Clausal Noun-Modification in Japanese

A Syntactic Approach

Daniel Chenevert

Advisor: Jim Wood

Japanese Clausal Noun-Modification

A Syntactic Approach

Daniel Chenevert

Abstract

Clauses have various different ways of modifying nouns. In English, we see distinct clause types such as relative clauses and content clauses, involving adjunction and complementation, respectively. Similar constructions in Japanese exhibit a high degree of uniformity in their surface structure, calling into question whether the same syntactic distinctions exist for Japanese noun-modifying clauses.

To explore these structures, I examine three potential categories of noun-modifying clauses in Japanese. For each, I test whether clause iteration (modifying one noun with multiple clauses) is grammatical. I conclude that adjunct-complement distinction exists in Japanese, with relative clauses and content clauses differing with respect to clause iteration. I also show that a third category in Japanese, gapless relative clauses, behaves more like relative clauses than content clauses, and discuss possible internal structures for gapless relatives by looking at existing analyses for Chinese.

Acknowledgements

I would like to express my deepest gratitude to everyone who helped me write my senior thesis. First off, I owe the bulk of my success as a linguist to Jim Wood, my advisor, who as my first linguistics professor is also responsible for me falling in love with the field. I would also like to thank Raffaella Zanuttini, who taught my first syntax course, and the rest of the Yale linguistics faculty. Thank you to my fellow linguistics seniors for their camaraderie during an especially challenging year. For their endless patience as I interrogated them about Japanese, thank you to Hiroyo Nishimura and the Yale Japanese faculty. Additionally, I owe thanks to Yohei Oseki for helping me acquire data for the finer points of my analysis. Finally, thank you to my family for their unending support throughout my twisted path through Yale, and to my friends without whom none of this would be possible.

1   Introduction

A fundamental issue within syntax is the question of how phrases combine with other phrases to modify them. One domain which has received significant attention is the subordination of clauses, investigating the structural details of which has yielded many theoretical insights. One area where this occurs is the noun phrase, in which we see phenomena such as relative clauses and content clauses. The surface structure of such constructions differ between languages; Japanese, in particular, is very restrictive in how its nouns can be modified by a clause. For clauses with a non-copular verbal predicate, all clauses which modify nouns must end in a finite verb form and immediately precede the noun they modify. Consequently, many constructions which look very different from one another in other languages, such as the distinction between relative clauses and noun-complement constructions, can look identical in Japanese. The data in (1), adapted from Teramura (1969: 64-65) (translation/gloss my own), lists a range of Japanese noun-modifying clauses which yield several different syntactic structures when translated to English:

(1)   a.   [*hitori   de sanma o   yaku*] *otoko*

           one person as saury   ACC grill   man

           'The man who grills saury alone'

    b.   [*sanma o   yaiteiru*] *nioi*

           saury ACC grilling   smell

           'The smell of grilling saury'

    c.   [*otoko ga   hitori   de sanma o   yaku*] *shi*

           man   NOM one person as saury   ACC grill   poem

           'The poem in which the man grills saury alone'

    d.   [*kare ga   Tookyoo e   itta*   ] *yoku-nen*

           he   NOM Tokyo   LOC went   next-year

           'The year after he went to Tokyo' (temporal adjunct)

    e.   [*kare ga   korosareta*] *kekka*

           he   NOM was killed   result

           'As a result of him having been killed'

All examples in (1) are NPs with a head noun preceded by a full clause which modifies it (Japanese is a head-final language, hence all the heads appearing on the right). As can been seen by the English translation, the examples in (1) represent a wide array of relationships between the head noun and its modifying clause.

To briefly describe each example: (1a) is a standard relative clause; (1b) is a noun-complement phrase; (1c) also resembles a relative clause, though with a relativized adjunct; finally, in both (1d) and (1e), the head noun is not really being semantically modified at all, rather, the construction is establishing a relation between its preceding clause and a main clause which must follow it. Despite such diversity of meaning, and of structure when it comes to the corresponding English constructions, all of these NPs have the structure mentioned above: a clause ending in a finite verb preceding a head noun.

This paper will examine several proposed types of clausal noun-modification in Japanese. Using clause-iteration as a diagnostic, I will argue that despite such surface uniformity, a familiar adjunct-complement distinction exists among Japanese adnominal clauses types. I will also discuss the so-called 'gapless relative clause' in more detail, surveying various proposals for Mandarin Chinese gapless relatives and sketching out a possible analysis for Japanese.

Section 2 introduces properties of Japanese which bear on the questions at hand, and surveys the kinds of semantic and syntactic relationships can be captured by a single surface structure in Japanese noun modification. Section 3 reviews previous literature and compares different analyses to clausal noun-modification in Japanese as well as Chinese. Section 4 analyses Japanese data involving multiple noun-modifying clauses in order to argue that both ordinary and gapless relatives are adjuncts, while content clauses are complements. Section 5 discusses work on Chinese gapless relatives and potential approaches for Japanese. Section 6 concludes.
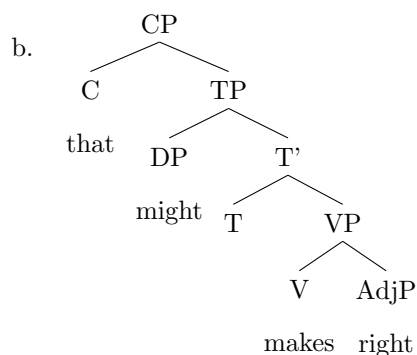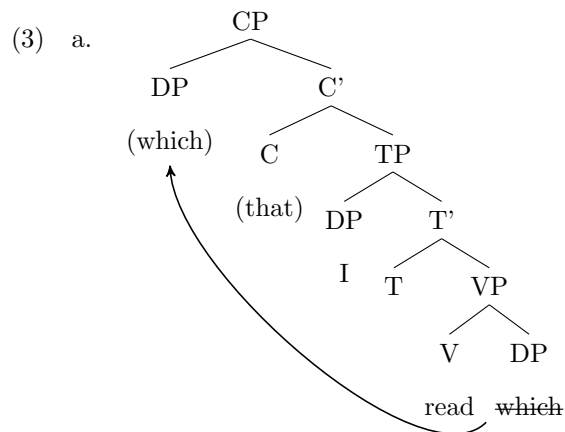
2   Background

