

The Syntax of Sino-Japanese Reflexive Verbs

1. Introduction

In this paper, we discuss the internal syntax of Sino-Japanese reflexive verbs known as *zi*-verbs such as *zi-ritu-suru* ‘establish oneself, *zi-kai-suru* ‘demolish itself’, and *zi-si-suru* ‘commit suicide’. The descriptive investigation of the syntax and semantics of this verbal class has been recently undertaken for the first time in Japanese linguistics by Tsujimura and Aikawa (1996, 1999) but the fuller examination of the true nature of *zi*-verbs within the wider context of the syntax-lexicon interface and the theory of argument structure is yet to be conducted.¹ Against this backdrop, the present paper attempts to develop a comprehensive theoretical account of Sino-Japanese reflexive verbs within the framework of generative grammar. We provide a variety of syntactic, morphological, and semantic arguments against Tsujimura and Aikawa’s (1999) unaccusative analysis of *zi*-verbs that all types of argument structure (unaccusative, unergative, and transitive) are attested for this class of complex predicate. Specifically, verbs such as *zi-ritu-suru* ‘establish oneself and *zi-satu-suru* ‘kill oneself’ are transitive; verbs such as *zi-kai-suru* ‘demolish itself’ and *zi-baku-*

¹ One important work on Sino-Japanese verb has been undertaken earlier than Tsujimura and Aikawa (1996, 1999) by Takezawa (1991), who discusses the syntax of Sino-Japanese reflexive verbs within a different context having to do with the resultative interpretation of *-teiru* in Japanese. We discuss his observation and analysis in detail in sections 5 and 6, when we propose a new syntactic analysis of Sino-Japanese reflexive verbs.

suru ‘explode itself’ are unaccusative; verbs such as *zi-si-suru* ‘commit suicide’ and *zi-sui-suru* ‘do one’s own cooking’ are unergative. We implement this three-way contrast between object-less reflexive verbs within the recent compositional theory of argument structure proposed in Hale and Keyser (1993, 2002), Harley (1995), and Harley and Noyer (2001). Our current investigation also draws on important results obtained from Takezawa (1991) on the resultative interpretation of the continuative morpheme *-teiru* and inalienable possession constructions.

The present paper is organized in the following way. We start in the next two sections by reviewing the seminal work on Sino-Japanese reflexive *zi*-verbs by Tsujimura and Aikawa (1996, 1999). Tsujimura and Aikawa (1999) analyze those *zi*-verbs that cannot take direct objects (object-less *zi*-verbs) as unaccusative reflexive verbs and provide two arguments for this analysis based on the Direct Object Restriction on resultative secondary predicates and the numeral floating quantifier. In section 4, we introduce five diagnostics proposed by Kageyama (1993) and Kishimoto (2005), a) V+V compounding, b) accusative case marking in light verb constructions, c) indirect passivization, d) passivized causativization, and e) *de*-marked instrumental subject constructions, in order to identify the verb class of *zi*-verbs with respect to argument structure. These tests, applied to *zi*-verbs, show that some of the object-less reflexive verbs such as *zi-ritu-suru* ‘establish oneself’ and *zi-satu-suru* ‘kill oneself’ are more properly analyzed as having the transitive argument structure, contrary to Tsujimura and Aikawa’s (1999) unaccusative analysis. We employ the same set of diagnostics to other *zi*-verbs to show that intransitive analyses must

also be admitted for the full description of the whole range of object-less *zi*-verbs. More specifically, our investigation shows that verbs such as *zi-si-suru* ‘commit suicide’ and *zi-sui-suru* ‘do one’s own cooking’ have unergative argument structure whereas verbs such as *zi-kai-suru* ‘demolish itself’ and *zi-baku-suru* ‘explode itself’ have unaccusative argument structure. In section 5, we attempt a theoretical explanation for the observed three-way contrast between object-less *zi*-verbs within the decompositional theory of argument structure as proposed in Hale and Keyser (1993, 2002), Harley (1995), and Harley and Noyer (2001). We argue that the contrast is naturally derived by varying the flavors of *v* as DO and BECOME. In section 6, we briefly discuss the syntax of what Tsujimura and Aikawa (1999) call inalienable *zi*-verbs. Section 7 is the conclusion.

2. What are Sino-Japanese Reflexive Zi-Verbs?

The reflexive morpheme *-zi-* ‘self’ (or *-ziko-* in certain cases such as *ziko-booei-suru* ‘defend oneself’ and *ziko-shutyoo-suru* ‘assert oneself’) combines with a wide variety of Sino-Japanese verbal nouns to create a complex predicate with the necessary support of the semantically empty light verb *suru* ‘do’ (Grimshaw and Mester 1988). Some examples of this class of predicate are given in (1a-b). The contrast between (2a) and (2b) shows that the reflexive morpheme is morphologically bound; it must be combined with a verbal noun.

As the examples in (1a-b) show, Sino-Japanese verbal nouns also cannot serve as independent verbal forms without the reflexive morpheme and the light verb *suru* ‘do’.²

- (1) a. *zi-satu-suru* ‘kill oneself’ *zi-ritu-suru* ‘establish oneself’
 zi-kai-suru ‘demolish oneself’ *zi-ten-suru* ‘revolve around itself’
- b. *zi-man-suru* ‘boast oneself’ *zi-kyoo-suru* ‘confess oneself’
 zi-san-suru ‘praise oneself’ *zi-nin-suru* ‘admit oneself’
- (2) a. John-ga *zi-satu-si-ta*.
 John-Nom self-killing-do-did
 ‘John killed himself.’
- b.* John-ga *zi-o* satu-si-ta.
 John-Nom self-Acc killing-do-Past
 ‘John killed himself.’

Tsujimura and Aikawa (1999) observe that there are two types of inherently reflexive verbs in Japanese: unaccusative *zi*-verbs and “inalienable *zi*-verbs.” The former cannot take direct

² The following abbreviations are used in this paper: Nom=nominative, Acc=accusative, Gen=genitive, Dat=dative, Past =past tense, Tran=transitive, Intr=intransitive, Loc=locative, Cl=classifier, Top=topicalizer, Caus=causative, Pass=passive, Pol=politeness marker, and Cop=copular.

object arguments; the latter can take direct object arguments that stand in the inalienable/part-whole relation with the subject argument. This is illustrated by the contrast between (3a) and (3b). We call the former class of verb object-less *zi*-verbs in this paper.

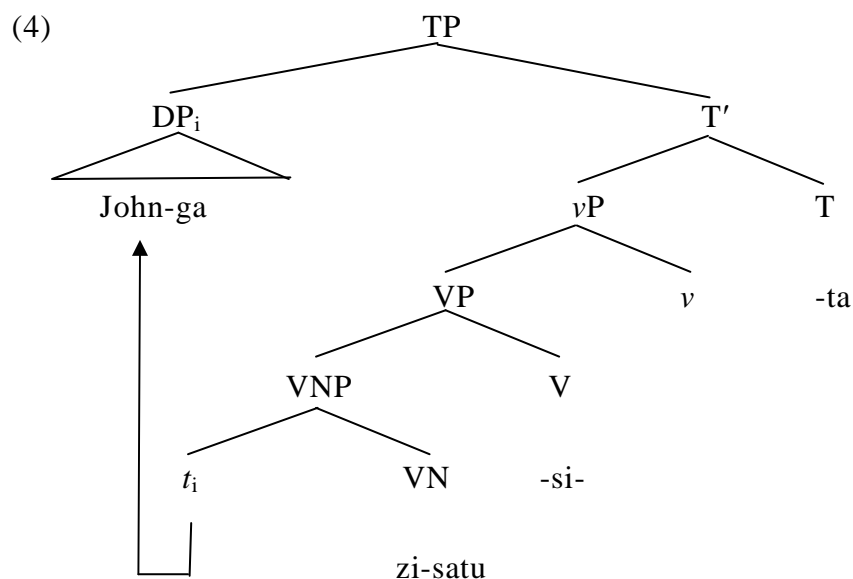
- (3) a. * John-ga musuko-o zi-satu-si-ta.
 John-Nom son-Acc self-killing-do-Past
 ‘John killed his son.’
- b. John-ga musuko-o zi-man-si-ta.
 John-Nom son-Acc self-boast-do-Past
 ‘John boasted about his own son.’

The bulk of this paper concentrates on the syntax and semantics of object-less *zi*-verbs though we briefly discuss the nature of “inalienable *zi*-verbs” in section 6 with reference to Tsujimura and Aikawa’s (1996, 1999) analysis.

3. Tsujimura and Aikawa’s (1999) Unaccusative Analysis of Object-Less *Zi*-Verbs

Tsujimura and Aikawa (1999) propose that object-less *zi*-verbs are unaccusative in the sense of Perlmutter (1978) and Burzio (1986). According to this analysis, the predicate in question lacks an external argument in [Spec, VP] (or [Spec, *v*P] in modern syntactic

terms). The surface subject, generated in the complement of the verbal noun, undergoes syntactic movement to the specifier of TP for nominative case. The derivation for the sentence in (2a) above would be as in (4).³



³ Tsujimura and Aikawa (1999) do not make it explicit what is the syntactic structure of object-less *zi*-verbs such as *zi-satu-suru* ‘kill oneself’. Thus, what is given in (4) is what *we* take to be the unaccusative syntactic structure based on their discussion of the unaccusative status of object-less *zi*-verbs; see Tsujimura and Aikawa (1999: 29-35). We will see in the next section, however, that their unaccusative analysis has several shortcomings, whatever syntactic structure may be adopted for examples such as (2a).

This analysis directly accounts for the observation noted above that *zi*-verbs such as *zi-satu-suru* ‘kill oneself’ cannot take direct objects, as shown in (3a), because unaccusative verbs in general cannot do so due to the Burzio’s Generalization given in (5).

(5) Burzio’s Generalization (Burzio 1986: 178, 179)

$-\theta_s \rightarrow -A$: All and only the verbs that can assign θ -role to the subject can assign (accusative) Case to an object.

