-ga**
           altitude.sickness-QUOT very    dangerous possibility-NOM
           aru-node
           exist-because
           'this place of high elevation, there is a possibility of altitude
           sickness, so...'
        (iii) ee **mizu-ga**  hizyooni zyuuyooni nari-masu
           FL water-NOM very    important become-PLT
           'water is very important.'          (S01F0151: 339.78-349.56)
     B:  hee, {**??thii-taimu/??takai tokoro-de/kikennna kanoosee-ga/mizu-ga**}
        Oh, {tea time/on places of high elevation/the possibility of danger/water}

As indicated in Table 4.1 and will be discussed below, brand-new elements
can never be coded by topic markers; they can never be assumed to be shared
between the speaker and the hearer. Non-anaphoric elements coded by topic
markers are inferable, declining, or unused as will be discussed in the following
sections. For example, as in (5), it is unacceptable for topic markers to code brand
new elements *oozei-no hito* 'many people' out-of-the-blue.

(5) ***oozei-no  hito-wa**  paathii-ni ki-masi-ta
    many-GEN person-*wa* party-DAT come-PLT-PAST
    'Speaking many people, they came to the party.'          (Kuno 1973b: 45)

Similarly, it is unacceptable for other topic markers to code these elements, whereas
*ga* can code them.

(6) **oozei-no  hito-{??toiuno-wa/??da-kedo/??Ø/ga}** paathii-ni
    many-GEN person-{*toiuno-wa*/COP-*though*/Ø/*ga*}  party-DAT
    ki-masi-ta
    come-PLT-PAST
    'Many people came to the party.'

While *oozei-no hito* 'many people' in (6) was unanchored in Prince's term,
*taroo-no otoosan* 'Taro's father' in (7) is anchored. The element coded by a topic
marker is still not acceptable in an out-of-the-blue context.

(7)  a!   **taroo-no otoosan-{??toiuno-wa/??wa/??da-kedo/Ø}** asoko-de
     oh! Taro-GEN father-{*toiuno-wa/wa/*COP-*though/*Ø}          there-LOC
     tabako    sut-teru-yo
     cigarette smoke-PROG.PLT-FP
     'Taro's father is smoking over there.'

Therefore, topic markers in Japanese are sensitive to the given-new taxonomy rather than definiteness and identifiability.[6]

Finally, as will be discussed in detail in §4.2.4, an element coded by a zero particle (Ø) that precedes other arguments and is uttered in a coherent intonation contour cannot be repeated as news and hence considered to be presupposed to be shared.

(8)  Context: Y and H are roommates, who are bothered by a mouse running around their room and eating their leftovers. The cat they keep finally caught the mouse while H was out. When H is back, Y wants to let H know this news.

     Y:   **nezumi-Ø** neko-ga tukamae-ta-yo
          nezumi-Ø cat-*ga*    catch-PAST-FP
          'The cat caught (the) mouse.'
     H:   hee, {??nezumi, neko(-ga)}
          Oh, {mouse, cat(-*ga*)}                              (=(8) in §3.3.1)

In the following sections, I analyze each topic markers in detail.

### 4.2.1 *Toiuno-wa*

In this section I will show that *toiuno-wa* codes elements of referents which are evoked through explicit or implicit introduction of the elements or availability in the universe of discourse.

There are phonetic variations of *toiuno-wa*: *(t)teno-wa*, *t(y)uuno-wa*, *teiuno-wa*, etc. I put them into the same category *toiuno-wa* and assume that they are the same except for stylistic difference.

#### 4.2.1.1 Evoked elements tend to be coded by *toiuno-wa*

*Toiuno-wa* typically codes evoked elements. As exemplified in (9) and (10), the antecedent of the *toiuno-wa*-coded elements, *un* 'fortune' in (9) and *tiryoo-hoo*

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[6] I suppose that the zero particle is acceptable because the zero particle in this case is ambiguous between topic and focus coding.

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'treatment methods' in (10), are mentioned in the immediately preceding contexts.

(9) a. syokugyoo-ni taisite-no <u>un</u>-toiu    koto-o tyotto o-hanasi
job-to    towards-GEN fortune-QUOT thing-*o* a.bit PLT-talk
si-tai-to    omoi-masu
do-want-QUOT think-PLT
'I would like to talk a bit about fortune in job.'

b. de **un-toiuno-wa**    maa iroirona un-ga    aru-to
then fortune-*toiuno-wa* FL    various fortune-*ga* exist-QUOT
omou-n-desu-keredomo
think-NMLZ-PLT-though
'I guess there are various kinds of fortunes...' (S01F0038: 0.53-8.70)

(10) a. de sono byooki-wa gen'in-ga humee-de
and that disease-*wa* source-*ga* unknown-COP
'And the source of that disease was unknown, and'

b. tiryoo-hoo-mo    kakuritu-si-tei-mas-en-desi-ta
treatment-method-also establish-do-PFV-PLT-NEG-PLT-PAST
'The treatment methods had not been established.'

c. sono **tiryoo-hoo-toiuno-wa**    yuiitu ... suteroidozai-de
that treatment-method-*toiuno-wa* only ... steroid-by
sinkoo    okur-aseru koto-dake-desi-ta
progress delay-CAUS thing-only-PLT-PAST
'The only way to treat is just to delay the progress of the disease by
steroid that I cannot use.'    (S02F0100: 294.39-308.12)

Non-anaphoric elements coded by *toiuno-wa* are considered to be evoked through implicit introduction of an element or by the physical context. In (11), *supootu-kansen* 'sport watching' is non-anaphoric but the speaker mentioned that he watched a world title match. Thus 'sport watching' is considered to be evoked when the speaker mentioned 'sports watching' with *toiuno-wa* coding in line c.

(11) a. ee <u>sekai-taitoru-sen-o-desu-ne</u> ee <u>terebi-de</u> <u>mi-masi-ta</u>
FL world-title-fight-*o*-PLT-FP FL TV-by    watch-PLT-PAST
'(My friend and I) watched a world title match on TV.'

b. ...

c. watasi-zisin gu -wa ee amari    koo **supootu-kansen-teiunowa**
1SG-self    FRG -*wa* FL not.really FL sport-watching-*toiuno-wa*

tyotto si-nakat-ta-n-desu-ne
FL    do-NEG-PAST-NMLZ-PLT-FP
'I myself hadn't watched any kinds of sports.'          (S01M0182:
52.77-79.62)

Similarly, in (12), *taitoru* 'title (in piano competitions)' is an non-anaphoric element but the speaker was talking about 'awards' in the preceding context and 'title' can be considered to have been evoked at the time of utterance (12-e).

(12)  a.  I have been participating in various piano competitions
      b.  So far the best award I received was the fourth best play in the China-Japan International Competition.
      c.  Beyond that, I would like to receive higher awards.
      d.  ano doositemo kore-wa yappari piano-o kokorozasu mono-ni
          FL anyhow    this-*wa* anyway piano-*o* orient      people-for
          totte-wa
          in.terms.of-*wa*
          'This, for those who want to make name as a pianist,'
      e.  kono **taitoru-tteiuno-wa** sugoku ookii-node
          this  title-*toiuno-wa*     very    big-because
          'titles matters a lot, so...'          (S00F0209: 507.13-529.76)

In another example like (13), *toiuno-wa*-coded elements are considered to be evoked through "common sense". (13) is the beginning of the talk but the speaker mentions *ningen* 'human being' with *toiuno-wa* coding. This is because people can always talk about human beings even in out-of-the-blue contexts. Therefore, "human beings" are always available as topic. *Tuuno-wa* is a variation of *toiuno-wa*.

(13)  **ningen-tuuno-wa** hizyooni ano umaku deki-teru    doobutu-da-to
      human-*toiuno-wa* very      FL well    created-PFV animal-COP-QUOT
      omoi-masu-ne
      think-PLT-FP
      'I think that human beings are well-created.'
      (S02M1698: 6.99-11.00)

Readers might think that (13) is acceptable because 'human being' is generic rather than evoked in the physical context. However, I do not employ this account for the following two reasons: (i) being generic is a characteristics across all *toiuno-wa*-coded elements (see §4.2.1.3), and (ii) even though the elements are

generic, some elements are still difficult to be coded by *toiuno-wa* in the beginning of speeches. Let us discuss example (14), which is at the very beginning of a speech about travel to Hawaii.

(14)  teema-wa hawai-too-no    sizen-no    subarasisa-to tabi-no
      theme-*wa* Hawaii-island-GEN nature-GEN splendor-and travel-GEN
      tanosisa-nituite-desu
      fun-about-COP
      'The topic (of this talk) is about the splendor of Hawaii nature and fun of
      travelling.'                                    (S00F0014: 0.30-6.08)

In this example, the speaker did not choose to code 'the splendor of Hawaii nature and fun of travelling' with *toiuno-wa*. It is harder to code this with *toiuno-wa* than 'human being' because it is not always available as topic even though 'the splendor of Hawaii nature and fun of travelling' is generic. Therefore, I argue that the acceptability of *toiuno-wa* coded 'human being' without introduction of human beings in (13) is possible because it is always available as topic, not because it is generic.

#### 4.2.1.2 Declining or inferable elements tend not to be coded by *toiuno-wa*

There are a few examples where *toiuno-wa* codes inferable elements. In (15), the speaker explains why she came to Iran and describes the middle school there. The climate in Iran has not been mentioned before (15-c), but is still coded by *toiuno-wa*. The climate in Iran is neither implicitly introduced nor available as universal topic.

(15)  a.  (The speaker moved to Iran when she is a middle school student.)
      b.  (The school for Japanese students in Iran was small but she had a lot
          of fun there.)
      c.  eeto iran-no   **kikoo-tteiuno-wa** tomokaku kansoo
          FL   Iran-GEN *climate-toiuno-wa* at.any.rate dry
          si-tei-masi-te
          do-PROG-PLT-and
          'Uh, the climate in Iran was very dry...' (S03F0072: 178.31-181.65)

Similarly, in (16-c), the speaker is going to talk about a dog his family kept. The speaker begins with the explanation why the dog came to his house. The element *keei* 'background (of why the dog came)' is coded by *toiuno-wa*, although *keei* has not been explicitly mentioned in the preceding context.

(16)    a.    (The speaker talks about a dog his family kept.)

       b.    (After the death of the previous dog they kept, the dog he is going to talk about joined his family.)

       c.    e uti-ni    ki-ta    **keei-toiuno-wa**
           FL home-to come-PAST background-*toiuno-wa*
           'The background of how the dog came to our house is'

       d.    ma sono zyuui-san-no syookai-nan-desu-keredomo
           FL that    vet-HON-GEN introduction-NMLZ-COP.PLT-though
           '(through) the introduction of that vet...'        (S02M0198:
           141.97-146.92)

On the other hand, there are some cases where it is unnatural for *toiuno-wa* to code inferable elements. For example, in (17-c), the element *hikoozyoo* 'airport' cannot naturally be coded by *toiuno-wa*, which is originally coded by *wa*. The airport is inferable because the speaker has already mentioned flying to Lukla.

(17)    a.    To start Himalaya trekking, you first fly to a village called Lukla whose elevation is 2600 meters.

       b.    From that village, we started trekking.

       c.    sono rukura-no mura-nan-desu-ga
           that    Lukla-GEN village-NMLZ-PLT-though
           'Regarding that Lukla village,'

       d.    **hikoozyoo-{wa(/??-toiuno-wa)}** hontooni yama-no      naka-ni
           airport-*wa*(/-*toiuno-wa*)          really    mountain-GEN inside-in
           ari-masi-te
           exist-PLT-and
           'the airport is really in a mountainous area.'      (S01F0151:
           179.50-191.39)

I speculate that the different acceptabilities of *toiuno-wa* among (15), (16), and (17) are due to different statuses of given-new taxonomy or the accessibility of the elements; 'the climate' in (15) and 'the background' in (16) are more general terms and are easily accessible than 'the airport' in (17). Note that this does not contradict, rather, is consistent with, the Semantic Map connectivity Hypothesis (1). Since the given-new taxonomy scale is continuous, the boundary between evoked and inferable is blur, and among the inferable elements in these examples, 'the climate' of Iran in (15) and 'the background' in (16) are easier to access than 'the airport' in (17). This is consistent with the nature of the conceptual space, although the boundary is drawn clearly in the semantic map in Table 4.1 for the

purpose of presentation.

It is unnatural when *toiuno-wa* codes declining elements. The degree of how a referent is declining is difficult to calculate from the corpus. Apparently, it does not simply correspond to the distance between an element and its antecedent, but the intervention of (an)other topic(s) seems to be more relevant. For example, a copula followed by *kedo* codes declining or unused elements as will be shown in §4.2.3. In (18-g), it codes a declining element rather than unused element because the element has already been introduced in line a. In line a, two potential topics 'fame' and 'job' are introduced. The speaker talks about 'fame' first and moves on to 'job' in line g. It is fair to assume that the topic 'job' is intervened by another topic 'fame'. When the element 'job' is retrieved as a current topic in line g, it is coded by a copula followed by *keredomo* 'though', a variation of *kedo*. However, this marker cannot be replaced with *toiuno-wa*.

(18)  a.  I have two goals: one is for <u>fame</u> and the other is for <u>job</u>.
    b.  Concerning <u>fame</u>,
    c.  I have been participating in various piano competitions
    d.  So far the best award I received was the fourth best play in the China-Japan International Competition.
    e.  Beyond that, I would like to receive higher awards.
    f.  Titles matters a lot for pianists, so I will work hard.
    g.  de   ato-wa      **sigoto-no**
       then remaining-*wa* job-GEN
       **bubun-{nan-desu-keredomo/(??toiuno-wa)}**
       part-{NMLZ-COP.PLT-though/*toiuno-wa*}
       'Concerning the other one, job,'
    h.  to receive higher wages...        (S00F0209: 495.77-539.19)

*Toiuno-wa* cannot code elements that have not been established as topic. In (19), although 'tea time' is introduced in line b, it does not appear to be established enough as topic, which makes *toiuno-wa* unnatural in line d; the original marker is a copula followed by *keredomo*.

(19)  a.  While we trek on the Everest Trail, the cook made us lunch on the way,
    b.  in addition, there is tea time and we can take a break while we climb the mountain,
    c.  so, we walked without feeling that we were in a big group.

    d.   de  kono **thii-taimu-nan-desu-{keredomo/(??toiuno-wa)}**
        and this   tea-time-NMLZ-COP.PLT-{though/toiuno-wa}
        'And at this tea time,'

    e.   kono hyookoo-no   takai tokoro-de-wa koozanbyoo-toiu
        this   elevation-GEN high  place-LOC-*wa* altitude.sickness-QUOT
        hizyooni kikennna  kanoosee-ga  aru-node
        very     dangerous possibility-*ga* exist-because
        'this place of high elevation, there is a possibility of altitude sickness,
        so...'

    f.   ee mizu-ga  hizyooni zyuuyooni nari-masu
        FL water-*ga* very    important  become-PLT
        'water is very important.'         (S01F0151: 323.00-349.56)

These subtle differences of acceptability of *toiuno-wa* cannot be captured simply by counting numbers. However, they are clear from the acceptability judgements.

   Unused elements also cannot be coded by *toiuno-wa*. It is very difficult to find unused elements because of the nature of our corpus; each speaker gave a speech in front of people s/he does not know and there are few things the speaker can assume to be shared with the hearer(s). However, constructed examples like (20) clearly shows that *toiuno-wa* cannot code unused elements.

(20)   Context: According to Facebook, both A and B are going to a party tomorrow. But they have not seen each other for a week. A sees B in a classroom and talks to B:

     A:   asita-no **paathii-{da-kedo/??toiuno-wa}** nan-zi-kara-na-no
         tomorrow-GEN party-{COP-though/*toiuno-wa*} what-o'clock-from-COP-
         Q
         'What time does tomorrow's party start?'

Note that if the element 'party' has already been introduced into the discourse, *toiuno-wa* can code it. This is shown in (21-A).[7]

(21)   Context: A and B are having a conversation. B mentioned the tomorrow's party, which A knows that both A and B are going to.

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[7] In this example, I am using *tteiuno-wa* instead of *toiuno-wa* simply because this hypothetical utterance is casual; *tteiuno-wa* is more casual than *toiuno-wa*. *Toiuno-wa* sounds too formal in this utterance.

A:  sono **paathii-{??da-kedo/tteiuno-wa}** nan-zi-kara-na-no
    that party-{COP-though/*toiuno-wa*}    what-o'clock-from-COP-Q
    'What time does tomorrow's party start?'

#### 4.2.1.3 Further characteristics of *toiuno-wa*-coded elements

Statements about *toiuno-wa*-coded elements tend to represent the general characteristics of the referents as has been pointed out in Masuoka (1987; 2008a). Masuoka argues that *toiuno-wa*-coded elements only accompany individual-level predicates (in his term, property predicates). This is clearly shown in the contrast between (22-a) and (22-b) (repeated from (55)) in §2.4.2.5. Whereas the stage-level predication (22-a) does not allow *toiuno-wa*, the individual-level predication (22-b) does allow *toiuno-wa*.

(22)  a.  *satiko-**toiuno-wa**  uso-o tui-ta
          Sachiko-*toiuno-wa* lie-*o*  commit-PAST
          'Sachiko lied.'                                    (Masuoka 2012: p. 96)
      b.  satiko-**toiuno-wa**  uso-tuki-da
          Sachiko-*toiuno-wa* lie-commiter-COP
          'Sachiko is a liar.'                                (Constructed)

In our corpus, most examples of *toiuno-wa* also accompany individual-level predication rather than stage-level predication. In (23), the speaker is talking about the general characteristics of puppies.

(23)  **koinu-toiuno-wa** dono   syurui-demo hizyooni ano neru-no-ga
      puppy-*toiuno-wa* which kind-also     very    FL  sleep-NMLZ-*ga*
      tokui-desu-ne
      good.at-COP.PLT-FP
      'Puppies are, no matter what kinds, good at sleeping.'      (S02M1698:
      166.62-170.59)

The explanation for this requires further investigation.

### 4.2.2 *Wa*

*Wa* codes inferable elements in addition to evoked elements. Overall, the referents of *wa*-coded elements are assumed to be borne in the hearer's mind at the time of utterance, or can be easily accommodated to the assumption.

### 4.2.2.1 Evoked and inferable elements tend to be coded by *wa*

As exemplified in the following examples, *wa* can code evoked elements. In (24), 'chelow kebab' is mentioned in line a, and it is mentioned again in line b and g. The second and the third mentioned elements are coded by *wa*.

(24)  a.  There is a dish called <u>chelow kebab</u>.
      b.  de  **sore-wa** eeto gohan-ni eeto bataa-o  maze-te
          and that-*wa* FL  rice-to  FL  butter-*o* mix-and
          'That, you mix rice with butter...'
      c.  on top of that you put spice,
      d.  on top of that you put mutton,
      e.  you mix it and eat it.
      f.  There were many dishes of this kind.
      g.  *sore-wa* kekkoo      sonnani hituzi-no oniku-no kusasa-mo
          that-*wa* to.some.extent not.really sheep-GEN meat-GEN smell-also
          naku-te
          not.exist-and
          'It did not have smell of mutton...'
      h.  I thought it was delicious.      (S03F0072: 446.03-471.72)

Also in (25), 'the result of the medical exam' is mentioned in line b, and it is mentioned again in line c, which is coded by *wa*.

(25)  a.  de  sosite is-syuu    anoo zibun-de-mo odoroku-hodo
          then and  one-week FL  self-for-also  be.surprised-degree
          reeseeni
          calmly
          'For a week, surprisingly calmly,'
      b.  kensa-no  **kekka**-o mati-masi-ta
          exam-GEN result-*o* wait-PLT-PAST
          'I was waiting for the result of the medical exam.'
      c.  nde sono kensa-no  **kekka-wa** hutuu-no    hito-yori-mo
          and that  exam-GEN result-*wa* normal-GEN person-than-also
          sootoo izyoodat-ta-n-desu-ga
          very    abnormal-PAST-NMLZ-COP-though
          'The result of the exam was quite abnormal than common people,'
      d.  but it didn't reach the disease.      (S02F0100: 662.61-677.85)

Unlike *toiuno-wa*, *wa* also codes inferable elements extensively. In (26), *nyu-*

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*usya* 'admission to a company' in line a triggers *siken* 'exam' in line c, which is naturally coded by *wa*.

(26)  a.  ee toaru  ryokoo-sya-ni       ano itioo     <u>nyuusya</u>
          FL certain travel-company-DAT FL   tentatively admission
          kimari-masi-ta
          decide-PLT-PAST
          'A certain travel company admitted me to work there.'
      b.  …
      c.  hizyooni **siken**-**wa** muzukasikat-ta-to  ima-mo
          very     exam-*wa* difficult-PAST-QUOT now-also
          oboe-teori-masu
          remember-PROG-PLT
          '(I) still remember that the exam was very hard.'
          (S01F0038: 231.34-241.96)

*Wa* sometimes forces the hearer to accept the assumption that the hearer has already been thinking about the *wa*-coded referent; I call this accommodation. In (27), which immediately follows (26), *wa* which codes *gyappu* 'gap' in line c forces the hearer to accept the assumption that s/he expected the speaker to talk about the gap between the expectation and the reality.

(27)  a.  tada soko-kara saki-wa   ano dono  sigoto-mo soo-da-to
          but  that-from ahead-*wa* FL   which job-also  so-COP-QUOT
          omou-n-desu-ga
          think-NMLZ-PLT
          'But, after the admission, I guess this is the same in all kinds of jobs,'
      b.  yume-to    genzitu-tte  iu-n-desu-ka
          dream-and reality-QUOT call-NMLZ-PLT-Q
          'people might call it (the difference between) dream and the reality,'
      c.  **gyappu**-**wa** kanari ari-masi-te
          gap-*wa*     very   exist-PLT-and
          'there was a gap (between what I expected and the reality).' (S01F0038: 265.11-270.98)

In cases like (26) and (27), some hypothetical speakers might have chosen to use *ga* instead of *wa*, while *wa* cannot be replaced with *ga* to code evoked elements in (24) and (25). If the elements were coded by *ga* in (26) and (27), they do not force the hearer to accommodate the assumption that s/he has already been thinking

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about them.

What can be inferable depends on the culture. In Japanese culture, apartments might come with furniture such as a washing machine, but not with livestock. Therefore, as in (28-b), *wa* coding *sentaku-ki* 'washing machine' sounds natural, while, as in (28-b′), *wa* coding *hituzi* 'sheep' sounds strange because it sounds as if the speaker assumed that it is common for a room to come with a sheep and it is too difficult to accommodate oneself to this assumption.

(28)   a.   I'm looking for a new room and yesterday I saw one room.

        b.   **sentaku-ki-{wa/ga}**      tui-te-ta-yo
            washing-machine-{*wa/ga*} come.with-PROG-PAST-FP
            '(The room) comes with a washing machine.'

        b′.   **hituzi-{??wa/ga}** tui-te-ta-yo
            hituzi-{*wa/ga*}    come.with-PROG-PAST-FP
            '(The room) comes with a sheep.'

Note that *ga*-coding is acceptable in both cases because *ga* can code new elements.

Kuroda (1972) and Kuno (1973b) argue that generic NPs are always available as topics and can be always coded by *wa*. However, as I have discussed in §4.2.1, not all generic NPs are available as topics. Kuno's examples like (29) may be natural at the beginning of speech.

(29)   kuzira-**wa** honyuu-doobutu-desu
      whale-TOP mammal-animal-COP.PLT
      'Speaking of whales, they are mammals. (A whale is a mammal.)' (Kuno 1973b: p. 44)

People can expect the speaker to start talking about *kuzira* 'whales' out-of-the-blue. However, it is difficult to expect the speaker to talk about "Kosovo War" (S00M0199) and "Himalaya trekking" (S01F0151). Therefore, these NPs are not naturally coded by *wa* out-of-the-blue even when they are in generic statements because they are not available as topics and are difficult to accommodate. The speakers would choose other forms to introduce these NPs, then might explain them in more detail in generic statements. Out of 12 speeches I studied, there is only one speech (S02M1698) where the speaker begins with a generic statement with *toiuno-wa*, which is (13). The speaker begins with a generic statement about human beings in general, which the hearer(s) can easily expect the speaker to start talking about out-of-the-blue.

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#### 4.2.2.2 So-called contrastive *wa*

I argue that so-called contrastive *wa*, which has been discussed for a long time in the literature (e.g., Kuno 1973b), is a special case for *wa* coding inferable elements. In typical cases of inferables like (26), the referent of one element (e.g., *nyuusya* 'admission to a company') is evoked by an explicit mention and the referent of another related element (e.g., *siken* 'exam') is partially evoked, triggered by the element explicitly mentioned; 'the admission' and 'the exam' form a set relevant to the current discourse. Similarly, the elements coded by contrastive *wa* are assumed to belong to a set relevant to the current discourse. In (30), which is slightly modified from (28), *reezooko* 'fridge' and *sentaku-ki* 'washing machine' belong to the same category of 'things expected to come with a room'. The 'fridge' and the 'washing machine' are contrasted in the sense that one is furnished but the other is not.

(30) a. I'm looking for a new room and yesterday I saw one room.
　　 b. **reezooko-wa** tui-te-nakat-ta-kedo
　　　　 fridge-*wa*　　 come.with-PROG-NEG-PAST-though
　　　　 **sentaku-ki-wa**　　　 tui-te-ta-yo
　　　　 washing-machine-*wa* come.with-PROG-PAST-FP
　　　　 'Though (The room) doesn't come with a fridge, (it) comes with a washing machine.'

Note that *wa* coding *hituzi* 'sheep' is still not natural in (31) for the same reason as described in relation to (28); sheep is not expected as a normal thing which accompanies with an apartment.

(31) a. I'm looking for a new room and yesterday I saw one room.
　　 b. ??**reezooko-wa** tui-te-nakat-ta-kedo　　　　　 **hituzi-wa**
　　　　 fridge-*wa*　　 come.with-PROG-NEG-PAST-though sheep-*wa*
　　　　 tui-te-ta-yo
　　　　 come.with-PROG-PAST-FP
　　　　 'Though (The room) doesn't come with a fridge, (it) comes with a sheep.'

Similarly, in (32) from our corpus, the *wa*-coded elements *tinomigo* 'infants' and *inu* 'dogs' are contrasted. They belong to the relevant category of 'creatures that might not be allowed to enter restaurants'.

(32) a. de doitu-toiu    kuni-wa hizyooni ano uu inu-ni   e
       and Germany-QUOT nation-*wa* very    FL  FL dog-DAT FL
       sumi-yasui kuni-desu
       live-easy   nation-COP.PLT
       'Germany is a dog-friendly country.'

   b. tatoeba      aa resutoran-de-mo   anoo **tinomigo-wa**
       for.example FL restaurant-at-also FL   infant-*wa*
       haire-nai-yoona         resutoran-mo  **inu-wa** haireru-to
       enter.can-NEG-such.as restaurant-also dog-*wa* enter.can-QUOT
       'For example, restaurants that infants are not allowed to get in, uh,
       dogs can get into them.'              (S02M1698: 243.46-256.10)

Kuno (1973b: p. 44 ff.) points out that the contrastively *wa*-coded elements are not necessarily anaphoric (given), while the non-contrastively *wa*-coded elements are. However, there is a problem with this claim. It is possible for non-contrastively *wa*-coded elements to be non-anaphoric; they can be inferable as we have seen in the previous section. If what Kuno means by "anaphoric" includes bridging anaphora (Clark 1975) and thus includes inferable elements, then contrastively *wa*-coded elements are also anaphoric because the elements belong to the same category relevant to the current discourse. I argue that the distinction between contrastive and non-contrastive is continuous and a matter of degree; if there are more than two evoked referents in the same category, they tend to be contrastive, while if there is only one element, it is non-contrastive.

### 4.2.2.3 Declining and unused elements tend not to be coded by *wa*

Declining elements cannot be coded by *wa*. For example, in (18), which is repeated here as (33) for convenience, 'job' is intervened by another topic 'fame'. When the speaker mentions back to 'job', it is not natural for *wa* to code the element 'job'.

(33) a. I have two goals: one is for fame and the other is for job.
   b. Concerning fame,
   c. I have been participating in various piano competitions
   d. So far the best award I received was the fourth best play in the China-Japan International Competition.
   e. Beyond that, I would like to receive higher awards.
   f. Titles matters a lot for pianists, so I will work hard.

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> g. de  ato-wa  **sigoto-no**
> then remaining-*wa* job-GEN
> **bubun-{nan-desu-keredomo/(??-wa)}**
> part-{NMLZ-COP.PLT-though/-*wa*}
> 'Concerning the other one, job,'
>
> h. to receive heigher wages...       (S00F0209: 495.77-539.19)

Similarly, unused elements cannot be coded by *wa* as the contrast between (34) and (35) shows. These examples are repeated from (20) and (21).

(34)   Context: According to Facebook, both A and B are going to a party tomorrow. But they have not seen each other for a week. A sees B in a classroom and talks to B:

   A:   asita-no **paathii-{da-kedo/??-wa}** roku-zi-kara-da-yo-ne
        tomorrow-GEN party-{COP-though/*toiuno-wa*} six-o'clock-from-COP-
        FP-FP
        'Tomorrow's party is from six, right?'

(35)   Context: A and B are having a conversation. B mentioned the party tomorrow, which A knows that both A and B are going to.

   A:   asita-no       **paathii-{??da-kedo/-wa}**
        tomorrow-GEN party-{COP-though/*toiuno-wa*}
        roku-zi-kara-da-yo-ne
        six-o'clock-from-COP-FP-FP
        'Tomorrow's party is from six, right?'

Although many scholars discuss *wa* based on examples like (36), which appears to be produced out-of-the-blue, they are unnatural in spoken Japanese.

(36)   ??anoo **toire-wa**       doko-desu-ka
        FL    bathroom-*wa* where-COP.PLT-Q
        'Excuse me, where is the bathroom?'

Assuming that (36) is produced out-of-the-blue without the previous mention of the bathroom, the best marker is Ø. It seems that in written Japanese, *wa* can be used to code unused elements as shown in (37), assuming that this is written Japanese (in an e-mail or letter).

(37)   tokorode   kono aida   ohanasi si-tei-ta       **eega-wa** totemo
        by.the.way this   interval speech  do-PROG-PAST movie      very

omosirokat-ta-desu
interesting-PAST-PLT
'By the way, the movie I mentioned the other day was very interesting.'

The spoken Japanese version of (37) is not natural as shown in (38).

(38)  ?a   kono aida    hanasi-te-ta    **eega-wa** totemo
      oh this  interval talk-PROG-PAST movie    very
      omosirokat-ta-desu-yo
      interesting-PAST-PLT-FP
      'By the way, the movie I mentioned the other day was very interesting.'

Formal speech is closer to written Japanese than casual speech and the boundary between them is blur. Note, however, that the conceptual space is a suitable format to capture variations like this (see Croft 2010).

### 4.2.3 Copula followed by *ga* or *kedo*

A combination of a copula followed by *ga* or *kedo* codes declining or unused elements. As has been mentioned above, there are not many examples of these topic markers in the corpus and I will mainly employ grammatical judgements of constructed and actual examples and analyze them qualitatively rather than quantitatively. The results are compatible with the claims in Koide (1984) and Takahashi (1999), which supports the conclusion of this thesis. As discussed in §2.4.2.6, they argue that *ga* newly introduces topics in the beginning of a discourse.

There are variations of both copulas and *ga* or *kedo*. Copulas can be *da* or *desu*. *Desu* is more polite than *da*, and it appears more frequently in our corpus. This is a natural consequence of the nature of the corpus; the speakers are not familiar with their listeners. There are no remarkable variations of *ga*, while there are some variations of *kedo*: *keredomo* and *kedomo*. In the following sections, I will sometimes call this marker *kedo*. Keep in mind, however, that there are variations of *kedo* as well as copulas preceding it.

#### 4.2.3.1 Evoked and inferable elements cannot be coded by copula followed by *ga* or *kedo*

Evoked elements cannot be coded by *kedo*. This is exemplified in (39), where 'ice cream' that H had kept in the fridge is assumed to be evoked in H's mind by

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speaker Y. It is appropriate to assume that the referent 'ice cream' is evoked in H's mind because H opens the fridge.

(39)   Context: Y knows that H, his roommate, keeps ice cream in the fridge but saw Taro, another roommate, eat all of H's ice cream after H had left for school. When H came back and opens the freezer, Y wants to tell the fact.

    Y:   **aisu-{??da-kedo/wa}**       taroo-ga tabe-tyat-ta-yo
        ice.cream-{COP-though/TOP} Taro-*ga*  eat-PFV-PAST-FP
        'Taro ate up (your) ice cream.'

In a similar way, inferable elements cannot be coded by the marker as shown in (40), where 'ice cream' is assumed to be inferable because they are talking about the things in the fridge and both of them know that there was ice cream there.

(40)   Context: Y and H are roommates and check what is remaining in the fridge.

    H:   I'm sure that there are still rice cakes remaining.
    Y:   un   demo **aisu-{??da-kedo/wa}**       taroo-ga tabe-tyat-ta-yo
        yeah but    ice.cream-{COP-though/*wa*} Taro-*ga*  eat-PFV-PAST-FP
        'Yeah, but Taro ate up (your) ice cream.'

### 4.2.3.2  **Declining and unused elements can be coded by copula followed by** ***ga* or *kedo***

Declining elements can be coded by *kedo*. As discussed above, there are no simple way to identify declining elements. The declining status appears to be related to intervention of other topics; when the speaker shifts one topic to another topic and mentions the first one again, the first topic is considered to be declining. In the following example (41), the speaker introduced the first (fame) and the second (job) topics at the same time in line a. She talks about the first one from line b-f, then moves on to the second one in line g, where the second topic (job) is considered to be declining.

(41)   a.   I have two goals: one is for <u>fame</u> and the other is for <u>job</u>.
     b.   Concerning <u>fame</u>,
     c.   I have been participating in various piano competitions.
     d.   So far the best award I received was the fourth best play in the China-Japan International Competition.
     e.   Beyond that, I would like to receive higher awards.
     f.   Titles matters a lot for pianists, so I will work hard.

g. de   ato-wa          **sigoto-no bubun-nan-desu-keredomo**
then remaining-*wa* job-GEN   part-NMLZ-COP.PLT-though
'Concerning the other one, job,'

h. to receive heigher wages...          (S00F0209: 495.77-534.04)

As discussed in 4.2.1.2, 'tea time' in the example (19), repeated here as (42), is not established as a topic yet (and hence cannot be coded by *toiuno-wa*). This kind of referent can also be coded by *kedo*. *Kedo* is able to upgrade the referent to the topic status.

(42) a. While we trek on the Everest Trail, the cook make us lunch in a way,
b. in addition, there is tea time and we can take a break while we climb the mountain,
c. so, we walked without feeling that we were in a big group.
d. de   kono **thii-taimu-nan-desu-keredomo**
and this   tea-time-NMLZ-COP.PLT-though
'And at this tea time,'
e. kono hyookoo-no    takai tokoro-de-wa koozanbyoo-toiu
this   elevation-GEN high  place-LOC-*wa* altitude.sickness-QUOT
hizyooni kikennna  kanoosee-ga  aru-node
very      dangerous possibility-*ga* exist-because
'this place of high elevation, there is a possibility of altitude sickness, so...'
f. ee mizu-ga  hizyooni zyuuyooni nari-masu
FL water-*ga* very      important  become-PLT
'water is very important.'          (S01F0151: 323.00-349.56)

There is only one non-anaphoric element coded by *kedo* as in (43), while the other six examples are anaphoric. In (43), the speaker has been talking about travel to Hawaii, then she mentions 'the travelling style', which is coded by *kedo*.

(43) a. nde ee kono tabi-no    **sutairu-tteiu-mono-nan-desu-keredomo**
and FL this   travel-GEN style-called-thing-NMLZ-COP.PLT-though
'And regarding this travel's style'
b. anoo watasi-wa moo kekkoo          ma tabi-nare-teru-to
FL   1.SG-*wa*  FL  to.some.extent FL travel-is.used.to-QUOT
iu-ka
say-Q
'I'm used to travel to some extent, so to speak...'          (S00F0014: 300.43-309.95)

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This kind of example may be considered to be inferable; travelling is associated with its style. However, the association might be too weak. I categorize this example as a marginal case of inferable and *kedo* functions to upgrade the referent to the topic status.

Unused elements can be coded by *kedo* as shown in (44). In (44), it is assumed that speaker Y and hearer H shares particular ice cream but it is not evoked in H's mind because s/he is just in school.

(44)   Context: Y knows that H, Y's roommate, keeps ice cream in the fridge but saw Taro, another roommate, eat all of H's ice cream after H had left for school. Y wants to tell H this fact when Y sees H in school.

   Y:   sooieba   **aisu-{da-kedo/??wa}**        taro-ga tabe-tyat-ta-yo
        by.the.way ice.cream-{COP-though/TOP} Taro-*ga* eat-PFV-PAST-FP
        'By the way, Taro ate up (your) ice cream.'

### 4.2.3.3 Further analysis of copula followed by *ga* or *kedo*

The above examples of *kedo* might be considered to be clauses rather than phrases because *ga* and *kedo* are subordinate-clause markers. In (45), *kedo* (realized as *keredomo*) is a subordinate-clause marker; the clause has the subject *pointo* 'point' and the predicate *kirauea-kazan* 'Kilauea'. Thus all the examples of topics coded by *kedo* above might also be the predicates of copula clauses.

(45)   a.   sono hawai-too-no      ma kankoo-no      itiban sono ookina
            FL   Hawaii-island-GEN FL sightseeing-GEN most  FL    big
            pointo-tteiuno-ga **kirauea-kazan-nan-desu-keredomo**
            point-*toiuno-ga*   Kilauea-volcano-NMLZ-COP.PLT-though
            'The biggest sightseeing point is Hawaii island is Kilauea...'
       b.   anoo kirauea-kazan-mo     mappu-o kai-masi-te  de zibun-tati-de
            FL   Kilauea-volcano-also map-*o*  buy-PLT-and and self-PL-by
            ma renta-kaa-o tobasi-te   e  iki-masi-ta
            FL rent.a-car-*o* drive-and FL go-PLT-PAST
            '(We) bought a map, drove rent-a-car, and went to Kilauea by ourselves.'                                                                 (S00F0014:
            836.05-850.16)

However, there are differences between examples like (45) and topics coded by *kedo* discussed in preceding sections. As has been mentioned in §2.4.2.6. First, it is actually impossible to "recover" the subject of alleged copula clauses in topic-

coding *kedo*, while it is possible in general for the copula predicate followed by *kedo* to have a subject. For example, one cannot "recover" the subject of the alleged copula clause (44), while examples like (45) does have a subject. Therefore, the former is considered to be a kind of phrase, whereas the latter is a kind of clause.

Second, topic elements coded by *kedo* are presupposed to be shared between the speaker and the hearer, while the predicate of copula clauses followed by *kedo* like (45) are not presupposed to be shared. This is supported by the *hee* test. As shown in (46), *kedo*-coded topics cannot be repeated as news preceded by *hee* 'oh, really'.

(46)  A:  (i)   sono **rukura-no mura-nan-desu-ga**
              that  Lukla-GEN village-NMLZ-COP-though
              'Regarding that village, Lukla,'
      (ii)  hikoozyoo-wa hontooni yama-no      naka-ni
            airport-*wa*     really    mountain-GEN inside-DAT
            ari-masi-te
            exist-PLT-and
            'the airport was really in a mountainous area...'    (S01F0151:
            187.33-191.39)
      B:  ??hee, rukura-no mura
          Oh, Lukla village.

On the other hand, the predicate of copula clauses followed by *kedo* can be repeated as news as shown in (47).

(47)  A:  sono hawai-too-no      ma kankoo-no      itiban sono ookina
          FL    Hawaii-island-GEN FL sightseeing-GEN most  FL    big
          pointo-tteiuno-ga **kirauea-kazan-nan-desu-keredomo**
          point-*toiuno-ga*   Kilauea-volcano-NMLZ-COP.PLT-though
          'The biggest sightseeing point is Hawaii island is Kilauea...' (S00F0014:
          836.05-842.87)
      B:  hee, kirauea-kazan-nan-da
          Oh  Kilauea-volcano-NMLZ-COP
          'Oh, Kilauea volcano.'                                    (Constructed)

Although these two kinds of *kedo* are distinct, they are related to each other. Niwa (2006: Chapter 9) argues that *ga*-coded subordinate clauses state background of the main clause and that this use of subordinate *ga* grammaticalizes

into topic marker. However, historical investigations are necessary to support this claim and I leave it open for future studies.

### 4.2.4 $\emptyset_t$

As mentioned earlier, zero particles do not appear frequently in our corpus because of the stylistic difference. As a result, most examples in this section are constructed rather than naturally produced.

There are two kinds of zero particles: a topic-coding zero particle ($\emptyset_t$) and a focus-coding zero particle ($\emptyset_f$). There are at least three differences as summarized in (48) (see also Niwa 2006; Nakagawa & Sato 2012).

| (48) | | $\emptyset_t$-coded elements | $\emptyset_f$-coded elements |
|---|---|---|---|
| | (a) | shared between the speaker and the hearer | not shared between the speaker and the hearer |
| | (b) | precede other arguments | close to predicate |
| | (c) | followed by accentual boundary | coherent intonation contour with predicate |

The elements coded by $\emptyset_t$ are by definition assumed to be shared between the speaker and the hearer. Also, they precede other arguments and are followed by the accentual-phrase boundary. On the other hand, those coded by $\emptyset_f$ are by definition assumed not to be shared between the speaker and the hearer. They appear close to the predicate and are not followed by the accentual-phrase boundary; rather, they are produced in a single intonation contour with the predicate. As shown in the contrast between (49) and (50), the element *nezumi* 'mouse' preceding another argument *neko* 'cat' is felicitous when the speaker and the hearer share the referent in question as in (49-Y), while it is not when they do not share the referent as in (50-Y). On the other hand, the element 'mouse' adjacent to the predicate *tukamae-ta* 'caught' is felicitous when they do not share the referent as in (50-Y′), while it is not when they share the referent as in (49-Y′).

(49)    Context: Y and H are roommates, who are bothered by a mouse running around their room and eating their leftovers. They set a trap to catch the mouse. But the cat they keep caught the mouse while H was out. When H is back and looks inside of the trap, Y wants to let H know this news.

Y:    **nezumi-Ø**, neko-ga tukamae-ta-yo
nezumi-Ø  cat-*ga*  catch-PAST-FP
'The cat caught (the) mouse.'

Y′: ?neko-ga **nezumi-Ø** tukamae-ta-yo
cat-*ga*  mouse-Ø  catch-PAST-FP
'The cat caught a mouse.'