2.1   Noun-Modifying Clauses in English

In English, there is no one uniform structure for clauses which modify nouns. Two cases which are clearly distinct are relative clauses and content clauses. Consider the examples in (2):

(2)   a.   the book [which I read]

     b.   the belief [that might makes right]

Both of these examples involve a noun modified by a clause, but display some visible structural differences. For one, (2a) can use either *which* or *that* to subordinate the clause, while *which* cannot be used with (2b). More striking is the presence of a syntactic gap in (2a) but not (2b). This structural distinction is represented in (3):

(3) a.

```
                        CP
              ┌─────────┴─────────┐
             DP                   C'
           (which)          ┌─────┴─────┐
              ↑             C           TP
              │           (that)   ┌────┴────┐
              │                   DP        T'
              │                   I    ┌────┴────┐
              │                        T        VP
              │                              ┌───┴───┐
              │                              V      DP
              │                            read    which
              └──────────────────────────────────┘
```

b.

```
            CP
       ┌────┴────┐
       C         TP
     that    ┌────┴────┐
            DP        T'
          might  ┌────┴────┐
                 T        VP
                      ┌────┴────┐
                      V        AdjP
                    makes     right
```

As can be seen in (3), the relative clause, (3a), involves *wh*-movement which is not present in the content clause, (3b), leaving a gap indicated by the struck-through *which*. These differences are apparent on the surface in English — the analyses of the CP-structure for these two examples must differ in some way, if not necessarily exactly as I have presented in (3), to account for the data.

Another distinction traditionally made between relative clauses and content clauses in English is the adjunct-complement distinction. Going back at least Chomsky (1970), most syntactic models have relied on a distinction between adjuncts and complements as two different ways for phrases to combine and/or modify. Without delving into possible formal implementations, adjuncts are generally more optional and multiple adjuncts can modify a single syntactic head, potentially adjoining to positions not immediately adjacent to the modified head. Complements, in contrast, are considered to be the immediate sister of the head and are limited to a maximum of one.

For noun-modifying clauses in English, traditional analyses consider relative clauses to exemplify adjuncts while content clauses exemplify complements (indeed, they are often referred to instead as *noun complements*).

2.2 A Descriptive Overview of Noun-Modification in Japanese

I now turn to clausal noun-modification in Japanese. First it is necessary to establish the facts about Japanese word order. Although it permits a fair amount of scrambling, Japanese is an overwhelmingly head-final, SOV language. Consider the sentence in (4), adapted from Nemoto, Naoko (1999):

(4)   *Taroo ga   ano mise de hon   o   katta*
      Taroo NOM that store at book ACC bought
      'Taro bought a book at that store'

As can be seen with phrases like *mise de* 'store at' ('at the store') and *hon o katta* 'book bought' ('bought a book') in (4), Japanese PPs and VPs are head final. This also holds for NPs; in particular, clauses precede the nouns which they modify. The properties of Japanese word order releveant to noun-modifying clauses are summarized below:

- basic clauses, both standalone and adnominal, end with a tensed predicate

- noun-modifying phrases occurring to the left of the noun

- any CP-head will occur to the right of the clause

In Japanese, noun phrases in which a noun is modified by a full clause generally occur with the surface structure shown in (5)

(5)   [TP [XP] [T$_{finite}$]] N

In (5), the noun is immediately preceded by a TP which ends with a finite tense morpheme. Note that this structure is intended to represent only the morphemes overtly visible. Accordingly, whether or not it is present in the underlying structure, no CP-layer is shown: in Japanese, there is generally no overt complementizer, relative pronoun, or any other element linking the clause to the noun. A key exception to this is discussed further below.

2.3 Japanese Clausal Noun-Modification from a Syntactic Perspective

Unlike the readily apparent distinction between different kinds of noun-modifying clauses in English (e.g. relative clauses vs. content clauses), the picture is not so clear for Japanese. As conveyed in the previous section, the lack of an overt complementizer or similar element in Japanese adnominal clauses leads to a wide array of semantic relationships being expressed by what appears as a single surface structure. Compare the examples in (6), adapted from Matsumoto (1997: 1, 18):

(6) a. [*watasi ga   kinoo   atta*] *hito*

        I   NOM yesterday met   person

    'the person whom I met yesterday'

  b. [*tikyuu ga   marui*] *zizitu*

      earth NOM round   fact

    'the fact that the eart is round'

  c. [*sakana ga   yakeru*] *nioi*

      fish   NOM burn   smell

    'the smell of fish burning'

Each example in (6) contains a noun modified by clause, with the clause's tensed predicate (in the same form that would occur in a matrix-clause context) immediately preceding a head noun. However, the semantic relationship between the clause and head noun in each example is quite different. Aside from the missing *wh*-operator, (6a) looks like an English relative clause, with a gap that gets interpreted as being coindexed with the head noun *hito* 'person'. (6b), on the other hand, resembles an English content clause: the modifying clause expresses the content of the head noun *zizitu* 'fact'.