Tsujimura and Aikawa (1999) provide two pieces of evidence from the literature on unaccusativity in Japanese to show that object-less *zi*-verbs are unaccusative verbs. The first piece of evidence comes from the Direct Object Restriction. This restriction, first noted by Simpson (1983) and so named by Levin and Rappaport-Hovav (1995), states that secondary resultative predicates can only be predicated of (underlying) direct objects.⁴ Consider (6a-d). The secondary predicate and the object it is predicated of are in bold and underlined, respectively.

⁴ The original statement of this generalization provided by Simpson (1983) within the framework of Lexical Functional Grammar is as follows:

- (6) a. Ziroo-ga [VP pan-o **makkuroni** yai-ta]. (Transitive Verb)
 Jiro-Nom bread-Acc black burn (tr.)-Past
 ‘Jiro toasted the bread black.’
- b.* Ziroo-ga [VP **kutakutani** hasi-tta]. (Unergative Verb)
 Jiro-Nom exhausted run-Past
 ‘Jiro ran exhausted.’
- c. Pan_i-ga [VP **makkuroni** *t_i* yake-ta]. (Unaccusative Verb)
 bread-Nom black burn (intr.)-Past
 ‘The bread burned black.’
- d. Furui tatemono_i-ga [VP **konagonani** *t_i* zi-kai-si-ta]. (Zi-Verb)
 old building-Nom into-pieces self-demolishing-do-Past
 ‘The old building demolished (itself) into pieces.’

In the example in (6a) with the transitive verb *yaku* ‘burn’, the secondary predicate *makkuroni* ‘black’ can be successfully predicated of the NP *pan* ‘bread’ in compliance with the Direct Object Restriction because the NP is in direct object position. The example in (6b) with the unergative

- (i) The controller of a resultative attribute must be an OBJECT, whether that OBJECT is a surface OBJECT, as in transitive verbs, or an underlying OBJECT, as in passive and intransitive verbs of the Unaccusative class. (Simpson 1983: 146)

verb *hasiru* ‘run’ is ungrammatical because there is no direct object that the secondary predicate *kutakutani* ‘exhausted’ can be predicated of. The grammaticality of the example in (6c) naturally falls out under the unaccusative hypothesis of Perlmutter (1978) and Burzio (1986) if intransitive verbs such as *yakeru* ‘burn’ are unaccusative and hence have underlying direct objects as indicated by the VP-internal trace. Now, when we apply this restriction to object-less *zi*-verbs such as *zi-kai-suru* ‘demolish itself’, we can see that this verb patterns with unaccusative verbs rather than with transitive and unergative verbs, as shown by the grammaticality of (6d). Tsujimura and Aikawa take this behavior as the first argument for the unaccusative status of object-less *zi*-verbs.

The second argument Tsujimura and Aikawa (1999) make for the unaccusative analysis of object-less *zi*-verbs concerns floating numeral quantifiers. Miyagawa (1989a) observe that a floating numeral quantifier must stand in the mutual c-command relation with its host. Consider examples in (7-10). A floating numeral quantifier and its host are in bold.

(7) a. **Gakusei-ga san-nin** [_{VP} ie-o ka-tta]. (Transitive Verb)

student-Nom three-Cl house-Acc buy-Past

‘Three students bought a house.’

b.* **Gakusei-ga** [_{VP} ie-o **san-nin** ka-tta].

student-Nom house-Acc three-Cl buy-Past

‘Three students bought a house.’

(8) a. **Gakusei-ga san-nin** [_{VP} ie-e hasi-tta]. (Unergative Verb)

student-Nom three-Cl house-toward run-Past

‘Three students ran toward the house.’

b.* **Gakusei-ga** [_{VP} ie-e **san-nin** hasi-tta].

student-Nom house-toward three-Cl run-Past

‘Three students ran toward the house.’

(9) a. **Gakusei_i-ga san-nin** [_{VP} ie-ni *t_i* ki-ta]. (Unaccusative Verb)

student-Nom three-Cl house-to come-Past

‘Three students came to the house.’

b. **Gakusei_i-ga** [_{VP} ie-ni **san-nin** *t_i* ki-ta].

student-Nom house-to three-Cl come-Past

‘Three students came to the house.’

(10)a. **Gakusei_i-ga san-nin** [_{VP} ie-de *t_i* zi-satu-si-ta]. (Zi-Verb)

student-Nom three-Cl house-Loc self-killing-do-Past

‘Three students killed themselves in the house.’

b. **Gakusei_i-ga** [_{VP} ie-de **san-nin** *t_i* zi-satu-si-ta].

student-Nom house-Loc three-Cl self-killing-do-Past

‘Three students killed themselves in the house.’

The example in (7b) with the transitive verb *kau* ‘buy’ is bad since the floating numeral quantifier *san-nin* ‘three-CL’ and its host *gakusei* ‘student’ are separated by the VP boundary that blocks the mutual c-command relation between the two elements. The example in (8b) with the unergative verb *hasiru* ‘run’ is ungrammatical for the same reason. By contrast, the example in (9b) with the unaccusative verb *kuru* ‘come’ is grammatical because the relevant requirement is met between the floating numeral quantifier and the VP-internal trace of the surface subject. With this in mind, Tsujimura and Aikawa (1999) note, the fact that the example in (10b) with *zi-satu-suru* ‘kill oneself’ patterns with the example in (9b) shows that this *zi*-verb is unaccusative.

To summarize, we have reviewed Tsujimura and Aikawa’s (1999) unaccusative analysis of object-less Sino-Japanese reflexive *zi*-verbs and seen that two diagnostics based on the Direct Object Restriction and the floating numeral quantifier provide evidence for this analysis. It is important to note, however, that many other diagnostics than the two just mentioned here have been proposed in the Japanese literature that are pertinent to identifying the verbal class of *zi*-verbs. In the next section, we see whether Tsujimura and Aikawa’s unaccusative analysis makes correct predictions concerning those tests.

4. Against the Unaccusative Analysis of Object-Less *Zi*-Verbs

In this section, we apply five tests from the literature to show that some of the object-free *zi*-verbs such as *zi-ritu-suru* ‘establish oneself’ and *zi-satu-suru* ‘kill oneself’ are more

properly analyzed as having the transitive argument structure, contrary to Tsujimura and Aikawa's (1999) claim. The five tests are given in (11a-f). The first four tests were developed by Kageyama (1993); the last one was developed recently by Kishimoto (2005).

(11) Five Diagnostics to Identify Verb Classes of Sino-Japanese Reflexive Verbs

- a. V + V compounds headed by *naosu* 'redo'
- b. accusative case-marked light verb constructions
- c. indirect passivization
- d. passivized causativization
- e. *de*-marked instrumental subject construction

We further show that the same set of tests make it clear that there are two other classes of *zi*-verbs, unergative *zi*-verbs such as *zi-si-suru* 'commit suicide' and *zi-soo-suru* 'run on its own' and unaccusative *zi*-verbs such as *zi-baku-suru* 'explode itself' and *zi-kai-suru* 'demolish itself'. The overall result of this section, therefore, shows that there are three types of object-free *zi*-verbs.

4.1. Zi-Ritu-Suru Verbs

The first argument against the uniform unaccusative analysis of object-less *zi*-verbs comes from V + V compounds headed by *naosu* 'redo'. In favor of his Transitivity Harmony

Principle, Kageyama (1993: 51) observes that, in Japanese V + V compounds, the argument structure of the first member is restricted by the argument structure of the second verb. When the second verb is transitive as in *naosu* ‘redo’, the first verb must be transitive or unergative, not unaccusative, as the contrast between (12a, b) and (12c) illustrates.

- (12)a. *ake-naosu* ‘open again’ *tukuri-naosu* ‘make again’ (V1 = Transitive Verb)
 b. *asobi-naosu* ‘play again’ *ne-naosu* ‘sleep again’ (V1 = Unergative Verb)
 c. **korobi-naosu* ‘tumble again’ **oti-naosu* ‘fall again’ (V1 = Unaccusative Verb)

When applied to certain *zi*-verbs such as *zi-ritu-suru* ‘establish oneself’, we can see that this verb can be the first member of the V + V compound headed by *naosu* ‘redo’, as the grammaticality of (13) shows.

- (13) John-ga *zi-ritu*-si-naosi-ta. (V1 = *Zi*-Verb)
 John-Nom self-establishing-do-redo-Past
 ‘John established himself again.’

This result indicates that this verb at least has external argument, hence provides evidence against Tsujimura and Aikawa’s (1999) unaccusative analysis.

The second argument against the unaccusative analysis comes from the observation due to Kageyama (1993: 52), based on Miyagawa (1989b), Dubinsky (1985,1989), and Tsujimura (1990). that the accusative case marker *-o* can be attached to transitive and unergative verbal nouns, not unaccusative verbal nouns. This is illustrated by the contrast between (14a, b) and (14c).

(14)a. Daigaku-de kenkyu (*-o*) suru hito-ga hueteiru. (Transitive Verbal Noun)

university-Loc research-Acc do person-Nom increase

‘The number of people who do research at universities is increasing.’

b. Roo huuhu-ga rikon(*-o*) si-ta. (Unergative Verbal Noun)

old couple-Nom divorce-Acc do-Past

‘The old couple got divorced.’

c. Kaityoo-ga kinoo sikyo(*-*o*) si-ta. (Unaccusative Verbal Noun)

CEO-Nom yesterday death-Acc do-Past

‘The CEO died yesterday.’

Under the theory of argument transfer proposed by Grimshaw and Mester (1988), the contrast between (14a, b) and (14c) follows as a natural result of Burzio’s Generalization. Grimshaw and Mester argue that the argument-taking property of the verbal noun is transferred into the empty θ -grid of the higher light verb *suru* ‘do’. Under this analysis, the verbal nouns can be

marked with *-o* by the light verbs in (14a, b), which become transitive and unergative verbs, respectively, as the result of Argument Transfer. The impossibility of the accusative case marking on the verbal noun in (14c) directly falls out from Burzio's Generalization given in (5) above because the light verb does not have external argument, hence lacks the ability to assign accusative case to the verbal noun. Tsujimura and Aikawa's (1999) analysis predicts that object-less *zi*-verbs should also not be able to assign accusative case to the verbal noun. This prediction, however, is falsified by the grammaticality of examples as in (15).