(50)  Context: Y and his cat is relaxing in the living room. H comes into the room.

H:  Anything fun today?
Y: ??**nezumi-Ø**, neko-ga tukamae-ta-yo
mouse-Ø  cat-*ga*  catch-PAST-FP
Intended: 'The cat caught a mouse.'
Y′:  neko-ga **nezumi-Ø** tukamae-ta-yo
cat-*ga*  mouse-Ø  catch-PAST-FP
'The cat caught a mouse.'

Similarly, Niwa (2006: Chapter 10) reports that topical elements such as *ano ko* 'that girl' and *ree-no seerusuman* 'the salesman' are felicitously zero-coded clause-initially as the contrasts between (51-a–b) and (52-a–b) show.

(51)  (People have discussed a female newcommer *ano ko* 'that girl'.)

a.  oi  keiri-ka-ni         **ano ko**-{**ga/Ø**}  hait-ta-zo
hey accounting-section-DAT that girl-{*ga/Ø*} enter-PAST-FP
'Hey, that girl joined the accounting section.'

b.  oi  **ano ko**-{**ga/Ø**}  keiri-ka-ni         hait-ta-zo
hey that girl-{*ga/Ø*} accounting-section-DAT enter-PAST-FP
'Hey, that girl joined the accounting section.'  (Niwa 2006: 293-294)

(52)  a.  kinoo     **ree-no**          **seerusuman**-{**ga/Ø**}
yesterday you.know.who-GEN salesman-{*ga/Ø*}
ki-ta-mitai-da-yo
come-PAST-INFR-COP-FP
'Yesterday that salesman came (here), apparently'

b.  **ree-no**          **seerusuman**-{**ga/Ø**} kinoo
you.know.who-GEN salesman-{*ga/Ø*}     yesterday
ki-ta-mitai-da-yo
come-PAST-INFR-COP-FP
'Yesterday that salesman came (here), apparently'         (ibid.)

On the other hand, focal elements such as *kawaii ko* 'a cute girl' and *dokokano seerusuman* 'a salesman' are not felicitously zero-coded clause-initially as the contrasts between (53-a–b) and (54-a–b) show.

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(53) a. oi keiri-ka-ni **sugoi kawaii ko**-{**ga/Ø**}
hey accounting-section-DAT very cute girl-{*ga/Ø*}
hait-ta-zo
enter-PAST-FP
'Hey, a very cute girl joined the accounting section.'

b. oi **sugoi kawaii ko**-{**ga/?Ø**} keiri-ka-ni
hey very cute girl-{*ga/Ø*} accounting-section-DAT
hait-ta-zo
enter-PAST-FP
'Hey, a very cute girl joined the accounting section.' (ibid.)

(54) a. kinoo **dokoka-no** **seerusuman**-{**ga/Ø**}
yesterday somewhere-GEN salesman-{*ga/Ø*}
ki-ta-mitai-da-yo
come-PAST-INFR-COP-FP
'Yesterday a salesman came (here), apparently'

b. **dokoka-no** **seerusuman**-{**ga/?Ø**} kinoo
somewhere-GEN salesman-{*ga/Ø*} yesterday
ki-ta-mitai-da-yo
come-PAST-INFR-COP-FP
'Yesterday a salesman came (here), apparently' (ibid.)

Note that *wa* is unnatural in all of the examples (51) through (54) although I interpret these elements as topics. As I have discussed in §4.2.2, *wa* codes elements referring to evoked or inferable entities. *Ano ko* 'that girl' in (51) and *ree-no seerusuman* 'the salesman' in (52) are unused. Hence, *wa*-coding is unnatural in this case; instead, *ga*-coding is natural. The question which naturally arises is whether these elements are actually topics. I argue that unused elements are ambiguous between topic and focus. They are topics in the sense that the referent in question is shared between the speaker and the hearer via shared knowledge or common sense; they are focus in the sense that it is newly introduced into the discourse.

Throughout this section, I mainly discuss P (the patient-like argument in transitive clauses) preceding A (the agent-like argument in transitive clauses) because it is clear that they are preposed, which are tend to be topics as we will see in Chapter 5.

### 4.2.4.1 Evoked, inferable, declining, and unused elements can be coded by $\varnothing_t$

Evoked elements can be coded by $\varnothing_t$ as exemplified in (55), where 'mouse' is assumed to be evoked in H's mind because H is looking at the trap to catch a mouse. In this case, *wa*-coding is also natural.

(55)     Context: Y and H are roommates, who are bothered by a mouse running around their room and eating their leftovers. They set a trap to catch the mouse. But the cat they keep caught the mouse while H was out. When H is back and looks at the inside of the trap, Y wants to let H know this news.

      Y:   **nezumi-{Ø/wa}**, neko-ga tukamae-ta-yo
          nezumi-{Ø/*wa*} cat-*ga*   catch-PAST-FP
          'The cat caught (the) mouse.'          (Evoked topic P)

This judgement might be too subtle for some readers. Here I am assuming that H is thinking about the mouse because s/he is checks the trap right now. Given this assumption, Y can felicitously use *wa* as well as zero-coding.

Inferable elements can be also coded by $\varnothing_t$ as shown in (56). *Hyoosi* '(book) cover' is used instead of *nezumi* 'mouse', which is easily associate with a book and is assumed to be inferable from the book mentioned earlier. Again, *wa*-coding is also natural in this case.

(56)     Context: Y borrowed a book from H and wants to return it.

      Y1:   Thank you for the book. It was interesting.
      Y2:   **hyoosi-{Ø$_t$/wa}** neko-ga yabui-tyat-ta     gomen
           cover-{Ø$_t$/*wa*}   cat-*ga*   break-PFV-PAST sorry
           'The cat broke the cover. Sorry.'       (Inferable topic P)

Declining elements can be coded by $\varnothing_t$ as shown in (57), where 'mouse' is assumed to be declining. The mouse belongs to the speaker and is mentioned first in (57–Y2). Then the speaker mentions the cat in (57–Y3-4), and again mentions the mouse in (57–Y5), which is assumed to be declining.

(57)     Y1:   A cat was chasing our mouse.
      Y2:   The mouse ran really quickly.
      Y3:   But the cat was also running very fast.
      Y4:   The cat seemed to be hungry.
      Y5:   de kekkyoku uti-no **nezumi-{Ø$_t$/wa/??da-kedo}** neko-ga tukamae-tyat-ta-yo

> and eventually our-GEN mouse-{$\emptyset_t$/*wa*/*cop*-though} cat-*ga* catch-PFV-PAST-FP
> 'Finally the cat caught our mouse.' (Declining topic P)

In this example (57–Y5), the passive version is preferable to an active version like (57–Y5) because the mouse belongs to the speaker but the cat does not. I will discuss this issue further in association with subjecthood in §4.4. Moreover, *wa* is acceptable and *kedo* is not acceptable in (57–Y5) contrary to the generalization in Table 4.1. I suspect that this is because the referent 'mouse' is the center of the speaker's interest; the mouse is still evoked, which causes *wa*, rather than *da-kedo* to be natural.

Unused elements can be coded by $\emptyset_t$ as exemplified in (58), where the referent 'mouse' is assumed to be unused because there is no clear evidence that H is thinking about the mouse at the time of utterance, though Y and H share the mouse that bothers them.

(58) Context: Y and H are roommates, who are bothered by a mouse running around their room and eating their leftovers. The cat they keep finally caught the mouse while H was out. When H is back, Y wants to let H know this news.

> Y: **nezumi-{$\emptyset$/??wa/da-kedo}**, neko-ga tukamae-ta-yo
> nezumi-{$\emptyset$/*wa*/COP-though} cat-*ga* catch-PAST-FP
> 'The cat caught (the) mouse.' (Unused topic P)

### 4.2.4.2 Difference between $\emptyset_t$ and explicit forms

In addition to the stylistic difference, there are further differences between $\emptyset_t$ and explicit forms such as *toiuno-wa*, *wa*, and *kedo*. First, the functional category of the topic element within a clause is less clear when the topic is coded by explicit markers, while the category needs to be clear if the topic is zero-coded. For example, in (59), where *thii-taimu* 'tea time' is originally coded by *kedo*, 'tea time' and the following clause are only vaguely connected and the status of the topic element in grammatical function within the clauses is not clear. In this case, coding elements by $\emptyset_t$ is difficult.

(59) a. de kono **thii-taimu-{nan-desu-keredomo/(??$\emptyset_t$)}**
and this tea-time-NMLZ-COP.PLT-though
'And at this tea time,'
b. kono hyookoo-no takai tokoro-de-wa koozanbyoo-toiu
this elevation-GEN high place-LOC-*wa* altitude.sickness-QUOT

> hizyooni kikennna kanoosee-ga aru-node
> very dangerous possibility-*ga* exist-because
> 'this place of high elevation, there is a possibility of altitude sickness, so...'

c. ee mizu-ga hizyooni zyuuyooni nari-masu
   FL water-*ga* very important become-PLT
   'water is very important.'                    (S01F0151: 339.78-349.56)

Another difference between zero-coded elements and explicitly coded elements is whether backchannel responses such as *un* 'yeah' are possible right after the production of the topic element in question. For example, in (58) repeated here as (60), it is difficult to insert a backchannel response such as *un* 'yeah' after *nezumi-Ø_t*, but it is possible after *nezumi-da-kedo*.

(60)    Context: Y and H are roommates, who are bothered by a mouse running around their room and eating their leftovers. The cat they keep finally caught the mouse while H was out. When H is back, Y wants to let H know this news.

Y: **nezumi-{Ø/da-kedo}**, neko-ga tukamae-ta-yo
   nezumi-{Ø/COP-though} cat-*ga* catch-PAST-FP
   'The cat caught (the) mouse.'                         (=(58))

This suggests that the speaker assesses through *kedo* the hearer's state of knowledge, i.e., whether the hearer can recall the referent of the *kedo*-coded element that is supposed to be shared between the speaker and the hearer, while this assessment effect is weaker in zero-coding.

### 4.2.5 Summary of topic markers

The findings of topic codings are summarized in Table 4.1, repeated here as Table 4.7 for convenience. The results indicate that topics are heterogeneous, but at the same time, can be accounted for in terms of given-new taxonomy. Closer analyses also revealed that the given-new taxonomy are continuous and there are borderline cases.

The characteristics of *toiuno-wa* discussed in §4.2.1 are a combination of the descriptions of Masuoka & Takubo (1992) and Takubo (1989). The statements that include *toiuno-wa*-coded elements describe the general characteristics of the referents. Although it is not always the case that the speaker assumes that the hearer does not know the referent in question, the speaker might assume that

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Table 4.7: Topic marker vs. activation status and given-new taxonomy

| Activation status | Given-new taxonomy | Topic | Focus |
|---|---|---|---|
| Active | Evoked | *toiuno-wa, wa*, Ø | |
| Semi-active | Inferable | *wa*, Ø | |
| Semi-active | Declining | COP-*kedo/ga*, Ø | case markers, Ø |
| Inactive | Unused | | |
| Inactive | Brand-new | – | |

s/he knows about it more than the hearer. For example, in (61), *hawai* 'Hawaii' is coded by *toiuno-wa*, where I do not believe that the speaker assumes that the hearer(s) do(es) not know Hawaii because it is too famous. However, the speaker might assume that she knows more about Hawaii than the hearer(s).

(61)    **hawai-toiuno-wa** ma nihon-zin-ga     totemo suki-de
        Hawaii-*toiuno-wa* FL Japan-person-*ga* very    like-and
        'Hawaii, Japanese people love it.'          (S00F0014: 1145.00-1147.55)

In addition to the characteristics the previous literature has pointed out, this study found that the *toiuno-wa*-coded elements tend to be evoked at the time of utterance and tend to be mentioned repeatedly in the following discourse; *toiuno-wa* codes important topics.

The discussion in §4.2.2 showed that *wa* codes elements referring to entities which are evoked or inferable through related elements. This is not only compatible with, but also elaborates the observation that *wa* codes elements that have been "entered into the registry of the present discourse" (Kuno 1973b: 45). I provided the cognitive model which well captures the distribution of *wa*-coding and showed the range of *wa*-coding: what can be and cannot be coded by *wa*. This thesis also provided an unified account for *wa*-coding in general, i.e., *wa*-coding including generic and contrastive *wa*. Of course, further empirical investigations are necessary to test whether the observations proposed here are supported or not.

The discussion in §4.2.3 supports the previous observation of this topic expression; the expression is used to newly introduce topics in the beginning of a discourse or a paragraph (Koide 1984; Takahashi 1999). I re-examined this observation in terms of given-new taxonomy.

The discussion in §4.2.4 distinguished topic vs. focus zero particles, following Niwa (2006) and Nakagawa & Sato (2012), This section investigated topic zero

particles and made it clear that they can code elements referring to all entities in the given-new taxonomy if the entities are shared between the speaker and the hearer.

## 4.3 Case markers

While topic markers code topics of different statuses in the given-new taxonomy as discussed in the previous section, I will argue in this section that elements coded by case markers *ga* and *o* are foci. For example in (62), the *ga*-coded element *doobutu-aigo-kyookai* 'animal shelters' and the *o*-coded elements *kihu* 'donation' and *koto* 'thing' can be repeated as news after *hee*.

(62)  A:  (i)  amerika-de-wa  anoo **doobutu-aigo-kyookai-ga**
          America-LOC-*wa* FL  animal-protection-association-*ga*
          'In America, animal shelters'

      (ii)  a  ee kurisumasu-no mae-ni-wa  sono doneesyon
            FL FL Christmas-GEN before-DAT-*wa* FL  donation
            **kihu-o**  si-te
            donation-*o* do-and
            'let (people) donate before Christmas and'

      (iii) maa aa ip-piki mot-teku-toiu **koto-o** yat-te  ori-masi-te
            FL  FL one-CL have-go-QUOT thing-*o* do-and PROG-PLT-and
            'take one, (they) were doing this kind of thing.'  (S02M1698:
            115.54-126.38)

      B:  hee, {doobutu-aigo-kyookai-ga/kihu-o/sonna koto-o}
          Oh, {animal shelters/donation/such a thing}

It has been pointed out by many scholars that elements coded by case markers in Japanese are foci. Lambrecht (1994), for instance, argues that *ga* is appropriate for focal elements and not appropriate for topical elements. For example, compare (63) and (64). In (63), where the speaker's neck is presupposed to be at issue at the time of utterance (63-A), only *wa*-coding is natural, although zero pronoun is more natural in this context.

(63)  Q:  How's your neck?
      A:  [kubi-{??ga/**wa**}]$_T$ itai]$_F$
          neck-{*ga*/*wa*}      hurt
          'My neck HURTS.'                    Lambrecht (1994: p.137)

In (64), on the other hand, where the speaker's neck is not presupposed to be at issue at the time of utterance (64-A), *ga*-coding is more natural than *wa*-coding.

(64)  Q:  What's the matter?
       A:  [kubi-{**ga**/??wa} [itai]$_F$
            neck-{*ga*/*wa*}   hurt
            'My NECK HURTS.'                                          (ibid.)

In the following sections, I will discuss focus coding mainly by means of case particles including zero ($\emptyset_f$). The distribution of particles are summarized in Table 4.8 (repeated from Table 4.2), where A indicates the agent-like argument of a transitive clause, S indicates the only argument of intransitive clause, and P indicates the patient-like argument of a transitive clause (Comrie 1978; Dixon 1979). Since zero-coding typically appears only in casual speech, the main source for the generalization in Table 4.8 is grammatical judgements.

Note that Table 4.8 is also a kind of semantic map; a scale of agentivity on the one hand and that of contrastiveness on the other. Here I categorize argument focus together with contrastive focus to refer to "contrastive focus" because, as long as *ga*/*o* vs. zero-coding concerns, argument and contrastive focus do not differ from each other; *ga*/*ọ* overtly codes argument and contrastive focus (of P and patient S), whereas zero-coding is preferred elsewhere.

I argue that the Semantic Map Connectivity Hypothesis (1) applies to this table: the category that each the marker codes should map onto a connected region in conceptual space. In the following sections, I will discuss each case particle.

Table 4.8: Overt vs. zero case markers

|  | A | S | | P |
|---|---|---|---|---|
|  |  | Agent | Patient |  |
| Non-Contrastive Focus | *ga* | *ga* | *ga*/Ø | Ø |
| Contrastive Focus or Formal Speech | *ga* | *ga* | *ga* | *o* |

As has been mentioned earlier, there are few zero particles in the corpus because of the style of this corpus, and the majority of discussions in this section also rely on grammaticality judgements rather than corpus studies or other experimental methods.[8]

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[8] This section is based on part of the discussion in Nakagawa (2013).

### 4.3.1 *Ga*

This section considers the marker *ga*. I distinguish *ga* coding A and S, and *ga* in the argument- and sentence-focus environment.

#### 4.3.1.1 *Ga* coding focus A

Focus A requires *ga* regardless of whether the element in question is contrastive or not. As exemplified in (65), only *ga*-coding is natural and *o*- and zero-codings are not natural to code non-contrastive focus A.

(65)    a  **neko-{ga/\*o/??Ø/}** nezumi oikake-teru
        oh cat-{*ga*/*o*/Ø}    mouse  chase-PROG
        'Look! A cat is chasing a mouse.'        (Non-contrastive focus A)

Unnaturalness of zero-coding in (65) is not necessarily because A is not adjacent to the predicate. As shown in (66), where the A is adjacent to the predicate, zero-coding is still not natural and only *ga*-coding is natural.

(66)    Q:  Do you know where my mouse is?
        A:  **neko-{ga/\*o/??Ø}** oikake-te-ta-yo
             cat-{*ga*/*o*/Ø}    chase-PROG-PAST-FP
             'The cat was chasing it.'        (Non-contrastive focus A)

Contrastive focus (or argument focus) A is only naturally coded by *ga* and other markers are not natural. This is exemplified in (67), where only *neko* 'cat' rather than the whole clause is the domain of focus.

(67)    Q:  What is chasing a mouse?
        A:  **neko-{ga/\*o/??Ø}** nezumi oikake-teru-yo
             cat-{*ga*/*o*/Ø}    mouse  chase-PROG-FP
             'A cat is chasing a mouse.'        (Contrastive focus A)

#### 4.3.1.2 *Ga* coding focus S

Agent S is obligatorily coded by *ga*, while patient S can be coded by either *ga* or $Ø_f$, when S is non-contrastive focus, which has already been pointed out in Kageyama (1993: pp. 56-57). As shown in the contrast between (68) and (69), agent S is naturally coded by *ga*, but not *o* or $Ø_f$ as in (68), while patient S can be naturally coded by either *ga* or $Ø_f$, but not *o* as in (69).

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(68)    a.    a   **neko-{ga/\*o/??Ø}** arui-teru
           oh cat-*{ga/o/Ø}*      walk-PROG
           'Look! A cat is walking!'
     b.    a   **kodomo-{ga/\*o/??Ø}** ason-deru
           oh child-*{ga/o/Ø}*      play-PROG
           'Look! A child is playing.'          (Non-contrastive focus S (agent))

(69)    a.    a   **saihu-{ga/\*o/Ø}** oti-teru
           oh purse-*{ga/o/Ø}*
           'Look! A purse is on the road! (Lit: A purse has fallen (and it's there).)'
     b.    a   **kanban-{ga/\*o/Ø}** taore-teru
           oh sign-*{ga/o/Ø}*      fall-PROG
           'Look! A sign has fallen (and it is lying).'     (Non-contrastive focus S (patient))

Contrastive S is always coded by *ga* regardless of whether S is agent or patient.

(70)    Q:    What is walking over there?
     A:    **neko-{ga/\*o/??Ø}** arui-teru    yo
          cat-*{ga/o/Ø}*      walk-PROG FP
          'A cat is walking.'             (Contrastive focus S (agent))

(71)    Q:    What has fallen?
     A:    **saihu-{ga/\*o/??Ø}** oti-ta-yo
          wallet-*{ga/o/Ø}*      fall-PAST-FP
          'The wallet has fallen.'         (Contrastive focus S (patient))

Note that it is more natural to code non-contrastive focus animate patient S by *ga* rather than $Ø_f$ as exemplified in (72).

(72)    a.    a   **kodomo-{ga/\*o/??Ø}** taore-teru
           oh child-*{ga/o/Ø}*      fall-PROG
           'Look! A child has fallen (and he is lying).'
     b.    a   anna tokoro-ni   **{kodomo/neko}-{ga/\*o/?Ø}** iru
           oh such place-DAT {child/cat}-*{ga/o/Ø}*      exist
           'Look! A child/cat is in that kind of (dangerous) place.'      (Non-contrastive focus S (patient & animate))

#### 4.3.1.3 *Ga* coding animate elements?

Some might think that the choice between *ga* vs. $\emptyset_f$ is sensitive to animacy rather than agentivity. As has been discussed in Chapter 1, I rather take a view that a single marker can code complex features; the marker *ga* codes focus, agent, and animate elements and one cannot determine a single feature that *ga* codes. Comrie (1979) calls this **seepage**. In Hindi, for example, the postposition *ko* codes definite or animate (especially human) direct object, while other kinds of direct objects tend to be zero-coded. There is no simple correlation of *ko* with either animate or definite direct object. In the following example (73), where DO stands for 'direct object marker', sometimes *ko* codes animate elements as in (73-a) but sometimes not as in (73-c), and it sometimes codes definite elements as in (73-c) but sometimes not as in (73-a,d). Therefore, it is difficult to decide a single feature that *ko* codes. Rather, as Comrie (1979) argues, *ko* codes complex features of animacy, definiteness, and direct object.

(73)   a.   aurat   **bacce ko** bulā   rahi  hai
           woman child   DO calling PROG is
           'The woman is calling the/a child.'                        (animate DO)

       b.   **darzī Ø** bulāo
           tailor Ø call
           'Call a tailor.'                                   (animate indefinite DO)

       c.   un     patrom ko parhie
           those letters   DO read    (POL)
           'Please read those letters.'                              (definite DO)

       d.   ye    **patr**   Ø parhie
           these letters Ø read    (POL)
           'Please read these letters'              (inanimate definite DO)

                                                           (McGregor 1972: p. 48)

In the same sense that *ko* codes complex features, I argue that *ga* codes complex features of agent, animacy, and focus. First, *ga*, but not $\emptyset_f$, codes inanimate A. For example, in (74), *makku* 'Mac(intosh)' in (74-a) and *baketu* 'bucket' in (74-b) are inanimate As and can only be coded by *ga*; $\emptyset_f$ is unnatural in this context. Therefore, in addition to animacy, *ga* is also sensitive to agentivity.

(74)   a.   a  **makku-{ga/?Ø}** koe dasi-ta
           oh Mac-{*ga*/Ø}     koe produce-PAST
           'Wow, a Mac produced voice!'

   b. a **baketu-{ga/?Ø}** doa osae-teru
     oh bucket-{*ga*/Ø} door hold-PROG
     'Oh a bucket holds the door (and this is why the door won't close).'
     (Inanimate A)

#### 4.3.1.4 *Ga* coding non-nominative focus

*Ga* also codes non-nominative focus. For example, *poteto-tippusu-to* 'with potato chips' in (75-a) and *ima-made* 'before now' are non-nominative as is shown in the translation; however, they are coded by *ga*.

(75) a. koora-wa **poteto-tippusu-to-ga** au-n-da-yo
    cola-*wa* **potato-chip-with-*ga*** match-NMLZ-COP-FP
    'Cola (especially) goes with POTATO CHIPS.'[9]
  b. tanni **ima-made-ga** samuku-nakat-ta-dake-mitai
    simply now-from-*ga* cold-NEG-PAST-just-apparently
    'It simply looks like BEFORE NOW was not cold (and now it's cold).'
    (Focus non-nominative)

Similarly, *guratan-ni* 'for gratin' in (76-B) is not argument of the predicate but is still coded by *ga*.

(76) A: I thought that you did't like penne.
  B: penne-wa **guratan-ni-ga** ii-n-da-yo
    penne-*wa* gratin-for-ga good-NMLZ-COP-FP
    'Penne is good for GRATIN.'  (Contrastive focus non-nominative)

The following examples are from a comic book and the Internet. One can find many examples of *ga*-coding non-nominative in the Internet. Note, however, that especially (77-b) is not acceptable to some people.

(77) a. koko-**kara-ga** hontoo-no zigoku-da
    here-ABL-*ga* true-GEN hell-COP
    'From here the true hell starts.'   (Vegeta in *Dragon Ball*[10] )
  b. kotira-wa nihonsyu-**to-ga** au-desyoo
    this-*wa* sake-COM-*ga* match-will
    'This one goes well with sake.'   (A review from *Tabelog*[11] )

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[9] This nice example was suggested by Yuji Togo.

[10] Toriyama, Akira (1990) *Dragon Ball* 23, p. 149. Tokyo: Shueisha.

[11] http://tabelog.com/ehime/A3801/A380101/38006535/dtlrvwlst/2992604/, last accessed on

    c.   ie-ni       kaeru-**made-ga** ensoku-desu
            home-DAT return-LIM-*ga*  excursion-COP.PLT
            'Until (you) arrive at home is the excursion. (Before you arrive at home, you are on the way of excursion.)'     (Common warning by school teachers)[12]

There are examples of *ga* coding focus non-nominative in actual spoken data. The following examples are from *the Chiba three-party conversation corpus* (Den & Enomoto 2007), which includes more casual conversations than CSJ. In (78), *sono hoo* 'that way' is marked by *ga* even though *okane* 'money' is the only argument of the intransitive predicate *kakaru* 'required or cost'. The speaker compares buying a computer with other options, and claims that buying a computer costs more. Buying a computer is interpreted as focus and is coded by *ga*, while money is S.

(78)    **sono hoo-ga** <u>okane-Ø</u>  kakaru-zyan
       that   way-*ga* money-Ø required.INTR-FP
       'More money is required on THAT way (i.e., if you buy a computer).'
       (chiba0232: 400.32-401.43)

In (79), after listening to an angry story of another participant, the speaker claims that it is the speaker himself (and the other participant) that were angry in this story. *hara* 'belly' is the only argument of the intransitive predicate *tatu* 'stand'. *hara tatu* 'belly stands' is an idiomatic expression meaning 'to be angry'. In this example, however, *ore-tati* 'we' is coded by *ga* because it is focused.

(79)    are-wa   musiro **ore-tati-ga hara-Ø** tat-ta-yo-ne
       that-*wa* rather  1SG-PL-ga   belly-Ø stand.INTR-PAST-FP-FP
       'In that event, WE got angry (rather than you).'     (chiba0432: 111.64-113.37)

These examples are the cases where *ga* codes purely focus: *ga* codes neither agent nor animate elements.

To summarize, *ga* sometimes codes animate patient S like (72), sometimes codes non-animate agent like (74), sometimes codes non-nominative inanimate focus elements as in (75) to (79), and, probably more frequently, it codes elements with complex features of agentivity, animacy, and focus. Like *ko* in Hindi, *ga*

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[12] I found 32,700 websites using this expression with Google exact search (searched on 06/17/2015).

codes multiple features and it is difficult and not necessary to determine a single feature that *ga* codes.

### 4.3.2 *O*

#### 4.3.2.1 *O* coding focus P

Non-contrastive focus P is usually zero-coded, while contrastive focus P is only naturally coded by *o*. This is shown by the contrast between (80) and (81). In (80), where the question elicits a broad focus structure, zero-coding is the most natural option, while *ga*- and *o*-codings are less natural.

(80)   Q:   What do you do?
        A:   **tetugaku-{\*ga/?o/Ø}** benkyoo si-te-n-da-yo
             philosophy-{*ga*/*o*/Ø}  study    do-PROG-NMLZ-DECL-FP
             'I study philosophy.'

In (81), on the other hand, where the question elicits a narrow focus structure, overt *o*-coding is more natural than *ga*- and zero-codings.

(81)   Q:   What do you study?
        A:   **tetugaku-{\*ga/o/??Ø}** benkyoo si-teru-n-da-yo
             philosophy-{*ga*/*o*/Ø}  study    do-PROG-NMLZ-DECL-FP
             'I study philosophy.'

Some native speakers of Japanese might find *o*-coding in (80) is not unnatural contrary to my claim. I argue that *o*-marking of non-contrastive focus in casual conversation is limited to theatric speech. According to Nakagawa (2013) , who studied a casual spoken corpus of *manzai* (a popular stand-up comedy performed by two people), 75 % (222 examples) of 297 P-codings are zero-coding, while only 25 % (75 examples) are *o*-coding. Although this corpus survey does not distinguish contrastive vs. non-contrastive foci, it is clear from this survey that vast majority of P-coding in casual spoken Japanese is Ø.

### 4.3.3 $Ø_f$

As discussed in the previous sections on *ga* and *o*, non-contrastive focus P and patient S are coded by $Ø_f$. As shown in (65), non-contrastive focus A can only naturally be coded by *ga*, and zero-coding is not natural. As discussed in relation to examples (68) and (69), non-contrastive agent S can only naturally be coded

by *ga*, but not Ø, while non-contrastive patient S can be coded by either *ga* or Ø. As shown in (80), non-contrastive P can only naturally be coded by Ø.

### 4.3.4 Summary of case markers

The distributions of case markers including zero particles are summarized in Table 4.8. This thesis revealed the distributions of case particles and zero particles in term of information structure. The previous literature was not clear about the relationships between the twofold characteristics of *ga*: nominative and exhaustive listing vs. neutral description. Following Comrie (1979), the thesis proposed that a single particle has multiple features at the same time. The particles *ga* and *o* are used in the focus environment; at the same time, they indicate the functional relation of the element coded by these particles. Especially, *ga* even codes non-nominative focus elements, which indicates that the particle is on the way to grammaticalize into a focus particle. In §4.5.2, I will discuss why the particle *ga*, among other particles, starts to code focus.

## 4.4 So-called subjects

In this section, I will briefly discuss the relationships between grammatical function and information structure. This is associated with the issue that has long been discussed in the literature: the connection between topic and subject (Li 1976; Du Bois, Kumpf & Ashby 2003). Since it is impossible to provide an overview of all the things that have been discussed for a long time, I briefly discuss a few points.

### 4.4.1 Subject and topic

Whereas Aoki (1992: 2) reported that 84.7% of *wa* attaching nouns code so-called subjects (A and S in my term, nominative case in her term) in novels and essays, only 40.3% of *wa* in our data codes As and Ss as shown in Table 4.9 and Figure 4.3. These table and figure include all kinds of elements excluded in other analyses.[13] Figure 4.4, which represents the overall frequencies of elements, is shown for comparison. This graph also includes all kinds of elements excluded in other graphs. On the other hand, Table 4.9 and Figure 4.3 show that 59.0% of *toiuno-wa* codes so-called subjects. This demonstrates that *toiuno-wa* in spoken Japanese is in fact closer to *wa* in written Japanese in terms of the preference of coding

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[13] Refer to §3.4.3.2 to see what is excluded.

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Table 4.9: Topic markers vs. grammatical function

|  | *toiuno-wa* | *wa* | *mo* |
|---|---|---|---|
| Ex | 18 | 33 | 7 |
|  | (20.7%) | (5.9%) | (2.4%) |
| A | 2 | 30 | 8 |
|  | (2.3%) | (5.4%) | (2.7%) |
| S | 47 | 194 | 120 |
|  | (54.0%) | (35.0%) | (40.8%) |
| P | 5 | 28 | 23 |
|  | (5.7%) | (5.0%) | (7.8%) |
| Dative | 2 | 65 | 29 |
|  | (2.3%) | (11.7%) | (9.9%) |
| Others | 13 | 205 | 107 |
|  | (14.9%) | (36.9%) | (36.4%) |
| Sum | 87 | 555 | 294 |
|  | (100%) | (100%) | (100%) |
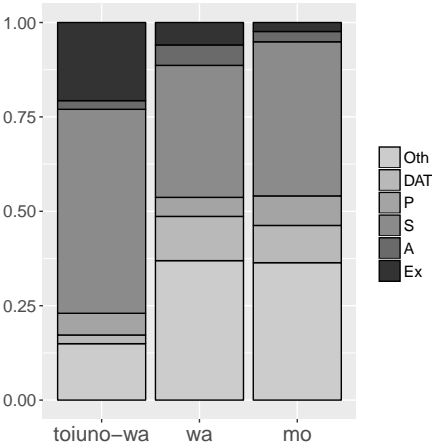


Figure 4.3: Topic markers vs. grammatical function
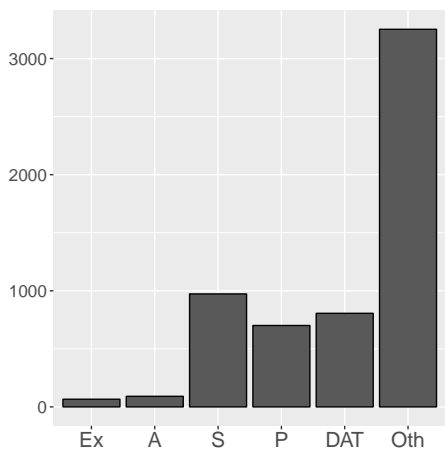
Figure 4.4: Overall distributions of elements

grammatical functions. Although a majority of the literature focuses on *wa* coding subjects, the results suggest that *wa* codes other kinds of elements in spoken Japanese.

So-called subjects have some special status in the discourse; they are interpreted to be definite in the discourse even though the NP is coded by *ga* instead of *wa*. For example, consider the difference between (82) and (83).

(82)  Q:  Why were you absent yesterday?
      A:  **kuruma-ga** inu-o  hii-ta-n-desu
          car-*ga*      dog-*o* run.over-PAST-NMLZ-PLT
          '(My) car ran over (a) dog.'
      A′  **kuruma-ga** inu-ni   butukat-ta-n-desu
          car-*ga*      dog-DAT  hit-PAST-NMLZ-PLT
          '(My) car hit (a) dog.'

(83)  Q:  Why were you absent yesterday?
      A:  **inu-ga** kuruma-ni hik-are-ta-n-desu
          dog-*ga* car-DAT     run.over-PASS-PAST-NMLZ-PLT
          '(My) dog was run over by (a) car.'
      A′  **inu-ga** kuruma-ni butukat-ta-n-desu
          dog-*ga* car-DAT     hit-PAST-NMLZ-PLT
          '(My) dog hit (a) car.'

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These utterances represent the same propositional meaning that can be something like '(a/the) car ran over (a/the) dog.' Note that, since Japanese does not have obvious ways to code definiteness, both 'car' and 'dog' can be potentially interpreted as either definite or indefinite, and hence 'car' and 'dog' are expressed in the same way in (82) and (83) except for case markers. Under these conditions, the subjects 'car' in (82) and 'dog' in (83) are interpreted as definite, while the non-subjects 'car' in (83) and 'dog' in (82) are indefinite, according to the author's intuition. NPs coded by *wa* are also likely to be interpreted as definite since the referent of those NPs are assumed to be evoked. This observation suggests that subjects without topic-marking still function like topic markers. This is worth investigating in the future since my argument is no more than an impressionistic analysis.

### 4.4.2 Hierarchy of topic-coding

There seems to be a hierarchy of topic-coding; given As and Ss are more likely to be coded by topic markers than given Ps. For example, consider the following example. In (84), *sohu* 'grandfather' is introduced in line a, and *pan* 'bread' is introduced in line b. In line c, which is of interest in the discussion, *oziityan* 'grandfather' is coded by *wa*, but *sore* 'that' referring to the bread in line b is coded by the case particle *o*.

(84)  a.  uti-no **sohu**-tteiuno-ga       okasi-ga sukina mono-de
           out-GEN grandfather-*toiuno-ga* sweet-*ga* favorite thing-COP
           'Our grandfather likes sweets.'
      b.  yoku pan-ya-san-de      <u>kasi-pan-o</u>   kat-te
           often bread-store-HON-LOC sweet-bread-*o* buy-and
           kuru-n-desu-ga
           come-NMLZ-COP.PLT-though
           '(He) often buys sweet bread and comes home,'
      c.  e  n  <u>sore-o</u> i   maa yoowa  **oziityan**-**wa**   issyookenmee
           FL FRG that-*o* FRG FL   in.a.word grandfather-*wa* trying.best
           taberu-n-desu-keredomo
           eat-NMLZ-COP.PLT-though
           'that, he tries his best to eat it, but'
      d.  he cannot eat all and
      e.  gives leftovers to the dog...        (S02M0198: 244.48-262.82)

It is unnatural for *wa* to code *sore* referring to the bread instead of *oziityan*

'grandfather', as shown in (85-c′). If A (e.g., *obaatyan* 'grandmother') is newly introduced as in (85-c″), there is no problem for *wa* coding *sore*; *obaatyan* 'grandmother' is naturally coded by *ga* instead of *wa*.

(85)   c′.  e n   sore-{o/wa} i   maa yoowa   ??**oziityan-ga**
          FL FRG that-{*o*/*wa*} FRG FL  in.a.word grandfather-*ga*
          issyookenmee taberu-n-desu-keredomo
          trying.best    eat-NMLZ-COP.PLT-though
          'that, my grandfather tries his best to eat it, but...'

       c″.  e n   sore-{o/wa} i   maa yoowa   **obaatyan-{ga/??wa}**
          FL FRG that-{*o*/*wa*} FRG FL  in.a.word grandmother-*ga*/*wa*
          issyookenmee taberu-n-desu-keredomo
          trying.best    eat-NMLZ-COP.PLT-though
          'that, my grandmother tries her best to eat it, but...' (modified from (85-c))

In fact, the majority of anaphoric Ps are still coded by *o*, instead of topic markers, whereas more ratio of anaphoric As and Ss are coded by topic markers. Table 4.10 and 4.11 and Figure 4.5 and 4.6 show the distributions of topic and case markers coding A, S, and P. Table 4.10 and Figure 4.5 represent the distributions of topic and case markers coding anaphoric A, S, and P. As the table and the graph show, while 44.1% of anaphoric As and 38.8% of anaphoric Ss are coded by topic markers, only 8.4% of anaphoric Ps are coded by topic markers. On the other hand, the majority of non-anaphoric elements are coded by case markers, although non-anaphoric Ss (most of which are in fact inferable) are remarkably more coded by *wa* than others.

I propose the hierarchy (86) for topic-coding. The given elements higher in this hierarchy are more likely to be coded by topic markers.

(86)    A, S > P

The hierarchy indicates that so-called subjects are more likely to be coded by topic markers. This hierarchy is a topic hierarchy: the hierarchy of elements which are more likely to be topics (Givón 1976; E. L. Keenan 1976; Comrie 1979; 1983; Du Bois 1987). This hierarchy is present in many languages in various ways. For example, A and S are more likely to be agreed with the verb than P cross-linguistically. Also, A and S are more likely to be zero-coded than P. Japanese *wa*-coding seems to follow this hierarchy; if there are two given elements potentially coded by *wa*, A and S are preferred over P following the hierarchy (86).

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Table 4.10: Markers for anaphoric

|  | Ex | A | S | P |
|---|---|---|---|---|
| Topic marker | 20 | 15 | 97 | 15 |
|  | (100%) | (44.1%) | (38.8%) | (8.4%) |
| Case marker | 0 | 19 | 153 | 163 |
|  | (0%) | (55.9%) | (61.2%) | (91.6%) |
| Sum | 20 | 34 | 250 | 178 |
|  | (100%) | (100%) | (100%) | (100%) |

Table 4.11: Markers for non-anaphoric

| Ex | A | S | P |
|---|---|---|---|
| 12 | 1 | 74 | 13 |
| (100%) | (8.3%) | (21.6%) | (6.8%) |
| 0 | 11 | 269 | 177 |
| (0%) | (91.7%) | (78.4%) | (93.2%) |
| 12 | 12 | 343 | 190 |
| (100%) | (100%) | (100%) | (100%) |
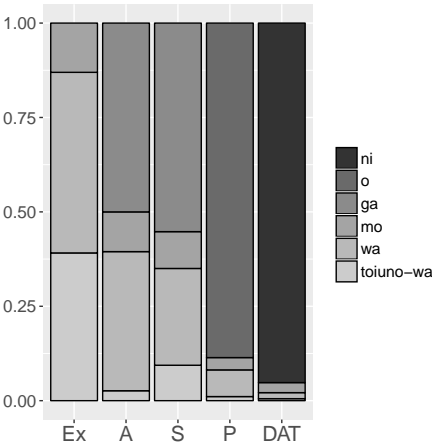


Figure 4.5: Markers for anaphoric
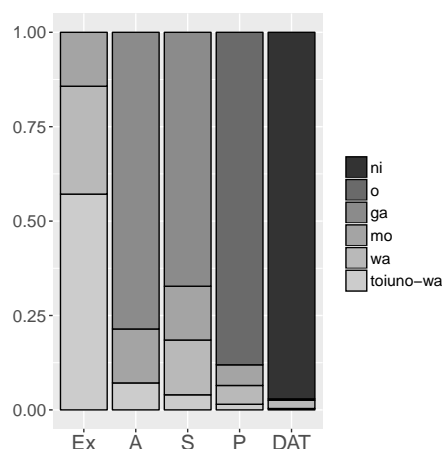
Figure 4.6: Markers for non-anaphoric

### 4.4.3 Ex or detached NPs

Finally, I discuss associations between "Ex" and topic markers. In §3.4.3.3, Ex was defined as elements "which appear to be part of the clause but do not have direct relationships with the predicate" (p. 89). A typical example is shown in (87). In (87), the predicate *nagai* 'long' is directly related to *hana* 'nose'. *Zoo* 'elephant' is not directly related to the predicate; it is not the elephant itself that is long.

(87)  **zoo-wa**       hana-ga nagai
      elephant-*wa* nose-*ga* long
      'The elephant, the nose is long (The elephant has a long nose).' (Mikami 1960)

Table 4.10 and 4.11 and Figure 4.5 and 4.6 show that Ex is only coded by topic markers. Table 4.9 and Figure 4.3 show that 21.7% of *toiuno-wa*-coded elements and 5.9% of *wa*-coded elements are categorized into Ex.

Lambrecht (1994) discusses cross-linguistic cases of Ex (in his term, "detached" topic) and argues that "in some languages at least, the detached topic NP cannot be a constituent [...] of the clause with which it is pragmatically associated" (p. 192). In (88), examples in English, the detached topics are not constituents of the clause; rather, they have a part-whole relation with some element(s) within a clause. In (88-a), the detached topic *the typical family today* is not a constituent

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of the clause; instead, it is associated with *the husband and the wife* pragmatically. In the same way, the detached topics *tulips* in (88-b) and *other languages* in (88-c) are pragmatically associated with constituents of the clauses *bulbs* and *tones*, respectively.