(6c) is yet something else entirely. (6c) refers to the smell that arises from the action of burning or grilling fish, but unlike in the English translation, this is grammatically expressed by a full clause rather than a gerund, with a structure more literally translated as something like 'the smell that the fish burns'. The relationship between the head noun *nioi* 'smell' and the clause that modifies it is not one of content-expression, and neither does *nioi* seem to fit into the structure of its modifying clause in the same way that *hito* fits into *watasi ga kinoo atta* in (6a). This third type of noun-modifying clause, dubbed 'gapless relative clauses', still contains the same lack of overt CP-layer as in (6a) and (6b), further complicating the puzzle of Japanese clausal noun-modification.

The main body of this essay will concentrate on the three types of noun-modifying clauses just introduced: relative clauses (hereafter often referred to as 'ordinary relative clauses' to distinguish them from the gapless variety), content clauses, and gapless relative clauses. There are other potential categories; for instance, in (7), the head noun in some way subordinates its modifying clause to whatever follows:

(7) [*kare ga   korosareta *] *kekka*

    he   NOM killed.PASS   result

  'As a result of him having been killed,'

The word *kekka* 'result' exists in Japanese as a standard noun, but also has uses like in (7) where it appears

to act more like a preposition or subordinating conjunction. What follows the construction in (7) is the main action of the sentence, which has been specified to be the result of someone having died. Whatever the underlying structure is (7) is, it seems quite different from the examples in (6) in that the resulting NP (or perhaps another phrase-category altogether) behaves quite differently and does not have standard Japanese NP-distribution. For this reason I will not be covering such constructions in my analysis, though they deserve investigation in their own right.

2.4 The Japanese complementizing element *toiu*

I will now introduce the Japanese complementizing element *toiu*, which will be necessary for later discussion of Japanese content clauses, as an exception to my prior claims that Japanese adnominal clauses do not involve an overt element intervening between the clause and the head noun, There are other potential candidates for overt realizations of a complementizer in Japanese, including *yoo* and *mitai*, but as these have semantic content on top of their grammatical function status, and, moreover, function morphologically like nominal-adjectives, their status is unclear. There are other forms of *toiu* as well, including *toitta* and *tte*, but I will concentrate on *toiu*, taking it to be representative.

toiu has some peculiarities that set it apart from similar elements in other languages. Ultimately, data which is particular to Japanese will lead me to certain conclusions about Japanese adnominal clauses that employ *toiu*. To begin, like other potential complementizer candidates, the lexical status of *toiu* in adnominal clauses is uncertain. *iu*, on its own, is an ordinary lexical verb with a basic meaning of 'to say', and takes full quotes, direct or indirect, as an internal argument using the quotative particle *to*, as seen in (8), adapted from Shimamura (2018):

(8) *Taroo wa [Hanako ga kawaii] to itta*
     Taroo TOP [Hanako NOM is cute] QUOT say.PAST
     'Taroo said that Hanako is cute'

In (8) the main verb is the past-tense form of *iu*, *itta*, with the topic *Taroo* as its grammatical subject. The embedded clause is established as an argument of *iu* via *to*. It is worth noting that in such a usage, other material can intervene between *to* and *iu*, including the speaker (which is often also the topic). There are also patterns involving *iu* as the main verb in which it takes an accusative object.

Alongside this clearly verbal usage of *iu* are constructions where *to* and *iu* appear together to link a noun with a modifier. In particular, this can occur with full clauses, as in (9):

(9) [*sore wa   mazui   toiu*   ] *iken*

      that TOP is awful *TOIU*   opinion

   'the opinion that that is awful'

In (9), the head noun *iken* 'opinion' is modified by a clause expressing its content, with *toiu* occurring between them. While ostensibly *toiu* appears to be functioning much like English *that*, it operates slightly differently as described by Matsumoto:

> Thus, while the function of *toiu* (literally: *to* 'QUOTATIVE', *iu* 'say') may be generally thought of as a complementizer, a more precise description is that it functions ... to mark the complement as a quotation or quasi-quotation.
>
> *(Matsumoto 1997: 136)*

In any case, I will assume *toiu* to be a complementizer in the context of my analysis (which exclues such cases where *iu* may be acting verbally). Regarding its use with noun-modifying clauses, *toiu* has a restricted distribution owing to its quotative nature. Namely, it only occurs with modifying clauses of the content-clause type, and does not occur with either ordinary or gapless relatives. While *toiu* is not always required for such structures ((6b) for instance), I will assume that it is always at least optional. This will lead me to identify Japanese content clauses as precisely those which permit, if not require, the use of *toiu*, as will be discussed further in section 4.2.

3 Previous Approaches

Returning to noun-modifying clauses, the main topic at hand, linguists have made a wide variety of proposals for the analysis of such constructions. Many characteristics found in Japanese noun-modification also occur in other languages, among them Mandarin Chinese, which also shares other areal features with Japanese. I will now review a sample of some approaches that have been taken for clausal noun-modification in these languages, looking first at a non-syntactic approach for Japanese, and secondly at an analysis arguing for an adjunct-complement distinction in Chinese noun-modifying clauses.

3.1 Matsumoto (1997): A Non-Syntactic Approach

Matsumoto (1997) discusses extensively the range of what she refers to as noun-modifying-constructions (NMCs) in Japanese. Noting the uniformity of the surface structures of these constructions, she argues that syntactic strategies such as movement are insufficient for distinguishing their various flavors, and instead

adopts a frame-semantics-based analysis. She rejects movement-based analyses for any such constructions in Japanese, including ordinary relative clauses, instead unifying Japanese NMCs under a single movement-less structure and focusing on how this structure is construed in the discourse. Using a frame-semantics approach, she distinguishes several types of NMCs by their semantics rather than through any structural differences. Per her analysis, the interpretation of a NMC as either one type or another is determined by the semantic and pragmatic context accessible to the interlocutors.