(15) John-wa oya-ni sinpai-o kake-mai-to zi-ritu(-o) si-ta. (*Zi*-Verbal Noun)

John-Top parent-Dat worry-Acc incur-won't-C self-establishing-Acc do-Past

'John established himself in order not to incur worries on his parents.'

This result thus provides another piece of argument that Tsujimura and Aikawa's (1999) unaccusative analysis does not hold for all types of object-less *zi*-verbs. At the same time, this result indicates that verbs such as *zi-ritu-suru* 'establish oneself' have an external argument in their argument structure as the present test diagnoses whether a particular verb has an external argument or not as a consequence of the Burzio's Generalization.

The third argument is related to the dative case-marking pattern in indirect/adversative passivization. As Kageyama (1993: 59, 60) points out, one well-known generalization

about indirect/adversative passives in Japanese is that only the external argument of a base verb can be marked with the dative case marker *-ni* in this construction. Consider (16-18).

(16)a. John-no *tuma-ga* hooseki-o ka-tta. (Transitive Verb)

John-Gen wife-Nom jewelry-Acc buy-Past

‘John’s wife bought jewelry.’

b. John-ga *tuma-ni* hooseki-o kaw-are-ta.

John-Nom wife-Dat jewelry-Acc buy-Pass-Past

‘John was adversely affected by having his wife buy jewelry.’

(17)a. (John-no) *tuma-ga* (kare-to) rikon-si-ta. (Unergative Verb)

John-Gen wife-Nom him-with divorce-do-Past

‘(John’s) wife got divorced (with him).’

b. John-ga *tuma-ni* rikon-s-are-ta.

John-Nom wife-Dat divorce-do-Pass-Past

‘John was adversely affected by having his wife divorcing him.’

(18)a. (John-no) *yasai-ga* kusa-tta. (Unaccusative Verb)

John-Gen vegetable-Nom rot-Past

‘(John’s) vegetables rot.’

b. *John-ga *yasai-ni* kusar-are-ta.

John-Nom vegetable-Dat rot-Pass-Past

‘John was adversely affected by having his vegetables rot.’

In (16a, b), the external argument of the basic transitive sentence *tuma* ‘wife’ becomes the dative argument of its corresponding indirect passive. The same pattern holds for the pair of examples in (17a, b) with the unergative verb *riku suru* ‘get divorced.’ This pattern, however, is not observed in the similar pair of examples in (18a, b) with the unaccusative verb *kusaru* ‘rot’ because *yasai* ‘vegetable’ is not the external argument of the verb. Given the above-generalization, Tsujimura and Aikawa’s unaccusative analysis would predict that object-less *zi*-verbs should also not allow the sole argument to be marked with dative case. This prediction, however, is not correct, in light of grammatical examples such as (19b).

(19)a. (John-no) *tuma-ga* zi-satu-si-ta. (Zi-Verb)

John-Gen wife-Nom self-killing-do-Past

‘John’s wife killed herself.’

b. John-ga *tuma-ni* zi-satu-s-are-ta.

John-Nom wife-Dat self-killing-do-Pass-Past

‘John was adversely affected by having his wife kill herself.’

This example thus casts doubt on the validity of the unaccusative analysis of object-less *zi*-verbs.

The fourth argument comes from passivized causativization. Kageyama (1993: 60-62), following the observation first made by Inoue (1976), points out that the embedded external argument, not the embedded internal argument, of a causative construction, can be promoted to the grammatical subject of the derived passive construction. This observation is illustrated in (20-22).

(20)a. Sensei-ga *seito-ni* kookana hon-o kaw-ase-ta. (Transitive Verb)

teacher-Nom student-Dat expensive book-Acc buy-Caus-Past

‘The teacher made the student buy an expensive book.’

b. *Seito-ga* sensei-ni kookana hon-o kaw-ase-rare-ta.

student-Nom teacher-Dat expensive book-Acc buy-Caus-Pass-Past

‘The student was made to buy an expensive book by the teacher.’

c.* Kookana hon-ga sensei-niyotte seito-ni kaw-ase-rare-ta.

expensive book-Nom teacher-by student-Dat buy-Caus-Pass-Past

‘An expensive book was made to be bought by the student by the teacher.’

(21)a. Karera-no ryosin-ga *hutari-o* rikon-s-ase-ta. (Unergative Verb)

they-Gen parent-Nom two-Acc divorce-do-Caus-Past

‘Their parents made the two get divorced.’

b. *Hutari-ga* karera-no ryosin-niyotte rikon-s-ase-rare-ta.

two-Nom they-Gen parent-by divorce-do-Caus-Pass-Past

‘The two were made to get divorced by their parents.’

(22)a. John-ga *mizu-o* joohatu-s-ase-ta. (Unaccusative Verb)

John-Nom water-Acc evaporate-do-Caus-Past

‘John made the water evaporate.’

b.* *Mizu-ga* John-niyotte joohatu-s-ase-rare-ta.

water-Nom John-by evaporate-do-Caus-Pass-Past

‘The water was made to evaporate by John.’

In the basic causative construction in (20a) with the transitive verb *kau* ‘buy’, *seito* ‘student’ is the external argument of the embedded transitive clause. This argument can be promoted to the matrix subject, as shown in (20b), in conformity with Inoue’s observation. The embedded internal argument in (20a), *kookana hon* ‘expensive book’, by contrast, cannot be so promoted, as shown in (20c). Inoue’s observation is further illustrated by the examples in (21a, b) with the unergative verb *rikon suru* ‘get divorced’. The embedded causee *hutari* ‘two’ in (21a) is promoted to the matrix subject in its passive counterpart in (21b). The ungrammaticality of the example in (22b) with the unaccusative verb *joohatusuru* ‘evaporate’ shows that the promotion is not possible with unaccusative verbs. Tsujimura and Aikawa’s (1999) unaccusative analysis, therefore, predicts that

object-less *zi*-verbs should not allow this promotion on a par with unaccusative verbs. This prediction is incorrect, as the grammaticality of examples as in (23b) shows.

(23)a. Ryosin-ga **John-o** zi-ritu-s-ase-ta. (Zi-Verb)

parent-Nom John-Acc self-establishing-do-Caus-Past

‘His parents made John establish himself.’

b. **John-ga** ryonsin-niyotte zi-ritu-s-ase-rare-ta.

John-Nom parent-by self-establishing-do-Cause-Past

‘John was made to establish himself by his parents.’

Since the current test diagnoses *zi*-verbs as having an external argument, the example in (23b) indicates that verbs such as *zi-ritu-suru* ‘establish oneself’ are not an unaccusative predicate, contrary to what Tsujimura and Aikawa (1999) predicts.

The final argument against the unaccusative analysis of object-free *zi*-verbs comes from the *de*-marked instrumental subject construction first discussed in Takubo (1985) and investigated most recently by Kishimoto (2005). Kishimoto observes that, if certain semantic and pragmatic conditions are met, volitional external arguments (i.e. volitional agents and experiencers) can be

optionally marked with the instrumental case marker *-de*.⁵ The contrast between (24a, b) and (24c) illustrates this observation. (The examples in (24a) and (24c) are from Kishimoto 2005: 145.)

(24)a. Watasi-tati-*ga/-de* kore-o yari-masu. (Transitive Verb)

I-Pl-Nom/Instr this-Acc do-Pol

‘We will do this.’

b. Watasi-tati-*ga/-de* isshoni ason-da. (Unergative Verb)

I-Pl-Nom/Instr together play-Past

‘We played together.’

c. Atusa-notame kondo-wa John-to-Mary-*ga/-*de* taore-ta. (Unaccusative Verb)

heat-for this time-Top John-and-Mary-Nom/Instr collapse-Past

‘This time, John and Mary collapsed due to heat.’

⁵ Specifically, Takubo (1985) and Kishimoto (2005: 145, 146) note that there are a few conditions for the *de*-marked construction other than the volitional nature of the external argument. Most interesting among those is that *de*-marked subjects must denote a plural volitional entity, as shown by the contrast between (i) and (24a).

(i) Watasi-*ga/-*de* kore-o yari-masu.

I-Nom/Loc this-Acc do-Pol

‘I will do this.’

(Kishimoto 2005: 146)

The examples in (24a, b) show that the volitional plural external argument *watasi-tati* ‘we’ can be optionally marked with the instrumental case rather than with the nominative case. This alternative case marking is impossible with the sole argument (*John to Mary* ‘John and Mary’) of the unaccusative verb *taoreru* ‘collapse’, as shown in (24c). With this observation in mind, the fact that the sole argument of *zi*-verbs such as *zi-ritu-suru* ‘establish oneself’ can be marked with the instrumental subject as in (25) shows that this *zi*-verb has a (volitional) external argument.

- (25) Oya-ni sinpai-o kake-taku-nai-node boku-taⁱ-ga/-*de* zi-ritu-si-masu.
parent-Dat worry-Acc incur-want-Neg-since we-Pl-Nom/Instr self-establishing-do-Pol
‘We will establish ourselves since we don’t want to incur worries on our parents.’

Summarizing thus far, we have shown that Tsujimura and Aikawa’s (1999) analysis of object-less *zi*-verbs does not stand through when we bring additional diagnostics for unaccusativity and external argumenthood to bear on the nature of this class of verb with respect to its argument structure. Rather, the results here strongly indicate that certain *zi*-verbs such as *zi-ritu-suru* ‘establish oneself’ and *zi-satu-suru* ‘kill oneself’ have an external argument in their argument/syntactic structure. We defer discussion of the precise syntactic structure of this class of *zi*-verbs until section 5, where we propose that they are associated with the hidden transitive structure in the sense of Hale and Keyser (1993, 2002). In the rest

of this section, we apply the same set of diagnostics to other *zi*-verbs not examined thus far in this paper. The result of our investigation will show that verbs such as *zi-si-suru* ‘commit suicide’ and *zi-sui-suru* ‘do one’s own cooking’ all have external arguments whereas verbs such as *zi-baku-suru* ‘explode itself’ and *zi-kai-suru* ‘demolish itself’ do not.