(88)   a.   (From a TV interview about the availability of child care)
            That isn't the typical family anymore. **The typical family today**, *the husband and the wife* both work.
       b.   (Talking about how to grow flowers)
            **Tulips**, you have to plant new *bulbs* every year?
       c.   (Lecture in an introductory linguistics course)
            **Other languages**, you don't just have straight *tones* like that.

<div align="right">([Lambrecht 1994](): 193)</div>

These detached topics are strikingly similar to "Ex" in Japanese.

Lambrecht also discusses cases in which topics are not counted as constituent of the clause even though they appear to be constituents. German, for example, has the principle that only allows the verb in the second position within a clause as exemplified in (89-a-d). However, the detached topic constituents that appear at the beginning are not counted as the first constituent of the clause. As exemplified in (89-e), the verb *isst* 'ate' appears in the second position assuming that the preceding *den* 'it' is in the first position, which indicates that the detached topic *den Apfel* is not counted as the first constituent in the clause. In fact, as in (89-f), it is unacceptable if the detached topic *den Apfel* is counted as the first constituent.[14]

(89)   a.   Hans **isst** den     Apfel.
            Hans eat  the.ACC apple
            'Hans eats the apple.'                                      (SVO)
       b.   Den Apfel **isst** Hans.                                    (OVS)
       c.   *Den Apfel Hans **isst**.                                   (*OSV)
       d.   Den   isst Hans.
            it.ACC eat  Hans
            'Hans eats it.'                                             (OVS)
       e.   <u>Den   Apfel</u> den   **isst** Hans.
            the.ACC apple it.ACC eat  Hans
            'The apple, Hans eats it.'                                  (TOVS)

---

[14] *Apfel* 'apple' in e, f of (89) is considered to be "detached" because the resumptive pronoun *den* 'it.ACC' is regarded as argument of the clause and *Apfel* itself does not function as argument.

f. *Den Apfel **isst** Hans den. (*TVSO)

(op.cit.: p. 194)

Both the topicalized NP *den Apfel* and the resumptive pronoun *den* in (89-e) appear as accusative. According to Lambrecht, however, it is optional for the topicalized NP, while it is obligatory for the resumptive pronoun. This is also reminiscent of topic-marking in Japanese. In Japanese, nominative and accusative codings are overridden by topic-marking and the case for A, S, and P coded by topic markers are not overtly expressed as has been discussed in §2.4.2.4.

The fact that topics tend to be "detached" from the predicate and lose case marking cross-linguistically suggests the possibility that there are some universal motivations behind this phenomenon. I argue that at least one of the motivations is clause-chaining. In clause-chaining, the speaker combines multiple clauses to form a thematic unit (Longacre 1985; Martin 1992; Givón 2001). (90) is an example of clause-chaining.

(90) She came in, [Ø] stopped, [Ø] looked around and froze.
(Givón 2001: 349)

By combining clauses in this way, thematic continuity is achieved. In clause-chaining, the detached topic, which typically appears utterance-initially as will be discussed in Chapter 5, is not necessarily an argument of the clauses; instead, it is pragmatically related to the following clauses. For example, in (91), where the speaker talks about a life in Iran, *mukoo-no hito* 'people there (in Iran)' in (91-a) is detached and annotated as "Ex" because its predicate *hukaku* 'deep', which has a part-whole relations with the people, has the so-called subject *hori* '(face) form'. In (91-b-c), the speaker continues to talk about Iran people by clause-chaining. *Kodomo* 'child' in (91-c) also has a part-whole relation with the Iran people.

(91) a. eto n **mukoo-no hito-toiuno-wa** hontooni hori-ga hukaku-te
FL FL there-GEN person-*toiuno-wa* really form-*ga* deep-and
'People there (in Iran), (their) face forms are really chiseled,'

b. kiree-de
beautiful-and
'beautiful,'

c. kodomo-nanka-wa anoo sugoku kawaii kao-o si-tei-mashi-ta
child-HDG-*wa* FL very cute face-*o* do-PROG-PLT-PAST
'children had very cute faces.' (S03F0072: 375.01-386.35)

Clause-chaining is a useful way to talk about something; the speaker puts the

topic at the beginning and continue to describe the topic as much as s/he can. In the descriptions in clause-chaining, the topic is not necessarily an argument; it is pragmatically associated with each clause. The hearer does not get lost. The hearer can trace the topic when the speaker provides enough evidence through linguistic expressions (such as particles, word order, and intonation) and other means (such as gesture, background knowledge, sequence of conversation, etc.).

Mikami (1960: Chapter 2) points out that *wa*-coded NPs can "go beyond periods" (p. 117) and "commas" (p. 130). This is closely related to what I argue here. He states: "in general, 'X-*wa*', skipping adverbial clauses in the middle, governs the final main clause. However, it [sometimes] governs the verbs in the middle a little bit; this is what I call [*wa*'s] going beyond commas" (p. 130). Of course, there are no commas and periods in spoken language, *wa* and *toiuno-wa* go beyond "commas" and "periods" by governing the whole clause-chaining.

## 4.5 Discussion

### 4.5.1 Distribution of markers and semantic space
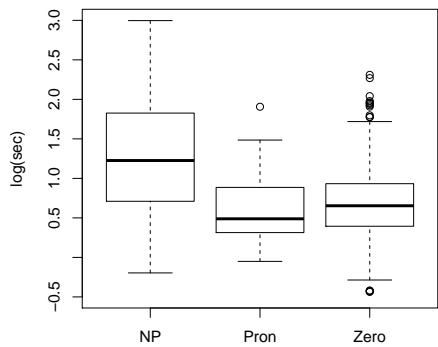


Figure 4.7: Anaphoric distance vs. expression type (all)

As discussed in §4.1, the particles code elements with features that can be mapped onto a conceptual space. As in Table 4.1 and discussion in §4.2, topic markers map onto a conceptual space of given-new taxonomy, while, as in Table

4.2 and discussion in §4.3, case markers map onto a conceptual space of agentivity, focushood, contrastiveness, and possibly animacy.

The semantic map of topic markers in Japanese indicates that inferable and evoked statuses form a connected region and are expressed by the same marker *wa*, while declining and unused statuses form a connected region and are expressed by the same marker a copula followed by *kedo* or *ga*; hence, the inferable status is closer to the evoked status, and the declining status is closer to unused in the conceptual space. This makes sense because inferable elements are more relevant to the current topic than declining elements. For example, in (92), the inferable element *gen'in* 'cause' is coded by *wa*. The element 'cause' is inferable because the disease has been already introduced and the cause of the disease can be considered to be part of the knowledge of getting a disease.

(92)   a.   (The speaker got a wired disease.)
       b.   First I visited several local hospitals.
       c.   I was examined several times, but
       d.   **gen'in-wa** humee-de
            cause-*wa*   unclear-COP
            'the cause (of the disease) was unclear.'   (S02F0010: 74.93-82.60)

In (92), the cause of the disease is relevant to the current topic, i.e., the speaker's disease. Later in this speech, the speaker talks about her parents and friends; in this case the cause of the disease is considered to be declining and is less relevant to the current topic (her parents and friends). Declining elements like the cause of the disease become unused as the time passes. If the speaker brings up the cause of the disease two days later, she will code it as unused. Thus, I argue that the adjacency of inferable and evoked statuses and that of declining and unused statuses are cognitively motivated and I argue that this is universal.

Moreover, I propose that there are at least two kinds of evoked status: evoked and what I call strongly evoked. Evoked elements are full NPs, and strongly evoked elements are zero and overt pronouns. Figure 4.7 shows the time difference (anaphoric distance) on logarithmic scale between the first mora of the element in question is produced and that of its antecedent is produced. Zero pronouns are assumed to be produced at the time when the first mora of the predicate is produced. The anaphoric distance approximates activation cost; smaller distance indicates lower activation cost, while larger distance indicates higher activation cost. Figure 4.7 represents the anaphoric distance of three kinds of elements: full NPs, pronouns, and zero pronouns. As is clear from the figure, the anaphoric distance of zero and overt pronouns is smaller than that of NPs, which

indicate that zero and overt pronouns are more evoked than full NPs (fixed effects model, $p < 0.001$). Therefore, I propose the status called "strongly evoked". I add this status in Table 4.12. Since overt pronouns coded by topic markers are as strongly evoked as zero pronouns, I suppose that topic markers *wa* and *toiuno-wa* can also code strongly evoked elements.

Markers for focus coding map onto agentivity, focushood, contrastiveness, and possibly animacy as has been discussed in §4.3. Table 4.8 in §4.3 indicates that A and agent S are adjacent to each other, and patient S and P are adjacent. This makes sense because A is conceptually closer to agent S, and P is conceptually closer to patient P.

Table 4.12: Topic marker vs. activation status and given-new taxonomy

| Activation status | Given-new taxonomy | Topic | Focus |
|---|---|---|---|
| Strongly active | Evoked | Zero pronoun | – |
| | | Overt pronoun *toiuno-wa, wa*, Ø | case markers, Ø |
| Active | Evoked | *toiuno-wa, wa*, Ø | |
| Semi-active | Inferable | *wa*, Ø | |
| Semi-active | Declining | COP-*kedo/ga*, Ø | |
| Inactive | Unused | | |
| Inactive | Brand-new | – | |

### 4.5.2 Distribution of markers and markedness

As discussed in §4.3 and summarized in Table 4.8, the distinction between overt vs. zero particles for focus coding is sensitive to grammatical functions, contrastiveness, and animacy. The distribution of overt vs. zero particles for non-contrastive focus coding in Table 4.8 is similar to that of split intransitive languages, if one ignores *ga*-coding for patient S. In general, split intransitive languages code S differently depending on whether it is an agent or a patient; agent S is coded in the same way as A in the transitive clause, while patient S is coded in the same way as P. (93) shows examples from Georgian.[15]

(93)     Georgian, South Caucasian

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[15] Examples are from the handouts in the lecture called Typology and Universals given by Matthew Dryer at the University at Buffalo in 2010. Glosses are modified.

a.    vano-<u>m</u> gamozarda ʒma-Ø
     Vano-A 3.3.grow    brother-P
     'Vano raised his brother.'            (A & P)

b.    vano-<u>m</u> imɣera
     Vano-A 3.sing
     'Vano sang.'                 (Agent S)

c.    rezo-<u>Ø</u> gamoizarda
     Rezo-P 3.grow
     'Rezo grew up.'              (Patient S)

Spoken Japanese and Georgian in (93) follow the typological tendency that agent S and A tend to be overtly coded, while patient S and P tend to be zero-coded. On the other hand, Spoken Japanese does not follow the tendency of nominative/accusative languages: the tendency that A and S (nominative elements) are more likely to be zero-coded than P (accusative elements). I argue that, in coding focus elements, patient elements are "unmarked", i.e., more frequent than agent elements, and are more likely to be zero-coded than agent elements. This is supported in studies such as Du Bois (1987) and Du Bois, Kumpf & Ashby (2003). On the other hand, in coding topic elements, agent elements are more frequent than patient elements, and are more likely to be zero-coded than patient elements. This is observed in another dialect of Japanese: Kansai Japanese. In Kansai Japanese, contrastive topic agents (A and agent S) can be zero-coded, while contrastive topic patients (P and patient S) are overtly coded, which is summarized in Table 4.13. See Nakagawa (2013) for more detailed discussion on the relation between markedness and the distribution of zero vs. overt particles in Standard and Kansai Japanese.

Table 4.13: Contrastive-topic coding in Kansai Japanese

| | A | S | | P |
|---|---|---|---|---|
| | | agent | patient | |
| Contrastive Topic | Ø/*wa* | Ø/*wa* | *wa* | *wa* |

As has been discussed in §4.3.1.4, *ga* sometimes codes non-nominative focus NPs. The theory of markedness also gives a hint to explain why *ga* is on the way to grammaticalize into a focus particle; focus A is the most rare in natural occurring discourse and it is likely for Japanese native speakers to associate the marker *ga* with focushood. On the other hand, P is very frequently focus, in

which case, it is less likely to associate the marker *o* with focushood.

## 4.6 Summary

### 4.6.1 Summary of this chapter

This chapter discussed the distributions of so-called topic marker and case markers in Japanese. I argued that different markers are sensitive to different features, and at the same time, multiple features contribute the usage of a single marker.

### 4.6.2 Remaining issues

While there are many remaining issues, one of the biggest issues is that it is necessary to test the proposals in this chapter through other empirical methods. If the proposals are supported also by other methods, they become more sound. Especially the distribution of zero particles is mainly based on a few native speakers' acceptability judgements. This should be tested with a larger number of native speakers. One possible experiment is to ask subjects to listen to short conversation where the particles in question are blurred and to produce what they hear. This is easier than subtle acceptability judgements and linguistically naïve subjects can also participate in it.

Another issue is the focus test. So far we only have the *hee* test and the *no* test, which depend on the author's acceptability judgements. One possible experiment is to ask subjects to listen to speech used in this study and respond to what the speaker say by *hee* as if they were the hearers. The elements that many subjects respond to are more likely to be foci. Another possibility is to investigate conversations and study the elements that the hearer actually responds to. Den et al. (2012) annotated response tokens like *hee* and the elements those response tokens address. Thus it is not very difficult to seek the second possibility.

# 5 Word Order

## 5.1 Introduction

This chapter discusses how information structure of a clause affects word order.

Figure 5.1 shows the overall distribution of elements in terms of their positions in a clause. Elements are counted by phrases (so called *bunsetsu*). The y-axis indicates the frequency of elements and the x-axis indicates the position of elements: 1 means that the element in question appeared in the first position in the clause, 2 means that it appeared in the second position, and so on. I used the values of nth originally included in CSJ. The reason why the frequencies of 1 and 2 are lower than 3 is that the linguistic categories that appear in the first or second position are typically fillers, connectives, and adjectives and they are excluded from the analysis. The fact that the elements in more than fifth positions appear very frequently might be counterintuitive based on the ordinary idea of a clause; a clause consists of a single predicate and at most three arguments and a few more adjuncts. In spoken language, however, there are many fillers, intensifiers like *hontooni* 'really', and paraphrases, which make the clause longer. Since nth simply counts the position of a phrase flatly, not structurally, embedded clauses such as relative clauses are also included in the count. I assume that it is worth including these intervening expressions to analyze where a phrase can be interfered by them and where it cannot. In fact, the following results show that most non-anaphoric elements appear immediately before the predicate, not interfered by fillers, intensifiers, and so on (see §5.4). Moreover, CSJ has a unique definition of clause, which is not always the same as intuitive clause; Rather, a clause in CSJ is closer to a single series of clause-chaining. For example, some subordinate markers such as *-to* 'if' and *-te* 'and' do not work as clause boundaries. These characteristics causes the nth of elements following the subordinate markers to be larger. See Maruyama, Takanashi & Uchimoto (2006) for the detailed definition of clause unit.

Figure 5.2 and 5.3 show element positions and their frequencies based on information status and persistence, respectively. Information status "anaphoric" in this thesis just means "the element in question has the co-referential antecedent"

and "non-anaphoric" means "it does not." "Persistent" means "the referent in question is mentioned also in the following discourse", and "non-persistent" means "it is not." See 3.4.3.2 for the detail of the procedure of annotation. As has been discussed in §4.2, a linear mixed effects model was employed to predict information status (anaphoric vs. non-anaphoric). As fixed effects, word order (`nth` in CSJ, see §5.1 for the definition of this annotation), particles (*toiuno-wa, wa, mo, ga, o, ni*), and intonation (phrasal vs. clausal IU, see §6.1 for the definitions) were included, and as a random effect, the speaker (`TalkID`) was included. The model with the effects of word order, particles, and intonation is significantly different from the models without each of them, which indicates that word order, particles, and intonation respectively contribute the prediction of information status. The model with all three effects is significantly different from the model without the effect of word order (likelihood ratio test, $p < 0.01$); It is significantly different from the model without the effect of particles ($p < 0.001$) and the model without the effect of intonation ($p < 0.05$)

As has also been discussed in §4.2, a linear mixed effects model was also applied to predict persistence (persistent vs. non-persistent). Word order, particles, and intonation were included as fixed effects, and the speaker (`TalkID`) was included as a random effect. The model with the effects of word order and particles is again significantly different from the models without either of them (likelihood ratio test, $p < 0.01$ for the model without word order, $p < 0.001$ for the model without particles). However, the model with the effect of intonation is not significantly different from the model without it ($p = 0.423$) The results are to be discussed more in §5.2.

Figure 5.4 shows the overall distribution of elements in terms of their distance from the predicate; `1` indicates that the element appears right before the predicate, `2` indicates that there is one element between the preceding element and the following predicate, and so on. If the element appears right after the predicate, the distance is counted as `-1`. Since the numbers of post-predicate elements are too small to achieve any generalization, they are excluded from the figures. Post-predicate elements will be discussed in comparison with dialogues in §5.3.

Figures 5.5 and 5.6 show the distance between the element and the predicate depending on information status and persistence. A linear mixed effects model of information status (the distance from the predicate and particles as fixed effects and the speaker as a random effect) indicates that whereas the model with particles is significantly different from the model without them (likelihood ratio test, $p < 0.001$), the difference between the models with and without the distance from the predicate is only marginally significant ($p = 0.060$). This entails
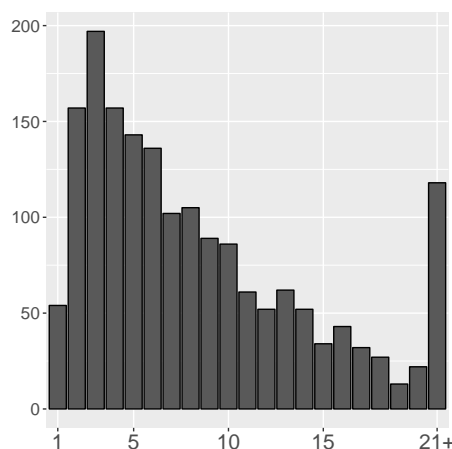
Figure 5.1: Order of all elements

that the effect of particles significantly contributes to the model, but the effect of the distance is inconclusive (see 5.4 for discussion). On the other hand, a linear mixed effects model of persistence (fixed and random effects are the same above) shows that the effects of both particles and the distance are significant to the model ($p < 0.01$ for both the model without particle and that without the distance). The results are also to be discussed more in §5.4.

## 5.2 Clause-initial elements

This section discusses clause-initial elements. It will be argued that shared elements (i.e., unused, declining, inferable, or evoked elements) tend to appear clause-initially in §5.2.1, and that persistent elements tend to appear clause-initially in §5.2.2. From these observations, it will be generalized that topics tend to appear clause-initially, as predicted from the previous literature. Finally in §5.2.3, I discuss the motivations for topics to appear clause-initially.
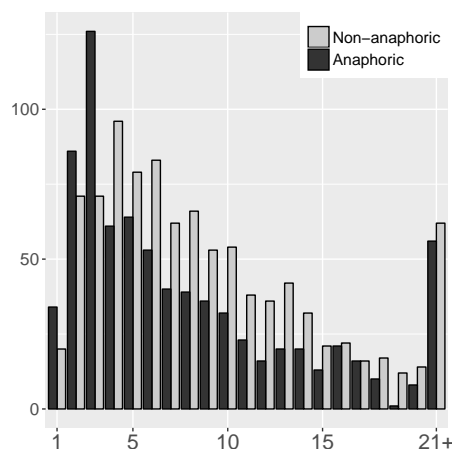
Figure 5.2: Word order vs. infoStatus

### 5.2.1 Shared elements tend to appear clause-initially

Figure 5.2 shows the frequency of elements and their positions based on the information status. Anaphoric elements appear most frequently in the third position. On the other hand, the non-anaphoric elements appear most frequently in the fourth position, but those in the fifth and sixth positions also appear frequently. These distributions of elements in different information statuses appear to replicate the classic observation that topics tend to appear earlier in a clause, i.e., the from-old-to-new principle (Mathesius 1928; Firbas 1964; Daneš 1970; Kuno 1978; Gundel 1988) This is explicitly stated in (1).

(1)     **From-old-to-new principle**: In languages in which word order is relatively free, the unmarked word order of constituents is old, predictable information first and new, unpredictable information last.      (Kuno (1978: p. 54), Kuno (2004: p. 326))

This principle is motivated by accumulative nature of processing utterance; old (or given) elements work as anchor that relates the previous utterance and the
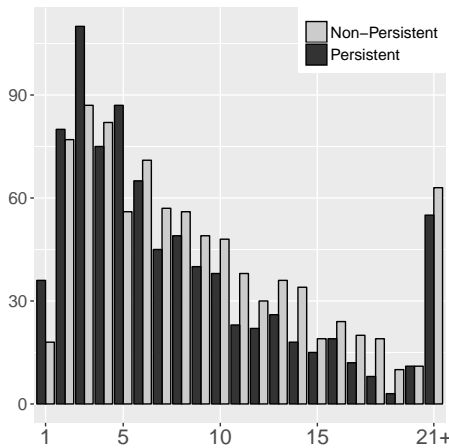
Figure 5.3: Word order vs. persistence

following utterance. This principle appears to be supported by examples such as the following. In (2), *sore* 'it' in line c precedes, which refers to *kasi-pan* 'sweet bread' back in line b, the A element *oziityan* 'grandfather'.

(2) a. uti-no   sohu-tteiuno-ga       okasi-ga sukina  mono-de
      out-GEN grandfather-*toiuno-ga* sweet-*ga* favorite thing-COP
      'Our grandfather likes sweets.'

   b. yoku pan-ya-san-de      kasi-pan-o      kat-te
      often bread-store-HON-LOC sweet-bread-*o* buy-and

      kuru-n-desu-ga
      come-NMLZ-COP.PLT-though
      '(He) often buys sweet bread and comes home,'

   c. e  n  **sore-o** i  maa yoowa  oziityan-wa       issyookenmee
      FL FRG that-*o* FRG FL  in.a.word grandfather-*wa* trying.best

      taberu -n-desu-keredomo
      eat-NMLZ-COP.PLT-though
      'that, he tries his best to eat it, but'
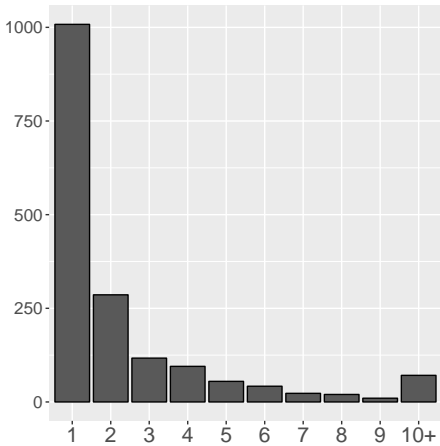
Figure 5.4: Distance from predicate

    d.   he cannot eat all and

    e.   gives leftovers to the dog…        (S02M0198: 244.48-262.82)

Note that *sore* 'that' in line c is not coded by *wa* but by *o*. This shows that clause-initial shared elements are not necessarily coded by topic markers, although it is predicted that elements coded by topic markers would more likely to appear clause-initially than those coded by case markers (see the discussion in §5.2.1.1).

    Similarly in (3), *sore* 'it' in line c refers back to *buraunkan* 'cathode ray tube' and appear at the beginning of the clause, preceding other elements.

(3)    a.   oo-gata-no-ne
           large-type-GEN-FP
           '(It's) a larger type (of cathode ray tube).'

        b.   yoku maa a   hooru-toka-ni aru-yoona oo-gata-no     ee
           often FL    FL hall-etc.-DAT   exist-like   large-tyle-GEN FL
           <u>buraunkan</u>-nan-da-kedomo

           cathode.ray.tube-NMLZ-COP-though
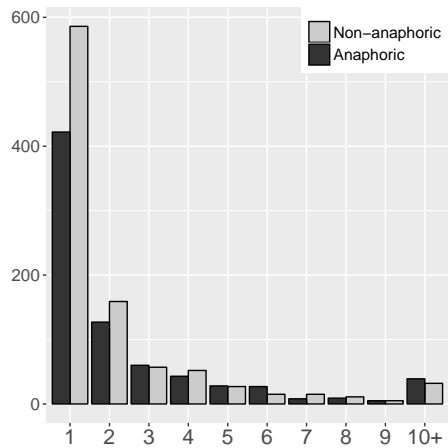
Figure 5.5: Distance from predicate vs. Information status

'(It's) a large type of cathode ray tube typically equipped in a large hall, and'

c. **sore-o**-ne koo <u>kotti-kara</u> <u>kotti-ni</u> | moti-ageru |-toiu-yoona
   that-*o*-FP this.way here-from here-from bring-rise-QUOT-like
   'this (cathode ray tube), (people) brought it from here to there.'

d. some people were doing something like that. (S05M1236: 471.26-490.38)

However, this is not the whole story; there are many counter-examples where non-anaphoric precedes anaphoric. Table 5.1 shows the number of cases where anaphoric precedes non-anaphoric and non-anaphoric precedes anaphoric within the same clause. There are 102 cases where anaphoric precedes non-anaphoric, while there are 63 cases where non-anaphoric precedes anaphoric. The cases where anaphoric precedes non-anaphoric only slightly outnumber the cases where non-anaphoric precedes anaphoric. 63 cases (39.4%) is too large a number to believe that they are mere exceptions of the principle (1).

I do not claim that the principle (1) is not correct, but I do claim that the prin-
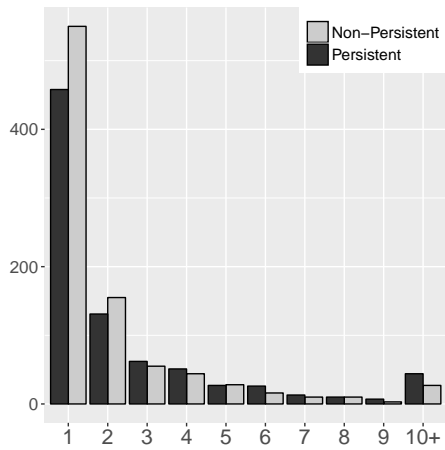
Figure 5.6: Distance from predicate vs. persistence

Table 5.1: Order of anaphoric & non-anaphoric elements

| Anaphoric → Non-anaphoric | Non-anaphoric → Anaphoric |
|---|---|
| 102 | 63 |

ciple does not apply to all cases. Anaphoric elements precede non-anaphoric elements if the anaphoric elements are assumed to refer to the "same" entity which has been already mentioned. In other words, shared elements precede non-anaphoric elements. For example, in (4), *mizu* 'water' is repeatedly mentioned in the utterance, but it is never produced clause-initially. I argue that this is because *mizu* 'water' in (4-b) and later is not assumed to refer to the "same" entity already mentioned in the previous discourse.

(4)  a.  desukara daitai        iti-niti-ni    ni-rittoru-no  **mizu-o**
         so       approximately one-day-for two-litter-GEN water-*o*
         <u>tot</u>-te    kudasai-to  iw-are-te
         drink-and please-QUOT tell-PASS-and

'So we were told to drink two litters of water per day,'

b. syokuzi-no toki-wa  kanarazu magukappu-de ni-hai-bun-no
meal-GEN   time-*wa* surely    mug-with     two-cup-amount-GEN
**mizu-o** <u>nomi</u>-masu-si
water-*o* drink-PLT-and
'whenever we have meal, we drink two cups of water,'

c. totyuu     totyuu-de-mo      kanarazu **mizu-o** ho anoo
on.the.way on.the.way-LOC-also surely     water-*o* FRG FL
<u>nomi</u>-taku-naku-temo
drink-want-NEG-even.if
'also on the way, even if we didn't want to drink water,'

d. nom-as-areru-to       iu  kanzi-de
drink-CAUS-PASS-QUOT say feeling-COP
'we were forced to drink (water).'

e. they think that drinking water is very important.        (S01F0151:
`339.78-366.29`)

In the same way, *tenkan* 'epilepsy' appears many times in (5), but never appear clause-initially.

(5) a. ato      ik-kai      **tenkan** <u>okosi</u>-tara sinu-tte
moreover one-time.CL epilepsy cause-COND die-QUOT
it-te-ta-n-desu-kedo
say-PAST-NMLZ-COP.PLT-though
'(The doctor) said that, if (my dog) get an epilepsy seizure once more,
(the dog) would die, but...'

b. mata so sookoo    si-teru uti-ni    **tenkan** okosi-masi-te
again FRG meanwhile do-PROG while-DAT epilepsy cause-PLT-and
'meanwhile, (the dog) get an epilepsy seizure, and...'

c. The dog recovered this time, but got an epilepsy seizure several times
and finally die. (130.8 sec omitted.)

d. sono boku-ga dekakeru toki-ni    moo     noki-sita-de   **tenkan**
FL   1SG-*ga* go.out    when-DAT already eave-under-LOC epilepsy
<u>okosi</u>-te
cause-and
'When I leave (home), (the dog) had already gotten an epilepsy seizure,
and...'

e. tabun    sin-dei-ta-n-da-roo-to
probably die-PROG-PAST-NMLZ-COP-INFR-QUOT

'probably died...'

f. ta   noki-sita-de    **tenkan** <u>okosi</u>-ta-ga     tame-ni
   FRG eave-under-LOC epilepsy cause-PAST-GEN reason-DAT
   'just because (the dog) get an epilepsy seizure under the eaves...'

g. the dog could not get out of there and died, we [the family members]
   were talking like that.                          (S02M0198: 558.7-712.8)

Whether the speaker refers to the shared entity mentioned previously depends
on the speaker's subjective judgement rather than objective reasoning. In (6), for
example, the anaphoric element *kuruma* 'car' in line c does not appear clause-
initially for the same reason as (4) and (5). However, *kuruma* 'car' in line b and
d are clearly the same entity.

(6)  a. kirauea-kazan-mo    mappu-o kai-masi-te
        Kilauea-volcano-also map-*o*   buy-PLT-and
        'Also for Kilauea, (we) bought a map and'

    b. de   zibun-tati-de ma rentakaa  **kuruma-o** <u>tobasi</u>-te  e
        then self-PL-by   FL  rent-a-car car-*o*      drive-and   FL
        iki-masi-ta
        go-PLT-PAST
        '(we) drove there by rent-a-car by ourselves.'
        (83.52 sec talking about the mountain.)

    c. de   anoo jibun-no koko koko-de  tyotto tome-te  miyoo-to
        and  FL   self-GEN FRG  here-LOC a.bit  stop-and try-QUOT
        omot-ta      toko-ni  koo      **kuruma-o** <u>tome</u>-te
        think-PAST place-DAT this.way car-*o*       stop-and
        'At the place (we) wanted to stop, (we) stopped the car,'

    d. you can take pictures and so on.        (S00F0014: 843.23-940.34)

I argue that, in this case, the speaker does not care about the identity of the car.
Rather, she focuses on talking about her trip to Kirauea; the car she was in is not
important for this speech. As will be discussed in §5.2.2, importance as well as the
identity of the entity contributes to word order in spoken Japanese. Important
(i.e., persistent) elements appear clause-initially.

Interestingly, these elements which are repeatedly mentioned but never appear
clause-initially are not mentioned by zero or overt pronouns. It is especially
difficult to zero-pronominalize *tenkan* 'epilepsy' in (5-b-f) and *kuruma* 'car' in
(6-d).[1] Zero pronouns are considered to be the most accessible topics (Givón

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[1] It is difficult to apply this test in (4) because *mizu* 'water' accompanies numeral modifiers such

1983: 17). To zero-pronominalize, the speaker needs to provide signals to let the hearer know which is the topic as will be discussed in 5.2.3.

From the discussion above, there are at least two predictions testable in the corpus. Firstly, since evoked and inferable elements are coded by topic markers as shown in Chapter 4, it is predicted that elements coded by topic markers tend to appear earlier in a clause (§5.2.1.1). This is because elements assumed by the speaker to be evoked or inferable are also assumed to be shared. Secondly, since pronouns essentially code shared elements which have been mentioned, pronouns are also predicted to appear earlier in a clause (§5.2.1.2). Both predictions are confirmed in the following investigations. Thirdly, I will show that clause-initial elements are not sensitive to activation cost; unused elements can also appear clause-initially (§5.2.1.3). Evoked, inferable, declining, and unused elements are shared (See Table 3.2). Therefore, the claim that shared elements appear clause-initial is supported.

### 5.2.1.1 Topic-coded elements appear clause-initially

Let us test the prediction that elements coded by topic markers tend to appear earlier in a clause. Figure 5.7 shows the distribution of topic-coded elements and their positions. Compare this figure with Figure 5.8, which shows the distribution of case-coded elements and their positions. It is clear that elements coded by topic markers are more skewed to earlier positions within a clause as compared with those coded by case markers.

(7) is an example of *wa*-coded element appearing clause-initially. The *wa*-coded element *hone* 'bone' in line a, which has been discussed in the previous discourse, is intervened with the locative (a tomb for animals in the temple). The intervening part is long and the predicate finally appears in line d.

(7)  a.  ee suriipii-no  itibu-no  oo **hone-wa**
         FL Sleepy-GEN part-GEN FL bone-*wa*
         'Part of bone of Sleepy (dog's name),'
     b.  sono morimati-no    watasi-no senzo-no    o hait-teru
         that  Morimachi-GEN 1SG-GEN   ancestor-*gen* FL enter-PROG
         otera-no
         temple-GEN
         'the temple in Morimachi where my ancestors were there,'
     c.  yahari ano doobutu-no kuyootoo-ga ari-masu
         again  that animal-GEN tomb-*ga*   exist-PLT

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as 'of two litters' and 'two cup of'.

*5 Word Order*
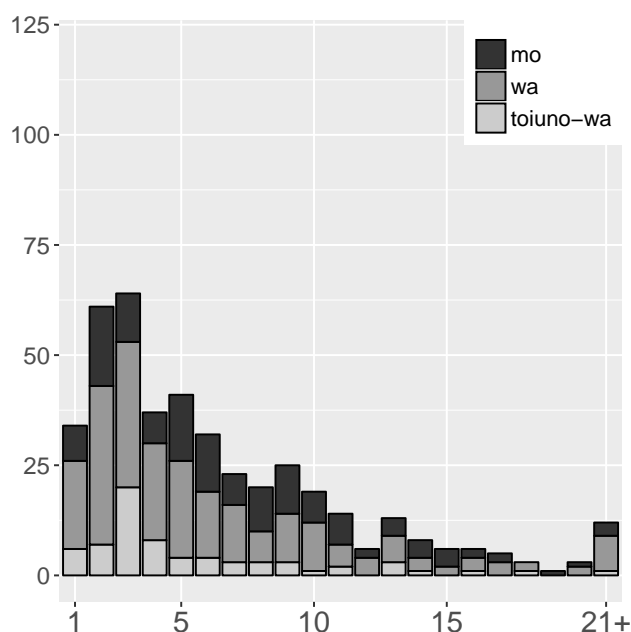


Figure 5.7: Order of arguments coded by topic markers

'there're tombs for animals,'

d.  sotira-no hoo-ni      <u>osame</u>-masite-ne
    that-GEN direction-DAT place-PLT-and
    '(we) placed (his bone) there.'          (S02M1698: 620.12‑634.26)

In (8), *sono ko* 'that puppy', whose referent has appeared in the previous line a, is also an example of *wa*-coded element appearing clause-initially. The element is also intervened by another argument 'distemper'.

(8)  a.  mosi <u>koinu-o</u> kat-tesimat-tara
         if    puppy-*o* keep-PFV-COND
         'If you decided to keep a new puppy,'

     b.  **sono ko-wa**    mata zisutenpaa-ni <u>kakat</u>-te   sin-zyau-kara
         that   puppy-*wa* again distemper-DAT catch-and die-PFV-because
         'the puppy will die of distemper again, so'

     c.  keep a new puppy after this winter, this is what we were told by the
         vet.                                   (S02M0198: 108.68‑126.70)
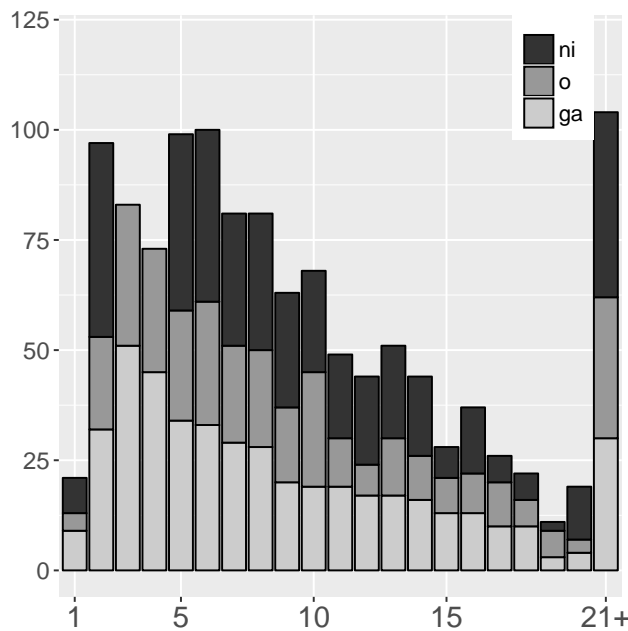
Figure 5.8: Order of arguments coded by case markers

*Wa* appearing at the initial position is already conventionalized, and it is possible to examine by acceptability judgements. It is not acceptable for *wa*-coded P to appear between the focus agent and the predicate except for contrastive reading of *wa*. As the contrast among (9-a-c) shows, the zero-coded P *hon* 'book' in (9-a) right before the predicate is acceptable, while the *wa*-coded *hon* 'book' in the same position as in (9-b) is not acceptable. To express the idea of (9-b), the *wa*-coded P should precede A *taroo* 'Taro'.

(9)  a.  taroo-ga **hon**  yon-deru-yo
         Taro-*ga*  book read-PROG-FP
         'Taro is reading a book.'

     b.  ??taroo-ga **hon-wa**  yon-deru-yo
         Taro-*ga*  book-*wa* read-PROG-FP
         'Taro is reading the book.'

     c.  **hon-wa**  taroo-ga yon-deru-yo
         book-*wa* Taro-*ga*  read-PROG-FP

'Taro is reading the book.' (Constructed)

There is only one example (out of 9 *wa*-coded Ps) in the corpus where *wa*-coded P is preceded by *ga*-coded A. This *wa*-coded P is contrastive, which will be discussed in §5.5.

I propose the hypothesis that elements which belong to the same unit of information structure appear adjacent within a clause. I call this information-structure continuity principle in word order.

(10)     **Information-structure continuity principle**: A unit of information structure is continuous in a clause; i.e., elements which belong to the same unit are adjacent with each other.

This principle explains why (9-b) is not acceptable, while (9-a,c) are acceptable. The information structure of each of the examples (9) are represented in (11). In (11-b), the topic P element *hon-wa* 'book-*wa*' intervenes two focus elements *taroo-ga* 'Taro-*ga*' and *yon-deru* 'read-PROG', which is not acceptable. In (11-c), on the other hand, the topic P does not intervene the domain of focus, and the whole sentence is acceptable. In (11-a), all the elements including *hon* 'book' belong to focus and hence *hon* in this position is acceptable.

(11)     a.     [taroo-ga **hon** yon-deru]$_F$-yo
                Taro-*ga*   book read-PROG-FP
                'Taro is reading a book.'
         b.     ??[taroo-ga]$_F$ [**hon-wa**]$_T$ [yon-deru]$_F$-yo
                Taro-*ga*       book-*wa*     read-PROG-FP
                'Taro is reading the book.'
         c.     [**hon-wa**]$_T$ [taroo-ga yon-deru]$_F$-yo
                book-*wa*     Taro-*ga*   read-PROG-FP
                'Taro is reading the book.'

Interestingly, it is possible for *wa*-coded A to be preceded by *o*-coded P as shown in (12-a) (compare this with (12-b)).

(12)     a.     hon-o **taroo-wa** yon-deru-yo
                book-*o* Taro-*wa*   read-PROG-FP
                'Taro is reading the book.'
         b.     hon-o **taroo-ga** yon-deru-yo
                book-*o* Taro-*ga*   read-PROG-FP
                'Taro is reading the book.'

As has been argued above, the preposed P, *hon-o* 'book-*o*' in (12), is topical, which is represented as in (13).

(13)　a.　[hon-o **taroo-wa**]$_T$ [yon-deru]$_F$-yo
　　　　　book-*o* Taro-*wa*　read-PROG-FP
　　　　　'Taro is reading the book.'
　　　b.　[hon-o]$_T$ [**taroo-ga** yon-deru]$_F$-yo
　　　　　book-*o*　Taro-*ga*　read-PROG-FP
　　　　　'Taro is reading the book.'

As shown in (13-a), the two topic elements *hon-o* 'book-*o*' and *taroo-wa* 'Taro-*wa*' are adjacent with each other and hence this sentence is acceptable. Also in (13-b), the only topic element *hon-o* 'book-*o*' does not intervene the focus elements *taroo-ga*, which is predicted to be acceptable. *Hon-o* 'book-*o*' could be focus instead of topic in (12-b), since given elements can be focus. But it is reasonable to think of a situation where given focus elements are preposed for the sentence to be a smooth transition from the previous sentence. The information-structure continuity principle (10) still holds in either case.

Note that (10) does not refer to word order; rather, it is about adjacency. I argue that this principle is also at work in intonation (see Chapter 6).

What is the difference between clause-initial elements coded by topic markers and those coded by case markers? As has been discussed in §4.4.2, there is a hierarchy of topic coding (86), which is repeated here as (14).