Matsumoto's approach, and those which follow in its footsteps (such as Zhan & Miao (2012)), are useful in that they highlight the importance of semantic/pragmatic effects involved in Japanese noun-modifying clauses, which due to surface uniformity, rely on the lexical properties of their constituents far more than do, say, English relative clauses. However, asserting that there is no movement involved for any of these structures requires a theoretical framework which is at odds with many modern models of syntax. I will thus pursue an approach in which movement may play a role.

3.2   Huang (2016): Gapless Relatives in Spec-NP

Huang (2016) defends the existence of an adjunct-complement distinction for clausal noun-modification in Chinese, which, like in Japanese, displays considerable uniformity on the surface. Huang argues against approaches that, similar to Matsumoto's approach to Japanese, propose that Chinese noun-modifying clauses do not fall into traditional adjunct and complement categories and instead belong to a single structure the interpretation of which relies more on semantics than syntax. Huang uses various diagnostics to establish an asymmetry in Chinese noun-modifying clauses, including standard adjunct/complement tests such as coordination, iteration, long-distance extraction, and N-bar ellipsis. He concludes that there are two main types of noun-modifying clauses in Chinese, relative clauses and noun phrase complements, and that they pattern as adjuncts and complements, respectively. Concerning gapless relative clauses, which also exist in Chinese, Huang argues that they are also noun complements. He also briefly examines noun-modifying clauses in Japanese and Korean, suggesting that some of his tests yield the same adjunct-complement distinction in those languages.

Huang acknowledges that in terms of both the underlying syntax and the interpretation of noun-modifying clauses, languages like Chinese have features that distinguish it from others. Nevertheless, Huang's thorough presentation of data involving Chinese noun-modification provides a strong argument that Chinese, despite less straightforward surface structure, still exhibits many of the same syntactic distinctions seen between adjuncts and complements in languages like English where this distinction is more widely assumed. The primary aim of my essay is to further argue for this distinction in Japanese.

10

4 Main Proposal: An Adjunct-Complement Distinction in Japanese Noun-Modifying Clauses

4.1 Relative Clauses as Adjuncts

I will now present some observations of distributional restrictions for different types of adnominal clauses in Japanese and conclude that, much like English, Japanese relative clauses are merged via adjunction while content clauses are merged as the complement of the head noun. All data in this section, unless otherwise cited, was generated and judged for grammatically via personal correspondence with Yohei Oseki.

Relative clauses are traditionally analyzed as adjuncts, so there is, perhaps, a slight burden of proof on arguing otherwise. As discussed in section 2.3, Japanese, as well as Chinese, displays considerably more flexibility among structures that resemble English relative clauses. Nevertheless, among the literature on Chinese relative clauses reviewed in section 3, most at least treat ordinary relative clauses (as opposed to gapless relatives) as adjuncts. One diagnostic for this, discussed by both Huang (2016) and Patterson (2020) with respect to Chinese, is the possibility of iterating modifying clauses. I will examine the iteration of modifying clauses in Japanese in order to argue that both ordinary and gapless relatives are adjuncts.

By iteration of relative clauses I am referring to the modification of a single noun by more than one relative clause. If this is observed in a language, it supports an adjunct analysis of relative clauses as the other structural positions in X-bar theory, complement and specifier, are structurally defined to occur only once per maximal projection. Concerning iterating relatives in Chinese, Huang (2016) and Patterson (2020) are primarily concerned with conflicting gapless relative clause data, disagreeing on whether they can iterate. However, they both accept data like (10), showing that ordinary relatives can be iterated:

(10) a. [*ta fa-chulai de*] [*ling ren haipa de*] *shengyin*
           he produce DE   cause person afraid DE   sound
           'the sound that terrified others that he produced'

    b. [*zhang-de gaogao de*] [*liuzhe chang toufa de*] *duishou*
           grow   tall   DE   keep long hair DE   opponent
           'the opponent who wears long hair who stands quite tall'

The examples in (10), adapted from Patterson (2020), both show nouns being modified by two relative clauses (Chinese attributive clauses regularly use the functional element *de* to link the clause and head noun). Both Huang and Patterson use such data as an argument that Chinese ordinary relative clauses are adjuncts.

Turning back to Japanese, relative clause iteration appears to be possible for both ordinary and gapless relative clauses. The example below involves ordinary relative clauses:

(11)   a.   [*anata ni*   *susumerareta*   ] *hon   o   saikin   yonda*
             you   DAT recommended.PASS   book ACC recently read

             'I recently read the book which was recommended by you'

       b.   [*Murakami ga   kaita*] *hon   o   saikin   yonda*
             Murakami NOM wrote   book ACC recently read

             'I recently read the book that Murakami wrote'

       c.   [*anata ni   susumerareta*   ] [*Murakami ga   kaita*] *hon   o   saikin   yonda*
             you   DAT recommended.PASS   Murakami NOM wrote   book ACC recently read

             'I recently read the book that Murakami wrote which was recommended by you'

(11), (11a) and (11b) involve the noun *hon* 'book' modified by a single relative clause, while (11c) combines them and has both clauses modifying the noun. (11c) in particular suggests that iteration of ordinary relative clauses in Japanese is grammatical; accordingly, I propose that such clauses are adjuncts.