4.2. *Zi-Si-Suru Verbs*

There is a certain class of object-less *zi*-verbs that behave essentially in the same way as verbs such as *zi-ritu-suru* ‘establish oneself’ and *zi-satu-suru* ‘kill oneself.’ This class of verb includes *zi-si-suru* ‘commit suicide’, *zi-sui-suru* ‘do one’s own cooking’ and *zi-katu-suru* ‘stand on one’s own feet.’ For reasons of space, we apply the five tests only to *zi-si-suru* as in (26), though the other verbs just mentioned pattern with this verb with respect to all these tests.

(26) John-ga *zi-si-si-ta*.

John-Nom self-death-do-Past

‘John committed suicide.’

In (27a-e), we have the full range of examples that contain *zi-si-suru* ‘commit suicide’ in order to see how this verb behaves with respect to the five tests introduced in section 4.1.

- (27)a. Zenkai misui datta node Mary-ga zi-si-si-*naosi*-ta.
 last time attempted Cop since Mary-Top self-death-do-redo-Past
 ‘Mary committed suicide again (since it was only attempted last time).’
- b. Isyo-o nokosite Mary-ga zi-si (-o) si-ta.
 note-Acc leaving Mary-Nom self-death-Acc do-Past
 ‘Mary committed suicide after leaving a note.’
- c. John-ga *tuma-ni* zi-si-s-are-ta.
 John-Nom wife-Dat self-death-do-Pass-Past
 ‘John was adversely affected by having his wife commit suicide.’
- d. Tuma-ga John-niyotte zi-si-s-ase-rare-ta.
 wife-Nom John-by self-death-do-Caus-Pass-Past
 ‘His wide was made to commit suicide by John.’
- e. Hukushu-notame John-to-Mary-ga/de zi-si-si-ta.
 revenge-for John-and-Mary-Nom/Instr self-death-do-Past
 ‘John and Mary committed suicide to revenge themselves.’

The examples in (27a-e) show that *zi-si-suru* ‘commit suicide’ behaves in the same way with the other verbs such as *zi-satu-suru* ‘kill oneself’ and *zi-ritu-suru* ‘establish oneself’ we have examined in section 4.1. Since all these tests identify whether a particular verb has an external argument or not,

the results here suggest that *zi-si-suru* (as well as other *zi*-verbs such as *zi-sui-suru* ‘do one’s own cooking’, *zi-katu-suru* ‘stand on one’s own feet’) are not unaccusative predicates, as argued for in Tsujimura and Aikawa (1999). We discuss the precise syntactic/argument structure of this class of verb in section 5 and claim that it is associated with the unergative syntactic structure.

4.3. Zi-Kai-Suru Verbs

Even though we have argued thus far that Tsujimura and Aikawa’s (1999) unaccusative analysis cannot be the whole story for object-less *zi*-verbs, we concur with them in analyzing certain *zi*-verbs such as *zi-kai-suru* ‘demolish itself’ and *zi-baku-suru* ‘explode itself’ as unaccusative complex predicates. In addition to the two arguments for the unaccusative status of these verbs made by Tsujimura and Aikawa on the basis of the Direct Object Restriction and the numeral floating quantifier, the five diagnostics from section 4.1 show that this class of verb indeed lacks an external argument. The full range of examples to illustrate this point are given in (28a-d).

(28)a.* (Zenkai hankai datta node) tatemono-ga zi-kai-si-**naosi**-ta.

last time half-collapsed Cop since building-Nom self-demolishing-do-redo-Past

‘The building got demolished again (since it was only half-destroyed last time).’

b. * (Tuyoi **zisin-notame**) tatemono-ga zi-kai-(***o**) si-ta.

strong earthquake-for building-Nom self-demolishing-Acc do-Past

‘The building got demolished due to a strong earthquake.’

c. *? John-ga **ie-ni** zi-kai-s-are-ta.

John-Nom house-Dat self-demolishing-do-Pass-Past

‘John was adversely affected by having his house get demolished.’

d. * **Ie-ga** John-niyotte zi-kai-s-ase-rare-ta.

house-Nom John-by self-demolishing-do-Cause-Pass-Past

‘The house was made to get demolished by John.’

e. Ano hoteru-de-wa honkan-to-bekkan-**ga/*de** zi-kai-si-ta.

that hotel-Loc-Top main building-and-annex-Nom/Instr self-demolishing-do-Past

‘As for that hotel, the main building and annex got demolished.’

Combined with the two arguments made by Tsujimura and Aikawa, this result shows that this type of *zi*-verb is unaccusative.

4.4. Section Summary

In this section, we have applied five syntactic, semantic, and morphological diagnostics to argue that the uniform unaccusative treatment of all object-less *zi*-verbs as in Tsujimura and

Aikawa (1999) cannot be upheld. Rather, the results of this section show that there seem to be three types of *zi*-verbs that need to be acknowledged for the comprehensive description of object-less reflexive verbs. Of course, we have not stated anything about what are differences, if any, between the first type of *zi*-verb such as *zi-ritu-suru* ‘establish oneself’ and the second type of *zi*-verb such as *zi-si-suru* ‘commit suicide’ to justify this three-way contrast among object-less Sino-Japanese reflexive verbs. In the next section, we provide further evidence to support this three-way description and provide a theoretical explanation for it within the recent decompositional theory of argument structure proposed by Hale and Keyser (1993, 2002), Harley (1995), and Harley and Noyer (2001).

5. The Syntax of Sino-Japanese Object-Less *Zi*-Verbs

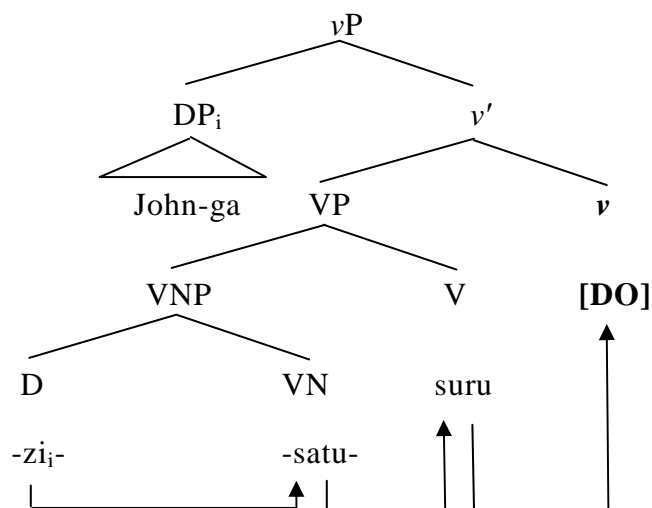
In this section, we address the question of what is the precise syntactic structure of object-less *zi*-verbs that captures the observation made in the preceding sections. We also provide several pieces of evidence in favor of the three-way contrast among this class of verb.

5.1. The Hidden Transitive Analysis of Zi-Ritu-Suru Verbs

Consider first *zi*-verbs such as *zi-ritu-suru* ‘establish oneself’ and *zi-satu-suru* ‘kill oneself.’ We have seen five pieces of evidence in section 4.1 that this type of reflexive verb has an external argument in their argument structure. To the extent that Burzio’s

Generalization in (5) holds for Japanese (see Miyagawa 1989a, b, Dubinsky 1989, and Tsujimura 1990 for evidence), this means that the relevant class also has an internal argument. This result, of course, appears to be contradictory with the fact that this class of verb cannot take any independent direct object, as the ungrammaticality of examples as in (3a) shows. We propose that this apparently conflicting result is resolved by analyzing this type of *zi*-verb as having a hidden transitive syntactic structure along the lines proposed by Hale and Keyser (1993, 2002) for English denominal unergative verbs such as *dance*, *laugh*, and so on. The relevant part of the syntactic structure for (2a), then, will be as in (29). See also discussion of Takezawa's (1991) analysis of *zi*-verbs below.

(29) The Hidden Transitive Analysis of *Zi-Ritu-Suru* Verbs



In this derivation, the reflexive morpheme *-zi-* is base-generated as the internal argument of the verbal noun *-ritu-* ‘establishing’ whereas the other argument *John* is merged directly in the specifier of *vP* as an external argument of the *v* head. Following recent work as in Harley (1995) and Harley and Noyer (2001), we assume that the value of the *v* head is selected from a fixed class (e.g., CAUSE, DO, BECOME, BE) provided by Universal Grammar and that each such favor has specific argument-selecting properties. In the present derivation, the little *v* with the value DO selects both the actor argument (DP) and the action complement (VP). Due to the bound nature of both the reflexive morpheme and the Sino-Japanese light verb, the reflexive bound morpheme *-zi-* undergoes successive syntactic incorporation through the verbal noun and the light verb into the *v* head to create the surface complex predicate, as indicated by the arrows in the derivation. The external argument *John* undergoes movement from [Spec, *vP*] into [Spec, TP] to receive nominative Case. The reflexive morpheme, on the other hand, does not need accusative Case because the Case marking requirement is nullified by being incorporated into its selecting verbal noun; see Baker (1988) for the original proposal to this effect. The results of the five diagnostics applied to *zi*-verbs such as *zi-ritu-suru* ‘establish oneself’ and *zi-satu-suru* ‘kill oneself’ are directly derived under the proposed derivation because the external argument of these verbs is base-generated in the specifier of *vP*.

