

*More on Unaccusative Sino-Japanese Complex Predicates in Japanese**

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Abstract

The aim of this paper is to argue that in a complex expression comprising a Sino-Japanese compound noun of unaccusative type and the light verb *suru*, there are cases where accusative case is in fact assigned to the Sino-Japanese compound noun, contrary to what Tsujimura (1990) predicts. My arguments here are based on data collected in a recent survey. First, I shall review how Tsujimura explains in the GB framework why unaccusative type Sino-Japanese complex predicates cannot assign accusative case to the Sino-Japanese compound noun. Second, I shall point out some problems in her analysis. Third, I shall use the data I collected to argue that the accusative case is in fact allowed in some of the relevant Sino-Japanese complex predicates, and I shall also discuss some other implications of the data.

1 Introduction

A recent paper by N. Tsujimura entitled "The Unaccusative Hypothesis and Noun Classification" (*Linguistics* 28 (1990), 929-957) interestingly argues that the unaccusative hypothesis can be extended to the category of nouns, including Sino-Japanese compound nouns. She also claims that the argument structure of Sino-Japanese complex predicates with the light verb *suru* suggests that the nature of accusative assignment observed with unaccusative complex predicates provides support for Burzio's generalisation (1986).

Though interesting and suggestive, her analysis is less well supported by the facts than she suggests. In a small-scale survey related to her claims I

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have found several examples from Japanese which turn out not to match her predictions. In this short article, I shall argue that there are some Sino-Japanese complex predicates of the unaccusative type which according to her should not assign accusative case (marked as *-o*) to the noun when it is not incorporated, but which do in fact do so.

2 Tsujimura (1990)'s Account in the GB Framework

Tsujimura (1990) claims that the Japanese verb *suru* is unable to assign accusative case to Sino-Japanese compound nouns of unaccusative type as in (1), but is able to assign accusative case to those of unergative type as in (2).

- (1) a. ??saiboo-ga KAKUDAI-o shita.
 cell-Nom enlargement-Acc *suru*-past
 'The cell enlarged.'
- b. saiboo-ga KAKUDAI-shita.
 cell-Nom enlargement-*suru*-past
 'The cell enlarged.'
- (2) a. kinoo tomodachi-ni DENWA-o shita.
 yesterday friend-Dat telephone-Acc *suru*-past
 '(I) telephoned my friend yesterday.'
- b. kinoo tomodachi-ni DENWA-shita.
 yesterday friend-Dat telephone-*suru*-past
 '(I) telephoned my friend yesterday.'

She also claims that the Sino-Japanese compound nouns of unaccusative type have to be incorporated when accompanied by *suru* as in (1), while the incorporation is optional for those of unergative type when followed by *suru*. This can also be seen in the contrast between (1) and (2).

Throughout the paper, Sino-Japanese compound nouns are represented in capital letters. In what follows Sino-Japanese compound nouns are taken as those compound nouns which are composed of two (or possibly more) bound morphemes which are originally from Chinese and were borrowed into Japanese a long time ago. In the Japanese orthography, each of these morphemes is written as a Chinese character. To take the case of KAKUDAI, for instance, KAKU is realised by one Chinese character and DAI by another. In the examples above, the acceptability judgements before the sentences are those of Tsujimura.

She attributes this particular property of the Sino-Japanese complex predicates in (1) to the unaccusative status of those nouns. The question is why

they are considered to be unaccusatives. Her explanation is based on Simpson's generalisation about the controller of a resultative attribute, the Uniformity of Theta Assignment Hypothesis (UTAH, Baker 1988) and Argument Transfer (Grimshaw and Mester, 1988) and is carried out elegantly in the framework of GB.

She assumes that Simpson's generalisation holds cross-linguistically:

(3) *Simpson's generalisation*

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 passives and intransitive verbs of the unaccusative class. (Tsujimura, 1990: 933)

When we apply this generalisation to sentences in which a Sino-Japanese complex predicate occurs with a resultative, we know that the controller of the resultative should be an underlying object, even if it is apparently controlled by a surface subject. Consider (4).

- (4) Mizu-ga shiroku TOOKETSU-shita.
 water-Nom white freeze-*suru*-past
 'The water froze white.'