For Japanese gapless relatives, the narrower semantic contexts in which such relatives can occur make it difficult come up with iteration data that does not fail for pragmatic reasons. While I hypothesize that multiple gapless relative clauses *can* modify the same noun in Japanese, supporting the adjunct analysis, I lack data showing this at the time of this writing. In its stead, I examine nouns modified by one ordinary relative and one gapless relative, and consider the possible orderings of these two relative clauses. (12) shows an ordinary relative clause, a gapless relative clause, and combinations thereof:

(12)   a.   [*boku ga   kiita*] *oto*
             I   NOM heard   sound

             'The sound that I heard'

       b.   [*otooto   ga   piano o   hiiteiru*] *oto*
             younger brother NOM piano ACC playing   sound

             'The sound of my younger brother playing the piano'

       c.   [*boku ga   kiita*] [*otooto   ga   piano o   hiiteiru*] *oto*
             I   NOM heard   younger brother NOM piano ACC playing   sound

             'The sound of my brother playing the piano that I heard'

d. [*otooto*   *ga*   *piano o*   *hiiteiru*] [*boku ga*   *kiita*   ] *oto*

    younger brother NOM piano ACC playing   I   NOM heard   sound

    'The sound that I heard of my brother playing the piano '

(12a) shows the noun *oto* 'sound' modified by an ordinary relative clause, while (12b) shows the same noun modified by a gapless relative. (12c) and (12d) show the combination of these two modifying clauses with two different orderings. Crucially, either order is acceptable, with neither order being strongly marked or inducing some particular focus. I suggest that this freedom in ordering arises from both (12c) and (12d) having the same basic structure; in other words, the difference in order is base-generated, rather than one of the orders involving movement lacked by the other.

This flexibility in base-generated order is expected if both modifying clauses are adjuncts. If one were instead the complement of the head noun, it would always be base-generated adjacent to the head noun. Any variance in the surface order would require an additional process, most likely movement. Given the parallelism of (12c) and (12d), I believe there is insufficient evidence for such movement. I thus favor an analysis in which both ordinary and gapless relatives are adjuncts, enabling multiple base-generated orderings.

4.2   Content Clauses as Complements

In contrast to relative clauses are Japanese content clauses. Loosely speaking, by the term 'content clause', I mean clauses which express the content of the noun which they modify. They generally correspond to noun complement clauses in English. In Japanese, I will equate the notion of *content clause* with clausal modification involving the complementizing element *toiu*. As discussed in section 2.4, *toiu* is one of a handful of complementizer candidates in Japanese, and can occur between a modifying clause and certain head nouns. Crucially, it cannot occur with just any noun-modifying construction, and never occurs with simple relative constructions of the sort in (12). This differs from Chinese, which appears not to possess such a complementizer for adnominal clauses with a restricted distribution. Instead, the Chinese word *de* regularly occurs with all kinds of clausal modification, as demonstrated in the examples in (13), adapted from Patterson (2020):

(13)   a.   [*zuotian*   *lai-guo*   *de*   ] *nanhai*

           yesterday come-EXP *DE*   boy

           'the boy who came yesterday'

b. [*Zhangsan zuo fan de*] *weidao*

   Zhangsan cook rice *DE* smell

   'the smell that arises/arose from Zhangsan's cooking a meal'

c. [*Zhangsan huo xiaqu de*] *xinxin*

   Zhangsan live down *DE* belief

   'the belief that Zhangsan continues to live'

(13) shows three different varieties of clausal noun-modification in Chinese, corresponding to the ordinary relative, gapless relative, and content clause categories, respectively. In all three cases, the element *de* intervenes between the clause and the noun to establish the clause as a prenominal modifier. *de* can also occur with noun-modification by other phrasal categories; broadly speaking, *de* is a general marker of noun-modifcation in Chinese.

The Japanese element *toiu*, on the other hand, expresses a particular relationship between a modifying clause and its head noun which appears restricted to cases which resemble the notion of a content clause in English. (14), adapted from Teramura (1969), demonstrates this distribution with cases where *toiu* is obligatory, optional, or impossible.

(14) a. Obligatory:

   [*enki-sita hoo ga yoi toiu*] *iken*

   postponed way NOM good *TOIU* opinion

   'the opinion that it'd be better to postpone'

b. Optional:

   [*tanuki ga kitune o bakasita (toiu)*] *hanasi*

   tanuki NOM fox ACC confused (*TOIU*) story

   'the story in which the tanuki confused the fox'

c. Impossible:

   [*sanma o yaiteiru (*toiu)*] *nioi*

   saury ACC grilling (*TOIU) smell

   'the smell of grilling saury'

Both (14a) and (14b) involve content clauses; *toiu* is obligatory in the first but optional in the second. (14c), in contrast, is a gapless relative clause and the use of *toiu* is ungrammatical. The pattern here — where content clauses at least permit, if not require, the presence of *toiu* while other types of modifying clause

forbid it — is consistent with *toiu*'s underlying meaning as a quoting element derived from the quotative particle *to* plus the verb *iu* 'say'. I assume this pattern is consistent in Japanese, and propose that Japanese content clauses be identified as specifically those which may take *tiou*. Accordingly, it is *tiou*-clauses that I use to test iteration of content-clauses in Japanese.

Clause-iteration involving adnominal clauses that either permit or require *toiu* yields different grammaticality judgements compared to iteration involving only relative clauses. While a noun can be modified by more than one *toiu*-clause, an intuition that the additional clause is somehow parenthetical or post-hoc was reported, as indicated in (15):

(15) ? [*ningen   ga   saru kara sinkasita toiu   ], [*syu   wa   zikan to   tomoni   sinkasuru*
            humans NOM apes from evolved   *TOIU*   species TOP time   with together evolve

      toiu   ] riron
      TOIU   theory
        ? 'The theory that humans evolved from apes, that species evolve over time'

(15) shows the noun *riron* 'theory' modified by two clauses that contain *toiu*, both of which appear to express the content of the head noun. The markedness of the Japanese construction in (15) is, in fact, shared by its English counterpart as shown in the translation in (15). In the translation, the noun *theory* is modified by two clauses expressing its content. Despite English content clauses traditionally being analyzed as noun complements, here we see multiple instances on a single noun, which could support an argument for an adjunct analysis. However, like in Japanese, the second content clause in English feels somehow extraneously inserted; in any case, there is a sharp contrast with iteration of relative clauses. Accordingly, due to the markedness of this structure in both English and Japanese, I argue that a complement analysis should be maintained for content clauses and an alternative explanation sought for the iteration.