The proposed hidden transitive analysis of certain object-less verbs claims that the reflexive bound morpheme is base-generated as the complement of the verbal noun in syntax. There are two pieces of independent evidence that supports this treatment of the reflexive morpheme. First, recall

the two arguments made by Tsujimura and Aikawa (1999) for the unaccusative analysis of object-less *zi*-verbs based on the direct object restriction on resultative predication and the floating numeral quantifier. We believe that these arguments can be turned into evidence that reflexive verbs such as *zi-ritu-suru* ‘establish oneself’ and *zi-satu-suru* ‘kill oneself’ have *-zi-* as internal argument of the verbal noun. According to our hidden transitive analysis, the direct object restriction is satisfied in (2a) as a direct consequence of the fact that *-zi-* occupies the object position of which the resultative secondary predicate is predicated of. Note that our claim that reflexives can satisfy the relevant restriction is also observed independently in the so-called fake reflexive resultative construction in English, as illustrated in (30) (Simpson 1983; Levin and Rappaport-Hovav 1995).⁶

⁶ Tsujimura and Aikawa (1999: 32) point out examples as in (i) as a case of resultative construction.

- (i) Taro-ga rippani zi-ritu-si-ta.
 Taro-Nom finely self-establishing-do-Past
 ‘Taro established himself well.’

It is not clear, however, whether the adverb here really constitutes the resultative attribute of the subject as the result of his self-establishing process. The authors of this paper are inclined to think that *rippani* ‘finely’ is more properly construed as a manner that modifies the process of self-establishment. The reason that true resultative constructions with *zi-ritu-suru* ‘establish oneself’ seems to be that resultative

(30) Dora shouted *herself* hoarse. (Levin and Rappaport-Hovav 1995: 35)

Similarly, the argument from the floating numeral quantifier that Tsujimura and Aikawa (1999) made for the unaccusative analysis also directly follows from our transitive analysis; the example in (10b) is grammatical because there is a mutual c-command relation between the numeral quantifier and the VP-internal direct object *-zi-* ‘self’ in the manner seen in (31a). Note that free reflexive elements can independently serve as the host of the floating numeral quantifier so that the external argument can be associated with the quantifier, as in (31b).

predication is typically constrained by *affectedness* (see Tenny 1994 for detailed discussion). Indeed, when we use affective/change of state transitive *zi*-verbs such as *zi-satu-suru* ‘kill oneself’ as shown in (ii), the resultative interpretation is totally fine.

- (ii) Taro-ga atokatamonaku zi-satu-si-ta.
Taro-Nom without a trace self-killing-do-Past
‘Taro killed himself without a trace.’

This example thus provides support for our hidden transitive analysis.

(31)a. *Gakusei-i-ga* [vp ie-de *san-nin* *zi*-satu-si-ta].

student-Nom house-Loc three-Cl self-killing-do-Past

‘Three students killed themselves in the house.’

b. *Gakusei-i-ga* [vp ie-de *san-nin* *zibun-o* seme-ta].

student-Nom house-Loc three-Cl self-Acc condemn-Past

‘Three students condemned themselves in the house.’

The second piece of evidence that the reflexive bound morpheme is base-generated in the object position of *zi*-verbal nouns such as *zi-ritu* ‘establishing oneself’ comes from a certain generalization on the continuative morpheme *-teiru* made by Takezawa (1991) (cf. note 1). This morpheme has a wide variety of meanings such as continuation of an action, continuation of the resultant state of an action, experience, repetition, and simple state. Focusing on the resultative interpretation of *-teiru* in Japanese and syntactic environments under which this interpretation is possible, Takezawa proposes the generalization in (32).

(32) Takezawa’s Generalization (Takezawa 1991: 70, 79)

The resultative interpretation of *-teiru* obtains when there is a binding relation between the (grammatical) subject and the internal argument of an affective verb, where the “internal argument” is an element subcategorized by the verb.

This generalization is illustrated in examples in (33-36).⁷

(33)a. Yamada-san-ga omocha-o kowasi-*teiru*. (Transitive Verb)

Yamada-Mr.-Nom toy-Acc break-TEIRU

‘Mr. Yamada is breaking a toy.’

⇒ progressive interpretation, *resultative interpretation

b. Omocha-ga kowas-are-*teiru*. (Passive Verb)

toy-Nom break.Tr.-Pass-TEIRU

‘The toy is broken.’

⇒ progressive interpretation, resultative interpretation

c. Omocha-ga koware-*teiru*. (Unaccusative Verb)

toy-Nom break.Intr.-TEIRU

‘The toy is broken.’

⇒ * progressive interpretation, resultative interpretation

(Takezawa 1991: 60, 61)

⁷ The examples in (35a, b) are from Takezawa (1991: 69, 70). The structure for the example in (35a) is

based on our understanding of Takezawa’s discussion of verbs of wearing in Japanese (pp. 69-71).

(34) Yamada-san-ga homer-are-*teiru*.

Yamada-Mr.-Nom praise-Pass-TEIRU

‘Mr. Yamada is praised.’

⇒ progressive interpretation, *resultative interpretation (Takezawa 1991: 66)

(35)a. Yamada-san-ga tebukuro-o hame-*teiru*.

Yamada-Mr.-Nom glove-Acc wear-TEIRU

‘Mr. Yamada wears a pair of gloves.’

⇒ progressive interpretation, resultative interpretation

b. Yamada-san-ga migite-ni tebukuro-o hame-ta.

Yamada-Mr.-Nom right hand-Loc glove-Acc put.on-Past

‘Mr. Yamada put on a glove on his right hand.’

c. [NP Yamada-san]₁-ga [PP [NP *e*₁] [P *e*]] tebukuro-o hame-*teiru*.

Yamada-Mr-Nom sweater-Acc wear-TEIRU

(36)a. Torakku-ga hosikusa-o tun-*deiru*.

truck-Nom hay-Acc load-TEIRU

‘The truck is loading hay.’

⇒ *progressive interpretation, resultative interpretation

b. Torakku-ga hosikusa-o hakon-*deiru*.

truck-Nom hay-Acc carry-TEIRU

‘The truck is carrying hay.’

⇒ progressive interpretation, * resultative interpretation

c. Torakku-ga nidai-ni hosikusa-o tun-*deiru*.

truck-Nom carriage-Loc hay-Acc load-TEIRU

‘The truck is loading hay on its carriage.’

d. *Torakku-ga nidai-ni hosikusa-o hakon-*deiru*.

truck-Nom carriage-Loc hay-Acc carry-TEIRU

‘The truck is carrying hay on its carriage’ (Takezawa 1991: 70, 71)

The example in (33a) shows that only the progressive interpretation of *-teiru* is available with the transitive verb *kowasu* ‘break’. The examples in (33b, c), however, show that the resultative interpretation becomes possible with the passive and unaccusative verbs. This contrast, therefore, shows that one necessary condition for the resultative interpretation is that the subject must bind the internal argument of a verb. Takezawa further observes that the resultative interpretation is not available for verbs such as *homeru* ‘praise’, as shown in (34), even though the subject binds the object. He claims that the impossibility of this interpretation is due to the fact that this verb is not an affective verb in the sense of Jaeggli (1986) and Rizzi (1986) for the notion of *affectedness*; see

Miyagawa (1989a) for evidence for the relevance of this notion to Japanese syntax based on *-tearu* passives and numeral floating quantifiers. Finally, the example in (35a) allows the resultative interpretation even though there does not appear to be any binding relation between the subject and the object. Takezawa observes that verbs of wearing in Japanese can take a *ni*-marked goal argument as shown in (35b) and that it is with this argument that the subject enters into a (non-movement-based) binding relation to yield the resultative interpretation in the manner seen in (15c). Examples as in (36a-c) make the relevance of the internal argument to the resultative interpretation of *-teiru* clearer. The example in (36a) allows only the resultative interpretation whereas the example in (36b) allows only the progressive interpretation. Takezawa suggests that this difference is reduced to that of subcategorization; the verb *tumu* ‘load’ takes the locative argument but the verb *hakobu* ‘carry’ does not, as the contrast between (36c) and (36d) illustrates. The resultative interpretation is possible only in (36a) because there is a binding relation between the subject and the implicit locative argument along the lines suggested by the structure in (35c).

The reason why Takezawa’s generalization is important for the purposes of this paper is that this generalization can be used to identify the status of the reflexive morpheme *-zi-* ‘self’ in Sino-Japanese object-less reflexive verbs. Specifically, the hidden transitive analysis of *zi*-verbs such as *ziritu-suru* ‘establish oneself’ and *zi-satu-suru* ‘kill oneself’ in (29) makes the prediction that these

verbs should allow resultative interpretation of *-teiru*. Takezawa shows that this prediction is indeed borne out by examples as in (37a). He proposes the structure shown in (37b) for (37a).⁸

(37)a. Yamada-san-no musuko-ga zi-ritu-si-*teiru*.

Yamada-Mr.-Gen son-Nom self-establishing-do-TEIRU

‘Mr. Yamada’s son is independent.’

⇒ *progressive interpretation, resultative interpretation

b. [_{NP} Yamada-san-no musuko]₁-ga [_{VP} [_{NP} *e*₁] [_V zi₁-ritusi]-teiru]]

(Takezawa 1991: 71)

Note that his proposed structure is similar to the one we proposed earlier in (29), with the only difference being that what he analyzes as the empty NP position in (37b) designated by *e*₁ is the base-generated position of the reflexive morpheme. The availability of the resultative interpretation of *-teiru* with *zi*-verbs such as *zi-ritu-suru* ‘establish oneself’, therefore, provides evidence for our hidden transitive analysis of this type of reflexive verb.

⁸ Takezawa notes (p. 71) that the Sino-Japanese reflexive verb construction is free from the affectedness constraint that blocks the resultative interpretation of *-teiru* in examples such as (34).