In (4), it is obvious that the controller of the resultative is the subject of the sentence, which is marked by the postposition *-ga*. Tsujimura (1990: 933-36) argues that verbs of Japanese origin as well as transitive complex predicates composed of a Sino-Japanese compound and *suru* confirm that Simpson's generalisation holds for Japanese. If this is the case, then the complex predicate in (4) must be unaccusative, with an underlying object as its surface subject.

Since the verb *-suru* in this case is a light verb (in the sense of Grimshaw and Mester (1988)), lacking an argument structure of its own and a theta-marking capability because of its semantic incompleteness, it must have an argument structure transferred to it from the Sino-Japanese noun through Argument Transfer as in (5). Double round brackets round a semantic relation (or theta-role) indicate that it is an internal argument.

- (5) SEICHOO *suru* (\emptyset , ((THEME))) 'grow'
 < SEICHOO (\emptyset , ((THEME)))
 CHINBOTSU *suru* (\emptyset , ((THEME))) 'sink'
 < CHINBOTSU (\emptyset , ((THEME)))
 KAKUDAI *suru* (\emptyset , ((PATIENT))) 'enlarge'
 < KAKUDAI (\emptyset , ((PATIENT)))

Thus *suru* has the argument structure of the compound noun and the only argument it has is an internal object complement which is semantically a non-agent. Here Burzio's generalisation (6) comes into play.

- (6) If a verb does not have the ability to assign a theta role to its subject, then it also lacks the ability to assign accusative case to its object.

It follows from Burzio's generalisation that *suru* cannot assign accusative case. Therefore an unaccusative-type noun must always be incorporated into *suru* (where it does not need accusative case), and is expected to appear only as a complex predicate. Hence the contrast in grammaticality in (1).

On the other hand, the Sino-Japanese compound noun in (2) is unergative. Therefore, the argument structure including an agent transfers to the light verb *suru*, so the light verb can assign accusative case and the Sino-Japanese noun in (2a) receives the accusative case *-o*. Alternatively these nouns can incorporate into the verb *suru* as in (2b). This is the outline of the explanation for why (1a) is ruled out whereas (2a) is not.

3 The Problem

Tsujimura admits that judgements on sentences like (1a) by native speakers of Japanese vary, and I for one have no difficulty in accepting as grammatical the following sentences, all of which include an unaccusative Sino-Japanese complex predicate with the verb *suru*. The (b) sentences contain the accusative marker *-o* are as good as the (a) sentences and have the same meaning. This intuition seems contrary to Tsujimura's analysis. Let us take a more detailed look at this phenomenon and make clear what is the problem in her analysis.

- (7) a. David-wa *ookiku* SEICHOO *shita*.
 David-Top big growth *suru*-past.
 'David grew big.'
 b. David-wa *ookiku* SEICHOO-o *shita*.
 David-Top big growth-Acc *suru*-past.
 'David grew big.'

- (8) a. secchakuzai-ga shiroku GYOOKO shita.
glue-Nom white solidification-Acc suru-past
'The glue solidified white.'
- b. secchakuzai-ga shiroku GYOOKO-o shita.
glue-Nom white solidification-Acc suru-past
'The glue solidified white.'
- (9) a. pilot-ga chijoo-ni RAKKA-shita.
pilot-Nom ground-to fall-suru-past
'The pilot fell to the ground.'
- b. pilot-ga chijoo-ni RAKKA-o shita.
pilot-Nom ground-to fall-Acc suru-past
'The pilot fell to the ground.'
- (10) a. Ya-ga mato-ni MEICHUU-shita.
arrow-Nom target-to hit-suru-past
'The arrow went precisely to the target.'
- b. Ya-ga mato-ni MEICHUU-o shita.
arrow-Nom target-to hit-Acc suru-past
'The arrow went precisely to the target.'
- (11) a. John-wa buchoo-ni SHOOSHIN-shita.
John-Top section-chief-to promotion-suru-past
'John obtained promotion to section chief.'
- b. John-wa buchoo-ni SHOOSHIN-o shita.
John-Top section-chief-to promotion-Acc suru-past
'John obtained promotion to section chief.'
- (12) a. Densha-wa Koobe-ni TOOCHAKU-shita.
train-Top Koobe-to arrival-suru-past
'The train arrived in Kobe.'
- b. Densha-wa Koobe-ni TOOCHAKU-o shita.
train-Top Koobe-to arrival-Acc suru-past
'The train arrived in Kobe.'