(14)　A, S > P

The hierarchy indicates that evoked or inferable A and S are more likely to be coded by topic markers than P in the same status. Word order is not affected by this hierarchy. Figure 5.9 and 5.10 show word order of anaphoric S and P, respectively. Compare these with Figure 5.11 and 5.12, which show word order of non-anaphoric S and P. Word order of A is omitted because the number is too small. As can be seen from the contrasts between Figure 5.9 and 5.11 and between Figure 5.10 and 5.12, anaphoric elements are more likely to appear earlier in a clause than non-anaphoric elements. Although the contrast is less clear between anaphoric vs. non-anaphoric P, especially notable is that there are three times as much anaphoric Ps as non-anaphoric Ps in the third position. (There are 27 anaphoric Ps in the third position, while there are only 10 non-anaphoric P.) I speculate that the contrast is less clear in anaphoric vs. non-anaphoric P than S because there are cases like (4) and (5), where the element is annotated as anaphoric but is considered to be not shared; in this case, P appear pre-predicatively rather than

clause-initially. Therefore, I argue that, while elements coded by topic markers are likely to appear earlier in a clause, word order is independent of topic marking. Topic markers are sensitive to given-new taxonomy as has been discussed in Chapter 4; clause-initial position is sensitive to shared-ness. Topic markers and word order are sensitive to different aspects of topichood.
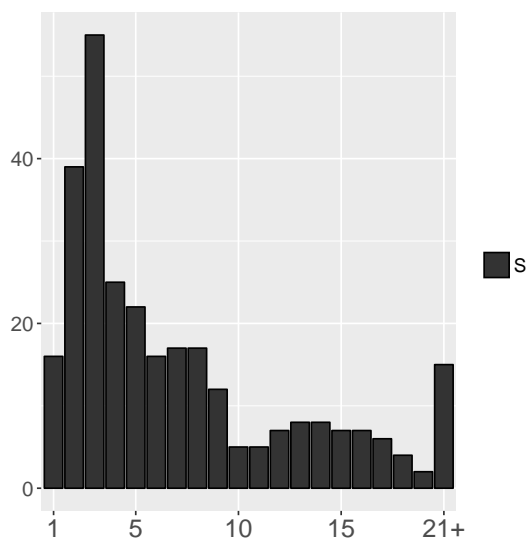


Figure 5.9: Word order of anaphoric S

### 5.2.1.2 Pronouns appear clause-initially

Next let us examine the position of pronouns. Figure 5.14 shows the positions of pronouns. Figure 5.1, repeated as Figure 5.13 for comparison, represents the distributions of all elements. Although the number of pronoun is small, it is clear, comparing with the overall distributions of elements in Figure 5.13, that the order of pronouns is skewed to earlier positions within a clause. Hence, it is reasonable to conclude that pronouns are likely to appear earlier in a clause. Examples of pronouns appearing earlier in a clause are shown in (2) and (3) above. The result is compatible with Yamashita (2002) and Kondo & Yamashita (2008).
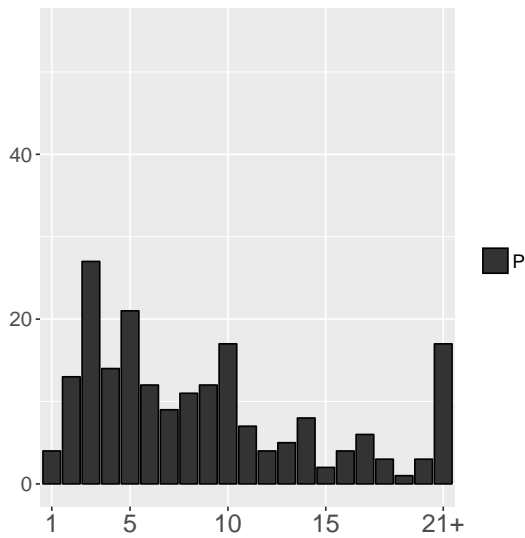
Figure 5.10: Word order of anaphoric P
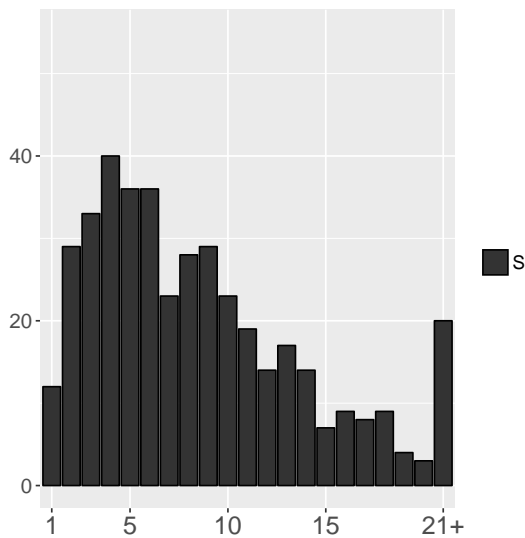


Figure 5.11: Word order of non-anaphoric S

*5 Word Order*
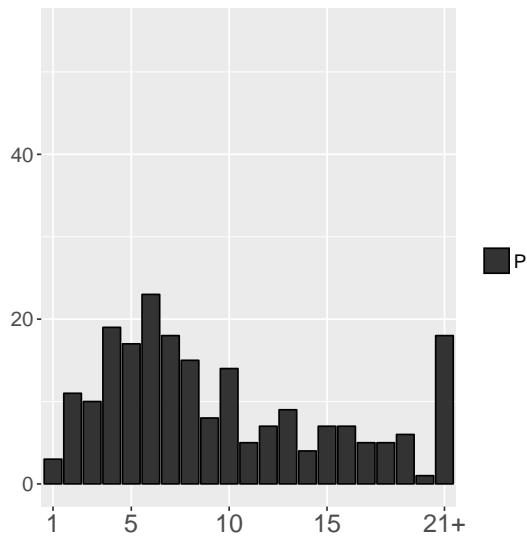


Figure 5.12: Word order of non-anaphoric P
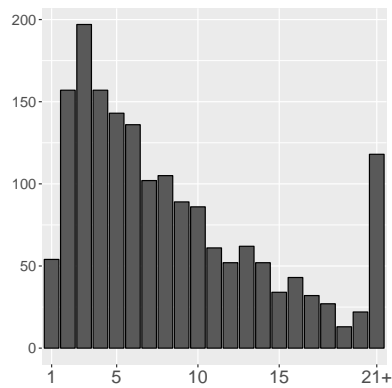


Figure 5.13: Order of all elements
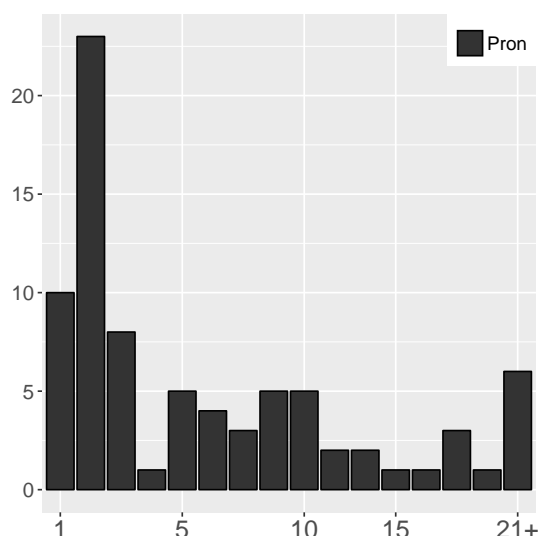
Figure 5.14: Order of pronouns

### 5.2.1.3 Unused elements appear clause-initially

Not only evoked, inferable, and declining elements, unused elements appear clause-initially. Elements coded by copula followed by *ga* or *kedo* are unused elements as has been discussed in Chapter 4.[2] It is very unnatural when they are preceded by other arguments. For example, as shown in the contrast between (15-a) and (15-b), *rei-no ken* 'that issue' cannot be felicitously preceded by another argument, in this case *kotira-de* 'this side'.

(15)  a.  **rei-no  ken-desu-ga**          kotira-de       nantoka
         that-GEN issue-COP.PLT-though this.side-LOC whatever
         nari-sou-desu
         become-will-COP.PLT
         'Regarding that issue, (I) guess (we) figured the way out.'  (modified
         from Niwa 2006: 283)
     a′. ??kotira-de  **rei-no  ken-desu-ga**          nantoka
         this.side-LOC that-GEN issue-COP.PLT-though whatever

---

[2] See §2.4.2.6 for the reason why An element coded by copula followed by *ga* or *kedo* is not considered to be a clause.

> nari-sou-desu
> become-will-cop.plt

In a similar manner, *yamada-no koto* 'the issue of Yamada' cannot naturally be preceded by adverbial, *ano mama* 'that way' as shown in the contrast between (16-a) and (16-b).

(16)   a.   **yamada-no koto-da-kedo** ano mama hot-toi-te     ii-no-kana
            Yamada-gen issue-cop    that way  leave-let-and good-nmlz-q
            'Regarding Yamada, is it OK to just leave him?'    (Niwa 2006: 283)
       a′. ??ano mama **yamada-no koto-da-kedo** hot-toi-te     ii-no-kana
            that way  Yamada-gen issue-cop    leave-let-and good-nmlz-q

Unused elements include indefinite elements although it is counter-intuitive to consider indefinite NPs as being "shared". For example, as has been mentioned in §3.3.4.2, an indefinite element can appear clause-initially if the speaker assumes the hearer to remember that the speaker (or somebody else) has talked about a category the element refers to. For example, as shown in (17-Y), repeated from (22) in §3.3.4.2, having mentioned a category of mango makes it possible for *mangoo* 'mango' to appear clause-initially, even though *mangoo* 'mango' is clearly indefinite since the hearer has no way to tell which mango the speaker ate. I regard this as unused and hence shared.

(17)   Context: Y told H that he had never seen and eaten mangoes. H told Y that they are delicious. Several days later, Y finally ate a mango.
     Y:  **mangoo** konoaida    miyako-zima-de   tabe-ta-yo
         mango   the.other.day Miyako-island-loc eat-past-fp
         '(I) ate (a) mango (we talked about) in Miyako island the other day.'
     Y′:  konoaida    miyako-zima-de  **mangoo** tabe-ta-yo
         the.other.day Miyako-island-loc mango   eat-past-fp
         '(I) ate (a) mango in Miyako island the other day.'

In this case, however, *mangoo* 'mango' in the pre-predicate position is also felicitous as in (17-′), which indicates that this is a borderline case; *mangoo* can be a topic in the sense that it is unused and the speaker has talked about before, while it can be a focus in the sense that it is new to the discourse and indefinite.

On the other hand, in (18-Y), where the speaker does not assume the hearer to remember that the speaker has talked about mango, clause-initial *mangoo* 'mango' is infelicitous, whereas pre-predicate *mangoo* is perfectly acceptable.

(18)    Context: Y and H have not met for a few months.

   H: What did you do these days?

   Y: ??**mangoo** konoaida  miyako-zima-de tabe-ta-yo
     mango the.other.day Miyako-island-LOC eat-PAST-FP

                      (=(17-Y))

   Y′: konoaida  miyako-zima-de **mangoo** tabe-ta-yo
     the.other.day Miyako-island-LOC mango eat-PAST-FP
     '(I) ate (a) mango in Miyako island the other day.'   (=(17-Y′))

Therefore, it is reasonable to conclude that shared elements include those which refer to categories the speaker (or somebody else) has talked about and that they can appear clause-initially.

### 5.2.2 Persistent elements tend to appear clause-initially

Persistent elements are skewed to earlier positions than non-persistent elements as shown in Figure 5.3.

 The following are examples of persistent elements appearing clause-initially. In (19), *hihu-byoo* 'skin-disease' in line a, coded by the topic marker *toiuno-wa*, appear clause-initially. The predicate appear in line c, intervened by a proposition in line b and also another argument (*hito-ni* 'person-by') of the clause. Also in line d, *kore-wa* 'this-*wa*', referring to 'skin-disease', appear clause initially.

(19) a. **hihu-byoo-toiuno-wa**
    skin-disease-*toiuno-wa*
    'The skin disease,'

   b. damat-tei-temo
    keep.silent-PROG-even.if
    'even if you don't tell people about it,'

   c. hito-ni  <u>mir-are-te-simau</u> mono-dat-ta-node
    person-by see-PASS-and-PFV thing-COP-PAST-because
    'people can see it, so'

   d. **kore-wa** ano omot-ta  izyooni seesintekini <u>kutuu-desi</u>-ta
    this-*wa* FL think-PAST more mentally painful-COP-PAST
    'this was mentally painful more than I had expected.' (S02F0100:
    222.75-231.09)

Similarly, in (20), *sore-wa* 'that-*wa*' in line b and g, and *sore-dake-wa* 'that-only-wa* in line i, all of which refer to 'chelow kebab' in line a, appear clause-initially.

(20)  a.  There is a dish called **chelow kebab**.

      b.  de  **sore**-**wa** eeto gohan-ni eeto bataa-o  maze-te
          and that-*wa* FL  rice-to    FL  butter-*o* mix-and
          'That, you mix rice with butter…'

      c.  on top of that you put spice,

      d.  on top of that you put mutton,

      e.  you mix it and eat it.

      f.  There were many dishes of this kind.

      g.  **sore**-**wa** kekkoo       sonnani hituzi-no oniku-no kusasa-mo
          that-*wa* to.some.extent not.really sheep-GEN meat-GEN smell-also
          naku-te
          not.exist-and
          'It did not have smell of mutton…'

      h.  I thought it was delicious.

      i.  **sore**-**dake**-**wa** anoo iran-ryoori-no naka-de   <u>taberu</u> koto-ga  ano
         that-only-*wa* FL  Iran-dish-GEN inside-LOC eat     thing-*ga* FL
         deki-ta   ryoori-desu
         can-PAST dish-COP
         'This is the only dish I could eat among Iran dish.'    (S03F0072:
         446.03-447.66)

As has been mentioned in 5.1, both word order and particles significantly contribute to predict persistence, contrary to the result of Imamura (2017), who concludes that "scrambling [PSV order] is pertinent to anaphorically prominent but cataphorically non-prominent objects and that topicalization is especially germane to 'continuing topic' as the referent of the object" (p. 78). There are a few potential reasons for why the results of the present work are different from those of Imamura (2017). One potential reason is the difference of modalities; Imamura (2017) employed a corpus of written Japanese (*the Balanced Corpus of Contemporary Written Japanese*, BCCWJ), while the present study employs spoken Japanese. Related to the first point, clause-chaining, which I will point out is one of the motivations for clause-initial elements tend to be persistent (see the next section), only appears in spoken Japanese, but not in written Japanese. In any case, this is a mere speculation and further studies are needed to analyze why the results of two studies differ.

### 5.2.3 Motivations for topics appearing clause-initially

As has been pointed out by many linguists, topics tend to appear clause-initially because they function as an anchor of the previous discourse. The principle (1) is motivated by this processing convenience (e.g., E. O. Keenan 1977). Clause-initial locatives and other adjectives can be also explained by this motivation. This anchoring function best works when the activation cost of the referent is relatively high (Givón 1983); i.e., when the referent of the element in question is inferable or declining. When the activation cost is low, i.e., the topic is continuous from the previous discourse, the element in question that refers to the topic is expected to be zero (Givón 1983; Gundel, Hedberg & Zacharski 1993; Ariel 1990); there is no need for anchoring because the topic is already evoked and the hearer expects the topic to be also mentioned in the current sentence. This explanation predicts that the distance between the element in question and the antecedent is larger when the element in question is expressed in the form of NP instead of zero. Figure 5.15 appears to support this prediction, although a statistical analysis indicates that the expression types do not significantly contribute to predict the distance. This paragraph discuss NPs with long distance. See the discussion below for NPs with shorter distance. The whisker plot in FIgure 5.15 shows the distance between the element in question (NP vs. (explicit) pronoun vs. zero pronoun) and its antecedent. It measures the time between when the first mora of the element question is produced and when the first mora of the antecedent produced. The figure shows that the distance between NP and the antecedent is larger than that of zero and the antecedent in many cases. Zero pronouns are assumed to be produced at the time when the first mora of the predicate is uttered.

(21) exemplifies this pattern, where zero pronouns are indicated by Ø. In line b, *san-nin-me* 'the last person' precedes adjuncts ('last fall') and coded by a variation of *toiuno-wa* (*ttuuno-wa*). Zero pronouns Ø are inserted right before the predicate for the purpose of presentation, but this does not affect the analysis. Since this person is one of the three people mentioned in line a, this person is inferable through a part-whole relation. The topic moves on to another person in line f, who is also one of the three people mentioned in line a. In line j, the speaker again refers to the person mentioned in line b. Also this time, the element *moo hitori-wa* 'the other person' appears near clause-initially, preceding other arguments. The referent keeps to be mentioned until line q. Finally, the speaker starts talking about himself in line r, in which case the element *boku-wa* '1SG-*wa*' appear near clause-initially.

5 Word Order

(21) a. All of us three quitted this job, interestingly, or strangely.

b. de anoo **san-nin-me-ttuuno-wa** tui se ee kyonen-no o
and FL three-CL-ORD-*toiuno-wa* just FRG FL last.year-GEN FL
aki-ni yame-ta-n-desu-kedomo
fall-in quit-PAST-NMLZ-COP.PLT-though
'The last person quitted this fall.'

c. **soitu-wa** maa itiban saisyo-ni yame-tai yame-tai ttut-ta
3SG-*wa* FL most first-in quit-want quit-want QUOT.say-PAST
ningen-nan-desu-kedomo
person-NMLZ-COP.PLT-though
'He was the first person who said he wanted to quit.'

d. This kind of thing often happens.

e. All of us three quitted eventually.

f. ndee <u>hitori-wa</u>-desu-ne
then one.person-*wa*-COP.PLT-FP
'Concerning another person,'

g. I guess this is closely related to the fact that we worked in Mobara.

h. de hitotu <u>sono</u> <u>hito-wa</u> ee ma yappari tonikaku
then one.thing that person-*wa* FL FL as.expected any.way
hatarai-te okane-ga koo te-ni Ø hairu-tte iu koto-ni
work-and money-*ga* this.way hand-to Ø get.in-QUOT say thing-to
itiban-no kati-o miidasi-ta wake-desu-ne sono ziki-ni
most-GEN value-*o* find-PAST reason-COP.PLT-FP that time-at
'At that time this person found it most valuable to work hard and
gain money.'

i. (Explanation about his view on working. 9.3 sec.)

j. de moo **hitori-wa** maa **kare-mo** hi hizyooni mobara-o
then more one.person-*wa* FL 3SG.M-also FRG very Mobara-*o*
aisi-teru-n-desu-ga
love-PROG-NMLZ-COP.PLT-though
'The other one, who also loves Mobara (a place name),'

k. kondo-no sigoto-tte atarasiku Ø tui-ta sigoto-tteiuno-wa
next-GEN job-QUOT newly Ø acquire-PAST job-*toiuno-wa*
'(his) next job, the new job (he) acquired is...'

l. maa inaka-no hoo-no sigoto-nan-desu-ne
FL rural-GEN area-GEN job-NMLZ-COP.PLT-FP
'in rural area.'

m. de **kare** iwaku-desu-ne
   then 3SG.M say-PLT-FP
   'According to what he says,'

n. sono yama-ga      nai        tokoro-ni-wa Ø sum-e-nai-to
   FL   mountain-*ga* not.exist place-at-*wa*  Ø live-can-NEG-QUOT
   'He says that he cannot live in places without mountains.'

o. Though Mobara does not have mountains, the sky in Mobara is clear.

p. We call it Mobara sky. Mobara has such an idyllic scene.

q. sore-ga maa doositemo   nai-to        Ø sum-e-nai-tte      iu
   that-*ga* FL  by.all.means not.exist-COND Ø live-can-NEG-QUOT say
   koto-o   sono ziki-ni  Ø sato-ta-n-zya-nai-ka-to
   thing-*o* that  time-in  Ø learn-PAST-NMLZ-COP-NEG-Q-QUOT
   '(He) learned at that time that (he) can't live without such scene (I
   guess).'

r. de <u>boku-wa</u>-to ii-masu-to
   then 1SG-QUOT say-PLT-COND
   'Talking about myself…'

s. …                                      (S05M1236: 639.40-738.22)

In this type of example, clause-initial elements especially coded by topic markers
function as an anchor to the previous discourse.
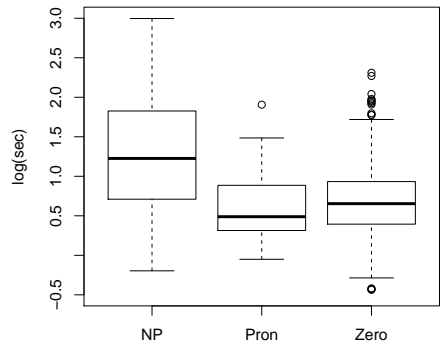


Figure 5.15: Anaphoric distance vs. expression type

However, Figure 5.15 also indicates that (explicit) pronouns (*kore* 'DEM.PROX

(this)', *sore* 'DEM.MED (this/that)', *are* 'DEM.DIST (that)', *kare* '3SG.M (he)', *kanozyo* '3SG.F (she)'[3] and zero pronouns do not differ from each other. Moreover, there are NPs which refer to the immediate antecedent; Whereas more than half of the NPs have longer distance than explicit and zero pronouns, the figure also shows that many NPs have distance as short as that explicit and zero pronouns. In fact, a fixed effects analysis for the distance (the expression type as a fixed effect and the speaker as a random effect) indicates that expression types are not a significant factor to predict the distance. For example, in the previous example (21), the referent of *hitori* 'one person' in line f is mentioned in line h as *sono hito* 'that person' again, although the distance is not very far.[4] In a similar manner, the referent of *san-nin-me* in line b is mentioned immediately following clause (line c) as *soitu* '3SG'. These examples are not mere exceptions. in fact, 74.1% of secondly mentioned referents are still expressed in the form of NP; only 21.4% are expressed as zero and 4.6% as pronoun as shown in Table 5.2 and Figure 5.16. Figure 5.16 and Table 5.2 show the expression type of the element in question based on how many times the referent is mentioned. "2" indicates that the element in question is second mentioned, "3" indicates that it is third mentioned, and so on. The ratio of zero increases as the referent keeps to be mentioned. The fact that the referent introduced is mentioned repeatedly is also reported in Clancy (1980), who investigates Pear Stories; this pattern is not unique to the corpus of the current study. (22) is another example of two NPs which refers to the same referent adjacent with each other. In this example, the very long word *yuugosurabia-syakaisyugi-kyoowakoku* 'Socialist Federal Republic of Yugoslavia' is repeated twice.

(22)  a.  ee kon ma kono tiiki ee yu  ma
          FL FRG FL  this  area FL FRG FL
          **kyuu-yuugosurabia-syakaisyugi-kyoowakoku**-toiu
          former-Yugoslavia-socialist-republic-QUOT
          tokoro-nan-desu-keredomo
          place-NMLZ-COP.PLT-though
          'This area is called Socialist Federal Republic of Yugoslavia,'
      b.  kono **yuugosurabia-syakaisyugi-kyoowakoku**-tteiuno-wa
          this   Yugoslavia-socialist-republic-*toiuno-wa*

---

[3] *Kare* '3SG.M (he)' and *kanozyo* '3SG.F (she)' are very rare in spoken Japanese. Instead, *kono hito* 'this person' or similar expressions are used more frequently. However, this study does not count them as pronouns.

[4] The impression of line g is inserted clause rather than topic shift.

> motomotoga ee minzoku-tairitu-no hagesii tiiki-de-gozai-masi-te
> originally    FL ethnic-conflict-GEN severe  area-COP-PLT-PLT-and
> 'this Socialist Federal Republic of Yugoslavia is an area with severe
> ethnic conflicts...'                              (S00M0199: 81.95-94.42)

Why does the speaker repeat the same referent adjacent with each other, al-
though s/he can fairly assume that the referent has been already evoked by the
first mention? In fact, the second 'Socialist Federal Republic of Yugoslavia' in
line b cannot be omitted contrary to what is claimed about the nominal forms
(Givón 1983; Gundel, Hedberg & Zacharski 1993; Ariel 1990). Why?

Table 5.2: Nth mention vs. expression type

|         | 2       | 3       | 4       | 5       | 6+      |
|---------|---------|---------|---------|---------|---------|
| NP      | 260     | 135     | 83      | 54      | 255     |
|         | (74.1%) | (64.9%) | (58.0%) | (52.4%) | (40.5%) |
| Pronoun | 16      | 14      | 9       | 13      | 20      |
|         | (4.6%)  | (6.7%)  | (6.3%)  | (12.6%) | (3.2%)  |
| Zero    | 75      | 59      | 51      | 36      | 355     |
|         | (21.4%) | (28.4%) | (35.7%) | (35.0%) | (56.3%) |
| Sum     | 351     | 208     | 143     | 103     | 630     |
|         | (100%)  | (100%)  | (100%)  | (100%)  | (100%)  |

Since the most frequent pronouns is zero pronoun in Japanese as indicated
in Figure 5.16 and Table 5.2, the speaker needs to make sure that the hearer un-
derstand which referent zero pronouns refer to. Therefore, the speaker needs to
establish the referent as a topic before s/he uses zero.[5] This might be related to
the observation in Lambrecht (1994: p. 136) that focus elements cannot be the
antecedent of zero, while topic elements can. Compare (23) and (24) (the accept-
ability judgements are based on Lambrecht. Information structure is added by
the present author). In (23), *John* is interpreted as topic (by default) in (23-b), in
which case zero is acceptable.

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[5] As pointed by one of the reviewers (Morimoto), it is possible to replace 'this Socialist Federal
Republic of Yugoslavia' in line b of (22) with pronoun-like form such as *kono kuni* 'this coun-
try'. My argument here still holds because the pronoun-like form 'this country' is much more
informative than zero pronoun. The following argument by Lambrecht (1994) also suggests
that focus can be the antecedent of overt pronouns, but not zero pronouns. See examples (23)
and (24).
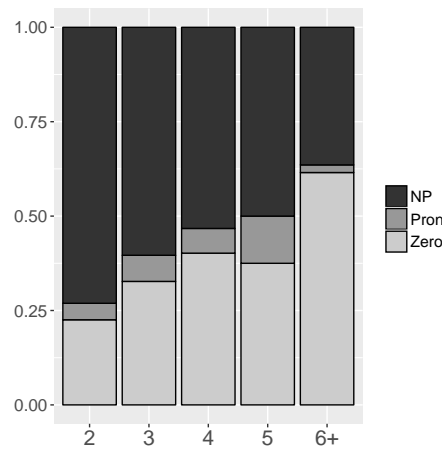
Figure 5.16: Nth mention vs. expression type

(23)  a.  John married Rosa, but he didn't really love her.
      b.  [John]$_T$ [married Rosa]$_F$, but Ø didn't really love her.

On the other hand, in (24), *John* is focus because it is the answer to the question, in which case zero is not acceptable as in (24-b). Only explicit pronoun is acceptable as shown in (24-a).

(24)  Q:  Who married Rosa?
      A:  a.  John married Rosa, but he didn't really love her.
          b.  *?[John]$_F$ [married Rosa]$_T$, but Ø didn't really love her.

Why are these pronouns or NPs which refer to the immediate antecedent appear (near) clause-initially? I argue that, in addition to the from-old-to-new principle (1), the persistent-element-first principle works in a spontaneous speech.

(25)  **Persistent-element-first principle**: In languages in which word order is relatively free, the unmarked word order of constituents is persistent element first and non-persistent element last.

One of the factors which motivate this principle is clause-chaining. In spoken Japanese, a chain of clauses is frequently observed as schematized in (26), where the speaker announces the topic at the beginning and continues to talk about it
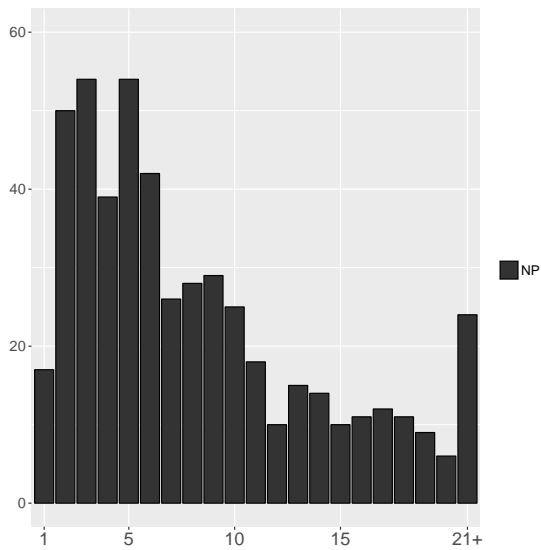
Figure 5.17: Antecedent's word order of NPs
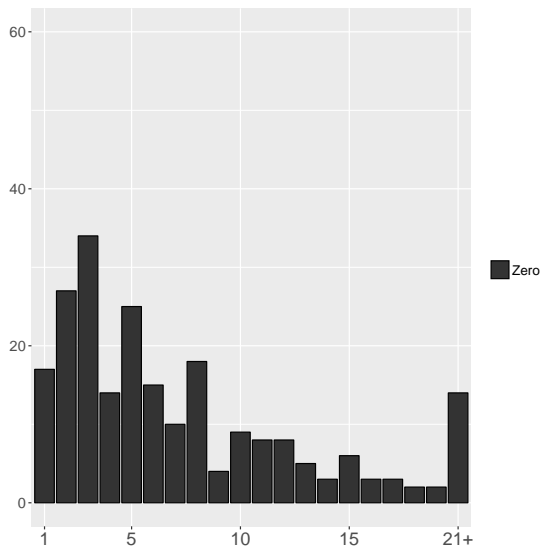


Figure 5.18: Antecedent's word order of zero pronoun

5 Word Order

by a chain of multiple clauses.[6]

(26)   a.   | Topic |
       b.   | Clause1 |
       c.   | Clause2 |
       d.   | Clause3 |
       e.   ...

A specific example of clause-chaining is shown in (27), where the topic 'Everest Trail' in line a is preannounced, and the following clauses (b–f) is about this topic 'Everest Trail'.

(27)   a.   **kono eberesuto-kaidoo-toiuno-wa**
            this   Everest-trail-QUOT-*wa*
            'This Everest Trail is'
       b.   tibetto-to  nepaaru-no kooeki-ro-ni-mo       nat-te
            Tibet-COM Nepal-GEN   trade-road-DAT-also become-and
            ori-masi-te
            PROG-PLT-and
            'also used for trading between Tibet and Nepal.'
       c.   ma zissai-wa  nihon-de   iu-to        ‖
            FL actual-*wa* Japan-LOC say-COND
            'Say, in Japan for example,'
       d.   Ø takao-san-mitaina       yama-miti-nan-desu-keredomo
            Ø Takao-mountain-like mountain-road-NMLZ-COP.PLT-though
            'it's like a road in Mt. Takao or something.'
       e.   genti-no   hito~bito-nitotte-wa ee Ø tuusyoo-ro-to       iu-yoona
            local-GEN person~PL-for-*wa*      FL Ø trade-road-QUOT say-like
       f.   insyoo-no       Ø miti-desi-ta
            impression-GEN Ø road-COP.PLT-PAST
            'it was a road like trading road for local people.'
                                                    (S01F0151: 105.73-120.14)

This pattern is useful because which referent the speaker talks about in the chain of clauses in question.

Figure 5.17 and 5.18 show word order of antecedents of NPs and zero pronouns, respectively. Although the contrast is subtle, the antecedents of zero pronouns

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[6] This is also pointed by Michinori Shimoji (p.c.) on Ryukyuan Languages, which belong to the same language family as Japanese.

are more skewed to earlier positions than NPs.

Consider the following example (28). The speaker mentions the topic 'the participants of the trekking' first in line a, and describes this in the following discourse. After (28-f), the speaker extends the topic and describes each participants.

(28)    a.    e **torekking-sankasya**-nituki-masite-wa
            FL trekking-participant-about-PLT-*wa*
            'Concerning the participants of this trekking,'

    b.    moo hontooni ni-zyuu-go-sai-no
            FL    really    two-ten-five-years.old-GEN
            ooeru-san-kara
            working.woman-HON-from
            'from 25-year-old working lady,'

    c.    nana-zyuu-ni-sai-no        ozii-san-made
            seven-ten-two-years.old-GEN old.guy-HON-till
            'to 72-year-old elderly man,'

    d.    hizyooni takusan-no hito~bito-ga
            very    many-GEN  person~PL-*ga*
            'many people...'

    e.    no, not many people,

    f.    ta-syu-ni       wataru nenree-soo-no hito-ga    i-te
            many-kind-DAT cover    age-tier-GEN    person-*ga* exist-and
            omosirokat-ta-desu
            interesting-PAST-PLT
            'there were many kinds of people from wide age range and it was
            interesting.'            (S01F0151: 597.67-610.87)

In this kind of example, clause-initial elements do not refer to zero pronouns as constituents in the following clauses, but are only pragmatically associated with the constituents in the following clauses (see also §4.4.3).

Not all clause-initial antecedents of zero are coded by topic markers. Figure 5.19 is a bar plot of expression types of elements based on the particles of their antecedents. According to the figure, the antecedents of zero pronouns are more likely to be coded by *wa* or *toiuno-wa* than those of overt NPs, although there are many antecedents of zeros coded by *ga* or *o*.

In the following example (29), *waru-gaki* 'brats' which is coded by *ga* clause-initially in line a is the antecedent of the zero in line b.

Table 5.3: Antecedent's particle vs. current expression type

|         | *toiuno-wa* | *wa*    | *ga*    | *o*     |
|---------|-------------|---------|---------|---------|
| NP      | 11          | 38      | 80      | 89      |
|         | (36.7%)     | (46.3%) | (63.0%) | (74.8%) |
| Pronoun | 4           | 3       | 5       | 3       |
|         | (13.3%)     | (3.7%)  | (3.9%)  | (2.5%)  |
| Zero    | 15          | 41      | 42      | 27      |
|         | (50.0%)     | (50.0%) | (33.1%) | (22.7%) |
| Sum     | 30          | 82      | 127     | 119     |
|         | (100%)      | (100%)  | (100%)  | (100%)  |
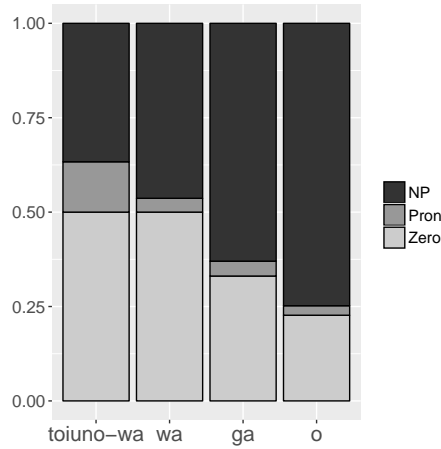


Figure 5.19: Antecedent's particle vs. current expression type

(29)  a.  a dokka-no      kinzyo-no       **waru-gaki-ga**
          FL somewhere-GEN neighborhood-GEN bad-brat-*ga*
          sute-inu-o     mi-te
          abandon-dog-*o* look-and
          'Brats around here found this abandoned dog, and'
      b.  akai penki-o hana-no  ue-ni      Ø nut-ta-n-daroo-to
          red  paint-*o* nose-GEN above-DAT Ø paint-PAST-NMLZ-INFR-QUOT
          '(they) must have painted the dog's nose red.'
      c.  (we) were talking like this.        (S02M0198: 176.26-184.61)

This might sound a priori to some readers because Japanese is traditionally ar-
gued to be an SOV language: of course *ga*-coded elements are subjects and pre-
cede other arguments. However, what I claim is that the persistent-element-first
principle (25), in addition to the from-old-to-new principle (1), is one of the mo-
tivations for so-called subjects (A and S) to precede other arguments.

   Another motivation has been pointed out for topic elements immediately re-
peated clause-initially. Den & Nakagawa (2013) discuss cases where clause-initial
topics are used as fillers. Since topics have already been evoked in the speaker's
mind, the cost of producing topics is lower than that of producing new elements.
While the speaker utters the topic, s/he plans the following utterance. They inves-
tigated conversations and found that the topic elements repeated immediately af-
ter the previous speaker's utterance complementarily distribute with fillers. They
also found that the length of the final mora of the topic phrase (typically *wa*) cor-
relates with the length of the following utterance (see also Watanabe & Den 2010).
In the following example (30), not only 'Serbian people' is repeated twice in line
a and b, the whole sentence is almost repeated; the sentences in line a and b con-
vey almost the same proposition. This is another piece of evidence that supports
their claim; while repeating almost the same proposition, the speaker can plan
what to say next about this topic.

(30)  a.  sono **serubia-zin-no**    **kata-tati**-ga    soko-ni-wa   ma
          that  Serbia-people-GEN person.PLT-PL-*ga* there-DAT-*wa* FL
          hazimete ee serubia-teekoku-toiu kokka-o tukuru-no-ga   maa
          first.time FL Serbia-empire-QUOT nation-*o* make-NMLZ-*ga* FL
          zyuu-ni-seeki-no       ma owari-gurai-nan-desu-ga
          ten-two-century-GEN FL  end-around-NMLZ-COP.PLT-though
          'Thoese Serbian people built a nation called the Serbian Empire to-
          wards the end of the eleventh century.'

b. ee kono ziki  maa **serubia-no kata-tati**-ga    maa koko-ni   tu
   FL this   time FL    Serbia-GEN person.PLT-*ga* FL   here-DAT FRG
   kokka-o tukut-te    ee serubia-teekoku-toiu koto-de
   nation-*o* make-and FL Serbia-empire-QUOT  thing-COP.and
   'Around this time Serbian people build a nation, this is Serbian Em-
   pire and'

c. ee ryuusee-o Ø kiwame
   FL flourish-*o* Ø be.extreme
   '(it) flourished.'

d. At that time from north Catholic was coming, and from south Greek
   Orthodox was coming,

e. though they are both Christian,

f. ee ni-keetoo-no      syuukyoo-no naka-de     seekatu-o Ø
   FL two-stream-GEN religion-GEN inside-LOC life-*o*    Ø
   si-te-iku    naka-de
   do-and-go inside-LOC
   'While (they) were living surrounded by two streams of religion,'

g. ee serubia-teekoku-tosite ma dotira-o erabu-ka-tteiu  na   ko   ee
   FL Serbia-empire-as       FL   which-*o* choose-Q-QUOT FRG FRG FL
   koto-no     naka-de
   thing-GEN inside-COP.and
   '(they) faced a question of which one to choose.'

h. ee ma minami-gawa-no girisya-seekyoo-o  Ø toru
   FL FL south-side-GEN    Greek-Orthodox-*o* Ø choose
   wake-nan-desu-ga
   reason-NMLZ-COP.PLT-though
   '(They) eventually chose Greek Orthodox.'                (S00M0199:
   212.34-221.02)

### 5.2.4  Summary of clause-initial elements

This section investigated characteristics of clause-initial elements. It turned out
that shared and persistent elements tend to appear clause-initially. Not only
this study confirmed the classic observation that topics tend to appear clause-
initially, this section and the next section analyze what kind of topics appear
clause-initially. I also discussed motivations for clause-initial topics.

## 5.3 Post-predicate elements

While Japanese is reported to be a verb-final language (Hinds 1986; Shibatani 1990), some elements appear after the verb in spoken Japanese (Kuno 1978; Ono & Suzuki 1992; Fujii 1995; Takami 1995a,b; T. Ono 2006; Nakagawa, Asao & Nagaya 2008). The following are examples of post-predicate elements. Since post-predicate elements are very rare in monologues, the examples are from the dialogue part of CSJ. *Kono hito* 'this person' in (31) and *terii itoo* 'Terry Ito (A person's name)' in (32) are produced after the predicates *yat* 'do' and *kake* 'wear', respectively.

(31)  R:  nani  yat-teru-no  **kono hito**
         what  do-PROG-NMLZ this   person
         'What is (he) doing, this person?'      (D02F0028: 193.30-194.45)

(32)  L:  sangurasu-toka kake-te-masu-yo-ne  **terii  itoo-tte**
         sunglasses-HDG wear-PROG-PLT-FP-FP Terry Ito-QUOT
         '(He) is wearing sunglasses, isn't he, Terry Ito?'      (D02F0015: 359.17-362.42)

This section investigates the information structure of post-predicate construction of this kind. Although post-predicate expressions could be adverbs, connectives, and other adjuncts, this study only examine noun phrases.

### 5.3.1 Strongly evoked elements appear after predicate

Takami (1995a: p. 136) argues that postposed elements are elements other than focus. For example, the answer to a question or *wh*-phrase cannot be postposed naturally. (33) is an example of a postposed element 'a 10-carat diamond ring' as the answer to the question 'what'. While the sentence itself is natural, the postposed element cannot felicitously be the answer to a question.

(33)  Q:  What did Taro buy for Hanako?
      A:  #taroo-wa hanako-ni  kat-te   yat-ta-yo  **zyuk-karatto-no**
          Taro-*wa*  Hanako-for buy-and give-PAST-FP 10-carat-GEN
          **daiya-no    yubiwa-o**
          diamond-GEN ring-*o*
          'Taro bought (it) for Hanako, a 10-carat diamond ring.'

Similarly, *wh*-phrases such as *dore* 'which' cannot be postposed as shown in (34).

(34)  *itiban oisii-desu-ka  **dore-ga**?
       most  delicious-COP.PLT-Q which-*ga*
       'The most delicious one, which?'

Nakagawa, Asao & Nagaya (2008) found that there are two types of post-predicate construction: single-contour type and double-contour type. The single-contour type is a type of post-predicate construction where the post-predicate elements are uttered without a pause and does not have the $F_0$ peak, whereas the double-contour type is a type of construction where the post-predicate elements are uttered with a pause and does have the $F_0$ peak. The pitch contours of each utterance is shown in Figure 5.20 for single-contour type ((35-A) and (36-A)) and 5.21 for double-contour type ((35-A′) and (36-A′)), both of which are produced by the author. The post-predicate part is *kome-wa* 'rice-*wa*', whose accent nucleus is on *me* and overall accent is supposed to be LHL (L indicates low and H indicates high in pitch). In Figure 5.20, where the postposed element is uttered in the same continuous contour as the main clause, one cannot observe the $F_0$ peak in *me* nor a pause between the predicate and the postposed element. In Figure 5.21, on the other hand, where the postposed element is uttered in a separate contour from the main clause, one can observe the $F_0$ peak in *me* and a pause between the predicate and the postposed element.

Nakagawa et al. investigated the difference between these two types in terms of information structure and found that the post-predicate elements of the single-contour type are evoked by being mentioned immediately before or through physical context. On the other hand, those of the double-contour type are not necessarily evoked. For example, compare the following examples (35) and (36), where the bold-faced letters indicate that they are high in pitch.[7] The referent 'rice' in (35) is evoked because it is mentioned in (35-Q) immediately before the answer to Q is uttered. In this case, (35-A′), where the post-predicate element *kome-wa* 'rice-*wa*' has its own $F_0$ peak and is preceded by a pause, is not acceptable, while (35-A), where the post-predicate element without its own $F_0$ peak is uttered immediately after the predicate without a pause, is acceptable.

(35)  **The referent 'rice' evoked**
       Q:  I don't like rice.
       A:  o**isii**-yo <u>kome-wa</u>
           good-FP rice-*wa*

---

[7] Here I assume that the pitch accent of *oisii* 'good' is LHHH and that of *kome-wa* 'rice-*wa*' is LHL.

A′: ?o**isii**-yo, <u>k**ome**-wa</u>
   good-FP rice-*wa*
   'RICE is good (but others not).'    (Nakagawa, Asao & Nagaya 2008:
   p. 7)

On the other hand, in (36), where 'rice' is not evoked before the speaker utters (36-A) or (36-A′), only double-contour type (36-A′) is acceptable and the single-contour type (36-A) is not natural.

(36)   **The referent 'rice' not evoked**
   Q:   Is that sushi bar good?
   A: ??o**isii**-yo <u>k**ome**-wa</u>
      good-FP rice-*wa*
   A′:  o**isii**-yo, <u>k**ome**-wa</u>
      good-FP rice-*wa*
      'RICE is good (but others not).'                           (ibid.)