5.2. *The Unergative Analysis of Zi-Si-Suru Verbs*

Consider now the syntax of the other type of reflexive verbs such as *zi-si-suru* ‘commit suicide’ and *zi-sui-suru* ‘do one’s own cooking’. Although Tsujimura and Aikawa (1999) advance the unaccusative analysis of object-less *zi*-verbs, they note as a future task to be undertaken for a complete classification of *zi*-verbs that “there is at least one other type in which *zi*- plays a role as an adjunct. Included in this list are *zi-sui-suru* ‘do one’s own cooking’, *zi-syuu-suru* ‘study for oneself’, *zi-doku-suru* ‘read for oneself’, and *zi-kyuu-suru* ‘supply for oneself.’ (p. 40). We concur with Tsujimura and Aikawa in that the reflexive morpheme serves the role of adjunct. We further maintain that the morpheme in this type of reflexive verbs means ‘on one’s own’ rather than the true internal argument of the Sino-Japanese verbal noun as in the case of the *zi*-verbs we have seen in the previous subsection. This point is evidenced by the fact that (26a), repeated here as (38a), can be paraphrased most closely as in (38b).

- (38)a. John-ga zi-si-si-ta. (=26a)

John-Nom self-death-do-Past

‘John committed suicide.’

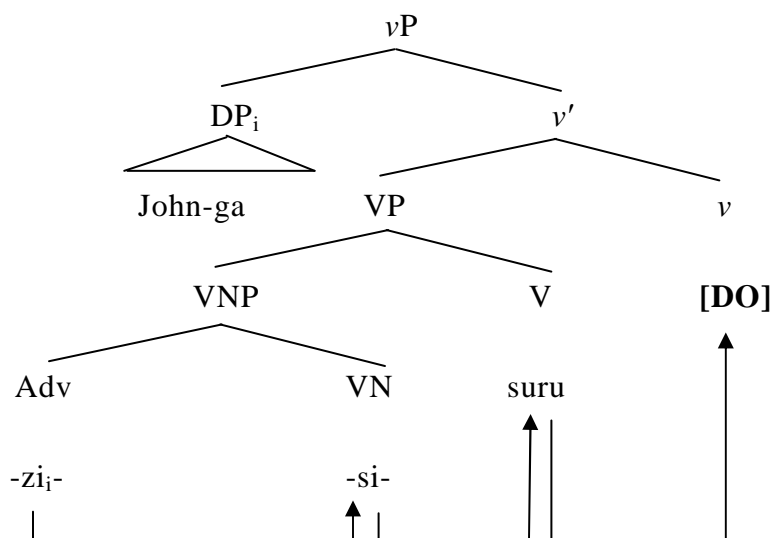
- b. John-ga *zibun-de/mizukara* sin-da.

John-Nom by himself/on his own die-Past

‘John died by himself/on his own.’

This use of *-zi-* ‘self’ is also quite similar to that of the English reflexive bound morpheme *-self-* as in examples such as *self-made man* or *self-motivated person*, where the morpheme means ‘on one’s own’; see Chapin (1967) and Kageyama (1996) for related discussion. Based on this observation, we propose that (38a) has the unergative syntactic derivation as in (39).

(39) The Unergative Analysis of *Zi-Sui-Suru* Verbs



In this derivation, the surface subject *John* is base-generated into the specifier of the *v* head with DO flavor as in the derivation in (29). The only structural difference between (39) and (29) is that in the former, the reflexive morpheme is an adverb for the verbal noun, not the internal argument thereof.

The present unergative analysis allows us to make an interesting prediction that is indeed verified. As we have seen in the previous subsection, Takezawa’s Generalization ii in (32) states that the resultative interpretation of *-teiru* is contingent on the binding relation between the

subject and the internal/subcategorized element of an affective verb. Since the reflexive morpheme is not an internal argument in the derivation in (39), our unergative analysis predicts that sentences with the *zi-si-suru*-type reflexive verb should not allow the resultative interpretation. Importantly, Takezawa (1991: 72) notes that this prediction is indeed borne out by examples as in (40a), which does not allow the resultative reading of *-teiru*.⁹

(40)a. Yamada-san-no musuko-ga zi-sui-si-*teiru*

Yamada-Mr.-Gen son-Nom self-cooking-do-TEIRU

‘Mr. Yamada’s son is cooking his own food.’

⇒ progressive interpretation, *resultative interpretation

b. Yamada-san-no musuko-ga *zibun-de* shokuzi-o tukut-*teiru*.

Yamada-Mr.-Gen son-Nom by himself meal-Acc make-TEIRU

‘Mr. Yamada’s son is preparing his own meals by himself.’

(Takezawa 1991: 72)

⁹ The judgment here is due to Takezawa. The authors of the present paper do not accept the progressive interpretation for (40a); the only possibly interpretation here seems to be that of habitative interpretation, which means roughly “Mr. Yamada’s son normally cooks his own food (rather than dining out).”

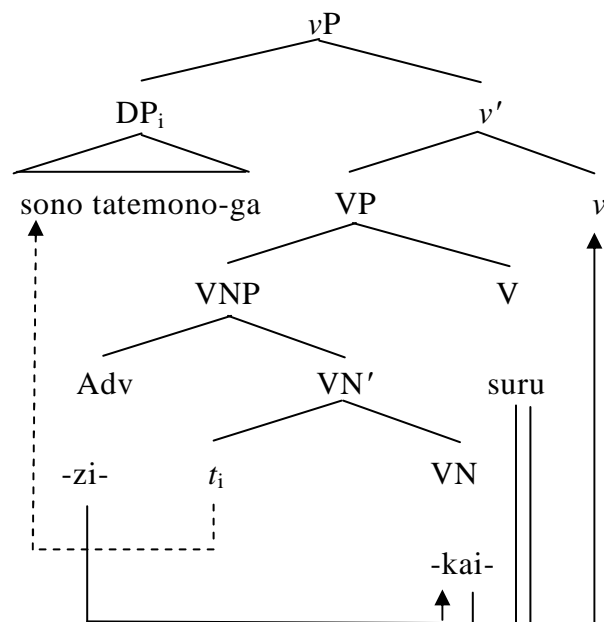
According to Takezawa, the impossibility of the resultative reading in (40a) is naturally expected since the reflexive morpheme is not a subcategorized argument of the verbal noun *-sui* ‘cooking’ but an adjunct of the noun. Note that the example in (40b), which is a paraphrase of the example in (40a), also lacks the resultative interpretation of *-teiru*. The lack of the resultative reading in (40a) shows that the reflexive morpheme here is not a true internal argument of the verbal noun. Combined with the earlier semantic observation of the role of *-zi-* above, examples as in (40a), therefore, provide independent evidence that the unergative analysis is correct for reflexive verbs such as *zi-sui-suru* ‘cook one’s own food’, *zi-si-suru* ‘commit suicide’, and *zi-syuu-suru* ‘study for oneself.’

5.3. *The Unaccusative Analysis of Zi-Kai-Suru Verbs*

Let us finally consider the syntactic structure of the third type of *zi*-verbs exemplified by *zi-kai-suru* ‘demolish itself’, *zi-baku-suru* ‘explode itself’, and *zi-ten-suru* ‘roll by itself.’

As we have seen in section 4, the five diagnostics convincingly show that this class of verb lacks an external argument. We propose that examples as in (41) (cf. (6d)) has the unaccusative syntactic structure shown in (42).

(42) The Unaccusative Analysis of Zi-Kai-Suru Verbs



In this derivation, the sole DP argument *sono tatemono* ‘that building’ is base-generated in the sister of the verbal noun and moves to the specifier of the *v* head with the BECOME flavor. The reflexive bound morpheme *-zi-* is base-generated in the position higher than the DP argument within the projection of the verbal noun. The surface complex verbal predicate is derived by the successive incorporation of the reflexive morpheme through the verbal noun and the light verb into the *v* head. Note that the proposed unaccusative derivation is minimally different from both the hidden transitive and unergative derivations given in (29) and (39); it is different from (29) in that the reflexive morpheme plays the role of adverbial; it is different from (39) in that the flavor of *v* is BECOME.

The proposed analysis captures two observations made earlier in this paper. First, recall that Tsujimura and Aikawa (1999) make two arguments from the direct object restriction and the

The second argument for our unaccusative analysis comes from the deverbal nominal construction headed by the aspectual affix *-kake* ‘be about to, do halfway’ discussed in detail by Kishimoto (1996, 2005). In this construction, the morpheme *-kake* is suffixed productively to a variety of verbal stems, followed by the genitive marker *no-*, to create the prenominal modification pattern. Kishimoto establishes the generalization that the target of the modification by this affix is restricted to the (underlying) internal argument.¹⁰ This is illustrated in examples in (44-46).

¹⁰ Specifically, Kishimoto (1996) establishes the relevant generalization within the framework of Role and Reference Grammar (Van Valin 1987, 1990, 1993) as in (i), where the LS means the “decomposed lexical-semantic representation of a verb” (p. 250).

(i) Deverbal Nominal Modification

A deverbal nominal may modify only the lowest ranking nonagent macrorole argument on the Actor-Undergoer hierarchy in the LS of the verb. (Kishimoto 1996: 269)

This generalization has the effect of restricting the target of *kake*-modification to the direct object of a transitive and unaccusative verb, excluding the subject of a transitive and unergative verb. Tsujimura and Iida (1999) argue that the *kake*-modification pattern is more properly characterized in terms of the notion of telicity (see Dowty 1979; Tenny 1994) that are globally computed by inherent verbal aktionsart, syntactic dependents, and pragmatic contexts. For the purposes of this paper, we take Kishimoto’s (1996) diagnostic

- | | | | |
|--------|---------------------------|-----------------|----------------------------------|
| (46)a. | Doa-ga | ai-ta. | (Unaccusative Verb) |
| | door-Nom | open.Intr.-Past | |
| | ‘The door opened. | | |
| b. | aki-kake-no | doa | |
| | open.Intr.-KAKE-Gen | door | |
| | ‘the door, slightly ajar’ | | ((28a) from Kishimoto 1996: 256) |

The contrast between (44b) and (44c) show that only the internal argument of the transitive verb *yomu* ‘read’ can be felicitously predicated by the corresponding preverbal noun derived by *kake*-suffixation. The example of *-kake* suffixation in (45b) with the unergative verb *hasiru* ‘run’ is ungrammatical because the subject *rannaa* ‘runner’ is the external argument of the verb. The example in (46b) shows that the internal argument of the unaccusative verb *aku* ‘open (intr.)’ can be the target of the *kake* -modification. Consider now what result we get by applying the deverbal nominalization test to *zi*-verbs such as *zi-kai-suru* ‘demolish itself’ and *zi-baku-suru* ‘explode itself’. The grammaticality of examples in (47b) shows that this type of reflexive verb allows its DP argument to be the target of the *kake*-modification.