It turns out the grammaticality of (15) can be improved by removing the first of the *toiu*'s, as in (16):

(16) [*ningen   ga   saru kara sinkasita*], [*syu   wa   zikan to   tomoni   sinkasuru toiu   ]
          humans NOM apes from evolved   species TOP time   with together evolve   *TOIU*
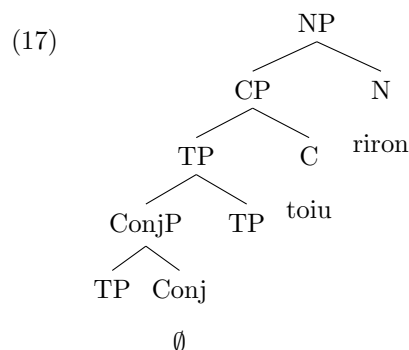
      riron
      theory
        ? 'The theory that humans evolved from apes, that species evolve over time'

(16) is identical to (15) save for the removal of the first instance of *toiu*. I propose that the improved judgement is the result of different structures underlying the two examples, rather than a simple case of elision of *toiu* for (16). In particular, I propose that (16) only has one *toiu* because it only has one CP-layer,

and that the two content clauses are tense-phrases embedded under a CP headed by *tiou*. This CP, the complement of the head-noun *riron* 'theory', is the sole phrase directly modifying it (c-commanding *riron* 'theory' while being part of its maximal projection).

This still leaves the question of how two TP's fit under a single CP. For the time being, I will adopt the proposal that the TP's are coordinated by a null conjunction. The structure of the full modified noun is sketched in (17):

(17)

```
                    NP
                   /  \
                 CP     N
                /  \    riron
              TP     C
             /  \    toiu
         ConjP    TP
         /   \
       TP    Conj
              ∅
```

To further support a complement analysis of Japanese content clauses, (18) examines the possible orderings of *toiu*-clauses with relatives clauses:

(18) a. [*kanojo ga   sinzinai], [ningen ga   saru kara sinkasita toiu]   riron*
            she   NOM not believe humans NOM apes from evolved   *TOIU* theory
         'The theory that the Earth is round, which she doesn't believe, '

      b. ? [*ningen   ga   saru kara sinkasita toiu   ] [kanojo ga   sinzinai   ] riron*
            humans NOM apes from evolved   *TOIU*   she   NOM not believe   theory
         'The theory, which she doesn't believe, that the Earth is round'

(18) shows two instances of a noun, *riron* 'theory', being modified by both a *toiu*-clause and an ordinary relative clause. In (18a), the relative clause occurs first, with the *toiu*-clause adjacent to the head noun. In (18b), the order is reversed, with the *toiu*-clause occurring first. The two different orders contrast in grammaticality, with (18a) being preferred and (18b) being marked. Such results are expected under the analysis that *toiu*-clauses are complements while ordinary relatives are adjuncts, as complements are generated closer to the head-noun than adjuncts. We expect complements' default position to be adjacent to their head; if they surface in a different position, movement must have occurred to displace them. Given that syntactic movement often yields differences in interpretation or grammatically, the markedness of (18b) can be attributed to the *toiu*-clause undergoing movement from its base-generated position.

Treating *toiu* clauses as complements completes the adjunct-complement distinction in the nominal domain for Japanese, with relative clauses being distinguished as adjuncts and *toiu*-clauses as complements

(the latter of which I identify as Japanese's content clauses).

5 More On Gapless Relative Clauses

While I have argued that Japanese gapless relative clauses are adjuncts, many questions remain about their internal structure. Even if they share their status as an adjunct, gapless relatives have striking differences from ordinary relatives, most notably the lack of an obvious syntactic gap. An exhaustive discussion of Japanese gapless relative clauses is beyond the scope of this essay, but in this section I will discuss some of the semantic relationships they can express, review some existing approaches to Chinese gapless relatives, and briefly sketch out the application of one such approach to Japanese.

5.1 Meanings Expressed by Japanese Gapless Relative Clauses

In ordinary relative clauses, the relationship between the head noun and the relative clause can be determined by identifying the location and nature of the syntactic gap and its corresponding operator. Even in Japanese relative clauses, where this gap can be ambiguous due to lack of overt *wh*-word and frequently dropped arguments, a given interpretation of a relative clause corresponds to a specific syntactic gap that can be associated with the head noun (for example, an object gap, agent gap, place-adjunct gap, manner-adjunct gap, etc.). For gapless relatives, the head noun does not play such a direct role in the structure of the clause modifying it. There is a range of semantic relationships that can arise between a gapless relative clause and its head noun; the following list, adapted from Matsumoto (1997), is by no means exhaustive, but offers some prominent examples of different kinds of gapless relative modification:

(19) a. [*me o*   *patipati-to-yaru*] *kuse*
       eyes ACC blink   habit
       'the habit (of) blinking (one's) eyes'

  b. [*kare ga*   *syukke-sita*   ] *dooki*
       he NOM became a priest   motivation
       'the motivation for his becoming a priest'

  c. [*dareka*   *ga*   *doa o*   *tataku*] *oto*
       someone NOM door ACC knock   sound
       'the sound of someone knocking on the door'

d. [*honyaku-sita*] *kane*

    translated   money

‘the money (which resulted after) (someone) translated (something)

e. [*atama ga*   *yoku-naru*   ] *hon*

    head   NOM good-become   book

‘the book (by reading which) (one) becomes smarter’

The examples in (19) are plausible instances of noun-modification by a gapless relative clause — plausible but not definite because, as has been noted, there is no overt marker for a gapless relative clause in Japanese. Accordingly, it may be possible to analyze some of these examples as ordinary relatives or content clauses (without collapsing the entire gapless relative category into another), but regardless, I will describe the semantic relations observed in (19).