The remaining issue is to investigate the difference between elements before and after the predicate in terms of information structure.
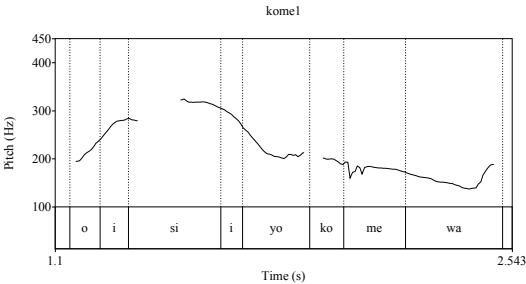


Figure 5.20: Post-predicate construction: single-contour type

Nakagawa, Asao & Nagaya (2008) measured the referential distance (RD) between the post-predicate elements and their antecedents, i.e., they measured the number of inter-pausal units between the element in question and its antecedent. They modified the definition of RD from the original one (Givón 1983) and decided to use inter-pausal unit as a measure of RD since clause boundaries are sometimes difficult to identify in spoken Japanese. Their results are shown in Table 5.4. The table shows that the average RD of the post-predicate elements of single-contour type is 6.9 on average, whereas that of double-contour type is
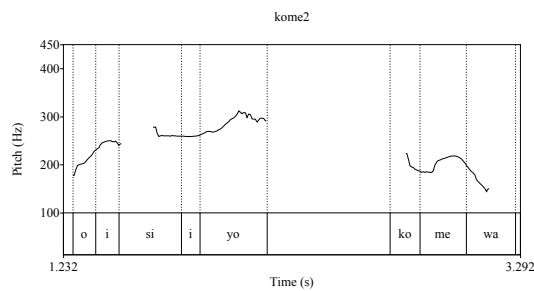
Figure 5.21: Post-predicate construction: double-contour type

39.7. What about elements before the predicate?

I conducted the same investigation for elements before the predicate, but this time I used monologues employed throughout this dissertation because the dialogues they used in their study lack the information about RD of elements before the predicate.[8] Further study is needed to make sure that elements before the predicate in monologues and dialogues have the same characteristics. Table 5.5 shows the average RDs of elements before the predicate based on their word order. Here, I simplified word order to only include arguments in the count (excluding fillers, fragments, adverbs, adjectives, etc.). 1 indicates that the element in question is the first argument in a clause, *2* indicates that it is the second argument, and so on. The RD of the first argument is 20.9 on average, that of the second argument is 23.0, and the third is 41.1. The table indicates that the RDs of elements before the predicate, regardless of their word orders, are larger than that of postposed elements of the single-contour type. The RD of double-contour postposed elements is similar to that of preposed elements in the third position. I do not have explanation for the RD of double-contour postposed elements. I believe that postposed elements of the double-contour type are heterogeneous; some might be afterthought, some might have interactional functions (T. Ono 2007), others might be something else (H. Tanaka (2005); Guo & Den (2012), see also the discussion in §5.3.2.3). What I want to emphasize here is that the RD of the

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[8] Nakagawa et al. counted the RD of non-anaphoric elements as 100 (the maximum value of RD), but this study didn't include non-anaphoric elements since I thought that this is too arbitrary. This modification makes the RD of elements before the predicate (conducted in this study) smaller. This has only a small effect and the overall conclusion does not change because, according to our result, the RD of pre-predicate elements are larger than that of post-predicate elements; If this study employed the same criteria as Nakagawa et al., the RD of elements before the predicate are expected to be even larger.

single-contour postposed elements is smaller than elements before the predicate. The postposed elements of the single-contour type are evoked when they are uttered; their activation cost is low. Taking into consideration the fact that many of the post-predicative elements are pronouns or nouns preceded by demonstratives (Nakagawa, Asao & Nagaya 2008), I propose that post-predicative elements are often strongly evoked. On the other hand, the activation cost of preposed elements is higher than that of postposed elements.[9]

Table 5.4: RD of post-predicate elements

|  | Single-contour | Double-contour |
|---|---|---|
| RD | 6.9 | 39.7 |

Table 5.5: RD of elements before predicate

|  | 1 | 2 | 3 |
|---|---|---|---|
| RD | 20.9 | 23.0 | 41.1 |

The following are examples of post-predicate constructions from dialogues. (37) and (38) are examples of single-contour type. The postposed elements of this type are typically pronouns or modified by demonstratives such as *kono* 'DEM.PROX (this)', *sono* 'DEM.MED (this/that)', *ano* 'DEM.DIST (that)'. In (37), the postposed element is the pronoun *kore* 'DEM.PROX (this)'. The participants are working on a tasks of ranking famous people based on how much they earn. The utterance is produced in the middle of this tasks and the demonstrative *kore* refers to the ranking so far. Therefore, the referent of *kore* is expected to be evoked in the participants' mind. As shown in Figure 5.22, where the upper box indicates the intensity of the utterance and the under box indicates the $F_0$, the postposed element *kore* does not have $F_0$ peak.

(37)　L:　sugoi tatakai-da-yo-ne **kore**
　　　　　awful battle-COP-FP-FP this
　　　　　'(It) is an awful battle, this?'　　　(D02F0025: 463.93-465.81)

In (38), where the participants are involved in the same task as (37), *kono hito* 'this person' is the famous person under discussion right now and hence the

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[9] The average RD of zero pronouns is 5.0, which shows that post-predicate elements of single-contour type is close to zero pronouns.

referent is evoked in the participants' mind. Figure 5.23 shows the intensity and the $F_0$ of the utterance (38). Although the $F_0$ of the postposed element is not shown because the speaker's utterance is too quiet, the intensity tells us that the postposed part is uttered without a pause. Also, the fact that the intensity is low indicates that the postposed element is only weakly uttered because the referent is evoked enough.

(38)  R:  nani  yat-teru-no    **kono hito**
          what  do-PROG-NMLZ  this   person
          'What is (he) doing, this person?'      (D02M0028: 193.30-194.45)

Common nouns can also be postposed elements of the single-contour type as in (39). In (39), where the participants are again involved in the same task, the postposed element *syasin* 'photo' is uttered without a pause or $F_0$ peak as shown in Figure 5.24. Since R, the other participant, has photos physically and this is part of their rules of the task, it is reasonable to assume that the participants have already evoked photos.

(39)  L:  siro-kuro-desu-ka       **syasin**
          white-black-COP.PLT-Q  photo
          'Are (they) black-and-white, the photo?'       (D02F0015:
          313.95-315.26)
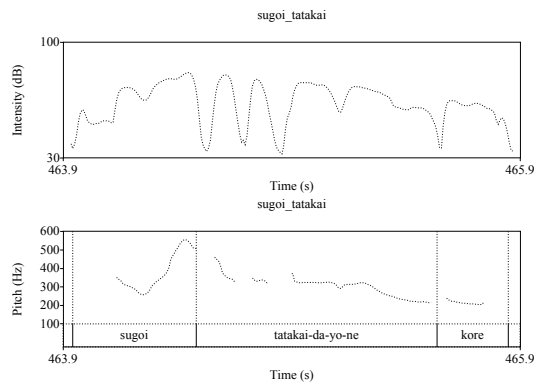


Figure 5.22: Intensity and $F_0$ of single-contour type (37)

On the other hand, postposed elements of the double-contour type have not been evoked enough or they are contrastive at the time of utterance. In (40),
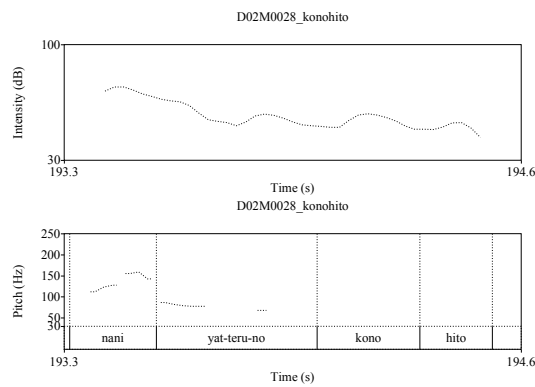
Figure 5.23: Intensity and $F_0$ of single-contour type (38)
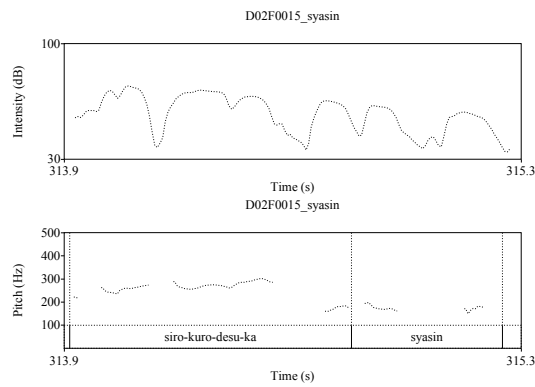


Figure 5.24: Intensity and $F_0$ of single-contour type (39)

where again the participants are involved in the task of ranking famous people based on their income, *kotti-wa* 'on my side' is uttered in a separate contour from the main clause and there is a pause between the main clause and the postposed element as shown in Figure 5.25. 'On my side' is necessary information in the sense that the other participant L was talking about how many people were listed on her own side. Therefore, the participant R might have thought that 'there are ten people' is not enough and add 'on my side' later. The $F_0$ peak of the postposed *kotti-wa* 'on my side' is still lower than *zyuu* 'ten' in the main clause, and the intensity is also lower. This is because the postposed element is not focus as Takami (1995a,b) has pointed out. Foci are typically new in the given-new

taxonomy and need $F_0$ peak and intensity in order for the hearer to understand clearly what is said.

(40)   L:   There are eleven people (listed on my side).

       R:   zyuu-nin-desu     **kotti-wa**

           ten-people-COP.PLT this.side-*wa*

           'There are ten people on my side.'      (D02F0015: 3.27-9.03)

In (41), L is interviewing about R's study on the difference among Japanese dialects. R utters 'western area' in a separate contour from the predicate because R compares different dialects and, only in eastern area, she didn't find any differences among smaller areas (prefectures). Therefore 'the eastern area' is contrasted with other areas. In this case, the $F_0$ peak and the intensity of the postposed element are as high as those of the main clause as shown in Figure 5.26.

(41)   R:   kooiu      sa-ga      aru-ne-tte iu-koto-wa   ie-nai

          such.and.such difference-*ga* exist-FP-Q say-thing-*wa* say-NEG

          zyootai-desi-ta-ne     **kantoo-no hoo-wa**

          situation-COP.PLT-PAST-FP east-GEN   direction-*wa*

          'One cannot say that there is such as such difference, eastern area.'

          (D04F0050: 338.54-349.27)
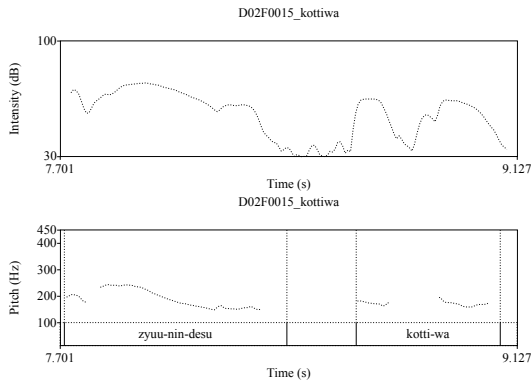


Figure 5.25: Intensity and $F_0$ of double-contour type (40)
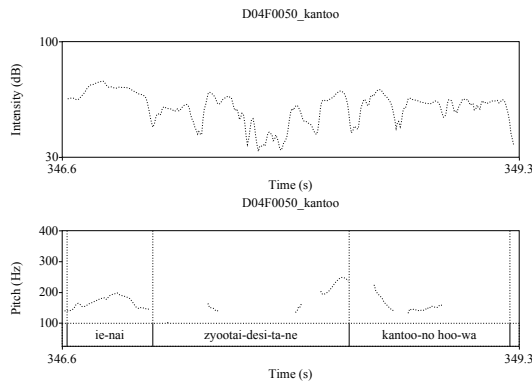
Figure 5.26: Intensity and $F_0$ of double-contour type (41)

### 5.3.2 Motivations for topics to appear post-predicatively

It has been pointed out that topics or given elements tend to appear clause initially (Mathesius 1928; Firbas 1964; Daneš 1970). Then, what are motivations for them to appear post-predicatively? In this section I mainly discuss the post-predicate elements of single-contour type in comparison with the elements before the predicate. Those of double-contour type is heterogeneous as discussed above and this needs further investigation.

#### 5.3.2.1 Low activation cost and general characteristics of intonation unit

Before getting directly into the question of why some topics appear post-predicatively, let us begin with the question of why some topics do not appear clause-initially. As discussed in §5.2.1 and this section, the activation cost of preposed topics is higher than those of postposed topics and zero pronouns. The low activation cost of post-predicate elements suggests that they are not anchors to the previous discourse; since they are already evoked enough, they do not have to relate the previous contexts and the current utterance. Therefore, they have at least motivations for not appearing clause-initially. Why do they appear post-predicatively?

I argue that the element whose activation cost is low tend to appear post-predicatively because, in Japanese and many other languages, an intonation unit starts from high $F_0$ and gradually declines toward the end (Liberman & Pierrehumbert 1984; Cruttenden 1986; Du Bois et al. 1993; Chafe 1994; Prieto, Shih & Nibert 1996; Truckenbrodt 2004; Den et al. 2010). Since the elements with low activation cost does not require high $F_0$, their preferred position is toward

the last position in an intonation unit. This kind of phenomenon has been already reported in Siouan, Caddoan, and Iroquoian languages of North America (Mithun 1995). In these languages, this newsworthy-first (i.e., given-last) word order is fully grammaticalized, and Mithun proposes a hypothesis that the given-last word order comes from right-detachment constructions, namely, the postposed constructions discussed in this section. She argues that this word order is motivated by the general tendency that intonation units start from high $F_0$, which gradually declines. This tendency of intonation units is physiologically motivated, as Cruttenden (1986) discusses:

> The explanation for declination has often been related to the decline in transglottal pressure as the speaker uses up the breath in his lungs. A more recent explanation suggests that an upward change of pitch involves a physical adjustment which is more difficult than a downward change of pitch, the evidence being that a rise takes longer to achieve than a fall of a similar interval in fundamental frequency. (Cruttenden 1986: p. 168)

Moreover, Comrie (1989: p. 89) argues that unstressed constituents such as clitic pronouns are cross-linguistically "subject to special positioning rules only loosely, if at all, relating to their grammatical relation"; therefore, he argues that "sentences with pronouns can be discounted in favour of those with full noun phrases". Arguing against the hypothesis (Givón 1979) that one can reconstruct ancient word order of a language based on pronominal affixes and clitics, Comrie suggests that the order of pronominal affixes and clitics in a clause is more likely to be influenced by stress rhythm properties (Comrie 1989: p. 218).

I argue that the order of Japanese unstressed pronouns and NPs are also affected by some phonetic constraints as Comrie suggests. As will be discussed in Chapter 6, some unstressed pronouns and NPs referring to highly evoked entities lose pitch peaks and are produced only in low pitch. However, an accent rule in Japanese does not allow lexical items to start with two low pitch morae in a row. Therefore, the best position for unstressed items is the sentence-final or post-predicate position, which allows unstressed items to appear. For phonetic analysis of unstressed items, see Chapter 6.

### 5.3.2.2 Why post-predicate construction mainly appears in dialogue and the source of "emotive" usage

The declination of $F_0$ does not fully explain post-predicate constructions in Japanese. The discussion above does not explain why Japanese post-predicate construction

mainly appears in dialogues, but not in monologues. Moreover, Japanese post-predicate constructions are reported to have "emotive" characteristics (T. Ono 2007). As examples for emotive characteristics of post-predicate constructions, consider the following constructed example. Let us assume that a boy gave a present to his girlfriend. The girl happily received the gift and opened it. After seeing the gift, say a banana case,[10] she uttered (42) or (43). Since the most frequent word order in Japanese is predicate-final, the canonical order is (42) and (43) can be regarded as a post-predicate construction.

(42)     kore nani
         this  what
         'What's this?'                                    (Canonical word order)

(43)     nani  kore
         what this
         'What's this (weird thing)?'              (Post-predicate construction)

These two utterances consist of the same constituents *kore* 'this' and *nani* 'what'. As has been pointed out in Ono & Suzuki (1992) and T. Ono (2007), however, the implicatures of these two are different. In (42), she simply does not know what she received, probably because she has never seen it before. Contrastively, in (43), she knows what she received (it's a banana case) but she did not like it, as we expected. In other contexts, (43) can be used to express the speaker's surprise, excitement, etc. However, (43) can never be a neutral question. Where does this implicature come from?

Since these two utterances consist of exactly the same elements, it is obvious that the implicature in (43) cannot be derived from the meaning of each constituent. In this study, I propose two factors involved in the questions of why post-predicate constructions mainly appear in dialogues and of what the source of this "emotive" usage is: word order and intonation.

Firstly, I concentrate on the relation between word order and why they appear mainly in dialogues. My point is that, since the intonation-unit-final position is a position for expressions with interactional functions, the post-predicate element (of the single-contour type) plays some interactional role. As has traditionally been argued (e.g., M. Watanabe 1971), the post-predicate position is for interaction in Japanese. Iwasaki (1993) extended this argument and claimed that in fact the intonation-unit-final position is the position for interaction; the post-predicate position is only one of examples of this intonation-unit-final position.

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[10] Bananas of all sizes can fit into this banana case.

*5 Word Order*

Consider the following example. Each line corresponds to a single intonation unit. The lines a, b, and c end with interactional markers *ne* and *sa*, which is indicated by **IT**. As examples (44) show, these interactional markers appear IU-finally.[11]

(44)   a.   sooiu sito-ga      siki  si-te-**ne**
            such   person-*ga* lead do-and-FP
            ID      ID           ID    ID-CO-**IT**
            'Such people led, and'
       b.   sinin-o     asoko-e  minna-**ne**
            corpses-*o* there-DIR all-FP
            ID           ID         ID-**IT**
       c.   ano dote-no    ue-e-**sa**
            that bank-GEN top-DIR-FP
            ID   ID          ID-ID-**IT**

            atsume-te
            gather-and
            ID-CO

            'gathered dead bodies on top of that bank...'      (Iwasaki 1993: p. 47,
            gloss and transcription modified by the current author)

As Morita (2005) suggests, a general function of interactional particles such as *ne* and *sa* is "to foreground a certain stretch of talk as an 'interactionally relevant unit' to be operated on – whether that unit is itself a whole utterance or merely one particular component of that utterance" (p. 92). Since the post-predicate elements follows these interactional particles within the same intonation unit as in (32) and (37), where the post-predicate elements follow *ne*, they are also expected to have some interactional functions. Guo & Den (2012) report that 77.6% of the post-predicate constructions have interactional particles of this kind after the predicate, whereas only 47.0 % of the non-post-predicate constructions have interactional particles. This also suggests that post-predicate constructions are related to some interactional characteristics. Further investigation is necessary for the question of what kind of interactional functions they have, possibly employing conversational analysis.

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[11] IT stands for "interactional component", one of four types of components in an intonation unit. Other types are: LD (lead component (e.g., fillers)), ID (ideational component), and CO (cohesive component). The order of an intonation unit is proposed to be LD ID CO IT in Japanese (Iwasaki 1993: p. 44).

Secondly, I argue that the source of "emotive" implicature of (43) in contrast with (42) comes from the intonational constraint of the post-predicate element. In Japanese, *wh*-questions can be optionally uttered in rising intonation. However, the post-predicate element is always falling and the rising intonation is not natural. Figure 5.28 shows the pitch contour of the utterance *nani kore* 'what's this (weird thing)?' (43), while Figure 5.27 shows the pitch contour of neutral order *kore nani* 'what's this?' (42). As indicated in the figures, the neutral word order (42) in Figure 5.27 is uttered in rising intonation, and I believe that this is the most frequent intonation, whereas the post-predicate construction (43) in Figure 5.28 is falling intonation, in which case it is impossible to utter *kore* with rising intonation. It is this constraint on the intonation of post-predicate elements to cause emotive implicature of the utterance (43). In fact, the neutral word order *kore nani* can be uttered in falling intonation as shown in Figure 5.29. In this case, as predicted from the discussion, the falling intonation conveys emotion of the speaker. It is possible for *nani* 'what' in (43) to be uttered in rising intonation as indicated in Figure 5.30, in which case the emotive nuance of (43) disappears.
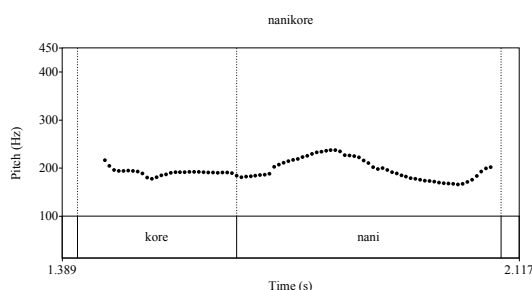


Figure 5.27: Pitch contour of *kore nani* (42) with rising intonation

### 5.3.2.3 Post-predicate elements with double-contour type

Finally, in this section, I briefly mention intriguing studies on post-predicate constructions, which I assume belong to double-contour type. The first study is Guo & Den (2012). They investigated whether the hearer responses (including back-channel responses) to the speaker near and after the predicate and showed that the speaker adds post-predicate elements when the hearer does not respond to the predicate. Their further analysis suggests that the speaker produces post-predicate elements to acquire hearer's response and to achieve mutual belief. Let us see example (45), which comes from the dialogue part of CSJ they employed.
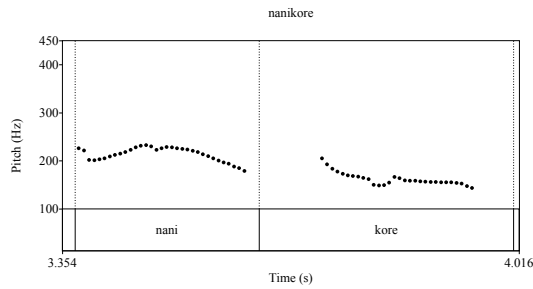
Figure 5.28: Pitch contour of *nani kore* (43)
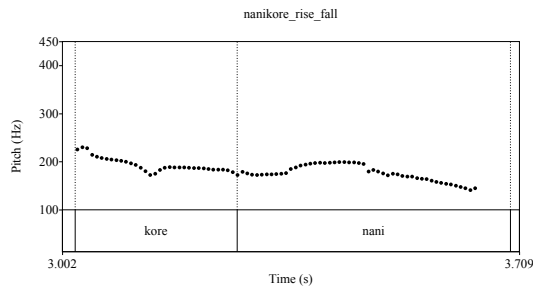


Figure 5.29: Pitch contour of *kore nani* (42) with falling intonation
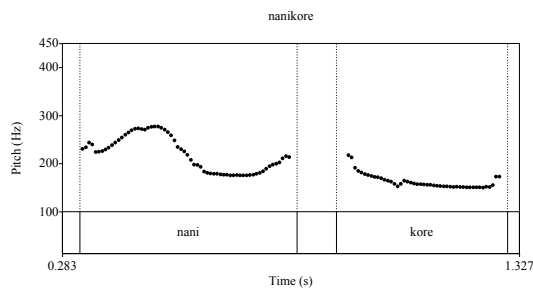


Figure 5.30: Pitch contour of *nani kore* (43) with rising intonation of *nani*

The duration of silence is shown in second inside parentheses since it is important for the discussion. In (45–L2), where the speaker postposes the element *kono kenkyuu* 'this study', there are pauses between the verb phrase and the postposed demonstrative *kono* 'this' and between the demonstrative and the postposed NP *kenkyuu* 'study', which is enough time for L to realize that R does not respond to L. Note that R, the listener of the post-posed construction, does not respond until 604.33 seconds, 0.32 seconds after L finished the post-predicate part. Also note that these pauses differentiate post-predicate constructions of double-contour type from those of single-contour type.

(45)    L1:   ima   nan-nin-gurai-de       (0.588) a   (0.29) ohi
               now   what-CL.person-HDG-with       FL       FRG
               'Right now, how many people… oh,'

      L2:   kihontekini-wa hitori-de     (0.161) <u>yat</u>-te   rassyaru-desu-mon-ne
               basically-*wa*     alone-with       do-and PROG.HON-COP-NMLZ-FP
               (0.12) **kono** (0.585) **kenkyuu**
                    this         study
               'basically, (you) do (it) by yourself, this study?'
                                         (D04M0010: 597.20-604.01)

      R3:   ettoo (0.434) a   (0.137) boku-no syozoku-si-teru
               FL            FL        1SG-GEN belong-do-PROG
               kenkyuu-situ-de(0.44)-wa hanasi-kotoba-no       ninsiki-o
               study-room-LOC-*wa*       speech-language-GEN recognization-*o*
               yat-teru-no-wa       (0.143) m    soo-desu-ne
               do-PROG-NMLZ-*wa*       FRG SO-COP.PLT-FP
               'Lets see… in the lab I belong to, the one who studies speech recognition is, yes…,'

      R4:   boku hitori-desu-ne
               1SG    alone-COP.PLT-FP
               'it's just me.'                     (D04M0010: 604.33-612.09)
                                         (Guo & Den 2012: 287)

H. Tanaka (2005) investigates postposed and preposed constructions in terms of interactional structures: preferred vs. dispreferred structures. See the discussion §2.4.3.3 for detail.

### 5.3.3 Summary of post-predicate elements

In this section, I investigated post-predicate elements. It turned out that the activation cost of postposed elements are much lower than that of preposed elements, which appear before the predicate. It suggests that topics also appear post-predicatively. I also discussed why topics appear post-predicatively as well as clause-initially in terms of the shape of intonation and its constraints on Japanese grammar.

The characteristic found in this study is one of many features of post-predicate elements. In the future study, it is necessary to explore how these features are related with each other.

## 5.4 Pre-predicate elements

This section discusses pre-predicate elements, which appear immediately before the predicate. In §5.4.1, I show a result which indicates that new, namely focus, elements tend to appear right before the predicate. In §5.4.2, I discuss motivations for focus elements to appear near the predicate.

### 5.4.1 New elements appear right before predicate

As shown in Figure 5.2 and 5.5, which are repeated here for convenience as Figure 5.31 and 5.32, respectively, new elements or focus elements tend to appear immediately before the predicate. Figure 5.31 shows the element position based on their information status including all expressions such as fillers, adjectives, and so on; Figure 5.32 shows the distance between the element and the predicate based on their information status. As indicated in Figure 5.31, the distribution of anaphoric elements skews towards clause-initial position, whereas that of non-anaphoric elements does not. Taking Figure 5.32 also into this account, we can see that many of new elements appear immediately before the predicate. As discussed in 5.1, the mixed effects model of information status (the distance between the predicate and the element in question) shows that the contribution of the distance is only marginally significant. However, a further analysis imply that the distance is also a significant factor to predict information status. As is clear from Table 4.3 and 4.4, datives tend to code new elements (especially, as opposed to *wa*). Datives can appear anywhere, from pre-predicate to clause-initial positions, which is shown in Figure 5.33. Therefore, I tantatively conclude that the distance between the predicate and the element in question (excluding
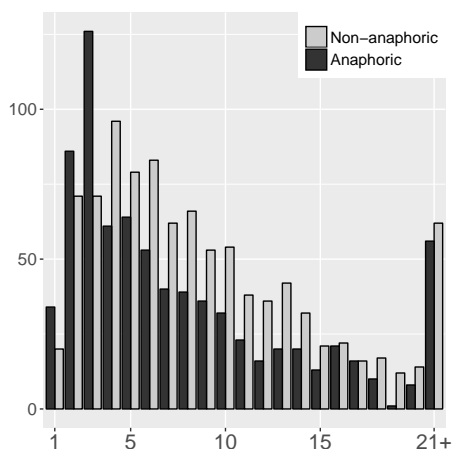
Figure 5.31: Word order vs. information status

*ni*-coded elements) is an important factor for information status and new elements appear before the predicate. This supports a classic observation in other languages that focus appears closely with the predicate (Bresnan (1994); Morimoto (1999) on Bantu languages, Jacennik & Dryer (1992) on Polish, Erguvanli (1984) on Turkish, see Morimoto (2000) for the summary of studies on both VO and OV languages). Further studies are necessary to obtain conclusive evidence.

The following are example of non-anaphoric elements appearing close to the predicate. (46) and (47) are examples of non-anaphoric P occurring immediately before the predicate. In (46), *kyoomi* 'interest' appear immediately before the predicate *moti* 'have', and, in (47), *aidenthithii* 'identity' in line a, *inoti* 'life' in line b, and *ti* 'blood' in line c appear right before the preciates *kake* 'risk' and *nagasi* 'bleed', respectively. Non-anaphoric Ps are typically abstract concepts like *kyoomi* 'interest' in (46), *aidenthithii* 'identity' in (47-a), and *inoti* 'life' in (47-b), or indefinite like *ti* 'blood' in (47-c).

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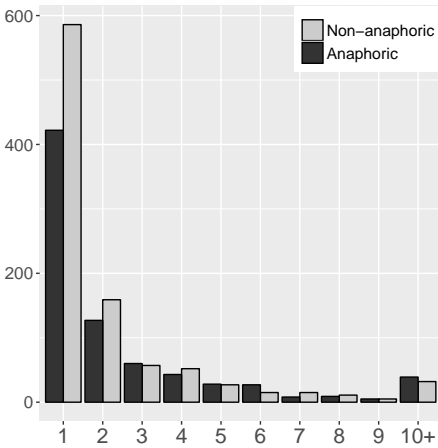
Figure 5.32: Distance from predicate vs. InfoStatus
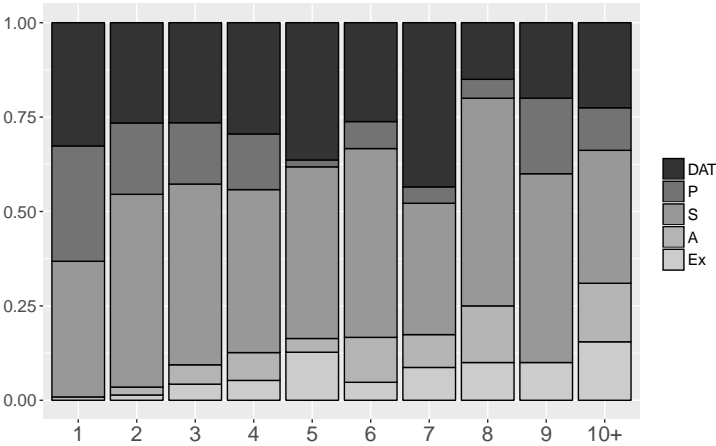


Figure 5.33: Distance from predicate vs. grammatical functions

(46) de   ee sono ri-too-no        hoo-ni      sono **kyoomi-o** <u>moti</u>
     then FL FL remote-island-GEN direction-DAT FL  interest-*o* have
     hazime-masi-te
     start-PLT-and
     '(We) are started to be interested in remote islands (in Hawaii).' (S00F0014:
     149.92-153.33)

(47) a. tasuu-no   serubia-zin-ga    minzoku-no ee **aidenthithii-o**
        many-GEN Serbia-people-*ga* ethnic-GEN  FL identity-*o*
        <u>kake</u>-te
        risk-and
        'Serbian people bet their identity, and'
     b. **inoti-o** <u>kake</u>-te
        life-*o*   risk-and
        'risked their lives, and'
     c. **ti-o**   <u>nagasi</u>-ta-to iu
        blood-*o* bleed-PAST-Q say
        'bled (in battles),'
     d. rekisi-ga    ee sono-go  tenkai   s-are-masu
        history-*ga* FL that-later progress do-PASS-PLT
        'the history went on this way.'        (S00M0199: 343.53-351.77)

Non-anaphoric S elements also appear immediately before the predicate. They
tend to be abstract or indefinite like non-anaphoric Ps. In (48), *kanzi* 'impression'
is the only argument of the predicate *tigau* 'differ' and hence is S, which is an
abstract concept. This appears immediately before the predicate.

(48) a. sono kontorasuto-toiuno-wa nanka    totemo koo
        that contrast-*toiuno-wa*    somehow very   such
        ekizotikku-to-iu-ka
        exotic-QUOT-say-Q
        'The contrast (the color of black and blue) is very exotic, I would say,'
     b. husigina **kanzi**-ga    <u>si</u>-masi-te
        mysterious impression-*ga* do-PLT-and
        'the impression was mysterious.'    (S00F0014: 1042.88-1047.03)

In (49), *hito* 'person' is indefinite and appears before the predicate.

(49) naka-ni-wa       byooin-okuri-ni naru **hito**-mo
     inside-DAT-*wa* hospital-send-to become person-also

i-masi-ta-kedomo
exist-PLT-PAST-though
'Some people were sent to the hospital (lit. People who were sent to the hospital also exist).'                      (S05M1236: 578.30-581.49)

### 5.4.2 Motivations for focus to appear close to predicate

I argue that the information-structure continuity principle (10) is also at work here, which is repeated below as (50) for the purpose of convenience.

(50)   **Information-structure continuity principle**: A unit of information structure is continuous in a clause; i.e., elements which belong to the same unit are adjacent with each other.

I assume that most frequently the predicate is in the domain of focus (Lambrecht 1994), optionally with one focus element. Since the predicate and the new element are in the same domain of focus, they appear together most frequently.

In fact, few studies pay attention to the information status (and namely information structure) of predicates.[12] Unfortunately this study is not an exception. Typically definite markers such as *the* in English and *der* in German attach to nouns, not to verbs. Also topic markers such as *wa* in Japanese typically attach to nouns. Therefore, nouns have attracted more attention than verbs. Typically verbs are followed by tense or aspect markers, subordinate-clause markers, realis vs. irrealis markers, and so on. I believe that these verbal markers are also related to information structure, but this is beyond the scope of this study.

However, it is obvious that argument-focus structure, where the predicate is not in the domain of focus, is the least frequent type among all three types (predicate-focus, sentence-focus, and argument-focus structures). Especially the corpus employed in this study is monologues, there are expected to be even fewer examples of argument-focus structures because argument-focus structure typically appears as the answer to a question of *who/what* as shown in (51), where the capital letters indicate prominence.

(51)   Q:   Who went to school?
         A:   [The CHILDREN]$_F$ [went to school]$_T$.         (Lambrecht 1994: p. 121)

Since there are no (explicit) questions in monologues, there are few argument-focus structure.

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[12] Hopper & Thompson (1980) is an important exception.

Another context in which sentences of argument-focus structure appear is "A not B" context. In monologue, "A not B" context typically appears in self-repair, which is also rare in our relatively smooth monologues. Therefore, it is not unreasonable to assume that the predicate is in the domain of focus most of the time, and I argue that the information-structure continuity principle (50) explains why new elements (i.e., focus elements) tend to appear immediately before the predicate.

One piece of evidence that supports the information-structure continuity principle is the fact that it is difficult for presupposed elements to appear immediately before the predicate, intervening the focus domain. Compare (52-A) and (52-A'), which are assumed to be the answers to the question (52-Q).[13] In (52-A), the presupposed elements *taroo-ni* 'to Taro' and *hanako-ni* 'to Hanako' are intervening the domain of focus 'gave a travel ticket' and 'gave a cake'. Therefore this sentence is not acceptable. Contrarily, in (52-A'), the presupposed elements do not intervene the domain of focus and hence this is acceptable.

(52)    Q:    What did you do for Taro and Hanako for their birthdays?
       A:    ?[ryokoo-ken-o]$_F$ [taroo-ni]$_T$ [age-te]$_F$ [keeki-o]$_F$ [hanako-ni]$_T$
           travel-ticket-*o*    Taro-DAT    give-and   cake-*o*      Hanako-DAT
           [tukut-te   age-ta]$_F$-yo
           make-and give-PAST-FP
           '(I) gave travel tickets to Taro and gave cake to Hanako.'
      A':   [taroo-ni]$_T$ [ryokoo-ken age-te]$_F$ [hanako-ni]$_T$ [keeki tukut-te
           Taro-DAT    travel-ticket give-and Hanako-DAT   cake    make-and
           age-ta]$_F$-yo
           give-PAST-FP
           '(I) gave travel Taro travel tickets and gave Hanako cake.'

A more natural context for (52-A) is where Q asks what A did for the travel ticket and the cake. Kuno (1978) proposes that the pre-predicate position is for new elements, but he limits this principle to cases where the predicate is given.

(53)    In cases where the predicate is given, the position immediately before the predicate is the position for new.      (Kuno 1978: p. 60, translated by the current author)

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[13] Note that they are not a perfect minimal pair because of the accusative marker of *o*. The presence or absence of *o* is determined by word order and information structure is a kind of side effect in this case. See the discussion in §4.3 for more detail.

*5 Word Order*

I argue that this observation also applies to cases where the predicate is new.

Moreover, as will be discussed in Chapter 6, the domain of focus is uttered in a single intonation unit, whereas the topic is uttered separately from the domain of focus. Figure 5.34 to 5.37 show the pitch contours of examples (47) and (48) we discussed in the last section. As we can see, there is no pause between the predicate and the previous element and the pitch range is larger in the elements than in the predicates. In Figure 5.36, it is difficult to see the pitch range because *ti* 'blood' does not have accent nucleus. From the first lowering of *na* in *nagasi-ta* 'bled' being cancelled,[14] one can see that *ti-o* 'blood-*o*' and *nagasi-ta* 'bleed' form a single intonation unit.
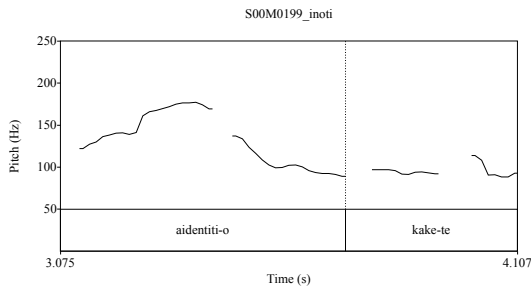


Figure 5.34: Pitch contour of a in (47)
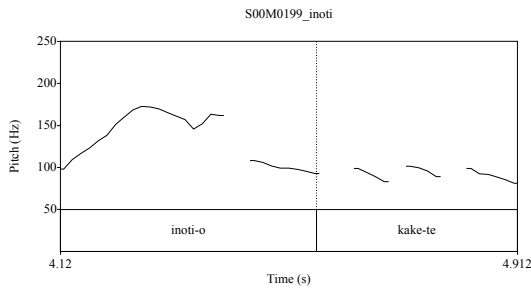


Figure 5.35: Pitch contour of b in (47)

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[14] The pitch accent of *nagasi-ta* is LHLL.
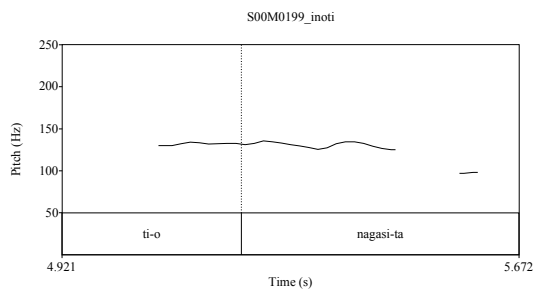
Figure 5.36: Pitch contour of c in (47)
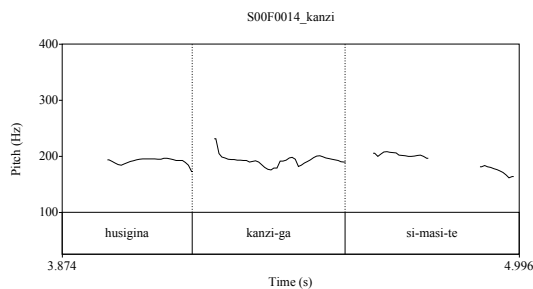


Figure 5.37: Pitch contour of b in (48)

### 5.4.3 Summary of pre-predicate elements

The results of this section showed that new, namely focus, elements tend to appear right before the predicate. A similar claim has been made by Kuno (1978) and Endo (2014) through constructed examples. This study supported their claim by examining natural occurring utterances. I also discussed motivations for focus to appear right before the predicate.

## 5.5 Discussion

This section first discusses possible confounding effects on word order in Japanese, especially in association with basic word order (§5.5.1). Second, I discuss Givón's topicality hierarchy (§5.5.2). I provide some counter-examples of this hierarchy and propose to modify it. Finally, I discuss the implications of this study's findings toward word order typology (§5.5.3).