(47)a. Sono biru-ga zi-kai-si-ta. (Zi-Verb)

that building-Nom self-demolishing-do-Past

‘That building demolished itself.’

b. zi-kai-si-kake-no biru

self-demolishing-do-KAKE-Gen building

‘the building, half demolished’

This result suggests that the class of reflexive verbs discussed have the unaccusative syntactic structure in the manner seen in (42).

5.4. *Section Summary*

In this section, we have proposed that there is a three-way contrast between object-less *zi*-verbs; hidden transitive *zi*-verbs, unergative *zi*-verbs, and unaccusative *zi*-verbs. We have provided independent evidence from the adverbial role of the reflexive morpheme, the presence of the resultative interpretation of *-teiru*, and the selectional restriction imposed on the target of the aspectual *kake*-modification that this classification is on the right track.

The summary of our investigation in this section is given in Table 1.

Table 1: The Syntax of Sino-Japanese Object-Less Reflexive Verbs

Types of <i>Zi</i> -Verbs	ext. arg.?	int. arg.?	<i>zi</i> = arg or adj?	flavor of <i>v</i>
Transitive <i>Zi</i> -Verb <i>zi-ritu-suru</i> ‘establish oneself’	YES	YES	Argument	DO
Unergative <i>Zi</i> -Verb <i>zi-sui-suru</i> ‘cook one’s own food’	YES	NO	Adjunct	DO
Unaccusative <i>Zi</i> -Verb <i>zi-kai-suru</i> ‘demolish itself’	NO	YES	Adjunct	BECOME

We believe that this three-way classification of object-less *zi*-verbs is also supported on an independent ground. Dubinsky (1985, 1989), Miyagawa (1989), and Tsujimura (1990) provide convincing evidence based on the distribution of floating numeral quantifiers, resultative constructions and accusative case marking that Sino-Japanese verbal nouns can be classified into transitive (e.g., *hakai-suru* ‘destroy’), unergative (*benkyoo-suru* ‘study’), and unaccusative types (*meetyoo-suru* ‘strike’). It is important to note that object-less reflexive verbal nouns discussed in this section form a proper subset of Sino-Japanese verbal nouns. Given the evidence from Dubinsky, Miyagawa, and Tsujimura, the null hypothesis is that the argument structure of object-less *zi*-verbal nouns should not be restricted to the unaccusative type, as in Tsujimura and Aikawa’s (1999) analysis; rather, all types of argument structures

should be attested in reflexive *zi*-verbs. The proposed analysis fulfills exactly this possibility. This consideration, therefore, provides an independent argument in favor of the three-way classification of object-less reflexive verbs we have arrived at in this paper.

This completes our discussion of object-less Sino-Japanese reflexive verbs. In the next section, we briefly discuss what Tsujimura and Aikawa (1996, 1999) analyze as “inalienable *zi*-verbs.” We show that the decomposition analysis of object-less *zi*-verbs proposed in this section also sheds a new light on the proper analysis of this class of verb.

6. Inalienable *Zi*-Verbs

Tsujimura and Aikawa (1996, 1999) note that there is a second type of *zi*-verb different from the object-less *zi*-verbs discussed thus far in this paper. This type of verb can appear with direct objects, as in (3b), repeated here as (48a). Additional examples are in (48b, c).

(48)a. John-ga musuko-o zi-man-si-ta. (=3b)

John-Nom son-Acc self-boast-do-Past

‘John boasted about his own son.’

b. Hannin-ga hankoo-o zi-kyoo-si-ta.

criminal-Nom crime-Acc self-confessing-do-Past

‘The criminal confessed (about his) crime.’ (Tsujimura and Aikawa 1996: 269)

c. Ziroo-ga ayamati-o zi-nin-si-ta.

Jiro-Nom mistake-Acc self-admitting-do-Past

‘Jiro admitted his own mistake.’

(Tsujimura and Aikawa 1999: 35)

Tsujimura and Aikawa (1996, 1999) observe that even though *zi*-verbs as in (48a-c) can appear with direct objects, the direct object must stand in a particular semantic relation with the subject. Specifically, they note that “the direct objects of these *zi*-verbs are necessarily interpreted in such a way that they have some attributive relation with the subject NPs such as concrete or abstract possession or a kinship relation.” (Tsujimura and Aikawa 1999: 35). Thus, in (48a), the direct object *musuko* ‘son’ must be the son of the subject *John* for the sentence to be grammatical. Similar remarks hold for the examples in (48b, c). The *crime* in (48b) and *mistake* in (48c) must be the one that was committed by *the criminal* and *Jiro*, respectively.

Tsujimura and Aikawa (1996, 1999) provide two pieces of evidence based on the interpretation of a nominalized verb and the restriction on the type of an object a verb imposes that this type of *zi*-verb must be inalienable possession verbs. First, compare examples in (49a, b) adopted from Tsujimura and Aikawa (1996:272-273).

(49)a. Zi-kyoo-suru-no-wa hayai hoo-ga ii.

self-confess-ing -Top soon way-Nom good

‘(As for) confessing (about) yourself/*someone else, the sooner the better.’

b. Kosi-o kagameru-no-wa yokunai.

hip-Acc bend-ing -Top not good

‘Bending one’s own hip/*someone else’s hip is not good.’

The *zi*-verb *zi-kyoo-suru* ‘confess oneself’ obligatorily induces the reflexive interpretation.

This behavior is parallel to that observed with inalienable possession verbs such as *kagameru*

‘bend’ in (49b). Second, *zi*-verbs in question cannot take direct objects different in reference

from the subject. Compare (50a) and (50b) adopted from Tsujimura and Aikawa (1996: 273).

(50)a. Taroo-ga (zibun)/*Hanako-no hankoo-o zi-kyoo-si-ta.

Taro-Nom self/Hanako-Gen crime-Acc self-confessing-do-Past

‘Taro confessed (about) his own/*Hanako’s crime.’

b. Taroo-ga (zibun)/*Hanako-no kosi-o kagame-ta.

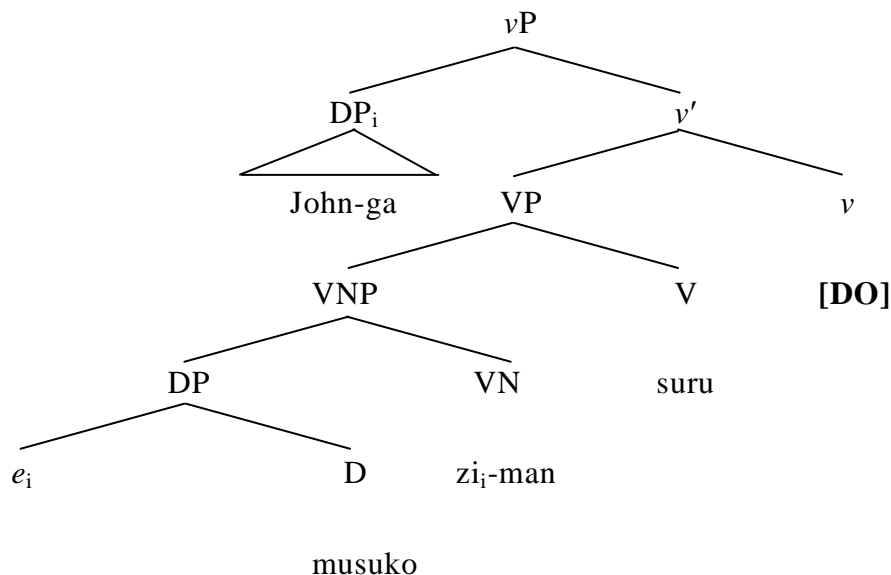
Taro-Nom self/Hanako-Gen hip-Acc bend-Past

‘Taro bent his own hip/*Hanako’s hip.’

The examples in (50a, b) show that *zi*-verbs such as *zi-kyoo-suru* ‘confess oneself’ can take only those direct objects that belong to the subject as do inalienable possession verbs such as *kagameru* ‘bend’. As Tsujimura and Aikawa note, the reflexive *zibun* ‘self’ coreferential with the subject can be deleted in these examples but still the object must be construed as belonging to the subject. Based on these arguments, it is quite reasonable to conclude that a) the type of *zi*-verbs discussed here is a transitive verb and that b) there is an (abstract) part-whole relationship between the subject and the direct object for the construction to be grammatical.

We propose that the behavior of this class of *zi*-verb is naturally accommodated within our syntactic approach to argument structure if it has the syntactic derivation as in (51) for the sentence in (48a).

(51) The Syntax of ‘Inalienable’ *Zi*-Verbs



In this structure, the subject element *John* is base-generated in the specifier of the *v* head with the DO flavor and moved into the specifier of T for nominative Case. We assume that there is an empty category, designated in (51) as e_i , that is bound by the reflexive morpheme *-zi-* within the verbal complex. This morpheme, in turn, is bound by the subject in [Spec, *v*P]. The surface complex predicate *zi-man-suru* ‘boast’ is derived by the successive incorporation of the VN through the light verb into the *v* head.¹¹

The proposed derivation is supported by three considerations. First, the obligatory part-whole relationship between the subject and object is accounted for by the fact that the surface subject binds the reflexive bound morpheme *-zi-*, which in turn binds the empty category within the object DP. Second, recall the five tests introduced in section 4, which allowed us to identify whether a particular *zi*-verb has an external argument. Examples in (52a-d) show that this prediction is indeed confirmed. Note that the accusative marking test on verbal nouns is inapplicable due to the independent constraint widely known as the *Double-o Constraint* (Kuroda 1965; Shibatani 1973) that prohibits more than one accusative-case marked element in a single clause.