(19a) is similar to a content-clause in function, but rather than expressing propositional content, such as that possessed by nouns like *belief* or *fact*, the content is an action or behavior which defines *kuse* ‘habit’. In (19b), the modifying clause acts as a kind of goal toward which the head noun, *dooki* ‘motivation’, is oriented. In (19c) the clause describes the source of the modified head noun *oto* ‘sound’. (19d) involves a head noun *kane* ‘money’ which is the result of the action in its modifying clause. Finally, in (19e) the resultative relationship appears reversed, with the action in the modifying clause occurring as a result of interacting with the object referred to by the head noun *hon* ‘book’.

To summarize, among the examples in (19) we see a modifying clause expressing:

- a non-propositional content-like relation (of habit)

- a abstract goal relation (of motivation)

- a source relation (of sound)

- a cause relation (of (earning) money)

- a result relation (of (reading) a book)

As is the case with ordinary relative clauses, due to lack of overt functional elements, all of these different semantic relationships are inferred from context. None of the examples show a relationship in which the head noun is a clear argument of a predicate in the modifying clause, but the remaining diversity in potential meanings needs to be reckoned with when analyzing gapless relatives. If a syntactic framework is to be maintained, it is necessary to have either some syntactic mechanism that is capable of deriving all these meanings, or to posit yet further structural diversity among noun-modifying clauses in Japanese. To my

knowledge, a comprehensive syntactic analysis of this level does not exist yet for Japanese. However, several approaches have been made toward Chinese gapless relative clauses. In the following subsections, I briefly introduce two such analyses.

5.2 Zhang (2008): Gapless Relatives in Spec-NP

Zhang (2008) examines gapless relative clauses in Chinese, and argues that unlike both relative clauses and noun-complements, gapless relative clauses involve the modifying clause as the subject of a nominal predicate. Zhang argues that, while relative clauses modify their head-noun via adjunction and noun-complements are the syntactic complement to their head noun, in the case of gapless relatives the modifying clause is located in Spec(NP), the specifier of the phrase headed by the head-noun.

To arrive at this conclusion, Zhang looks at the predication relationships between nouns and their modifying clauses in the various types of clausal complex NPs. She claims that for ordinary relatives, the head-noun is an argument and the modifying clause is its predicate; in contrast, for noun-complements the head-noun is the predicate, while the modifying clause is its internal argument (hence the complement-relation). Zhang argues that gapless relatives also involve a nominal predicate as the head-noun, but rather than being modified by an internal argument, it is modified by an external one (in other words, a subject).

To support this analysis, Zhang argues that all head-nouns of gapless relatives are relational nouns — nouns which denote some sort of inherent relationship to another noun or to an event. Accordingly, the structure that Zhang proposes for gapless relatives mirrors that of English NPs like *Bill's neighbor*, in which *neighbor*, a relational noun, takes *Bill* as its subject. According to Zhang, Chinese differs from English in that English cannot have clausal subjects, explaining its lack of gapless relatives.

Zhang's approach to gapless relatives is elegant in that it provides a clear structural distinction between gapless relatives and other clausal complex NPs, without needing to introduce new mechanisms into the theory. However, I believe there are several issues that require further consideration. Firstly, if gapless relatives fill the SpecNP node of the structure, how do we analyze cases where a gapless relative co-occurs with a nominal possessor (this depends in part on one's analysis of Chinese DP/NP structure)? Additionally, her characterization of gapless relatives as strictly 'relational' is rather narrow. At least in the case of Japanese, I do not believe all gapless relative clause data can fit into subject-predicate structure, potentially requiring positing additional structures for edge cases.

5.3 Patterson (2020): Gapless Relatives as a type of Adjunct Relative Clause

Patterson (2020) also examines chinese gapless relative clauses, but takes the stance that there is syntactic

movement involved, as well as an associated gap. Specifically, she argues that these clauses are akin to adjunct relative clauses, utilizing a null adjunctivizer phrase within the modifying clause to derive an adjunct relationship between the noun and its modifier. Moreover, Patterson argues that, contrary to traditional analyses, noun-complement clauses in Chinese also involve the same sort of adjunctivizer and its associated movement, meaning they are not actually complements of their head-noun.

Consequently, Patterson ends up grouping three categories of clausal modifiers together: ordinary adjunct relatives, gapless relatives, and noun-complement clauses (under Patterson's analysis, the terms 'gapless' and 'complement' are misnomers here). To account for the semantic difference between these three types, she posits that the adjunctivizer in these structures can introduce various kinds of adjuncts: ordinary adjunct relatives involve 'conventional adjuncts' such as location and instrument, while gapless relatives and noun-complements involve 'unconventional adjuncts' such as cause, effect, and content.

Patterson's approach is reminiscent of semantics-based approaches in that it captures the surface-uniformity of the data by positing a single underlying structure, deriving the differences between various types of noun-modifying clauses via variation in the semantics of a specific element in the structure. Unlike Matsumoto (1997), however, Patterson's analysis is still largely syntactic in nature, positing the movement of a null element to derive adjunct relationships. While a syntactic approach that captures the surface-uniformity is appealing, the claim that Chinese gapless relative clauses, and even apparent noun-complement clauses, actually involve a gap is difficult to make consistent with data suggesting an adjunct-complement distinction, such as that discussed in Huang (2016).