### 5.5.1 Possible confounding effects
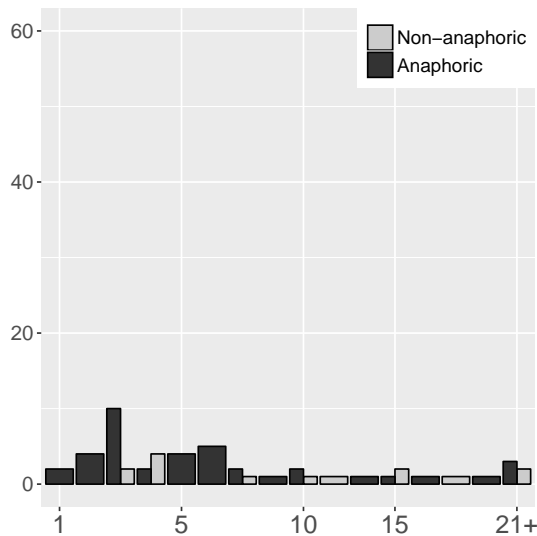


Figure 5.38: Word order of A

It is necessary to take other features into account to see the exact effect of top-ichood and focushood on word order. Especially, the effect of "basic word order" should not be ignored. Here I provide some evidence to support my argument that information structure contributes to word order in spoken Japanese. Figure 5.38 to 5.41 show word order and information status of each type of grammatical function (A, S, P, and dative). These figures indicate that anaphoric elements of all grammatical function types are still more likely to appear earlier in a clause than new elements. A and S are more likely to appear earlier in a clause than P because of the basic word order. However, my argument still holds for the same grammatical function types. In case with new elements, one can see the effect of basic word order; the peak of S is 4, which means the 4th position is the most popular for new S (Figure 5.39), whereas the peak of P is 6, which means the 6th position is the most popular for new P (Figure 5.40). The distribution of A is not clear because there are few examples. But the trend still seems to hold for A.
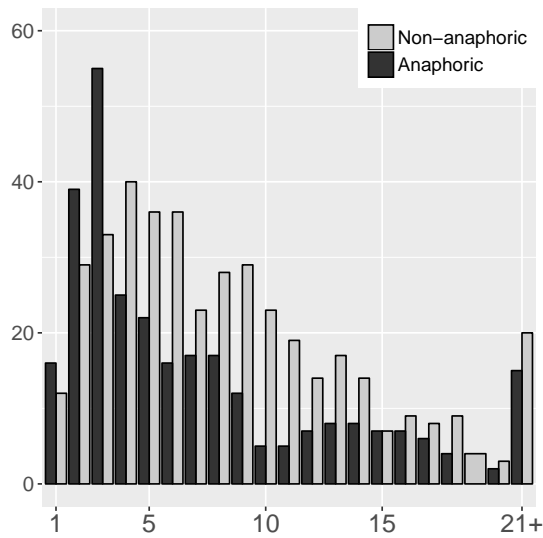
Figure 5.39: Word order of S
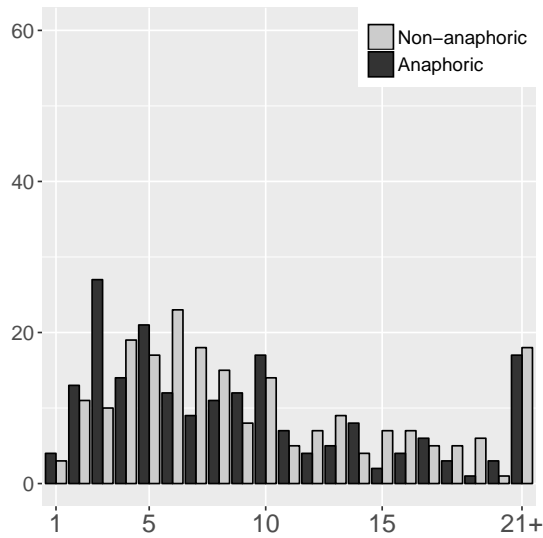


Figure 5.40: Word order of P
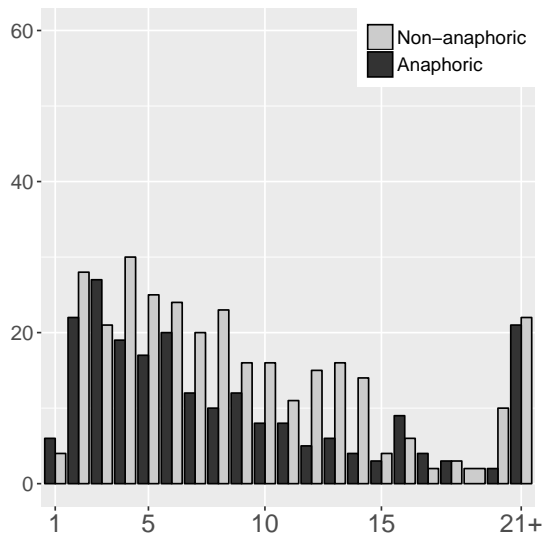
Figure 5.41: Word order of dative

## 5.5.2 Givón's topicality hierarchy and word order

Givón (1983) proposes a hierarchy of topicality (54) (terminology modified by the author). "RD" refers to referential distance, which is one of the approximations to measure topicality. Low RD means high topicality, while high RD means low topicality.

(54) ↑ High RD
  a. Referential indefinite NPs
  b. Cleft/focus constructions
  c. Y-moved NPs ('contrastive topicalization')
  d. Preposed definite NPs
  e. Neutral-ordered definite NPs
  f. Postposed definite NPs
  g. Stressed/independent pronouns
  h. Unstressed/bound pronouns or grammatical agreement
  i. Zero anaphora
  ↓ Low RD                                            (Givón 1983: p. 7)

Here I point out two counter-examples against this hierarchy. First, as has al-

ready been shown in Table 5.4 and 5.5, which are repeated as Table 5.6 and 5.7 for convenience, the average RD of elements in the clause-initial position (20.9) is lower than that in the second (23.0) or third positions (41.1). To see this more in detail, I divided the result of Table 5.7 based on grammatical function. This is shown in Table 5.8. Regardless of whether the element is A, S, or P, the overall tendency is that the elements closer to the predicate have higher average RD.[15] The topicality hierarchy (54) predicts that clause-initial elements (d in (54)) is lower RD than elements in the neutral-ordered position (e in (54)).[16] Especially P is against the topicality hierarchy (54), according to which P in the second or third positions should have lower RD than P in the first position because the neutral position of P is the second or third positions in Japanese. But this is not the case. At least in Japanese, the data show that elements closer to the predicate have higher RDs because the pre-predicate position is for focus and hence new elements.

Table 5.6: RD of post-predicate elements

|  | Single-contour | Double-contour |
|---|---|---|
| RD | 6.9 | 39.7 |

Table 5.7: RD of pre-predicate elements (based on argument order)

|  | 1 | 2 | 3 |
|---|---|---|---|
| RD | 20.9 | 23.0 | 41.1 |

Table 5.8: RD of pre-predicate elements (based on grammatical function)

|  | 1 | 2 | 3 |
|---|---|---|---|
| A | 10.3 | 47.3 | – |
| S | 22.5 | 21.7 | 73.5 |
| P | 22.4 | 36.6 | 49.1 |

---

[15] For now I do not have an explanation for S in the second position. It is necessary to test whether the difference between Ss in the first and the second positions are statistically significant or not.

[16] I assume that all elements that have antecedents (and namely RDs) are definite.

5 Word Order

Second, the average RD of zero pronouns is as high as that of postposed NPs according to Table 5.9 and 5.10. This is against the topicality hierarchy (54) because it states that preposed definite NPs (d in (54)) and neutral-ordered definite NPs (e in (54)) have higher RDs than postposed definite NPs. As discussed above, elements are postposed for some interactional purpose and/or intonational reason.

Table 5.9: RD of postposed elements of single-contour type (based on expression type)

|  | Pronoun | NP |
|---|---|---|
| RD | 15.1 | 5.0 |

Table 5.10: RD of pre-predicate elements (based on expression type)

|  | Zero | Pronoun | NP |
|---|---|---|---|
| RD | 5.0 | 5.8 | 27.8 |

The final point is an additional suggestion of (54) rather than a counter-example. The RD of postposed elements of double-contour type is much higher than Givón predicts. As will be argued in Chapter 6, a unit of information structure corresponds to a unit of intonation. Since postposed elements of single-contour type by definition belong to the same intonation unit as the main predicate, the predicate and the postposed element form a single unit (construction) and postposed elements are relatively homogeneous and are relatively easy to characterize. However, postposed elements of double-contour type are heterogeneous as discussed above and are difficult to characterize because the element itself corresponds to a single unit. The motivations for such elements to be uttered are heterogeneous. The functions of such postposed elements are determined by the sequence of conversation.

### 5.5.3 Information structure and word order typology

Since most frequent focus elements are patients according to the correlating features (2), which is repeated as (55), the information-structure continuity principle (10) predicts that cross-linguistically P (the patient-like argument in a transitive clause) and V (the predicate) tend to appear together most frequently and, if the

word order is fixed in the language in question, P and V tend to appear together.

|  | | topic | focus |
|---|---|---|---|
| (55) | a. | presupposed | asserted |
|  | b. | evoked | brand-new |
|  | c. | definite | indefinite |
|  | d. | specific | non-specific |
|  | e. | animate | inanimate |
|  | f. | agent | patient |
|  | g. | inferable | non-inferable |

In fact this has already been claimed and tested in Tomlin (1986: Chapter 4). Tomlin proposes this claim as Verb-Object Bonding.

(56) **Verb-Object Bonding (VOB):** the object of a transitive verb is more tightly bounded to the verb than is its subject.  (Tomlin 1986: p. 74)

He also states that "[e]xactly why there should be such a bond between a transitive verb and its object is not entirely clear" (ibid.). I propose the information-structure continuity principle for the motivation of such bond. He enumerates many cross-linguistic pieces of evidence that support VOB. I introduce a few of them to keep the discussion simple.

First, in many languages, there exists some clause-level phonological behavior (reductions or sandhis) which occur between object and verb, but not between subject and verb (op. cit., p. 97). In French, for example, liaison does not occur between the subject and the transitive verb, but it does between the object and the verb (see also Selkirk 1972). There is no liaison between the subject *les gens* and the verb *achètent* as in (57), whereas there can be liaison between the verb *donnerons* and the object *une pomme* as in (58).

(57) a. les gens   achètent beaucoup de ça
        le  ʒã     aʃɛt     boku      də sa
        the people buy      much      of that
        'Those people buy a lot of that.'                    (no liaison)
     b. *le ʒã zaʃɛt boku də sa                              (*liaison)

(58) a. nous donnerons une pomme à  notre mère
        nu   dɔnərõ     zyn pɔm    a notr mɛr
        we   give.3PL   a   apple  to our  mother
        'We will give an apple to our mother.'               (liaison)

(Tomlin 1986: pp. 98-99, transcription modified based on standard French)

Another case is Yoruba (Niger-Congo) vowel deletion (from Bamgbose 1964). In verb-noun sequences of this language, when the object begins with a vowel, the last vowel of the verb is sometimes deleted. This happens between verb and object, but not between subject and verb.

(59)  a.  gbé    + odó   → gb'ódó
          brought + motor
      b.  jɛ   iyɔ́n        → j'iyɔ́n
          eat pounded.yam
      c.  ʃe  òwò  → ʃ'òwò
          do trade

(Bamgbose 1964: pp. 29–30)

These phonological phenomena in French and Yoruba suggest that the object and predicate are bound tighter than the subject and predicate. In a similar manner, in Japanese, the focus element and the predicate form a single intonation unit, but the topic element and the predicate do not, as we will see in Chapter 6.

The second piece of evidence that supports VOB is noun incorporation. In Mokilese (Oceanic), for example, there is a set of verbs into which an indefinite object may be incorporated (from Harrison 1976). (60-a) is a transitive clause with definite object, which is not incorporated into the verb, whereas (60-b) is a clause with indefinite object, which is incorporated into the verb. Note that the incorporate object *rimeh* 'bottle' in (60-b) is between the verb and the aspect suffix *la*.

(60)  a.  ngoah audoh-<u>la</u> **rimeh**-i
          1sg    fill-pfv   bottle-this
          'I filled this bottle.'
      b.  ngoah audohd **rimeh**-<u>la</u>
          1sg    fill       bottle-pfv
          'I filled bottles.'                           (Harrison 1976: 162)

Similarly, compare (61-a) and (61-b). (61-a) is a case where the object *suhkoah* 'tree' is definite and is not incorporated, while (61-b) is a case where the object is indefinite and is incorporated into the verb.

(61)   a.   ngoah poadok-<u>di</u> **suhkoah**-i
            1SG    plant-PFV tree-this
            'I planted this tree'
      b.   ngoah poad **suhkoah**-<u>di</u>
            1SG    plant tree-PFV
            'I planted trees.'                     (ibid.)

As Mithun (1984) observes, in some languages patient S can also be incorporated into verbs but languages allows patient S-incorporation also allows P-incorporation (See also Baker (1988)). Namely, there is a universal hierarchy as in (62). The last two (agent S and A) are in brackets because they are not attested.

(62)    P > patient S (> agent S > A)

In Southern Tiwa (Tanoan), for example, the patient Ss 'dipper' and 'snow' are incorporated as in (63), while the agent Ss such as 'dog' cannot be incorporated as in (64).

(63)   a.   l-**k'uru**-k'euwe-m
            B-**dipper**-old-PRES
            'The dipper is old.'
      b.   we-**fan**-lur-mi
            C.NEG-**snow**-fall-PRES.NEG
            'Snow isn't falling. (It is not snowing.)'        (patient S)
                                (Allen, Gardiner & Frantz 1984; Baker 1988)

(64)   a.   **khwien**-ide Ø-teurawe-we
            **dog**-SUF    A-run-PRES
            'The dog is running.'
      b.   *Ø-**khwien**-teurawe-we
            A-**dog**-run-PRES
            'The dog is running.'                   (agent S)
                                  (Allen, Gardiner & Frantz 1984; Baker 1988)

In Japanese, Kageyama (1993) reports that patient S and P (in his terminology, internal arguments) are widely incorporated into verbs and form noun-verb compounds. He also reports the existence of agent S and A (external arguments) incorporated into verbs, but claims that they are exceptional. The hierarchy of noun incorporation (62) is similar to the hierarchy of zero-marking in Japanese. This is because they are both hierarchy based on focus structure (see also §7.3).

    Finally, VOB and the information-structure continuity principle with correlat-

ing features of information structure (2) predict that cross-linguistically, P and V appear together most frequently. Table 5.11 shows the order of subject (S in the table, A in our term), object (O in the table, P in our term), and verb (Dryer 2013c). "[O]ne order is considered dominant if text counts reveal it to be more than twice as common as the next most frequent order; if no order has this property, then the language is treated as lacking a dominant order for that set of elements " (Dryer 2013a). The table shows that SOV and SVO are the most popular dominant word order among all other possibilities as predicted, while the next popular order is VSO, which is against our prediction. However, note that, in deciding which word order is dominant in a language, Dryer included only "a transitive clause, more specifically declarative clauses in which both the subject and object involve a noun (and not just a pronoun)" (Dryer 2013c). Therefore, this dominant word order might not be of predicate-focus structure. Since both of the full noun phrases can be new, the clause might be of sentence-focus structure. Dryer (1997) (as well as Dryer (2013c)) points out that transitive clauses with full lexical nouns do not occur frequently; it is more common that one of the two arguments is pronominal, which is more likely to be of predicate-focus structure. For now, cross-linguistic examination of word orders controlling information structure is very difficult and I leave this problem for future studies.

Table 5.11: Order of subject, object, and verb (Dryer 2013c)

| Word Order | # of Lgs |
| --- | --- |
| SOV | 565 |
| SVO | 488 |
| VSO | 95 |
| VOS | 25 |
| OVS | 11 |
| OSV | 4 |
| No dominant order | 189 |

## 5.6 Summary

### 5.6.1 Summary of this chapter

This chapter analyzed associations between word order and information structure in spoken Japanese. I made it clear that shared topics appear clause-initially, while strongly evoked topics appear post-predicatively. Also, new, i.e., focus,

elements appear immediately before the predicate. Based on these findings, I proposed the information-structure continuity principle, in addition to from-old-to-new principle and persistent-element-first principle.

### 5.6.2 Remaining issues

As I briefly discussed in §5.5.1, information structure is not the only feature contributing to word order in spoken Japanese. It is necessary to employ statistical analyses.

# 6 Intonation

## 6.1 Introduction

This chapter investigates the relation between information structure and intonation units. I propose that an intonation unit corresponds to a chunk of information, which often corresponds to a unit of information structure. I employ two methods; one is a corpus study that I have employed in the previous chapters (§6.2), and the other is a production experiment, where I ask native speakers of Japanese to read aloud sentences and measure $F_0$ of their speech (§6.3). From these findings and the results of the experimental study, I propose principles governing intonation (§6.4).

Before going into the analyses, I discuss two types of intonation units (IUs) investigated in this study: phrasal IU and clausal IU. For the definition of intonation units, see §2.4.4.

I assume that there are many factors to determine IUs and it is impossible to investigate all of them. To study information structure factors determining IUs, I distinguish two types of intonation units: phrasal IU and clausal IU. A phrasal IU is an IU where an element (NP regardless of grammatical functions) is uttered in an IU separate from its predicate, whereas a clausal IU is an IU where an element is uttered in the same IU as its predicate. IUs where elements themselves are predicates are excluded from the analysis. Phrasal and clausal IUs are schematized as in (1), where an IU corresponds to a box.

(1) a. Phrasal IU: | NP | | Predicate |
  b. Clausal IU: | NP Predicate |

The motivations for this distinction come from the observation that IUs in Japanese are more frequently smaller units than a clause (Iwasaki 1993), while IUs in English often correspond to a clause (Chafe 1994). This distinction is also employed in Matsumoto (2003: Chapter 4), who investigated intonation units in Japanese in terms of information flow. (2) is an example of Japanese IU, where a single line corresponds to a single IU.

(2)   a.   atasi-wa-ne
           1SG-*wa*-FP
      b.   uti-de      kii-ta-no-ne
           home-LOC listen-PAST-NMLZ-FP
      c.   sono are-wa-ne
           FL   that-*wa*-FP
      d.   hoosoo-wa-ne
           broadcast-*wa*-FP
      e.   kazoku-de
           family-with
           'I listened to the broadcast at home with my family.'   (Iwasaki 1993:
           p. 40)

Iwasaki states that IUs in (2) are typical examples in Japanese. An IU corresponds to a phrase rather than a clause. Note that the definitions of IU in Iwasaki (1993) and Matsumoto (2003) are different from those in Den et al. (2010) and Den, Maruyama & Koiso (2011) employed in this study, while they share some similarities. In this particular example (2), most IUs end with the discourse particle *ne*, which often appears IU-finally also in the criteria of Den et al.

## 6.2 Intonation unit and unit of information structure: corpus study

Table 6.1: IU vs. information status

|            | Anaphoric | Non-anaphoric |
|------------|-----------|---------------|
| Phrasal IU | 501       | 571           |
|            | (65.2%)   | (59.4%)       |
| Clausal IU | 267       | 391           |
|            | (34.8%)   | (40.6%)       |
| Sum        | 768       | 962           |
|            | (100%)    | (100%)        |

This section explores the associations between IUs and information structure by investigating our corpus. I will argue that, in general, topics tend to be uttered in phrasal IUs (§6.2.1), while foci tend to be produced in clausal IUs (§6.2.2). I also discuss exceptional cases for each tendency.
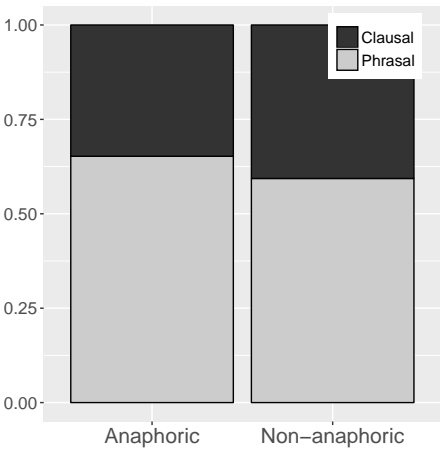
Figure 6.1: IU vs. information status
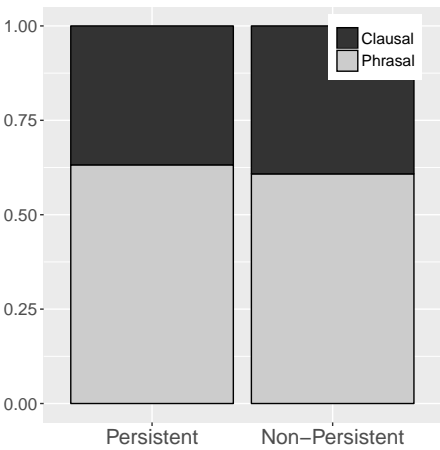
Figure 6.2: IU vs. persistence

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Table 6.2: IU vs. Persistence

|  | Persistent | Non-Persistent |
|---|---|---|
| Phrasal IU | 524 | 548 |
|  | (63.2%) | (60.8%) |
| Clausal IU | 305 | 353 |
|  | (36.8%) | (39.2%) |
| Sum | 829 | 901 |
|  | (100%) | (100%) |

Table 6.1 and Figure 6.1 show the distribution of phrasal vs. clausal IUs in different information statuses (anaphoric vs. non-anaphoric). Anaphoric elements refer to those whose referents have been mentioned in the previous discourse, whereas non-anaphoric elements refer to those whose referents have newly mentioned (see 3.4.3.3 for the annotation procedure more in detail). A linear mixed effects model was employed to predict information status, as we have seen in §4.2 and §5.1. Intonation (phrasal vs. clausal IU), particles (*toiuno-wa, wa, mo, ga, o, ni*), and word order (`nth` in CSJ, see §5.1 for the definition of this annotation) are included as fixed effects, and the speaker (`TalkID` in the corpus) is included as a random effect. The model with the effects of intonation, particles, and word order is significantly different from that without each of them (likelihood ratio test, $p < 0.05$ without intonation, $p < 0.001$ a model without particles, and $p < 0.01$ that without word order).

Table 6.2 and Figure 6.2 show the distribution of phrasal vs. clausal IUs in terms of persistence (persistent vs. non-persistent). Persistent elements are those whose referents are to be mentioned again in the following discourse, whereas non-persistent elements are those whose referents are not to be mentioned. Again a linear mixed effects model was applied to predict persistence, as discussed in §4.2 and §5.1. Intonation, particles, and word order are included as fixed effects and the speaker as a random effect. The model with the effects of particles, word order, and intonation is not significantly different from that without the effect of intonation ($p = 0.423$), whereas it is significantly different from the model without each of the effects of particles and word order (likelihood ratio test, $p < 0.001$ a model without particles, $p < 0.01$ that without word order).

### 6.2.1 Topics tend to be uttered in phrasal IUs

This section and the next section discuss associations between topics and IUs and argue that evoked, inferable, declining and unused topics tend to be uttered in phrasal IUs (§6.2.1.1, 6.2.1.2). I also claim that some strongly evoked topics, especially pronouns, are in fact part of the following IU and should be counted as clausal IUs by modifying the definitions of IU (§6.2.1.3). It also discusses exceptional cases where topics appear in clausal IUs (§6.2.1.4). I will argue that topics to be established tend to be uttered in phrasal IUs (§6.4).

Table 6.3: Intonation unit vs. particles

|  | *toiuno-wa* | *wa* | *mo* | *ga* | *o* | *ni* |
|---|---|---|---|---|---|---|
| Phrasal IU | 64 | 157 | 81 | 270 | 160 | 259 |
|  | (95.5%) | (83.5%) | (68.6%) | (60.0%) | (47.1%) | (58.6%) |
| Clausal IU | 3 | 31 | 37 | 180 | 180 | 183 |
|  | (4.5%) | (16.5%) | (31.4%) | (40.0%) | (52.9%) | (41.4%) |
| Sum | 67 | 188 | 118 | 450 | 340 | 442 |
|  | (100%) | (100%) | (100%) | (100%) | (100%) | (100%) |
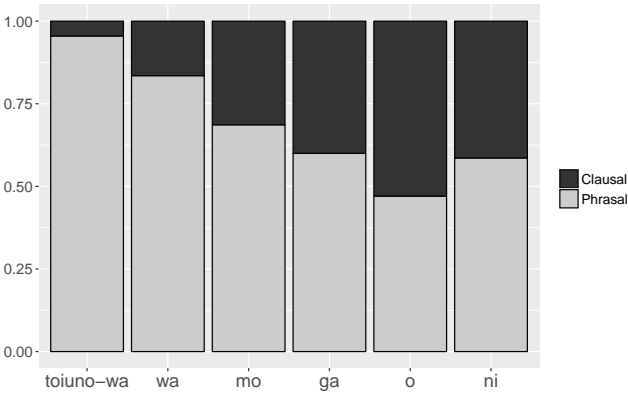


Figure 6.3: Intonation unit vs. particles

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### 6.2.1.1 Evoked, inferable, and declining elements with topic markers in phrasal IUs

As Table 6.1, Figure 6.1, and the results of statistical analysis indicate, anaphoric elements are more likely to be uttered in phrasal IUs. Also, Table 6.3 and Figure 6.3 show that elements with topic markers such as *toiuno-wa* and *wa* are more likely to be in phrasal IUs than those with case markers. Elements with topic markers are uttered in phrasal IUs most of the time, while the ratio of elements with case markers (without topic markers) in clausal IUs is larger. These observations indicate that at least evoked and inferable topics tend to be produced in phrasal IUs. This conclusion results from the observation that elements coded by topic markers such as *toiuno-wa* and *wa* are evoked or inferable elements as argued for in Chapter 4. Below I show that declining elements are also uttered in phrasal IUs. I will argue that strongly evoked elements, especially pronouns, are in fact part of the following IUs, although in the current criteria they are included in phrasal IUs, and should be counted as phrasal IUs in §6.2.1.3.
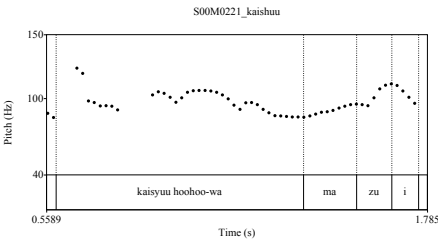


Figure 6.4: Pitch contour of (3)
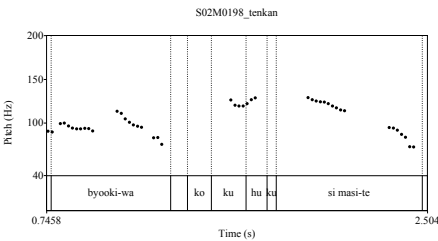


Figure 6.5: Pitch contour of (4)

(3) exemplifies an evoked element with topic marker uttered in a phrasal IU ("‖" indicates IU boundaries). In this talk, the speaker is talking about his former
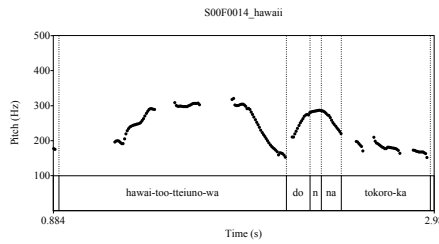
Figure 6.6: Pitch contour of (5)
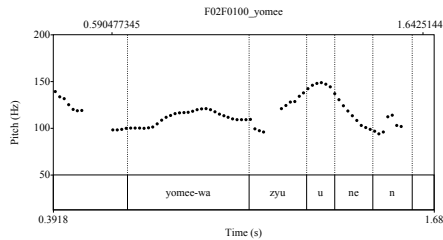


Figure 6.7: Pitch contour of (6)

job, collecting debt from people. There is an IU boundary after *kaisyuu hoohoo-wa* 'collecting method-*wa*', the element coded by a topic marker. *kaisyuu hoohoo* 'collecting method' is evoked because it is mentioned in the immediate context as indicated by *koo it-ta* 'this way of'.

(3)  koo        it-ta        ‖ **kaisyuu    hoohoo-wa** ‖ <u>mazui</u>-to        ‖
     this.way  say-PAST   collecting method-*wa*   wrong-QUOT
     'This way of collecting (debt) is wrong...'    (S00M0221: 580.21-582.06)

Figure 6.4 shows the pitch contour of (3). In the figure, one can observe a pitch reset in the first mora of the predicate *mazui* 'wrong'.

(4) is another example, where the speaker is talking about his dog, who had epilepsia. There is an IU boundary after *byooki-wa* 'disease-*wa*'. *Byooki* 'disesase' is also evoked because it is mentioned in the immediate context as indicated by the demonstrative *sono* 'that'.

(4)  sono **byooki-wa** ‖ kokuhuku <u>si</u>-masi-te   ‖
     that disease-*wa*   overcome do-PLT-and
     '(The speaker's dog) overcame that disease.'   (S02M0198: 480.52-482.47)

The pitch contour of (4) is shown in Figure 6.5. In the figure, one can observe not only a pitch reset, but also falling intonation, which typically occurs IU-finally.

(5) is an example of *toiuno-wa*-coded element uttered in a phrasal IU. The pitch contour is shown in Figure 6.6. *Hawai-too* 'Hawaii island' is also evoked as is clear from the demonstrative *kono* 'this'.

(5)  de    kono ‖ **hawai-too-tteiuno-wa**    ‖ don'na <u>tokoro</u>-ka-tte
     then this    Hawaii-island-*toiuno-wa*  how    place-Q
     ii-masu-to      ‖
     say-PLT-COND
     'What kind of place is this Hawaii island?'    (S00F0014: 166.53-169.71)

As shown in the figure, one can observe the pitch reset in the first mora of the predicate *don'na* 'how'.

Similarly, the inferable element *yomee-wa* 'life.expectancy-*wa*' is produced in a phrasal IU as indicated in Figure 6.7. *Yomee* 'life.expectancy' is inferable because the speaker is talking about her disease and it is reasonable to assume that the life expectancy is part of the knowledge about disease.

(6)  osoraku ‖ **yomee-wa**         ‖ <u>zyuu-nen</u> ‖ -da-to        ‖
     probably   life.expectancy-*wa*  ten-CL.year   -COP-QUOT
     iwa-re-masi-ta
     say-PASS-PLT-PAST
     '(I) was told that (my) life expectancy was 10 years.'         (S02F0010:
     312.22-314.91)

Declining elements are also produced in phrasal IUs rather than clausal IUs. Consider the following example. In (7), two competing topics, *meisei* 'fame' and *sigoto* 'job', are introduced in line a. Then, the speaker starts to talk about fame first and moves onto 'job' in line g, where the topic *sigoto* 'job' is considered to be declining. In this case, there is an intonation-unit boundary after *sigoto-no bubun-na-n-desu-keredomo* 'concerning the other one, job'.

(7)  a.  I have two goals: one is for <u>fame</u> and the other is for <u style="text-decoration: double underline">job</u>.
     b.  Concerning <u>fame</u>,
     c.  I have been participating in various piano competitions
     d.  So far the best award I received was the fourth best play in the China-
         Japan International Competition.
     e.  Beyond that, I would like to receive higher awards.

    f.    Titles matters a lot for pianists, so I will work hard.

    g.    de  ‖ ato-wa        ‖ **sigoto-no** ‖ **bubun-na-n-desu-keredomo**    ‖
        then  remaining-*wa*  job-GEN    part-COP-NMLZ-COP.PLT-though
        'Concerning the other one, job,'

    h.    to receive higher wages…        (S00F0209: 495.77-539.19)

### 6.2.1.2 Unused elements with topic markers in phrasal IUs

Unused elements with topic markers also tend to be uttered in phrasal IUs. Elements coded by a copula plus *kedo* or *ga* appear in phrasal IUs most of the time. For example, in (8-a), the element *sutairu* 'style', which is introduced for the first time, are produced in a phrasal IU.[1]

(8)    a.    nde ‖ ee ‖ kono ‖ tabi-no    ‖ **sutairu** ‖ -**tteiu**
           and  FL  this    travel-GEN  style    *-toiu*
           **mono-na-n-desu-keredomo**      ‖
           thing-COP-NMLZ-COP.PLT-though
           'Regarding my style of travelling,'

        b.    uh, I'm kind of getting used to travelling,

        c.    uh, I want to travel cheap and

        d.    go anywhere freely by myself,

        e.    that was my style of travelling, so…    (S00F0014: 300.43-317.95)

Similarly, in (9-a), *kandoo* 'emotion' is mentioned for the first time and is produced in a phrasal IU.

(9)    a.    de eberesuto-o mi-ta    **kandoo-na-n-desu-keredomo**      ‖
           and Everest-*o*   see-PAST emotion-COP-NMLZ-COP.PLT-though
           'Talking about the emotion of seeing Everest,'

        b.    um, Himalaya Mountains have very unique shape I've never seen before,

        c.    Actually, local people call them holy mountains,

        d.    hm, somehow their shapes are sacred.    (S01F0151: 460.73-477.82)

    Readers might speculate that these elements appear in phrasal IUs because they are long expressions. However, examples of the experimental study in §6.3 that force the speakers to assume topics to be unused, are short expressions (one

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[1] In fact, the predicate of 'style' is not clear in this example. This is a general characteristics of topics. See discussion in §4.4.3 for more detail.

word). The experiment show that these short unused topics are still produced in phrasal IUs.

### 6.2.1.3 Strongly evoked elements in clausal IUs
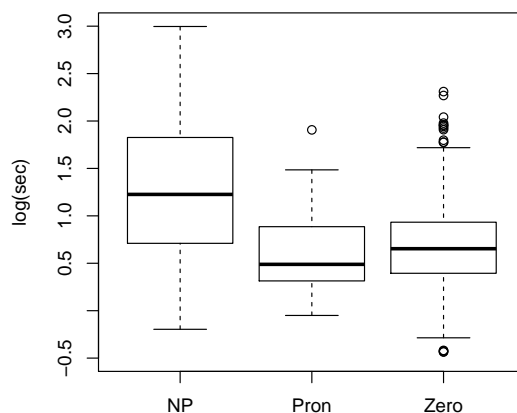


Figure 6.8: Anaphoric distance vs. expression type (all)

I propose that strongly evoked elements, usually pronouns coded by topic markers, are uttered in clausal IUs, although they are categorized into phrasal IUs by the current definition. Because strongly evoked elements tend to be uttered in low pitch with smaller pitch range than the following accentual phrase, they are likely to be counted as phrasal IUs. However, I argue that they should be regarded as clausal IUs. The number of pronouns are very small, which does not influence the overall tendency in Figure 6.3 and Table 6.3 and hence this change does not affect the conclusion proposed in the last section. The claim that pronouns are strongly evoked elements is supported in Figure 6.8, repeated from Figure 4.7, which show the time difference between when the first mora of the element in question is produced and when that of its antecedent is produced. This is assumed to approximate the activation cost of elements. As indicated in the figure, pronouns have as low activation costs as zero pronouns.

First, I show examples of strongly evoked elements and their pitch contours.

The pitch contours are different from evoked elements we have seen in the previous section. (10) is one of the few examples from the corpus of the current study, CSJ, whose pitch contour is shown in Figure 6.9. The IU boundary "‖" is inserted based on the current definition. I argue that there is no boundary after *sore-wa* 'that-*wa*'.

(10)  **sore-wa** ‖ <u>nan</u>-daroo-to     omot-te    ‖
      that-*wa*    what-COP.INFR-QUOT think-and
      '(I) was wondering what it was…'       (S00F0014: 654.06-655.18)

Since the number of pronouns is small in the current corpus, I provide examples from another corpus. Examples (11) and (12) are from *the Chiba three-party conversation corpus*, which is a corpus of three people's casual conversation (Den & Enomoto 2007). Their pitch contours are shown in Figure 6.10 and 6.11 respectively. Again, the IU boundary is inserted based on the current definition that I challenge.

(11)  **are** ‖ <u>kir</u>-en-no-ka-na    ‖
      that    cut-CAP-NMLZ-Q-Q
      'Can (you) cut it?'       (chiba0232: 442.56-443.33)

(12)  **sore** ‖ <u>dame</u>-zyan ‖
      that    wrong-FP
      'It's wrong, isn't it?'       (chiba1232: 155.92-156.64)

As shown in Figure 6.9-6.11, there is neither a pause nor vowel lengthening, which is often observed IU-finally. Moreover, the accent nucleus is not clearly observed in these pronouns. This suggests that a phrasal IU of evoked elements coded by topic markers and that of strongly evoked elements are qualitatively different. Since strongly evoked elements are already evoked and do not need to attract the hearer's attention, they are uttered with lower pitch. When they are followed by the predicate, which is typically not evoked and needs to attract the hearer's attention, the predicate is uttered with higher pitch, which causes a pitch reset.

I challenge the claim that this type of strongly evoked element actually forms a single chunk of processing. First, in addition to the qualitative difference between phrasal IUs of evoked elements and of strongly evoked elements, the transition from the IU with a single strongly evoked element such as *are* and *sore* in Figure 6.9-6.11 to the next is too fast for the speaker to plan the next utterance, assuming that an IU represents some kind of processing unit. This suggests that the current

element and the following element(s) belong to a single processing unit.

Second, a single strongly evoked element is too small a number for a processing unit. Especially pronouns are of relatively high frequency (although they are less frequent than zero pronouns) and the referent is assumed to have been evoked both in the speaker's and the hearer's mind. Although "the magic number" is still controversial (including the skepticism about "expressing capacity limits of human cognition in terms of a number" (Oberauer 2007: p. 245)), Cowan (2000; 2005) estimates that the magic number is around four in healthy young adults, whereas, in the original proposal in Miller (1956), the number is seven plus or minus two. Anyway, one element is too small in terms of this magic number.

Third, it is known that, historically, unstressed pronouns can change into clitics, then into affixes (Givón 1976). Japanese pronouns such as *are* and *sore* are not exceptions; *r* in *are* and *sore* are sometimes reduced and are uttered very quickly, which is highly likely to become a motivation for them to change into clitics in the future. Moreover, these pronouns often does not seem to have a clear pitch peak any more. The original pitch accent of *kore*, *sore*, and *are* is LH (The accent type of *kore*, *sore*, and *are* are flat type; i.e., they do not have accent nucleus). However, at least the pitch contours of the pronouns in Figure 6.9-6.11 are not LH any more.[2] The pronoun *are* in Figure 6.10 is completely low, and *sore-wa* in Figure 6.9 is HL, whose first pitch I believe is high because the pronoun appear utterance-initially. When such clitic pronouns start to phonologically depend on other words, it becomes harder to argue that a single clitic corresponds to a single processing unit.

From the observations above, I propose that IUs with a single anaphoric element do not form a single processing unit; rather, it is more appropriate to integrate it to the following IU and regard the whole chunk as a unit of processing. How to decide to integrate some IUs into the following IUs but not others is necessary to investigate in the future research.

### 6.2.1.4 Elements with topic markers in clausal IUs

I have claimed that evoked topics tend to be uttered in phrasal IUs, while strongly evoked topics tend to be uttered in clausal IUs. This section discusses cases where lexical NPs coded by topic markers are produced in clausal IUs for several reasons.

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[2] This breaks one of the pitch accent principles of Japanese discussed in §2.4.1, which states that the pitches of the first and the second morae within a word must be different. I claim that this is one of the motivations for pronouns to appear after the predicate. See also §5.3.2.1 for discussion.

S00F0014_sore
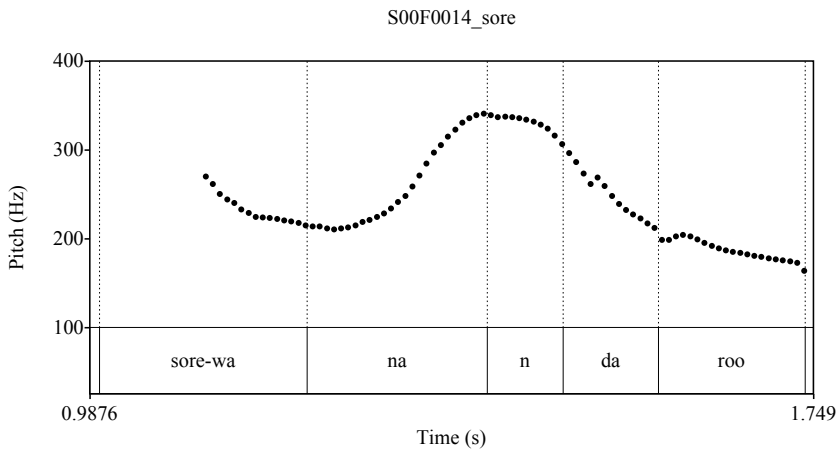
Figure 6.9: Pitch contour of (10)

chiba0232_are
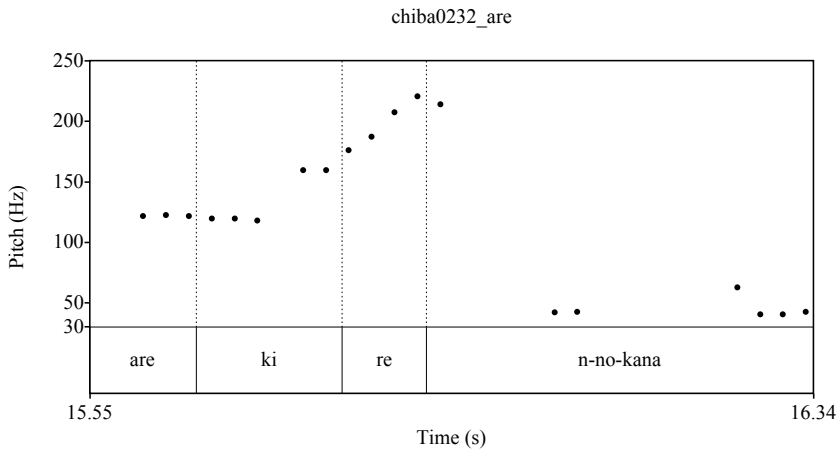
Figure 6.10: Pitch contour of (11)
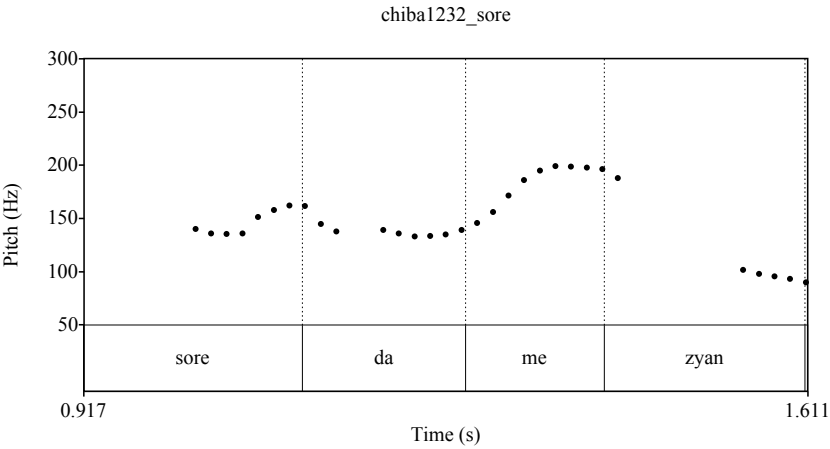
Figure 6.11: Pitch contour of (12)
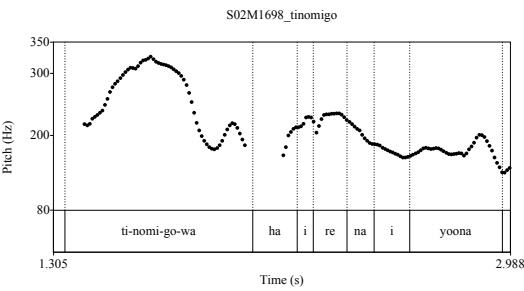


Figure 6.12: Pitch contour of a in (13)
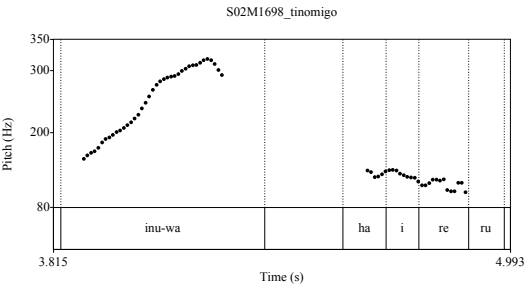


Figure 6.13: Pitch contour of b in (13)b
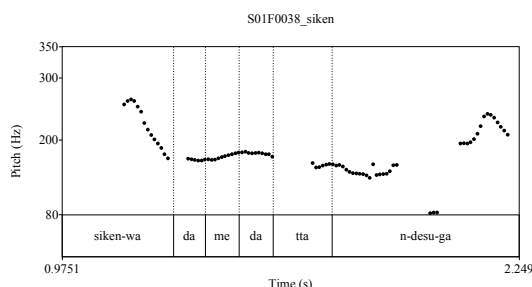
Figure 6.14: Pitch contour of (14)

First, contrasted elements coded by topic markers are typically uttered in a clausal IU; the pitch range of contrasted elements with the topic marker *wa* is larger than that of the predicate. In (13), for example, where the speaker is talking about his life with his dog in Germany, *ti-nomi-go* 'infant' and *inu* 'dog' are contrasted.