All these examples involve the resultative construction in which the controller of a resultative attribute is the subject.

As to the definition of the resultative attribute, let us assume for the moment that a resultative attribute is one which describes the state of an argument resulting from the action denoted by the verb (cf. Halliday, 1967). I call this argument the controller of the resultative attribute. In (7)-(12), the underlined words are resultative attributes in Japanese. From a semantic point of view, all the underlined words refer to the state of the subject after the

action or process the verb expresses. In English, prototypical resultative attributes are APs, but they can be a PP as in (9)-(12), or even an NP or AdvP.

The fact that the subject is the controller of the resultative attribute shows that the Sino-Japanese complex predicates in all these sentences are of an unaccusative type. The meaning of each verb above certainly fits the definition of unaccusative verbs by Perlmutter (1978). Moreover, contrary to what Tsujimura (1990) predicts, the accusative case-marker *-o* is assigned in the (b) sentences.

4 The Data and their Implications

In order to get a more accurate picture of this phenomenon in Japanese, I conducted a small-scale survey of 29 informants of native speakers of Japanese (both men and women aged between 20 and 30), who were asked to make grammaticality judgements on some sentences involving a Sino-Japanese complex predicate with the accusative *-o* on the noun. A complete list of the tested sentences and the results of grammatical judgements are given in the appendix at the end of this paper. The latter shows how many informants accepted, rejected or queried each example, with acceptances expressed as a percentage of the total. In what follows a combination of a letter and a number enclosed by square brackets before an example refers to its group and number in the complete list of examples.

The sentences were given in random order in the original questionnaire. Here I have grouped them into four sets just for convenience of discussion: (A) unaccusative Sino-Japanese predicates with a resultative and the accusative case marker *-o*, (B) unaccusative Sino-Japanese predicates without a resultative attribute, (C) scrambled versions of sentences in (B), (D) examples involving a numeral quantifier (NQ), (E) others. Several interesting facts emerge from the results of the survey. Before discussing them in detail, I must acknowledge that my observations below derive from a relatively small sample. However they are no less important for that, because just one significant counter-example is enough to refute a linguistic theory which is claimed to be universal.

First of all, what I think is the most important finding, and the most relevant to the topic of this paper, is that six sentences out of 16, viz. (13)-(18), are judged grammatical by more than half of my informants, although each of them contains both the accusative *-o* and a resultative attribute which syntactically guarantees that the predicate is an unaccusative type as discussed earlier.

- (13)=[A6] hune-ga kaichuu hukaku CHINBOTSU-
o shita.
boat-Nom in the sea deep s u b m e r s i o n -
Acc *suru*-past
'The boat sank deep in the sea.'
- (14)=[A7] David-wa ookiku SEICHOO-o shita.
David-Top big growth *suru*-past.
'David grew big.'
- (15)=[A8] ondo-ga 30-do-ni JOOSHOO-o shita.
temperature 30 degrees-to rise-Acc *suru*-past
'The temperature rose to 30°C.'
- (16)=[A9] bakudan-ga konagona-ni HARETSU-o shita.
bomb-Nom pieces-into burst-Acc *suru*-past
'The bomb burst into pieces.'
- (17)=[A10] kuuki-ga karakara-ni KANSOO-o shita.
air-Nom extremity-to dryness-Acc *suru*-past
'The air dried out.'
- (18)=[A14] Densha-wa Koobe-ni TOOCHAKU-o shita.
train-Top Koobe-to arrival-Acc *suru*-past
'The train arrived in Kobe.'

Since each of the complex predicates (i.e. NP + *suru*) in the relevant examples must be unaccusative, Tsujimura predicts wrongly that the NP should not receive accusative case. Among the sentences above, (14) scores highest in acceptability. This may be partly because its subject is human in contrast with that of others.

As to the rest of the sentences in (A), my informants' grammatical judgements divide but it must be noticed that there is no sentence with an unaccusative verb and the accusative case marker *-o* which was completely rejected by all of the informants. Admittedly (19) was very low in acceptability, being accepted by only one of the seven informants. This might be due to semantic redundancy caused by the adjective *kataku* (*katai*) and the verb GYOOKO-*suru*, because they both have a semantic concept 'solid' as a part or the whole of its meaning. To put it in terms of Word Grammar semantics (Hudson 1990), the semantic structure of GYOOKO-*suru* involves a result where the be-er is 'solid' (*katai*). This is supported by the fact that in Japanese the same Chinese character is used for *kata* of *kataku* and KO of GYOOKO.