5.4   A Hypothetical Approach for Gapless Relative Clauses in Japanese

As mentioned, my analysis thus far argues that gapless relative clauses are adjuncts but does not delve into their internal structure. Are these clauses truly gapless, or do they involve a gap and associated operator along the lines of ordinary relative clauses? To properly answer such questions for Japanese would require testing for movement in various ways, such as island constraints. In the absence of sufficient data for such tests, I will draw upon Patterson's (2020) analysis of Chinese gapless relatives in order to sketch out a possible analysis should there emerge significant evidence of movement in Japanese gapless relatives.

Patterson's analysis of Chinese gapless relatives is adjunct-based, disagreeing with argument-based analyses as seen in Huang (2016) and contending that in the Chinese data for gapless relatives, they pattern similarly to ordinary relative clauses. I contend that the same is true in Japanese, as exemplified by the clause-iteration data above. Consequently, similar to Patterson's account of Chinese gapless relatives, I will speculate that Japanese gapless relative clauses have essentially the same structure as ordinary relatives,

involving an operator (null for Japanese), and A-bar movement leaving a syntactic gap (thus rendering 'gap-less' relatives not truly gapless). (21) sketches the basic structure in question as applied to (19d), reproduced here as (20):

(20)   [*honyaku-sita*] *kane*

    translated   money

    'the money (which resulted after) (someone) translated (something)

(21) $[_{CP}$ OP_i $[_{TP}$ t_t honyaku-sita]] kane

(21) shows the movement of an operator in the clause modifying the head noun *kane* 'money'. In Japanese relative clauses, both ordinary and gapless, this operator is null. Considering the position where the operator is generated, given that none of the meanings expressed by Japanese gapless relatives involve the head noun as a clear argument of the modifying clause, I rule out the operator originating in an argument position. Instead, I propose it is generated as some sort of adjunct in the modifying clause before raising up to Spec(CP). I leave open the question of the exact location of adjunction.

This operator establishes the semantic relationship between a relative clause and its head noun for gapless clauses in addition to ordinary relatives. This requires a broader range of potential meanings expressed by the operator compared to those found with ordinary relative clauses. In the case of (21), we might interpret this operator as supplying some meaning along the lines of 'which results from', i.e. 'the money (*which results from*) having translated (something)'.

To summarize this speculative analysis, which is largely borrowed from Patterson (2020), gapless relative clauses in Japanese are fundamentally the same as other relative clauses; their apparent "gapped"-ness arises from the fact that Japanese's null operator involved takes on a broader range of meaning than, for example, *wh*-operators in English. It is also worth noting that Patterson's analysis of Chinese gapless relatives claims that content clauses also have this same structure, and thus are also adjuncts. In the case of Japanese, however, there is reason to suppose the content clauses are structurally distinct from relatives and are compliments, not adjuncts, as discussed in section 4.2.

6   Conclusion

While noun-modifying clauses in languages like Japanese and Chinese look quite different from languages like English which show transparent differences between adjuncts and complements in the noun-modifying domain, the data suggests that such a distinction still exists for these languages. The diagnostic of clause-iteration, which has been used to demonstrate an adjunct-complement distinction in Chinese, shows that

Japanese relative clauses, including gapless relative clauses, are adjuncts while content clauses are complements. This strengthens our understanding of syntax as a fundamental component of language with cross-linguistically universal properties; even languages which manifest things like noun-modification in different ways can be shown to obey similar underlying principles. On the other hand, there are still ways in which Japanese clearly differs from a language like English. Gapless relative clauses in particular, are far from being fully understood. Applying some of the tests used to analyze Chinese gapless relatives to Japanese could offer an avenue for significant progress, as might comparisons with gapless relative phenomena in other languages.

List of Abbreviations

ACC = accusative case

NOM = nominative case

LOC = locative case

TOP = topic marker

PASS = passive voice

PAST = past tense

QUOT = quotative particle

EXP = experiential marker

References

Chomsky, Noam. 1970. Remarks on Nominalization. *Readings in English Transformational Grammar. Waltham, Mass.: Ginn and Co* 184–221.

Huang, James. 2016. The Syntax and Semantics of Prenominals: Construction or Composition? *Language and Linguistics* 17(4). 431–475. doi:10.1177/1606822X16645744. http://lin.sagepub.com/lookup/doi/10.1177/1606822X16645744.

Matsumoto, Yoshiko. 1997. *Noun-modifying constructions in Japanese: a frame-semantic approach* (Studies in language companion series v. 35). Amsterdam ; Philadelphia, PA: John Benjamins Pub.

Nemoto, Naoko. 1999. Scrambling. In Natsuko Tsujimura (ed.), *The Handbook of Japanese Linguistics*, 121–153. Massachusetts: Blackwell Publishers.

Patterson, Yina. 2020. *A Study of Nominal-Clausal Relations in Mandarin Chinese*: Indiana University PhD Dissertation.

Shimamura, Koji. 2018. *The Theory of Quotative Complementation in Japanese Semanticosyntax*: University of Connecticut PhD Dissertation.

Teramura, Hideo. 1969. The Syntax of Noun Modification in Japanese. *The Journal-Newsletter of the Association of Teachers of Japanese* 6(1). 64. doi:10.2307/488720. https://www.jstor.org/stable/488720?origin=crossref.

Zhan, Fangqiong & Xiaoman Miao. 2012. A Comparative Study on Japanese and Chinese NMCs: A Semantic and Discourse Approach. *Rice Working Papers in Linguistics* 3. Publisher: Rice University.

Zhang, Niina. 2008. Gapless relative clauses as clausal licensors of relational nouns. *Language and Linguistics* 9(4). 1003–1026. Available on lingbuzz/000526.