(13)   a.   **ti-nomi-go-wa**      <u>hair</u>-e-nai-yoona   resutoran-mo   ‖
            milk-drink-child-*wa* enter-CAP-NEG-like restaurant-also
            'Restaurants where infants are not allowed to enter,'
       b.   **inu-wa** <u>hair</u>-eru-to      ‖
            dog-*wa* enter-CAP-QUOT
            'dogs are allowed to enter.'            (S02M1698: 252.32-256.10)

As shown in Figure 6.12 and 6.13, the pitch range of the contrasted elements coded by the topic marker *wa* are larger than that of the predicates.

In a similar vein, in (14), *siken* 'exam' is implicitly contrasted with *mensetsu* 'interview'. Although the speaker did not do well in the exam, she had a fun time in the interview and she successfully passed the admission.

(14)   a.   tabun   **siken-wa** <u>dame</u>-dat-ta-n-desu-ga      ‖
            probably exam-*wa* bad-COP-PAST-NMLZ-PLT-though
            'Probably (the result of) the exam was bad, but'
       b.   (I) successfully passed the admission.   (S01F0038: 257.69-261.75)

In this case, as shown in Figure 6.14, *siken* 'exam' is uttered in a wider pitch range than the predicate.

Also, when the clause is in a special status and is uttered faster, elements coded by topic markers are typically uttered in clausal IUs. For example, inserted

*6 Intonation*
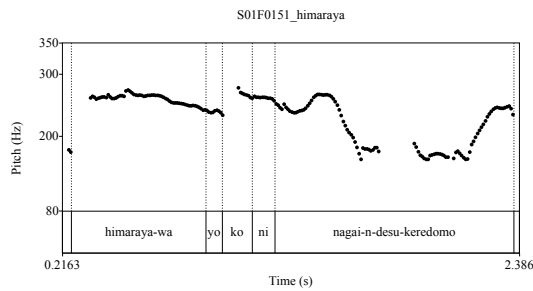


Figure 6.15: Pitch contour of c in (15)c
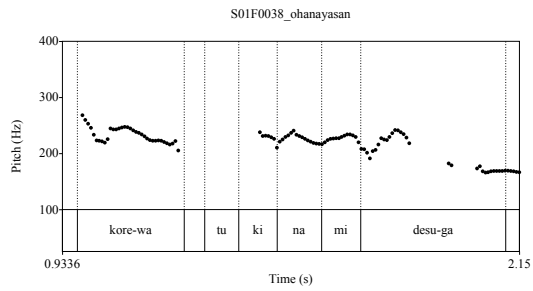


Figure 6.16: Pitch contour of a in (16)a
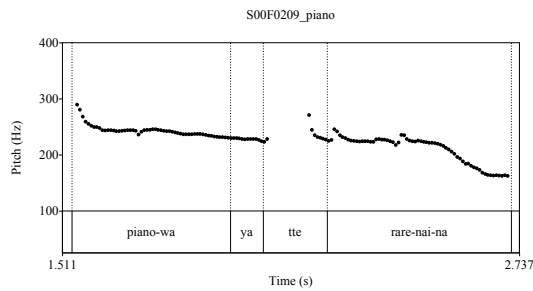


Figure 6.17: Pitch contour of (17)

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clauses are uttered faster relative to other utterances and their pitch is lower than the surrounding utterances. In (15), where the speaker explains Everest treks and which course she took, she inserts the clause describing the geometry of the Himalayas in (15-c). This clause contains an element coded by a topic marker, i.e., *himaraya-wa* 'Himalaya-*wa*', which is uttered in a clausal IU.

(15)   a.   de    watasi-ga ‖ zissaini ‖ it-ta    ‖ torekkingu-koosu-wa ‖
             then 1SG-*ga*    actually  go-PAST trekking-course-*wa*

       b.   eberesuto-kaidoo-to yob-areru ‖ masani ‖
             Everest-trail-QUOT    call-PASS   exactly

       c.   ee **himaraya-wa** yokoni      nagai-n-desu-keredomo    ‖
             FL Himalaya-*wa*  horizontally long-NMLZ-COP.PLT-though

       d.   ee sono ‖ ee higasi-gawa-ni ataru       ‖
             FL that   FL east-side-DAT    correspond

       e.   eberesuto-o ‖ nn -ni   mukat-te iku ‖ ruuto-desu
             Everest-*o*    FL -DAT face-and go   route-COP.PLT
             'The course I took for trekking is called the Everest Trail, which exactly, **uh the Himalayas are long horisontally**, uh on the east side is Everest and we walked toward the Everest.'           (S01F0151:
             89.71-105.25)

As shown in Figure 6.15, the F$_0$ peak of *himaraya-wa* 'Himalaya-*wa*' is higher than that of the following predicate; therefore there is no IU boundary between the noun and the predicate.[3] In a similar way, in (16), where the speaker talks about her childhood dream, she comments on her dream in the inserted clause (16-a).

(16)   a.   maa **kore-wa** tukinami-desu-ga       ‖
             FL this-*wa*  ordinary-COP.PLT-though
             'This (dream) might be too ordinary, but'

       b.   because I liked beautiful flowers,

       c.   (my dream was) florist.              (S01F0038: 53.90-58.93)

Figure 6.16 shows the pitch contour of (16-a). As in the figure, the F$_0$ peak of

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[3] In (15), pitch range difference cannot be used to determine the IU boundary because the F$_0$ of the phrase *himaraya-wa* is always high and hence one cannot meaningfully measure the pitch range. In this case, the IU boundary is identified after the phrase in question if the F$_0$ peak of the phrase is lower than that of the following phrase. In (15), the F$_0$ peak of *himaraya-wa* is higher than that of the predicate. Therefore, the IU boundary is not identified after the phrase *himaraya-wa* (see Igarashi, Kikuchi & Maekawa 2006: p. 420 ff.).

the topic phrase *kore-wa* 'this-*wa*' is higher than that of the predicate. Therefore, there is no IU boundary after *kore-wa*.

Another type of topic-coded element uttered in an clausal IU is embedded in a noun-modifier clause or quotation clause. For example, in (17-a), *piano-wa* 'piano-*wa*' is embedded in a quotation clause; the clause is the content of what the speaker thought.

(17)  a.  aa moo       ‖ kore-wa totemo **piano-wa**
          oh any.more  this-*wa* ever    piano-*wa*
          yat-te-rare-nai-na-to         omot-tara  ‖
          do-PROG-CAP-NEG-FP-QUOT think-COND
          'When I thought that (I) cannot play piano any more,'
      b.  it was so painful that I could not stand. (S00F0209: 214.53-219.84)

As indicated in Figure 6.17, which shows the pitch contour of (17-a), the $F_0$ peak of the topic phrase *piano-wa* is higher than that of the predicate and the whole clause is interpreted as a single IU.

### 6.2.2 Foci tend to be uttered in clausal IUs

#### 6.2.2.1 *Ga*-coded S and *o*-coded P that appear in clausal IUs

Table 6.4: Intonation unit vs. particles

|              | *toiuno-wa* | *wa*      | *mo*      | *ga*      | *o*       | *ni*      |
|--------------|-------------|-----------|-----------|-----------|-----------|-----------|
| Phrasal IU   | 64          | 157       | 81        | 270       | 160       | 259       |
|              | (95.5%)     | (83.5%)   | (68.6%)   | (60.0%)   | (47.1%)   | (58.6%)   |
| Clausal IU   | 3           | 31        | 37        | 180       | 180       | 183       |
|              | (4.5%)      | (16.5%)   | (31.4%)   | (40.0%)   | (52.9%)   | (41.4%)   |
| Sum          | 67          | 188       | 118       | 450       | 340       | 442       |
|              | (100%)      | (100%)    | (100%)    | (100%)    | (100%)    | (100%)    |

Table 6.3 and Figure 6.3, repeated here as Table 6.4 and Figure 6.18, indicates that *ga*- and *o*-coded elements are more likely to appear in clausal IUs than those coded by topic markers. In terms of grammatical function, it turned out that especially Ss are more likely to be uttered in clausal IUs than As, as shown in Table 6.5 and Figure 6.19, which show the distribution of grammatical function in terms of intonation unit regardless of whether elements are coded by topic
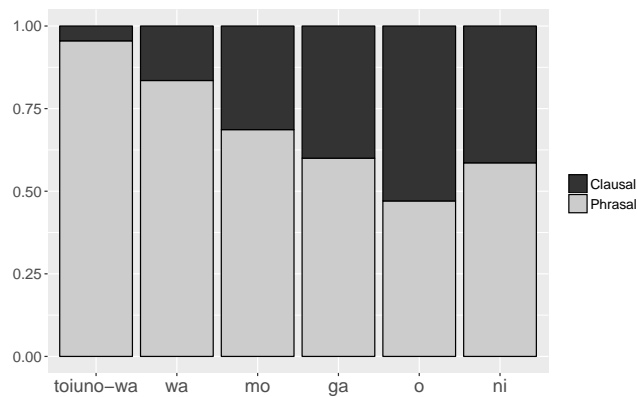
Figure 6.18: Intonation unit vs. particles

Table 6.5: Intonation unit vs. grammatical function

|            | Ex       | A        | S        | P        | Dative   |
|------------|----------|----------|----------|----------|----------|
| Phrasal IU | 38       | 41       | 463      | 202      | 328      |
|            | (97.4%)  | (80.4%)  | (66.0%)  | (49.1%)  | (62.2%)  |
| Clausal IU | 1        | 10       | 239      | 209      | 199      |
|            | (2.6%)   | (19.6%)  | (34.0%)  | (50.9%)  | (37.8%)  |
| Sum        | 39       | 51       | 702      | 411      | 527      |
|            | (100%)   | (100%)   | (100%)   | (100%)   | (100%)   |

markers or case markers. Since *ga* and *o* codes focus and S and P also correlate with focus, it is reasonable to conclude that focus in general tends to appear in clausal IUs.

(18-b) is an example of S in clausal IUs. The element *o-hanasi-ga* 'PLT-speech-*ga*' is uttered in a clausal IU.

(18)   a.   our way of collecting debt might be problematic,

b.   oo mina-san     ‖ zisyuku suru-yooni-to iu ‖ **o-hanasi-ga**
     FL everyone-HON   control do-IMP-QUOT say  PLT-speech-*ga*
     <u>de</u>-masi-te       ‖
     come.out-PLT-and
     'somebody proposed that employees should improve the method.'
     (S00M0221: 503.23-511.02)
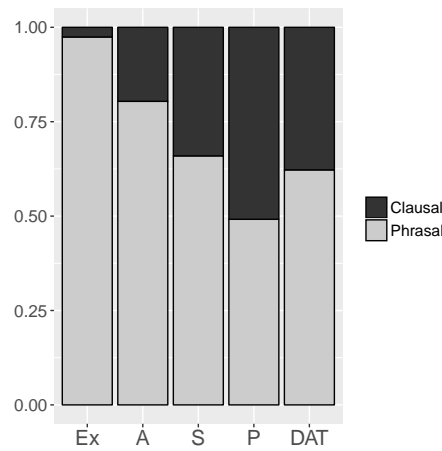
Figure 6.19: Intonation unit vs. grammatical function

As shown in Figure 6.20, there is no pitch reset in the first mora of the predicate. Also, the pitch range of *o-hanasi-ga* 'PLT-speech-*ga*' is larger than that of the predicate *de-masi-te* 'come.out-PLT-and', which indicates that the S element and the predicate are uttered in a single IU.

In a similar vein, in (19), whose pitch contour is shown in Figure 6.21, the S element *sikitari-ga* 'tradition-*ga*' and the predicate are uttered in a single IU; there is no pitch reset observed in the first mora of the predicate.

(19)   hizyooni kanasii ‖ anoo ‖ **sikitari-ga**   ari-masi-te    ‖
       very     sad      FL    tradition-*ga* exist-PLT-and
       'There was a very sad tradition...'        (S05M1236: 297.99-305.33)

(20-a) is an example of P uttered in a clausal IU.

(20)   a.   ee zyaa ‖ ano **puro-raisensu-o**      tori-tai-toka      ‖
            FL then   FL   professional-license-*o* take-want-HDG
            'OK, next, (I) wanna take a professional (boxing) license, or some-
            thing like that,'
       b.   (I) started to think like this.        (S01M0182: 251.43-257.40)

As shown in Figure 6.22, since there is no pitch reset at the first mora of the predicate *tori-tai* 'take-want' and the pitch range of the element *puro-raisensu-o* 'professional-license-*o*' is larger than that of the predicate, there is no IU bound-

ary after the element *puro-raisensu-o* 'professional-license-*o*'.

Similarly, in (21-c), whose pitch contour is shown in Figure 6.23, the clause is uttered in a single IU. The pitch range of the element *syuzyutu-o* 'operation-*o*' is larger than that of the predicate.

(21)  a.  Since I was young,
      b.  many times (I) stayed in the hospital and
      c.  **syuzyutu-o** <u>uke</u>-tei-tari   ‖ si-tei-ta-node        ‖
          operation-*o* receive-PROG-HDG   do-PROG-PAST-because
          'received operations, so'
      d.  when I die,
      e.  (I) was thinking that (I) would probably die in an accident or from
          disease.                                    (S02F0100: 387.22-399.08)
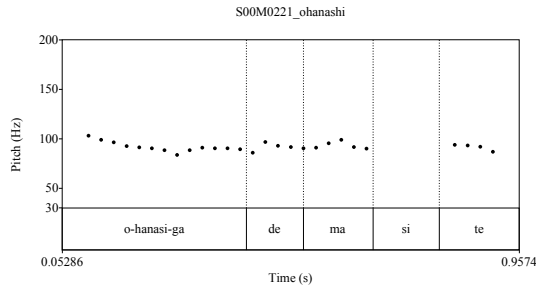


Figure 6.20: Pitch contour of (18)
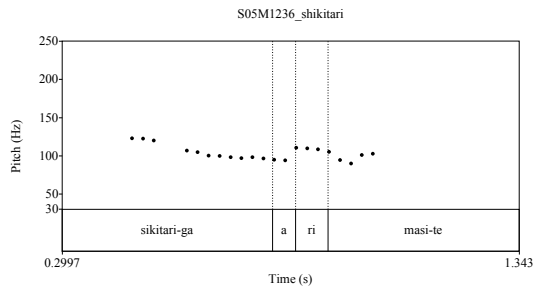


Figure 6.21: Pitch contour of (19)
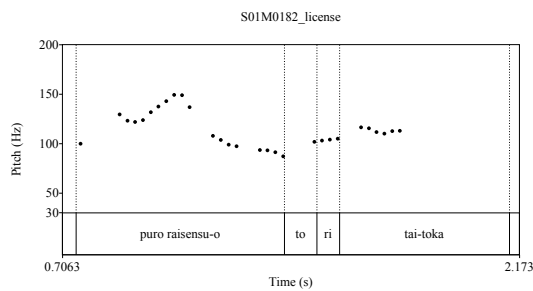
Figure 6.22: Pitch contour of a in (20)
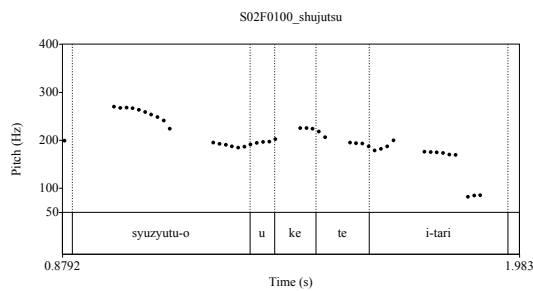


Figure 6.23: Pitch contour of c in (21)

#### 6.2.2.2 *Ga*-coded S and *o*-coded P that appear in phrasal IUs
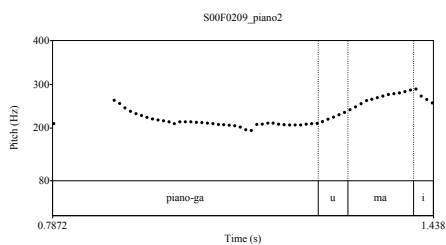


Figure 6.24: Pitch contour of a in (22)

Here, I discuss *ga*-coded S and *o*-coded P that appear in phrasal IUs. Although they are more likely to be uttered in clausal IUs than those coded by topic markers, there are many of those uttered in phrasal IUs as shown in Table 6.5 and Figure 6.19. I point out two types of focal elements uttered in phrasal IUs.
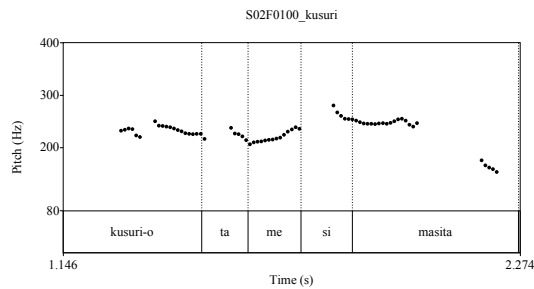
Figure 6.25: Pitch contour of a in (23)
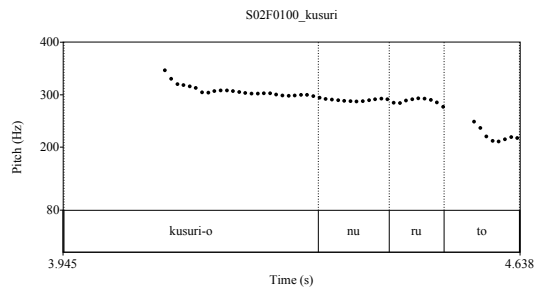


Figure 6.26: Pitch contour of b in (23)

The first type of this kind is strongly evoked elements which are uttered in lower pitch than their predicate and therefore have an IU boundary after these elements. They are uttered in phrasal IUs for the same reason as pronouns as discussed in §6.2.1.3. For example, in (22), whose pitch contour is shown in Figure 6.24, *piano* is strongly evoked and is uttered in lower pitch than its predicate. Therefore, the $F_0$ range of *piano* is smaller than that of the following predicate and there is an IU boundary between the element *piano* and the predicate. *Piano* is considered to be strongly evoked because the speaker mentions it repeatedly throughout her talk.

(22)   a.   zibun-yori **piano-ga** ‖ <u>umai</u>   hito-ga   yononaka-ni-wa takusan ‖
             self-than   piano-*ga*   good.at person-*ga* world-DAT-*wa*   a.lot

      b.   takusan iru…
           many   exist…

'There are so many people who are better at (playing) piano than me...'

`(S00F0209: 204.28-206.81)`

Similarly, in (23-a), whose pitch contour is shown in Figure 6.25, *kusuri* 'medicine' is strongly evoked and uttered in lower pitch than the predicate *tamesu* 'try'. *Kusuri* 'medicine' is strongly evoked because it also has been mentioned immediately before (23-a), as indicated by *sono* 'that'.

(23)  a.  sono s  **kusuri-o**  ‖ <u>tamesi</u>-masi-ta ‖
          that FRG medicine-*o*  try-PLT-PAST
          '(I) tried that medicine (because I was told that there was no other way).'
      b.  de   ‖ tasikani  sono **kusuri-o**   nuru-to   ‖
          then  certainly that  medicine-*o* put-COND
          'As the doctor said, when (I) put on the medicine,'
      c.  (my disease) becomes a little bit better...   (S02F0100:
          155.34-159.32)

However, in (23-b), which immediately follows (23-a), the $F_0$ peak of *kusuri* 'medicine' is higher than that of the predicate *nuru* 'put on', as shown in Figure 6.26. This contrasts with what I have claimed so far. I believe that the $F_0$ peak of *kusuri* in (23-b) is higher than that of the predicate because this appears sentence-initially. Japanese is a clause-chaining language, which combines multiple clauses to form a thematic unit (Longacre 1985; Martin 1992; Givón 2001). $F_0$ of sentence-initial clauses are the highest and it declines as the sentence goes on (Koiso & Ishimoto 2012; Ishimoto & Koiso 2012; 2013). Therefore, the elements in the sentence-initial position are the highest among other elements. As I have argued in §6.2.1.3, a pair of strongly evoked element and the following phrase should be considered to form a single processing unit. As in Figure 6.24 - 6.26, there is no pause or vowel lengthening between the anaphoric element and the predicate, which typically appear IU-finally. This supports that they should be integrated into a single unit at the level higher than intonation unit.

The second type is not as clear as the first one. I am not sure whether examples of the second type share the same characteristics. Rather, it is likely that they are still heterogeneous. Here I try to capture some characteristics they have. In some examples of the second type, the element is non-anaphoric and the $F_0$ is high, however, the $F_0$ of the predicate is also high for some reason. Examples of this kind are shown in (24) and (25). In (24), *kusa* 'grass' is non-anaphoric and

is uttered with prominence, but there is a pitch reset before the predicate, which has its own $F_0$ peak as in Figure 6.27.

(24)  a.  **kusa-ga** ‖ <u>hae</u>-te    ki-ta        ‖ tokoro-ni ‖
          grass-*ga*   grow-and come-PAST   place-DAT
          ‘The place where grasses grow up’

      b.  some people build houses...        (S00F0014: 276.80-279.30)

In (25), in a similar vein, there is a pitch reset before the predicate; the non-anaphoric element *tatoe* ‘metaphor’ and the predicate *warui* ‘bad’ have their own $F_0$ peak as in Figure 6.28.

(25)  a.  ee tyotto ‖ **tatoe-ga**    ‖ <u>warui</u>-n-desu-ga              ‖
          FL a.bit    metaphor-*ga*  bad-NMLZ-COP.PLT-though
          ‘This might be a bit bad metaphor, but’

      b.  it's kind of kamikaze-like idea.       (S00M0199: 360.76-365.14)
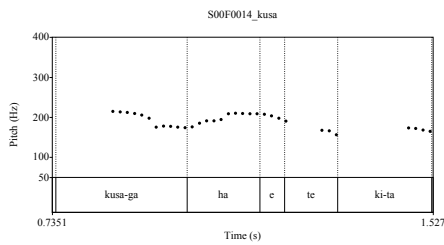


Figure 6.27: Pitch contour of a in (24)
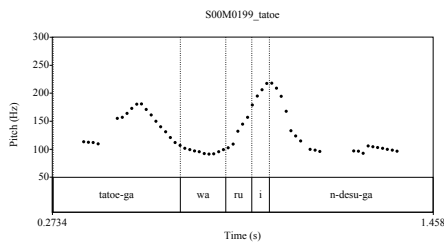


Figure 6.28: Pitch contour of a in (25)

In other examples of the second type, non-anaphoric elements are uttered in low pitch without prominence as though they are strongly evoked. In example (26),

the brand-new element *nyuukinbi* 'the deadline of repayment' is produced in low pitch against our prediction as shown in Figure 6.29.

(26)  a.  "Do you forget (about the deadline)?"
      b.  oo ‖ **nyuukinbi-ga** ‖ <u>sugi</u>-te   ori-masu-toiu      koto-de   ‖
          FL   deadline-*ga*      pass-and  PROG.PLT-PLT-QUOT  thing-COP
          "'The deadline of repayment has passed" something like that...'
                                                  (S00M0221: 220.24-225.28)

In this case, however, *nyuukinbi* 'the deadline of repayment' can be also regarded to be inferable through the previous context, because the speaker has been talking about the people who did not return money, although the speaker has not specifically mentioned *nyuukinbi* 'the deadline'. However, it is more natural for inferable elements to acquire their own pitch peak.

Moreover, there are also cases where perfectly brand-new elements are uttered in low pitch as if they were strongly evoked. In (27), neither the element *kyoomi* 'interest' nor the related concepts have been mentioned in the previous discourse, while it is still uttered in low pitch as in Figure 6.30.

(27)  a.  ee sono ritoo-no              ‖ hoo-ni    **kyoomi-o** ‖ <u>moti</u>
          FL FL  neighbour.island-GEN  direction-to interest-*o*  have
          hazime-masi-te ‖
          start-PLT-and
          '(We) started to be interested in neighbour islands (in Hawaii),'
      b.  and the first island in Hawaii we went to is Maui.      (S00F0014:
          149.92-156.93)

I do not have clear explanation for why this happens. Intuitively, the $F_0$ peak can be either on the element *kyoomi* 'interest' or on the predicate *moti* 'have' and the nuance does not change. However, it is unnatural if both the element and the predicate have their own $F_0$ peaks. Typically there is no pause or vowel lengthening between the element and the predicate in this type of example. Therefore, I tentatively conclude that uttering both the element and the predicate in a coherent pitch contour is important and I leave it open the question of which one should have the $F_0$ peak. I am inclined to think that the element and the predicate form a single processing unit.
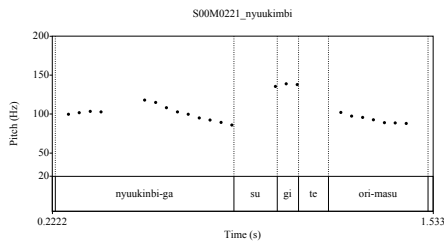
Figure 6.29: Pitch contour of b in (26)
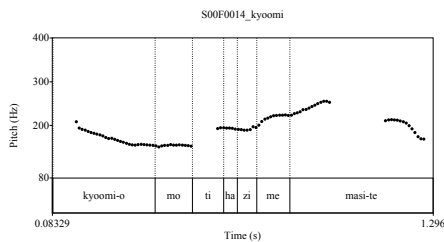


Figure 6.30: Pitch contour of a in (27)
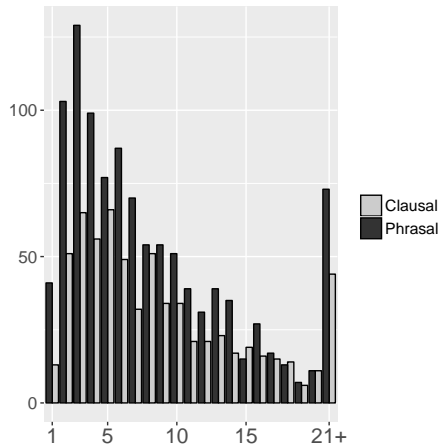


Figure 6.31: Intonation unit vs. word order

### 6.2.3 Summary of corpus study

This section argued that evoked, inferable, and declining topics tend to be produced in phrasal IUs, separately from the IU with the predicate; and strongly evoked topics are typically produced in clausal IUs together with the IU with the predicate; whereas foci tend to be produced in clausal IUs, although there are explainable exceptions.

However, as discussed in Chapter 5, topics tend to appear clause-initially and foci tend to appear right before the predicate. An element is more likely to be uttered in clausal IUs if it is closer to the predicate, which implies that foci are more likely to be uttered in clausal IUs. Therefore, it is not entirely clear whether information structure really affects the difference between phrasal and clausal IUs independent of word order. As an example, let us assume that (28) is a possible utterance that the speaker bears in his/her mind. "($\|$)" indicates a potential IU boundary. For simplicity, let us assume that only one out of the three potential IU boundaries realizes in this utterance.

(28)     A ($\|_1$) B ($\|_2$) C ($\|_3$) Predicate

If the speaker wants to put an IU boundary in $\|_1$, the IU which includes A is a phrasal IU, whereas the IU which includes B and C is a clausal IU as schematized in (29).

(29)     $\boxed{\text{A}}$ $\|_1$ $\boxed{\text{B C Predicate}}$

On the other hand, if the speaker wants to put the IU boundary in $\|_2$, now the IU which includes A and B is a phrasal IU, whereas the IU which includes C is a clausal IU. This is schematized in (30).

(30)     $\boxed{\text{A B}}$ $\|_2$ $\boxed{\text{C Predicate}}$

This indicate that even though the speaker does not want to put the IU boundary in $\|_1$, A are uttered in a phrasal IU because of $\|_2$ and $\|_3$; A is more likely to be uttered in a phrasal IU than B and C because it is uttered earlier. Similarly, B is more likely to be uttered in a phrasal IU than C. The effects of word order should not be ignored in the distinction between phrasal and clausal IUs. In fact, as Figure 6.31 shows, earlier elements are more likely to be produced in phrasal IUs than later elements.

In the next section, I discuss an experiment, controlling word order, and show that topics tend to be followed by an IU boundary, while foci are not.

## 6.3  Intonation unit and unit of information structure: experimental study

In the previous sections, I investigated the corpus of spoken Japanese. In this section, I will show that my argument so far is also supported by a production experiment keeping word order constant.

### 6.3.1  Method

This section gives an overview of the method of the experiment. First, I explain how stimuli are made (§6.3.1.1), then go over the procedure of the experiment (§6.3.1.2). Finally, I explain how the recordings acquired are annotated (§6.3.1.3).

#### 6.3.1.1  Stimuli

First, I made a list of three-mora nouns without accent nucleus (the pitch formation is expected to be LHH). I chose basic words that are used in everyday life, such as *sakura* 'cherry blossom' and *koinu* 'puppy'. I used an electric dictionary of Japanese called *UniDic* to search words (Den et al. 2002; 2007).[4] I chose words of this accent type to exclude the potential effect of the accent of these words on the following words. Second, I collected a list of verbs starting with low pitch. The second mora of the verbs should be high because the first and the second morae of a word should be distinct as discussed in §2.4.1. I chose these words to see the $F_0$ difference between the first and the second morae. Third, I made 14 pairs of a noun and a verb of high collocation using *Case Frame* (Kawahara & Kurohashi 2006a,b).[5] 7 pairs are subject-verb, and the remaining 7 pairs are object-verb, using the same noun. The stimuli can be schematized as in (31), where N indicates noun and V indicates verb.

(31)    $[LHH]_N$ $[LH...]_V$

Finally, I made two contexts for each pair; in one context, the noun is interpreted as topic, and in the other context, the noun and the verb as a whole are interpreted as focus.

Examples of two kinds of contexts and noun-verb pairs are shown in (32) and (33). The target sentence is *koinu yuzut-ta* '(I/we) gave (a/the) puppy'. In (32), where the noun is intended to be interpreted as topic and the verb to be focus, the

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[4] http://sourceforge.jp/projects/unidic/
[5] http://reed.kuee.kyoto-u.ac.jp/cf-search/

referent of the noun *koinu* 'puppy' has already been shared between the speaker and the hearer. Only the verb *yuzu-ta* 'gave' is news to the hearer. In all examples, the context forces the speakers to assume topics to be unused.

(32)   **Predicate-focus context**: Yesterday the speaker and his/her friend found an abandoned puppy on the street. The speaker brought it to his/her home. Today, the speaker tells the friend what happened to the puppy.

> sooieba   [**koinu**]$_T$ [**yuzut-ta**]$_F$-yo
> by.the.way puppy   give-PAST-FP
> 'By the way, (I) gave the puppy (to somebody).'

In (33), on the other hand, where both the noun and the verb are intended to be interpreted as focus, the referent of the noun *koinu* 'puppy' has not been shared. Not only the verb 'gave', but also 'a puppy' is brand-new to the hearer.

(33)   **All-focus context**: The speaker and his/her friend are working in an animal shelter. The friend was absent yesterday and wants to know what happened yesterday.

> kinoo-wa   [**koinu yuzut-ta**]$_F$-yo
> yesterday-*wa* puppy  give-PAST-FP
> 'Yesterday (we) gave puppies.'

After I made stimuli, I randomized the order of them so that the same target sentences (with predicate-focus and all-focus contexts) do not appear adjacent with each other.

### 6.3.1.2 Experimental procedure

I asked seven native speakers of standard Japanese to read aloud the stimuli. All of the participants grew up in Tokyo or near Tokyo (such as Saitama), where standard Japanese is spoken. All of them have lived for more than a year outside of the areas where standard Japanese is not spoken. Four of the participants are male, and three are female. I recorded their production using EDIROL (R09-HR) and the internal microphone.

### 6.3.1.3 Coding process

After the recording, I coded their speech using Praat.[6] First, I divided each target sentence into morae, then I divided each mora into a consonant (if any) and a

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[6] http://www.fon.hum.uva.nl/praat/

vowel. Second, I measured $F_0$ of the midpoint of the vowels with a Praat script.

### 6.3.2 Results

Figure 6.32-6.35 show the $F_0$ of vowels of each target sentence based on information structure. The graphs of Speaker 5–7 are omitted. In the x-axis, `n1` indicates the first mora of the noun, `n2` indicates the second mora, and `v1` indicates the first mora of the verb, and so on.

In some cases, there are less than 14 data points. This is because some vowels are devoiced. In standard Japanese, high vowels are often devoiced between two voiceless consonants such as *kusuri* [ku̥suɾi] 'medicine'. However, this is not always the case. Therefore, the numbers of data points vary depending on the speaker.

The red lines indicate the plot of the predicate-focus context, while the blue lines indicate the plot of the all-focus context. The error bars indicate the standard variations of $F_0$. Although the error bars are too large, it is clear that there is a pitch reset in `v1`, i.e., the first mora of the verb, and the pitch rises again in `v2`, i.e., the second mora of the verb.
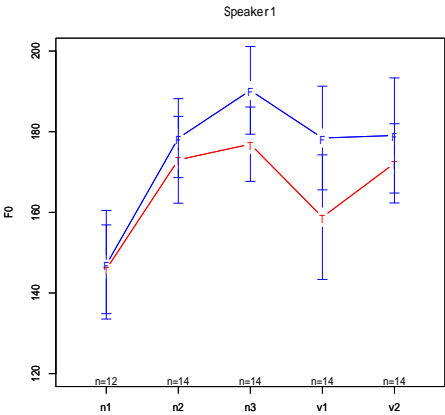


Figure 6.32: $F_0$ of vowels (Speaker 1)

A logistic regression analysis supports this impression. Table 6.6 and 6.7 show the results of the regression analysis. The dependent value is the $F_0$ difference between the adjacent morae of each utterance; in Table 6.6, the dependent value
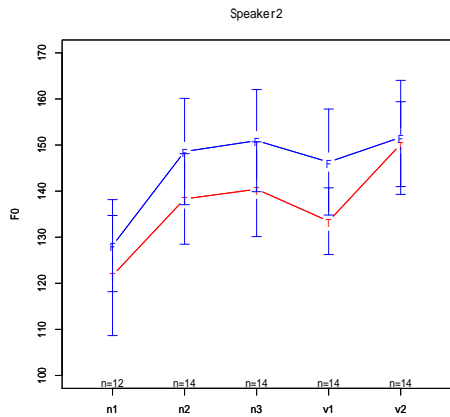
Figure 6.33: $F_0$ of vowels (Speaker 2)
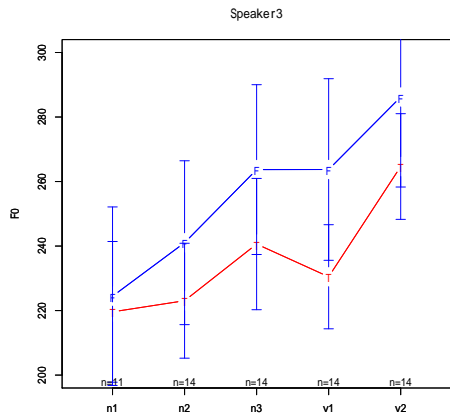


Figure 6.34: $F_0$ of vowels (Speaker 3)
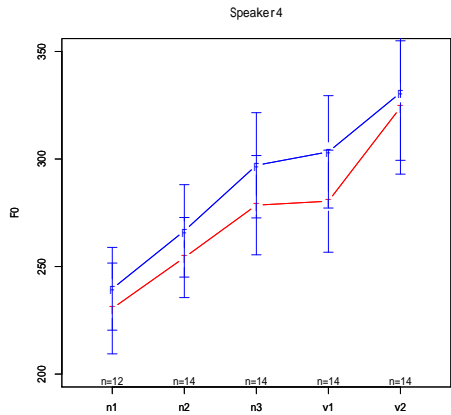
Figure 6.35: $F_0$ of vowels (Speaker 4)

is the $F_0$ difference between n3 and v1, while, in Table 6.7, it is the difference between v1 and v2. The independent values (predictors) are information structure (the distinction between the predicate- vs. all-focus contexts), grammatical relation (the distinction between the subject and the object), in addition to speakers and items as random effects.

Table 6.6 shows that the predicate-focus context significantly contributes to the $F_0$ difference between n3 and v1. The fact that the estimate is minus indicate that the $F_0$ value of v1 is lower than that of n3, which leads to the conclusion that there is a pitch reset in v1. Table 6.7 shows that, on the other hand, both the predicate-focus structure as well as the subject significantly contribute to the $F_0$ difference between v1 and v2. The estimate is plus this time, which indicates that there is a pitch rising from v1 to v2.[7] To summarize, there is a pitch reset in the first mora of the verb in the predicate-focus context, where the noun is topic, while the pitch reset is not observed in the all-focus context.

Examples of the pitch contours of actual production are shown in Figure 6.36 and 6.37. In Figure 6.36, where one of the participants of the experiment uttered (32), there is a pitch reset in the first mora of the verb *yuzut-ta* 'gave', while in Figure 6.37, where the same participant uttered (33), there is no pitch reset.

I also measured the vowel length of the last mora of the nouns. However,

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[7] I do not have explanation why the subject also contributes to the pitch difference of verbs. Further investigation is definitely necessary.

*6 Intonation*

Table 6.6: Results of logistic regression analysis (`v1-n3`)

| Coefficients | Estimate | p-value | |
|---|---|---|---|
| Information structure (predicate-focus) | −5.591 | 0.0437 | * |
| Grammatical relation (subject) | 0.7901 | 0.7758 | |

Table 6.7: Results of logistic regression analysis (`v2-v1`)

| Coefficients | Estimate | p-value | |
|---|---|---|---|
| Information structure (predicate-focus) | 8.5667 | 0.0149 | * |
| Grammatical relation (subject) | 8.2356 | 0.0221 | * |

$(0 \leq$ '***' $\leq 0.001 \leq$ '**' $\leq 0.01 \leq$ '*' $\leq 0.05$ '.' $\leq 0.1 \leq$ ' ' $1)$
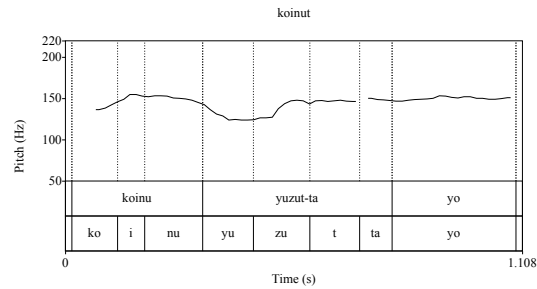


Figure 6.36: Pitch contour of (32)
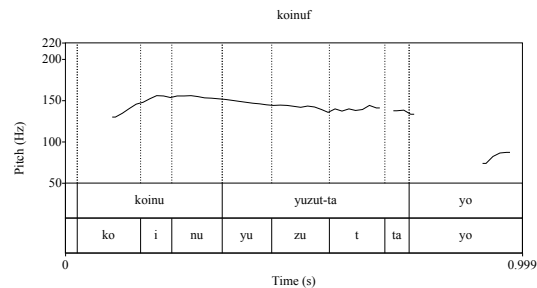


Figure 6.37: Pitch contour of (33)

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neither information structure nor grammatical relation significantly contributes to the vowel length. In addition, I conducted the regression analysis using the pitch-range difference between the noun and the verb as a dependent variable. Again, however, neither information structure nor grammatical relation do not significantly contribute to the pitch-range difference.

### 6.3.3 Summary of experimental study

In this section, I discussed the results of the production experiment and concluded that topic elements are produced intonationally separated from the focus predicate, namely, in phrasal IUs; while elements which consist of focus with the predicate are produced intonationally unified with the predicate, namely, in clausal IUs.

## 6.4 Discussion

This section discusses motivations for intonation units.

### 6.4.1 Principles of intonation unit, information structure, and activation cost

I propose two closely related motivations for evoked, inferable, declining, and unused topics in phrasal IUs and for foci in clausal IUs. First, uttering an evoked, inferable, declining, or unused topic, typically a noun followed by a topic particle, in an IU and a focus, typically the predicate and optionally a noun, in another IU is iconic and easy to process for both the speaker and the hearer. I call it the iconic principle of intonation unit and information structure (34).

(34)   **The iconic principle of intonation unit and information structure**: In spoken language, an IU tends to correspond to a unit of information structure.

This motivates the tendency that an evoked topic tends to be uttered in a phrasal IU and a focus uttered in a clausal IU.

Second, strongly evoked elements are proposed to be produced in a coherent IU with the predicate, namely, in a clausal IU; elements with low activation cost are not produced by themselves. Based on this observation, I propose the principle of IU and activation cost.

(35) **The principle of intonation unit and activation cost**: all substantive IUs have similar activation costs; there are few IUs with only a strongly evoked element or those with too much new elements.

This is inspired by, but also elaborates, "one new idea at a time" constraint in Chafe (1987; 1994). Chafe (1987; 1994), and Matsumoto (2003), who follows Chafe, considers this "one idea" corresponds to a grammatical category such as subject, object, and verb. Chafe (1994: p. 110 ff.), for example, discusses IUs consisting of an object and a verb as exceptional IUs. He argues that, in such IUs, there are special reasons for an object and a verb to be produced in an IU; verbs have been already evoked, the IU includes a low-content verb (such as "*have, get, give, do, make, take, use* and *say*", p. 111), or the object and verb is a lexicalized phrase (such as *wash dishes*). However, in my corpus, IUs with an object and a verb (or a subject and a verb) which do not apply to these conditions are not rare. For example, *toti-o uba-u* 'deprive (somebody) of land' is produced in a single IU. However, the expression is not frequently used in everyday life and the predicate *uba-u* 'deprive' is mentioned for the first time in this monologue. The verb *uba-u* 'deprive' is not low-content, either.

(36)  wareware-no ‖ **toti-o** <u>ubat</u>-te       ‖
      1PL-GEN       land-*o* deprive-and
      '(They) deprived our land…'          (S00M0199: 473.79-475.65)

Similarly, in (37-b), *i-nai kata-ga nana-wari* 'those who are absent consist of 70%' is neither conventionalized nor evoked, but it is still produced in a single IU.

(37)  a.  Those who do not pay back their debt consist of 30 %.
      b.  sorekara ‖ **i-nai**    **kata-ga**  <u>nana-wari</u>-to      ‖
          then       exist-NEG person-*ga* seven-ratio-QUOT
          'And, those who are absent consist of 70%.'
                                    (S00M0221: 348.22-356.07)

I argue that the NP and the verb are produced in a clausal IU because they consist of a unit of information structure: focus. At the same time, they form a syntactic constituent: VP. A unit of focus can contain several clauses through clause-chaining, but they are usually not realized as a single IU, but as several IUs because of the limitation of processing, which is captured by the principle (35).

  The principles (34) and (35) compete with each other and form an actual IU.