¹¹ This analysis is reminiscent of Kayne’s (1985) analysis of inalienable possession constructions in French. Kayne shows that the phrase that constitutes the part of the subject in this construction behaves as anaphors to be locally bound to the subject. We will not dwell further into this point for the purposes of this paper.

(52)a. Hanako-ga hankoo-o zi-kyoo-si-*naosi*-ta.

Hanako-Nom crime-Acc self-confessing-do-redo-Past

‘Hanako confessed about his own crime again.’

b. Hanako-ga *musuko-ni* hankoo-o zi-kyoo-s-are-ta.

Hanako-Nom son-Dat crime-Acc self-confessing-do-Pass-Past

‘Hanako was adversely affected by having her son confessing about his own crime.’

c. *Musuko-ga* Hanako-niyotte hankoo-o zi-kyoo-s-ase-rare-ta.

son-Nom Hanako-by crime-Acc self-confessing-do-Caus-Pass-Past

‘Her son was made to confess about his won crime by Hanako.’

d. Sukosi-demo higaisha-no itami-o yawarage-tai-to

little-even victim-Gen pain-Acc alleviate-want-Quo

Taroo-to-Hanako-*ga/de* hankoo-o zi-kyoo-si-ta.

Taro-and-Hanak-Nom/Instr crime-Acc self-confessing-do-Past

‘Taro and Hanako confessed about their crime in the hope that it would alleviate the pain of the victims a bit.’

Third, the proposed analysis has a certain prediction to make with respect to the resultative interpretation of *-teiru*. Recall from section 5 that Takezawa established the generalization that this interpretation crucially rests on the binding relationship between the subject and the

subcategorized/internal element of the (affective) verb (see note 5). We have seen so far that there is a mandatory part-whole relationship between the subject and object in object-taking *zi*-verbs. In syntactic terms, this can be interpreted as suggesting that the object DP must contain an element that is coreferential with the surface subject. Given this observation, the proposed analysis predicts that the resultative interpretation of *-teiru* should be available with verbs such as *zi-kyoo-suru* ‘confess oneself’. This prediction is indeed borne out by examples as in (53a, b).

(53)a. Taro-to-Hanako-ga hankoo-o zi-kyoo-si-*teiru*.

Taro-and-Hanako-Nom crime-Acc self-confessing-do-TEIRU

‘Taro and Hanako are confessing their crime.’

⇒ progressive interpretation, resultative interpretation

b. Taro-to-Hanako-ga ayamati-o zi-nin-si-*teiru*.

Taro-and-Hanako-Nom mistake-Acc self-admitting-do-TEIRU

‘Taro and Hanako are admitting their mistake.’

⇒ (?) progressive interpretation, resultative interpretation

In sum, evidence based on the diagnostics from sections 4 and 5 shows that the analysis of object-taking verbs such as *zi-kyoo-suru* ‘confess oneself’ as in (51) is on the right track.

7. Concluding Remarks

In this paper, we have proposed a comprehensive account of the syntax of Sino-Japanese reflexive verbs with the recent compositional approach to argument structure as in Hale and Keyser (1993, 2002), Harley (1995), and Harley and Noyer (2001). Contra Tsujimura and Aikawa's (1999) unaccusative analysis of object-less reflexive verbs, we have provided a variety of syntactic and morphological arguments for the three-way contrast among object-less *zi*-verbs; a) verbs such as *zi-ritu-suru* 'establish oneself' and *zi-satu-suru* 'kill oneself' are transitive predicates, b) verbs such as *zi-si-suru* 'commit suicide' and *zi-sui-suru* 'cook one's own food' are unergative predicates, and c) verbs such as *zi-kai-suru* 'demolish oneself' and *zi-baku-suru* 'explode itself' are unaccusative predicates. We have also briefly discussed "inalienable *zi*-verbs" and have shown that the proposed syntactic approach sheds a new light on the syntax of this class of verb.

References

- Baker, Mark. 1988. *Incorporation: A theory of grammatical function changing*. Chicago: University of Chicago Press.
- Burzio, Luigi. 1986. *Italian syntax: A government-binding approach*. Dordrecht: Reidel.
- Chapin, Paul. 1967. *Word formation in generative grammar*. Cambridge, Mass.: MIT Press.

- Dowty, David. 1979. *Word meaning and Montague grammar: The semantics of verbs and times in generative semantics and Montague's PTQ*. Dordrecht: Reidel.
- Dubinsky, Stanley. 1985. *Japanese union constructions: A unified analysis of -sase and -rare*.
Doctoral dissertation. Cornell University.
- Dubinsky, Stanley. 1989. Compound 'suru' verbs and evidence for unaccusativity in Japanese.
Papers from the 25th Annual Meeting of the Chicago Linguistic Society. 98-111.
- Grimshaw, Jane and Armin Mester. 1988. Light verbs and θ -marking. *Linguistic Inquiry* 19: 205-232.
- Hale, Kenneth and Samuel Jay Keyser. 1993. On argument structure and the lexical expression of syntactic relations. In: Kenneth Hale and Samuel Jay Keyser (eds.) *The view from Building 20: Essays in honor of Sylvain Bromberger*. 53-110. Cambridge, Mass.: MIT Press.
- Hale, Kenneth and Samuel Jay Keyser. 2002. *Prolegomena to a theory of argument structure*. Cambridge, Mass.: MIT Press.
- Harley, Heidi. 1995. *Subjects, events, and licensing*. Doctoral dissertation. MIT.
- Harley, Heidi and Rolf Noyer. 2001. Formals versus encyclopedic properties of vocabulary: Evidence from nominalizations. In Bert Peters (ed.) *The lexicon-encyclopedia interface*. 349-373. Amsterdam: Elsevier.
- Inoue, Kazuko. 1976. *Henkei bunpoo to nihongo* (Transformational grammar and Japanese). Tokyo: Taishukan.

- Jaeggli, Osvaldo. 1986. Passive. *Linguistic Inquiry* 17: 587-622.
- Kageyama, Taro. 1993. *Bunpoo to gokeisei* (Grammar and word formation). Tokyo: Hituzi Shobo.
- Kageyama, Taro. 1996. *Doosi imiron: Gengo to ninti no setten* (Verb semantics: An interface between language and cognition). Tokyo: Kurosio Publishers.
- Kayne, Richard. 1985. *French syntax: The transformational cycle*. Cambridge, Mass.: MIT Press.
- Kishimoto, Hideki. 1996. Split intransitivity in Japanese and the unaccusative hypothesis. *Language* 72: 248-286.
- Kishimoto, Hideki. 2005. *Toogo koozoo to bunpoo kankei* (Syntactic structures and grammatical relations). Tokyo: Kurosio Publishers.
- Kuroda, Sigeyuki. 1965. *Generative grammatical studies in the Japanese language*. Doctoral dissertation. MIT.
- Levin, Beth and Malka Rappaport Hovav. 1995. *Unaccusativity: At the syntax-lexical semantics interface*. Cambridge, Mass.: MIT Press.
- Miyagawa, Shigeru. 1989a. *Structure and case marking in Japanese*. New York: Academic Press.
- Miyagawa, Shigeru. 1989b. Light verbs and the ergative hypothesis. *Linguistic Inquiry* 20: 659-668.
- Perlmutter, David. 1978. Impersonal passives and the unaccusative hypothesis. *Proceedings of the Third Annual Meeting of the Berkeley Linguistics Society*. 157-189.
- Rizzi, Luigi. 1986. Null objects in Italian and the theory of pro. *Linguistic Inquiry* 17: 501-557.

- Shibatani, Masayoshi. 1973. Semantics of Japanese causativization. *Foundations of Language* 9: 327-373.
- Simpson, Jane. 1983. Resultatives. In: Lori Levin, Malka Rappaport-Hovav and Annie Zaenen (eds). *Papers in lexical-functional grammar*. 143-157. Bloomington: Indiana University Linguistics Club.
- Takezawa, Koichi. 1991. Judoobun, nookakubun, bunrifukanooshoyuukoobun to “teiru” no kaishaku (Passives, ergatives, inalienable possession constructions, and the interpretation of *-teiru*). In: Nitta Yoshio (ed.) *Nihongo no voisu to tadoosei* (Voice and transitivity in Japanese). 59-81. Tokyo: Kurosio Publishers.
- Takubo, Yukinari. 1985. Gendai nihongon no basho o arawasu meesirui nituite (On the class of nominals that denotes places in Modern Japanese). *Nihongo Nihon Bunka* 12: 89-117. Division of Foreign Students. Osaka University of Foreign Studies.
- Tenny, Carol. 1994. *Aspectual roles and the syntax-semantics interface*. Dordrecht: Kluwer.
- Tsujimura, Natsuko. 1990. Ergativity of nouns and case assignment. *Linguistic Inquiry* 21: 277-287.
- Tsujimura, Natsuko and Takako Aikawa. 1996. Intrinsic reflexivity and inalienable possession in Japanese. In: Masatoshi Koizumi and Hiroyuki Ura (eds.) *Formal approaches to Japanese linguistics 2: MIT Working Papers in Linguistics* 29. 276-282. MITWPL: Department of Linguistics and Philosophy.

- Tsujimura, Natsuko and Takako Aikawa. 1999. Two types of *zi*-verbs in Japanese. *Journal of the Association of Teachers of Japanese* 33: 26-43.
- Tsujimura, Natsuko and Masayo Iida. 1999. Deverbal nominals and telicity in Japanese. *Journal of East Asian Linguistics* 8: 107-130.
- Van Valin, Robert D. 1987. The unaccusative hypothesis vs. lexical semantics. *Proceedings of Northeastern Linguistic Society* 17: 641-661.
- Van Valin, Robert D. 1990. Semantic parameters of split intransitivity. *Language* 66: 221-260.
- Van Valin, Robert D. 1993. *Advances in role and reference grammar*. Amsterdam: John Benjamins.