### 6.4.2 Principle of the separation of reference and role

I argue that intonation units play an important role in clause-chaining. As discussed in Chapter 5, uttering persistent elements clause-initially (with topic markers) is especially useful in clause-chaining language; this announces which element becomes zero in the following utterance. This type of clause-initial elements are often uttered in phrasal IUs rather than clausal IUs. For example, in (38), *eberesto-kaidoo* 'Everest trail' appears clause-initially, followed by an IU boundary, and is mentioned three times in the following clauses as indicated by Ø.[8] This big chunk of clauses in (38) as a whole consists of a sentence and each clause is combined through clause-chaining.

(38)  a.  **kono eberesuto-kaidoo-toiuno-wa ‖**
        this   Everest-trail-QUOT-*wa*
        'This Everest Trail is'
     b.  tibetto-to  nepaaru-no ‖ kooeki-ro-ni-mo      nat-te
        Tibet-COM Nepal-GEN     trade-road-DAT-also become-and
        ori-masi-te‖
        PROG-PLT-and
        'also used for trading between Tibet and Nepal.'
     c.  ma zissai-wa  nihon-de  iu-to        ‖
        FL  actual-*wa* Japan-LOC say-COND
        'Say, in Japan for example,'
     d.  Ø takao-san-mitaina      ‖ yama-miti-nan-desu-keredomo        ‖
        Ø Takao-mountain-like   mountain-road-NMLZ-COP.PLT-though
        'it's like a road in Mt. Takao or something.'
     e.  genti-no  hito∼bito-nitotte-wa ‖ ee ‖ Ø tuusyoo-ro-to    ‖ iu-yoona
        local-GEN person∼PL-for-*wa*       FL  Ø trade-road-QUOT  say-like

     f.  insyoo-no        Ø miti-desi-ta        ‖
        impression-GEN Ø road-COP.PLT-PAST
        'it was a road like trading road for local people.'
                                                        (S01F0151: 105.73-120.14)

To schematize, utterances like (39) are frequently observed.

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[8] Ø is assumed to appear right before the predicate for the purpose of presentation. However, this assumption does not affect the analysis here.

(39)   a.   | Topic | ‖
       b.   | Clause1 | ‖
       c.   | Clause2 | ‖
       d.   | Clause3 | ‖
       e.   …

First, the topic is uttered clause-initially (often coded by topic markers) in a phrasal IU. Then the explanation about the topic follows the topic. In other words, expressions like (39-a) followed by an IU boundary establishes topics to be mentioned in the following discourse.

This type of example is small in number per monologue because there is only a few topics introduced in each monologue. This blurs the pattern like (39) in simple count of raw numbers like the one shown in Table 6.2 and Figure 6.2.

I argue that the tendency schematized in (39) is a realization of the principle of the separation of reference and role proposed by Lambrecht (1994). Lambrecht (1994: 184-185) argues: "[t]he non-canonical configurations thus allow speakers to separate the REFERRING function of noun phrases from the RELATIONAL role their denotata play as arguments in a proposition. […] I will call the grammatical principle whereby the lexical representation of a topic referent takes place separately from the designation of the referent's role as an argument in a proposition the PRINCIPLE OF THE SEPARATION OF REFERENCE AND ROLE (PSRR) for topic expressions. The communicative motivation of this principle can be captured in the form of a simple pragmatic maxim: 'Do not introduce a referent and talk about it in the same clause'". In Japanese, PSRR is reflected by the fact that topic elements are also separated intonationally from the clause.

## 6.5 Summary

### 6.5.1 Summary of this chapter

This chapter analyzed intonation units in Japanese in terms of whether an NP is intonationally separated from the predicate or not. It argued that evoked, inferable, declining, and unused topics tend to be separated intonationally from the predicate, while strongly evoked topics tend to be integrated into the predicate. On the other hand, focus elements tend to be integrated into the predicate to form a unit of focus with the predicate. I proposed three inter-related principles at work to determine intonation units in Japanese.

### 6.5.2 Remaining issues

In this chapter, I proposed to modify the definitions of intonation units. Further studies are needed to investigate cognitively-valid definitions of intonation units. Furthermore, it is also necessary to come up with methodology to find a unit of processing independent of intonation to avoid circularity.

# 7 Discussion: Munti-dimensionality of linguistic forms

## 7.1 Summary of findings

The findings so far are summarized in Table 7.1 and 7.2.

Table 7.1: Summary of topic

| Activation status | Given-new taxonomy | Particles | Word order | Intonation |
|---|---|---|---|---|
| Active | Strongly evoked | (Zero pronoun) | | |
| | | *toiuno-wa, wa,* Ø | Post-predicate | Clausal IU |
| | Evoked | | Clause-initial | Phrasal IU |
| Semi-active | Inferable | *wa,* Ø | | |
| | Declining | COP-*kedo/ga,* Ø | | |
| Inactive | Unused | | | |
| | Brand-new | – | – | – |

Table 7.2: Summary of (broad) focus

| | Particles | Word order | Intonation |
|---|---|---|---|
| A | *ga* | | |
| Agent S | *ga* | Pre-predicate | Clausal IU |
| Patient S | *ga,* Ø | | |
| P | Ø | | |

Overall, I showed that correlating but distinct features affect the choice of particles, word order, and intonation in spoken Japanese. The features proposed are summarized in (2) in Chapter 3, which is repeated here as (1) for convenience.

*7 Discussion*

(1)

|   | topic | focus |
|---|-------|-------|
| a. | presupposed | asserted |
| b. | evoked | brand-new |
| c. | definite | indefinite |
| d. | specific | non-specific |
| e. | animate | inanimate |
| f. | agent | patient |
| g. | inferable | non-inferable |

In Chapter 4, I concentrated on particles. Topic markers such as *toiuno-wa*, *wa*, and *kedo/ga* are sensitive to assumed the statuses in given-new taxonomy of the referent in question. All topic markers code elements that are presupposed to be shared between the speaker and the hearer and cannot be negated in a normal way. Namely, topic markers are sensitive to a and b in (1). The marker *toiuno-wa* codes elements referring to an entity in evoked status in the hearer's mind. The marker *wa* codes elements referring to an entity in inferable status, in addition to elements that can be coded by *toiuno-wa*. The marker *kedo/ga* preceded by the copula *da* or *desu* codes elements referring to an entity that is declining or unuesd in the assumed hearer's mind. Topic markers are optional except for contrastive topics. In a formal speech style, topic markers tend to appear. In addition to whether the referent in question is evoked or not, I also showed that the topic markers are partially sensitive to grammatical function (f in (1)); when the clause has two evoked arguments, A and P, A is more likely to be coded by topic markers (in this case, *wa*), rather than P.

Case markers are, on the other hand, sensitive to whether the referent is (part of) assertion or not (a in (1)), in addition to grammatical functions (f in (1)). A, agent S, and optionally patient S are coded by *ga*, whereas patient S and P tend to be coded by Ø. A, S, and P in the argument focus or narrow focus environment are coded by explicit markers. I (and the previous literature) also suggested the possibility that *ga* and *o* are sensitive to animacy (e in (1)).

In Chapter 5, I focused on word order. I showed that shared elements, which correlate with topics, tend to appear clause-initially irrespective of the status of given-new taxonomy. Strongly evoked elements can appear post-predicatively especially in conversation. Post-predicate elements are sensitive to given-new taxonomy (b in (1)), while clause-initial elements are sensitive to identifiability. On the other hand, foci tend to appear pre-predicatively (i.e., immediately before the predicate). Pre-predicate elements tend to refer to non-shared entities, in contrast with clause-initial topics. Word order is also sensitive to grammatical function (f in (1)), as classically observed. The referent of clause-initial elements

are referred to by zero pronouns in the following discourse, while the referent of pre-predicate elements repeatedly appear as full NPs. In terms of word order I proposed that three inter-related principles repeated here as (2), (3), and (4) are working to determine word order of spoken Japanese. Principles (2) and (4) predict that topics appear clause-initially, while Principle (3) and the assumption that Japanese is a verb-final language predict that focus appear pre-predicatively.

(2) **From-old-to-new principle**: In languages in which word order is relatively free, the unmarked word order of constituents is old, predictable information first and new, unpredictable information last.     (Kuno (1978: p. 54), Kuno (2004: p. 326))

(3) **Information-structure continuity principle**: A unit of information structure must be continuous in a clause; i.e., elements which belong to the same unit are adjacent with each other.

(4) **Persistent-element-first principle**: In languages in which word order is relatively free, the unmarked word order of constituents is persistent element first and non-persistent element last.

I suppose that there is no principle that predicts the order of strongly evoked elements because they are not necessary elements to be produced; the hearer is assumed to be able to identify the referent because they are strongly evoked. They are produced for some intonational or interactional reasons as has been discussed in 5.3.2.

In Chapter 6, I discussed intonation. I showed that evoked, inferable, declining, and unused topics tend to be produced in an intonation unit separately from the predicate, while strongly evoked topics tend to be produced in an intonation unit together with the predicate. On the other hand, broad focus tend to appear in an intonation unit with the predicate to form a unit of predicate focus structure. I proposed two principles determining intonation unit in Japanese repeated here as (5) and (6). Principle (5) predicts that a topic and a focus appear in an intonation contour by itself, respectively, whereas Principle (6) predicts that strongly evoked topics are glued to an IU of focus.

(5) **Iconic principle of intonation unit and information structure**: In spoken language, an IU tends to correspond to a unit of information structure.

(6) **Principle of intonation unit and activation cost**: all substantive IUs have similar activation costs; there are few IUs with only a strongly evoked

element or those with too much new elements.

To be more precise, these principles predict that when the activation cost of a topic is high, it is separated intonationally from the focus predicate as in (7-a); whereas when the activation cost of a topic is low, it is produced with the focus predicate as in (7-b-c). A box corresponds to an IU.

(7)  a.  | Topic | | Focus |

b.  | Topic Focus |

c.  | Focus Topic |

## 7.2 Competing motivations

As summarized above, there is no single feature (such as topic or focus) to determine the choice of particles, word order, and intonation; multiple features influence a single linguistic expression. This is not a rare phenomenon; rather, it is frequently observed in languages and it is a source of language change. Comrie (1979) called this variability "seepage". As has been discussed in §4.3.1.3, *ko* in Hindi codes definite or animate direct object; there is no single feature that determines the use of *ko*. He discusses another example from Mongolian (Poppe 1970). According to Poppe, the accusative suffix *-iig* only attaches to certain kinds of direct objects. Human direct objects are always followed by the suffix as exemplified in (8).

(8)  a.  dorž bagš-**iig**    zalav
dorj teacher-DO invited
'Dorj invited the teacher.'

b.  bid nar olan   xün-**iig**    üzsen
we ?    many people-DO saw
'We saw many people.'                          (Comrie 1979: 18)

On the other hand, non-human direct objects are optionally followed by the suffix. In this case, definiteness plays an important role. To complicate things, the suffix also attaches to indefinite direct objects when they are apart from the verb.

(9)  a.  čoidog   zurag  zurav
Choidog picture painted
'Choidog painted a picture'

b.  zurag-iig    Choidog zurav
    picture-DO Choidog painted
    'Choidog painted the picture. (As for the picture, it was Choidog that
    painted it.)'                                        (Comrie 1979: 19)

The distinction between so-called accusative marker *o* and zero particles in Japanese
is similar to the use (or non-use) of this suffix *-iig* in Mongolian. The choice be-
tween *o* and zero particles is reported to be determined by definiteness, animacy,
and word order. Definite or animate objects are more likely to be coded by *o*
rather than zero particles (Minashima 2001; Fry 2001; Kurumada & Jaeger 2013;
2015). Also, according to Tsutsui (1984); Matsuda (1996), and Fry (2001), verb-
adjacent objects are more likely to be zero-coded (hence less likely to be *o*-coded),
while non-verb-adjacent objects are more likely to be coded by *o*, although the
distinction is subtle.

Du Bois (1985) argues that multi-dimensionality of a linguistic expression is
based on "competing motivations". An example of competing motivations that
Du Bois provides and is relevant to this thesis is that of the distinction between
ergative-absolutive and nominative-accusative languages.

> The reason that not all languages are ergative – i.e. that some languages
> choose the 'option' of categorizing S with A rather than with O [P in terms
> of this thesis] – is that there is another motivation which competes for the
> same limited good, the structuring of the person-number-role paradigm.
> [...] S and A are united by their tendency to code referents which are human,
> (relatively) agentive, and maintained as topics over significant stretches of
> discourse ('thematic'). Thus, a discourse pressure to roughly mark topic/agent
> motivates nominative-accusative morphology, while a discourse pressure
> to roughly mark new information motivates ergative-absolutive morphol-
> ogy. These two pressures may be seen as competing to overlay a secondary
> function on the existing A/S/O base (though this formulation is of course
> somewhat oversimplified). [...] Thus the answer to the question as to why
> not all languages are ergative is simply that, while there is a strong discourse
> pressure which motivates an absolutive category, there is an equally strong
> – possibly stronger – discourse pressure which motivates a nominative cat-
> egory. Both motivations cannot prevail in the competition for control of the
> linguistic substance of this paradigm. (Du Bois 1985: 354–355)

My thesis showed competing motivations that affects choices of particles, word
order, and intonation in spoken Japanese. For example, as has been discussed in
§4.5.2 and Nakagawa (2013), case particles are sensitive to focushood and thus P

and patient S are unmarked (zero-coded). On the other hand, topic markers are sensitive to topichood and thus A and agent S are unmarked in another dialect, Kansai Japanese.

If a single feature "topic" or "focus" determines the choice of word order and particles, it is expected, for example, that all clause-initial elements are coded by topic markers because both clause-initial elements and those coded by topic markers are topics. However, this is not the case as shown in §5.2.1.1. Although clause-initial elements tend to be coded by topic markers, not all clause-initial elements are coded by topic markers. This is because word order and topic coding are sensitive to different features, while both of them are sensitive to topichood and focushood; clause-initial elements are sensitive to identifiability, whereas topic markers are sensitive to activation status of the referent in question.

The claim of this thesis is an elaboration of the claim made by Li & Thompson (1976) that Japanese is a subject-prominent and topic-prominent language. In terms of this thesis, the claim is elaborated in the following way; Japanese is sensitive to various features related to topichood and focushood such as presupposition vs. assertion (a in (1)) and the status of given-new taxonomy (b in (1)), in addition to grammatical function (f in (1)).

The theory of competing motivations and correlating features of topic and focus (1) predicts that there are other types of languages such as animacy-prominent languages and specificity-prominent languages. As far as I notice, there are at least what I call animacy-prominent languages according to the literature (Dahl & Fraurud 1996; Minkoff 2000; de Swart, Lamers & Lestrade 2007: *inter alia*). For example, in grammatical sentences in Mam-Maya, the subject is as animate as, or more animate than the object (Minkoff 2000). Another well-known example is Navajo (Athapaskan). In Navajo, the order of S and P can be either SP or PS. In case of an SP order, the marker *yi* attaches before the verb; in case of a PS order, the marker *bi* attaches to the verb (Hale 1972; Frischberg 1972). This is exemplified in (10). In (10-a), where the subject 'horse' precede the object 'mule', the affix *yi* attaches to the verb. In (10-b), on the other hand, where the object precede the subject, *bi* is used.

(10)    a.    lhíí    dzaanééz  **yi**-ztalh
              horse mule      him-kicked
              'The horse kicked the mule.'                    (SP)
        b.    dzaanééz lhíí    **bi**-ztalh
              mule      horse him-kicked
              'The horse kicked the mule.'                    (PS)

(Hale 1972: 300)

When the subject and the object are equally animate as in the case (10), both *yi-* and *bi-* constructions can be used. However, when the subject is more animate than the object, only *yi-*construction with the SP order is grammatical; while when the object is more animate than the subject, only *bi-* construction with the PS order is grammatical. These languages can be called animate-prominent languages in the sense that animacy constraints word order or grammatical functions.

Finally, I point out that this kind of multivariate analysis is not compatible with theories like generative grammar. For example, Endo (2014), following Rizzi's cartography theory (e.g., Rizzi 1997; 2004), points out that "an information focus occurs immediate left to the verb" (p. 170).[1] This observation is compatible with that of Kuno (1978). In the following example (11-A), *hon* 'book' is a focus because it is the answer to the *wh*-question (11-Q). The focus appear immediately before the verb *kai-masi-ta* 'bought'.

(11)    Q:    What did you buy?
        A:    watasi-wa **hon-o**    kai-masi-ta
              1SG-TOP    book-ACC buy-PLT-PAST
              'I bought a book.'                              (Endo 2014: 170–171)

As we immediately notice, however, the focus *hon* 'book' is the object (P) of the sentence at the same time. In the framework of cartography, it is not clear how to represent an element which a focus and the object at the same time.

## 7.3 Languages with hard constraints

This thesis showed a variety of statistical tendencies of particle choice, word order, and intonation in Japanese. Especially, in Chapter 5 and 6, I discussed the distinction between elements that appear close to the predicate (in terms of word order) and are glued to the predicate (in terms of intonation) and elements that appear separately from the predicate (in terms of both word order and intonation). In this section, I discuss other languages that have conventionalized the statistical tendency shown in this thesis. As Bresnan, Dingare & Manning (2001) state, "soft constraints mirror hard constrains"; namely, "[t]he same categorical phenomena which are attributed to hard grammatical constraints in some

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[1] An information focus is "the answer to *wh*-questions and the target of negation" (ibid.), which is the same focus discussed in this thesis.

languages continue to show up as statistical preferences in other languages, motivating a grammatical model that can account for soft constraints" (p. 29) (see also Givón 1979; Bybee & Hopper 2001).

In §7.3.1, I discuss languages that integrate some elements into the predicate. In §7.3.2, I focus on languages that separate some elements from the predicate.

### 7.3.1 Elements glued to the predicate

There are two kinds of elements proposed in this thesis that are glued to the predicate: strongly evoked elements that are postposed and focus elements.

#### 7.3.1.1 Affixation of pronouns

First, I discuss languages where strongly evoked elements, especially pronouns, are glued to the predicate. As discussed in §5.3, strongly evoked elements in spoken Japanese can appear immediately after the predicate, with a single intonation contour with the predicate. This is a statistical tendency (i.e., soft constraint) rather than a categorical phenomenon (i.e., hard constraint), showing that strongly evoked elements tend to be glued to the predicate. I argue that in languages with hard constraints, this corresponds to so-called "grammatical agreement". In languages with grammatical agreement, an affix, which is coreferential with the subject or the object, attaches typically to the verb. As Givón (1976: 151) states, "[grammatical agreement and pronominalization] are fundamentally one and the same phenomenon, and [...] neither diachronically nor, most often, synchronically could one draw a demarcating line on any principled grounds." He argues that "subject grammatical agreement" arose from topic-shift constructions like (12-a), which are reanalyzed as "subject-verb agreement" as in (12-b).

(12)  a.  Topic shift
          <u>The man</u>, **he**          came.
          (topic)     (pronoun) (verb)
      b.  Neutral (reanalyzed)
          <u>The man</u> **he**-came.
          (subject) (agreement)-(verb)

(Givón 1976: 155)

Givón argues that "[t]he morphological binding of the pronoun to the verb is an inevitable natural phenomenon, cliticization, having to do with the unstressed status of pronouns, their decreased information load and the subsequent loss of

resistance to phonological attrition" (p. 155). The following are examples from Swahili (Bantu). In (13-a), the subject *m-toto* 'child (class 1)' has an agreement relationship with the verb prefix *a* 'he (class 1)'. According to Givón, the verb prefix *a* originates from a pronoun. Similarly, in (13-b), the subject *ki-kopo* 'cup (class 7)' agrees with *ki* 'it (class 7)'. The examples are glossed based on Contini-Morava (1994).

(13) a. **m-toto**  a-li-kuja
CL1-child 3SBJ.CL1-PAST-come
'The child came.'

b. **ki**-kopo **ki**-li-vunjika
CL7-cup 3SBJ.CL7-PAST-break
'The cup broke.'                                    (Givón 1976: 157)

Also, preposed objects are attested in Swahili, and they have an agreement relationship with a verb affix in a way similar to subject agreement. The object *m-toto* 'child (class 1)' agrees with the interfix *kw* 'him (class 1)' as in (14-a), and the object *ki-kopo* 'cup (class 7)' with *ki* 'it (class 7)' as in (14-b).

(14) a. **m-toto**, ni-li-**mw**-ona
CL1-child 1SG-PAST-3OBJ.CL1-see
'The child, I saw him.'

b. **ki-kopo**, ni-li-**ki**-vunja
CL7-cup 1SG-PAST-3OBJ.CL7-break
'The cup, I broke it.'                                    (ibid.)

Dryer (2013b) states that "[l]anguages in which pronominal subjects are expressed by pronominal affixes are widespread throughout the world." According to him, in 437 out of 711 languages, "pronominal subjects are expressed by affixes on verbs." Mian (Ok, Papua New Guinea) is one of those languages. As shown in (15), in Mian, the subject are expressed by the suffix *i*, and the object are expressed by the prefix *a*.

(15) **nē** naka=e  a-temê'-b-**i**=be
1SG man=SG.M 3SG.M.OBJ-see.IMPFV-IMPFV-1SG.SBJ=DECL
'I am looking at the man.'                          (Fedden 2007: 261)

Givón (1976) argues that the subject-agreement stems from topic-shift constructions like (12), while the object-agreement originates from afterthought-topic constructions like (16), i.e., post-predicate constructions, at least in SVO

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languages.

(16)   a.   Topic shift
            <u>The man</u>, I saw **him**.
       b.   Afterthought
            I saw **him**, <u>the man</u>.
       c.   Neutral
            I saw-**him** <u>the man</u>.

Deaccented pronouns in Japanese can be interpreted as premature pronominal affixes.

### 7.3.1.2 Noun incorporation

While focus elements tend to be produced pre-predicatively in a coherent intonation contour with the predicate in Japanese, I propose that, in languages with hard constraints, focus elements are incorporated into the predicate. In this section, I point out some similarities between focus elements in the predicate focus environment and incorporated nouns. Also, I discuss similarities between focus zero-coding and noun incorporation based on Mithun (1984). In noun incorporation, a nominal and predicate form a unit; nominals and the predicate are phonologically, morphologically, and syntactically cohesive. According to Mithun (1984), zero-coding is the first stage of noun incorporation.

First, as Mithun (1984) states, typically incorporated nouns are indefinite and/or non-specific, which are features correlating with focus. Definite and/or specific nouns, which are closer to topics, are not incorporated into the verb. Examples are shown below from Onondaga. Woorbudy (1975: 11) states that "[i]t is generally agreed that a noun which is incorporated makes a more general reference than one which is free of the verb stem." In (17-a), the noun 'tobacco',which is not incorporated into the verb, refers to specific tobacco, and, as the translation shows, it is interpreted as definite. On the other hand, in (17-b), the incorporated noun "tobacco" refers to tobacco in general rather than a specific tobacco, as the translation shows.

(17)   Onondaga (Iroquoian)
       a.   waʔ-ha-hninú-ʔ neʔ oyέʔkwa-ʔ
            TR-3SG-buy-ASP the **tobacco**-n.s.
            'He bought the tobacco.'
       b.   waʔ-ha-yεʔkwa-hní:nu-ʔ
            TR-3SG-**tobacco**-buy-ASP

'He bought tobacco.' (Woorbudy 1975: 10)

Similarly, in pseudo-noun incorporation in Niuean (Oceanic), definite nouns cannot be incorporated into the verb. Niuean is a VSO language; canonically, the object appears after the subject. On the other hand, incorporated objects appear after the verb (before the subject), from which one can see noun incorporation. Unlike typical noun incorporation, incorporated nouns can accompany modifiers, as shown in (18). This is why Massam (2001) calls this pseudo-noun incorporation. Note that the A argument *mele* is coded as absolutive instead of ergative.

(18) Niuean (Oceanic)

    a.   ne  inu  **kofe kono** a   mele
           PAST drink coffee bitter ABS Mele
           'Mele drank bitter coffee.'

    b.   ne   holoholo **kapiniu kiva** fakaeneene a   sione
           PAST wash     dish     dirty carefully   ABS Sione
           'Sione washed dirty dishes carefully.' (Massam 2001: 158)

Niuean does not allow nouns coded by case markers or number articles to be incorporated because they are interpreted as definite and non-specific.

(19)  a.  *ne  inu  **e**  **kofe kona** a   mele
          PAST drink ABS coffee bitter ABS Mele
          'Mele drank the bitter coffee.'

    b.  *kua holoholo **tau kapiniu** a   mele
          PFV wash     PL dishes ABS Mele
          'Mele washes the dishes.' (op.cit.: p. 168)

In Southern Tiwa, all inanimate direct objects must be incorporated, while animate direct objects are optionally incorporated (Allen, Gardiner & Frantz 1984). As shown in the contrast between (20-a) and (20-b), the inanimate object *shut* 'shirt' is incorporated, otherwise it is ungrammatical.

(20) Southern Tiwa (Tanoan)

    a.   ti-**shut**-pe-ban
           1SG.A-shirt-make-PAST
           'I made the/a shirt.'

    b.  ***shut** ti-pe-ban
          shirt 1SG-make-PAST

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(Allen, Gardiner & Frantz 1984: 293)

On the other hand, animate objects are only optionally incorporated, they are grammatical irrespective of whether they are incorporated or not as shown in (21-a-b).

(21)  a.  ti-**seuan**-mũ-ban
          1sg.A-man-see-past
          'I saw the/a man.'
      b.  seuanide ti-mũ-ban
          man      1sg.A-see-past
          'I saw the/a man.'        (Allen, Gardiner & Frantz 1984: 294-295)

Southern Tiwa is sensitive to animacy instead of definiteness. However Southern Tiwa is like Onondaga and Niuean discussed above in the sense that Ps with features correlating with focus are incorporated, while Ps with features correlating with topic can be not incorporated.

Second, while patient nouns tend to be incorporated into the verb, agent nouns are not incorporated (Mithun 1984; Baker 1988). In Southern Tiwa, for example, the patient Ss, 'dipper' and 'snow', are incorporated as in (22), while the agent S, 'dog', cannot be incorporated as in (23).

(22)  Southern Tiwa (Tanoan)
      a.  i-**k'uru**-k'euwe-m
          B-dipper-old-pres
          'The dipper is old.'
      b.  we-**fan**-lur-mi
          C.neg-snow-fall-pres.neg
          'Snow isn't falling. (It is not snowing.)'    (Allen, Gardiner & Frantz 1984: 300)

(23)  a.  **khwienide** Ø-teurawe-we
          dog         A-run-pres
          'The dog is running.'
      b.  *Ø-**khwien**-teurawe-we
          A-dog-run-pres
          'The dog is running.'                         (op.cit.: p. 299)

This is parallel with Onondaga as shown in the contrast between (24) and (25). Patient S is incorporated into the verb as in (24), while agent S cannot be incorporated as in (24-b). Glosses are based on Baker (1988: 87-89)

(24)  Onondaga (Iroquoian)

 a. ka-**hsahe?t**-ahí-hw-i
  3N-**bean**-spill-CAUS-ASP
  'Beans got spilled.'                                         (Woodbury 1975: 15)

(25)  a. h-até-?sé:-?           ne? o-**tsí?kt**-a?
   3MS-REFL-drag-ASP the PRE-**louse**-SUF
   'The louse crawls.'

 b. *h-ate-**tsi?ktí**-?se:-?
   3MS-REFL-**louse**-drag-ASP
   'The louse crawls.'                                            (ibid.)

Mithun (1984: p. 875) argues that, verb-internally, incorporated nouns bear a
limited number of possible semantic relationships to their host verbs. This ap-
plies no matter whether the language is basically of the ergative, accusative, or
agent/patient type. She proposes the following hierarchy of possible noun incor-
porations in different languages. Agent S and A are put in parentheses because
they are not attested in Mithun's data. The hierarchy implies that languages
which incorporate patient S can also incorporate P, but not necessarily vice versa.

(26)  P > patient S (> agent S > A)

I point out that the same hierarchy (26) explains the variety of zero-coding
cross-linguistically. According to Mithun (1984), simple juxtaposition of a noun
(without any markers) and a verb is the first stage of noun incorporation. There
are many examples of languages without P-coding discussed in the literature
(Comrie 1979; 1983; Croft 2003; Aissen 2003; Haspelmath 2008: *inter alia*). In
these languages, Ps with features correlating with topic, i.e., animate, human,
and/or definite Ps, are overtly coded, while Ps with features correlating with
focus are zero-coded. Some examples are discussed above as (8)-(9) in §7.2. An-
other example is from Russian, which has a special marker for animate (or hu-
man) Ps, but not for inanimate Ps. As shown in the following examples, *nosorog*
'rhinoceros' in (27-a), an animate P, is overtly coded by the direct object marker
*a*, whereas *il* 'slime', an inanimate P, is zero-coded.

(27)  a. begemont     ljubit nosorog-**a**
   hippopotamus loves rhinoceros-DO
   'The/a hippopotamus loves the/a rhinoceros.'

> b. begemont     ljubit il
>    hippopotamus loves slime
>    'The hippopotamus loves (the) slime.'

Examples for languages without P- and patient-S-codings are (Standard) Japanese and Lahu. In (Standard) Japanese, as discussed in §4.3.1, the agent S tends to be coded overtly as in (28-a), while the patient S tends to be zero-coded as in (28-b-c) (Kageyama 1993: p. 93).

(28)  a. a   kodomo-{ga/??Ø} ason-deru
         oh  child-{NOM/Ø}    play-PROG
         'Look! A child is playing.'                          (Agent S)
      b. a   saihu-{ga/Ø} oti-teru
         oh  wallet       fall-PROG
         'Look! A wallet has fallen!'                        (Patient S)

(29) and (30) are examples from Lahu. As in (29-a), the definite P 'the liquor' is coded with the accusative marker, while the indefinite P 'liquor' is not.

(29)  Lahu (Tibeto-Burman)

      a. jɨ̀    thà' dɔ̀
         **liquor** ACC drink
         'to drink (the) liquor'
      b. jɨ̀    dɔ̀
         **liquor** drink
         'to drink liquor'                                        (P)
                                               (Matisoff 1981: p. 307)

As in (30), the indefinite patient S is also zero-coded in Lahu (ibid.).

(30)  mû-yè[2] là
      **rain**  comes
      'it is raining.'                                      (Patient S)

There are also languages which zero-codes P, patient S, and agent S. In Kansai Japanese, for example, agent Ss can be also zero-coded in addition to Ps and patient S. a in (28) without *ga* is acceptable in Kansai Japanese (see also Nakagawa 2013).[3]

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[2]The expression *mû-yè* as a whole means 'rain (noun)'; which originates from *mû* 'sky' and *yè* 'water' (Matisoff 1981: 60).

[3] Although the form of the sentence is identical, the pitch accent is drastically different and it is

### 7.3.2 Elements separated from the predicate

As discussed in §6.2.1 and 6.3, topics which have not been established are produced intonationally separate from the predicate. This section explores the possibility of the existence of languages with hard constraints, i.e., languages that do not allow unestablished topics to appear together with the predicate or main clause.

I did not find languages which match the exact condition. However, one of the related phenomena is that, in some languages, indefinite non-generic NPs cannot in general be the subject; they can only be the subject of existential constructions (Givón 1976: p. 173ff.). I assume that, in these languages, the connection between the subject (A and S) and topic is so strong that non-topical subjects are not allowed. Canonical pre-verbal subjects in many Bantu languages are inherently topical and subjects cannot be focus in situ (See Downing & Hyman (2016) and works cited therein for the summary of information structure in Bantu languages). For example, in Northern Sotho, it is possible for the subject to appear in the canonical pre-verbal position as in (31-a) or in the post-verbal position as in (31-b).

(31)  a.  **Mo-nna** o  ngwala le-ngwalo
          CL1-man CL1 write   CL5-letter
          'The man is writing a letter.'
     b.  Go  fihla **mo-nna**
          CL17 arrive CL1-man
          Lit. 'There arrives a man.'          (Zerbian 2006: p. 171)

It is ungrammatical to put *wh*-words in the canonical pre-verbal position as shown in (32).

(32)  a.  \***Mang o** nyaka  ngaka?
          who    CL1 look.for CL9.doctor
          Intended: 'Who is looking of the doctor?'
     b.  \***O** nyaka ngaka   **mang**?
          CL1 look.for CL9.doctor who
          Intended: 'Who is looking for the doctor?'     (Zerbian 2006: p. 69)

In many Bantu languages, it appears that an NP must be introduced in a special clause of non-canonical VS order and, only after that, the NP can be mentioned

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easy to distinguish Standard Japanese from Kansai Japanese. Grammaticality judgements are of the current author.

in a normal clause of canonical SV(P) order to bring the narrative forward.

Also in French, which is a SV(P) language, VS order is used to focalize the subject and the predicate typically expresses existence, emergence, and motion (Togo & Ohki 1986). Because the inverted subject is focus, the scope of negation is the subject as shown in (33-a), and it is unnatural to provide alternatives incompatible with the subject as in (33-b).

(33)　a.　Dans cet  immeuble n'habitent pas **des　ouvriers français**, mais
　　　　　 in　　 this building  not.live　 NEG some workers French　 but
　　　　　 des　 ouvriers espagnols.
　　　　　 some  workers Spanish
　　　　　 'In this building, French workers do not live, but Spanish workers.'
　　　b.　??Dans cet  immeuble n'habitent pas **des　ouvriers français**, mais
　　　　　 in　　 this building  not.live　 NEG some workers French　 but
　　　　　 dans l'autre　 immeuble.
　　　　　 in　　the.other building
　　　　　 'In this building, French workers do not live, but in the other building.'
　　　　　 (Togo & Ohki 1986: p. 3, translated by the current author)

It is infelicitous to put more new elements after the inverted subject. For example, (34-a), which is a typical subject inversion, is acceptable, whereas (34-b), which is (34-a) followed by another phrase 'by French and Japanese educators', is not acceptable.

(34)　a.　Dans ce  débat  ont  été discutés **problèmes de l'éducation**
　　　　　 in　　this debate have  be  discuss  problems   of the.education
　　　　　 **morale**.
　　　　　 moral
　　　　　 'In this debate, problems of education moral were discussed.'
　　　b.　??Dans ce  débat  ont  été discutés **problèmes de l'éducation**
　　　　　 in　　this debate have  be  discuss  problems   of the.education
　　　　　 **morale** par des　 pédagogues français et　 japonais.
　　　　　 moral　by  some  educators　  French  and Japanese
　　　　　 'In this debate, problems of education moral were discussed by French
　　　　　 and Japanese educators.'　　　　　　　　　　　(op.cit.: p. 4)

Interestingly, however, if a pause is inserted between the VS part (*ont été discutés **problèmes de l'éducation morale*** 'problems of education moral were dis-

cussed') and the additional phrase (*par des pédagogues français et japonais* 'by French and Japanese educators') in (34-b), the acceptability improves. This suggests that a new NP is introduced in a special construction of VS order, and additional new information cannot be introduced within the same intonational phrase in French.

## 7.4 Summary

This section outlined a summary of the thesis and discussed languages that grammaticalize the tendencies proposed in this thesis. Of course the discussion provided more possibilities than conclusion. Further investigation is needed to analyze the exact associations between languages with hard constraints and those with soft constraints. Also, it is intriguing to account for what factors determine a language to have hard constraints or soft constraints.

# 8 Conclusion

## 8.1 Summary

This thesis attempted to answer partially to a larger question of how Japanese speakers communicate with each other through abduction of the mental state of other people. It revealed that Japanese speakers employ a variety of cues to express the speaker's assumption about the hearer's mental state.

While a great amount of literature has discussed the distinction between *wa* and *ga*, the relationships among other kinds of particles have not been discussed. Chapter 4 in this thesis revealed the distinction between *wa* and other topic particles such as *toiuno-wa* and *kedo/ga* preceded by copula, as well as the distribution of case markers, by drawing a semantic map of particles. It also investigated the distribution of zero particles and their associations with information structure.

The previous literature investigated clause-initial, pre-predicate, and post-predicate constructions independently in different frameworks; however, there was no unified account for word order in Japanese. In Chapter 5, I described word order in spoken Japanese in a unified framework.

Chapter 6 investigated intonation. While the previous literature mainly concentrates on contrastive focus, this thesis discussed both topic and focus. I investigated intonation as a unit of processing and argued that information structure influences on the form of intonation units.

To the best of my knowledge, particles, word order, and intonation in Japanese have been investigated separately in the literature; there was no unified theory to account for the whole phenomena. This thesis investigated the phenomena as a whole in a consistent way by annotating the same information for all linguistic expressions and by employing the same analytical framework.

## 8.2 Theoretical and methodological implications

This section discusses some theoretical and methodological implications this thesis has. First, I proposed that topic and focus are multidimensional rather than homogeneous; topic and focus are interpreted to be a bundle of features and each

feature is scalar rather than binary. Different languages are sensitive to different features to different degrees. Even within a language, different linguistic expressions are sensitive to different features to various extents. Moreover, it is often the case that a single linguistic expression is sensitive to multiple features. As outlined in Chapter 2, different authors discuss different kinds of topic and focus, which is a confusing situation. I argue that linguistic research would be clearer if one asks "what feature(s) is/are sensitive to what linguistic expression(s)?", instead of asking "which feature best predicts the distribution of some linguistic expressions?"

Second, I proposed methods of annotation and analysis that are cross-linguistically applicable. I did not annotate all the features proposed in (2) in §3.3; however, all the features can be defined independent of a language-specific categories and can be applied universally. Some features such as specificity and definiteness are hard to annotate, and it is highly likely that different annotators have different intuitions about the expression in question. I argue that this is not a problem. In the real life, some people might interpret some expression to be definite, other people might interpret the same expression to be indefinite. This is a source of linguistic variation, and there is no single right answer. Ideally, a statistically sufficient amount of annotators annotate the same corpus, and all the annotations are used in analyses.

Third, I point out the importance of qualitative analysis in addition to quantitative analysis. In §4.2 in Chapter 4, for example, I concluded that *toiuno-wa* and *wa* attaches to elements in different statuses in given-new taxonmy by examining each example, even though the difference was not visible from raw numbers. This is because my annotation is not fine-grained enough to capture the subtle difference between these markers. Of course, it is necessary to run statistical tests in the future. However, it is also important to examine each example to make sure that the results do not contradict with observations.

## 8.3 Remaining issues

This thesis has many remaining issues to be investigated in the future. I discuss two of these in this section.

### 8.3.1 Predication or judgement types

As discussed in Chapter 2, traditional Japanese linguistics scholars have paid attention to predication types or judgement types. Predication or judgement types

include the distinctions (Matsushita 1928; Yamada 1936; Mio 1948/2003; Kuroda 1972; Masuoka 2008a; Kageyama 2012). Although this thesis focused on the distinction among nominal types such as topic and focus, the findings of this thesis can be integrated into theories of predication or judgement types. This implies that information structure is not only related to properties of NPs; rather, it is also associated with properties of predicates. Especially, grammatical categories such as tense, aspect, modality, and evidentiality are highly likely related to types of information structure. For example, as Masuoka (2012) points out, the topic marker *toiuno-wa* cannot be used in event predication (or stage-level predication); it can only be used in property predication (or individual-level predication).[1] This is shown in the contrast between (1-a) and (1-b). (1-a), where *toiuno-wa* is used in event predication with simple past tense, is unacceptable. In (1-b), on the other hand, where *toiuno-wa* is used in property predication, is acceptable.

(1)   a.   *sachiko-**toiuno-wa** uso-o tui-ta
          Sachiko-*toiuno-wa* lie-*o*  spit-PAST
          'Regarding Sachiko, she lied.'                    (Masuoka 2012: p. 96)
      b.   sachiko-**toiuno-wa** uso-tuki-da
          Sachiko-*toiuno-wa*  lie–spitter-COP
          'Regarding Sachiko, she is a lier.'                     (Constructed)

Masuoka (2012) concludes that *toiuno-wa* is used only for property predication.

Moreover, it is well known that the interpretations of *wa* and *ga* changes depending on predicate types (Kuroda 1972; Kuno 1973b). In property predication, *wa* is the default marker, and *ga* tend to be interpreted to be exhaustive listing. As exemplified in (2-a-b), both of which are copular sentences (i.e., property predication), a sentence with *wa* (2-a) is considered to have a common topic-comment structure, while a sentence with *ga* (2-b) is considered to focus only John, namely, (2-b) is interpreted as the answer to the question 'who is a student?' In Kuno's term, *ga* is interpreted to be exhaustive listing.

(2)   a.   zyon-**wa** gakusei-desu
          John-*wa* student-COP
          'John is a student.'
      b.   zyon-**ga** gakusei-desu
          John-*ga* student-COP
          'JOHN is a student. (it is John who is a student.)'      (Kuno 1973b: 38)

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[1] See §2.4.2.5 in Chapter 2 for the distinction between property vs. event predication.

In event predication, on the other hand, *ga* is the default marker and is interpreted to be neutral description, while *wa* tend to be interpreted as contrastive. In (3-a-b), which are event predication, the NP followed by *wa* in (3-a) is interpreted to be contrastive, while the whole sentence including the NP with *ga* in (3-b) is interpreted to have broad focus structure; namely, in Kuno's term, *ga* is considered to be neutral description.

(3)  a.  ame-**wa** hut-te   i-masu-ga...
         rain-*wa* fall-and PROG-PLT-though
         'Though it does rain...'
     b.  ame-**ga** hut-te   i-masu
         rain-*ga* fall-and PROG-PLT-though
         'It is raining.'                                    (ibid.)

As far as I notice, there are few studies investigating the question of why sentences of some information structure type are associated with particular predication types.

### 8.3.2  Genres

Genres are also an important factor to influence the phenomena investigated in this thesis. As pointed out in 2.4.2.7 (Chapter 2), for example, the choice between zero vs. overt particles is sensitive to styles (casual vs. formal). However, it is not clear why the formal style requires overt particles than the casual style.

Also, I have argued that post-predicate constructions are more frequent in conversations than monologues. Although I suggested a few possible answers why this is the case (5.3 in Chapter 5), there is still no clear answer. Since there is a corpus of conversations annotated in the same way as this thesis (Nakagawa & Den 2012), it is useful to compare these corpora.

In monologues like the ones employed in this thesis, it is likely that predicate-focus structure appears more frequently than usual conversations; the speaker usually talks about what s/he did or what happened to his/her in narratives, which fixes a topic (typically the speaker), and fixing a topic elicits predicate-focus structure. Moreover, because of the absence of hearers who ask *wh*-questions and misunderstand what the speaker means, the speaker less frequently has to answer *wh*-questions or correct hearers, which typically elicit argument-focus structure. It is important also for this reason to investigate other genres of spoken language.

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