- (19)=[A3] chi-ga kataru GYOOKO-o shita.
 blood-Nom hard solidification-Acc suru-past
 'Blood solidified hard.'

Furthermore all of my informants judged as grammatical two of four examples in the group (B) which do not have a resultative attribute, yet whose verb may well be considered to be unaccusative according to its semantic structure (or argument structure).

- (20)=[B18] ondo-ga JOOSHOO-o shita.
 temperature rise-Acc suru-past
 'The temperature rose.'
- (21)=[B19] kasan-ga HUNKA-o shita.
 volcano-Nom eruption-Acc suru-past
 'The volcano erupted.'

I included sentence (22) in the questionnaire. It does not have a Sino-Japanese complex verb. Rather the verb is made up of DAUN, which is a borrowed word from the English adverb *down*, and the Japanese verb *suru*. 40% of my informants accepted it with a resultative attribute and objective case.

- (22)=[A15] yen-no kachi-ga hanbun-ni DAUN-o shita.
 yen-Gen value-Nom half-to down-Acc suru-past
 'The value of yen went down by half.'

The examples in group (C) are scrambled versions of the first seven sentences in the first group (A). In all of them, a compound noun with objective case is moved to the front of a sentence across the subject. Tsujimura argues that scrambling of a Sino-Japanese compound noun with accusative case is possible with the Sino-Japanese complex predicate of unergative type but not with that of unaccusative type, because only the former treats the noun as an ordinary object which can be scrambled. My informants rejected nearly all of the scrambled versions, which appears to support Tsujimura's claim. However, the facts are not so simple. About a third of the informants rejected (24), which is a scrambled version of (23), as ungrammatical, although the Sino-Japanese complex verb in (23) is an unergative type, which therefore should allow scrambling of the NP DENWA with objective case, suggesting that scrambling is not always possible even with an unergative type complex verb.

(23)=[E39] kinoo tomodachi-ni DENWA-o shita.
 yesterday friend-Dat telephone-Acc suru-past
 '(I) telephoned my friend yesterday.'

(24)=[E40] DENWA-o kinoo tomodachi-ni shita.

This may imply that whether the NP can be scrambled or not is not an adequate criterion for identifying unaccusativity of the complex verb concerned.

The sentences in group (D) all have Numeral Quantifiers (NQ) which are linked in meaning to the surface subject. In Japanese NQs usually appear with a certain classifier which is selected by the NP which it quantifies. Thus a NQ in Japanese consists of a numeral and a classifier that agrees with the type of entities being counted. For instance, to count people of more than two in number, the classifier *-nin* is usually used, and for one and two persons, another classifier *-ri* is used. Miyagawa (1989) claims that a noun and its NQ enter into a predication relation in the sense of GB, and that a mutual c-command relation must hold between the two.¹ Given the mutual c-command requirement for the predication relationship between an NP and its NQ, sentence (25), whose verb is an unaccusative according to Tsujimura's analysis, is predicted to be grammatical.

(25)=[D35] shinkansen-ga Tokyoo-eki-ni 5-hensei
 TOOCHAKU-shita.
 Super-Express-Nom Tokyo-Station-in 5-cl
 arrival-*suru*-past
 'Five Super. Express trains arrived at Tokyo Station.'

Supposing it is an unaccusative verb, TOOCHAKU-SURU takes only an internal argument at D-structure, which would be moved to the subject position and the trace left behind by the NP movement of *shinkansen* can enter into the mutual c-command relation with the NQ as shown in (26), and the structure will be allowed.

(26) shinkansen_i-ga [_{VP} ... t_i NQ]

Contrastively, a sentence like (27), which has an unergative verb, does not have a structure where the subject NP is in a mutual c-command relation with the NQ because the NQ is internal to the VP and therefore does not c-command

¹Here the classic "first branching node" definition of c-command is used. This we might define as: X c-commands Y iff the first branching node dominating X dominates Y, and X does not dominate Y, nor does Y dominate X.

the subject. Violation of the c-command relation between the subject NP and its NQ explains the ungrammaticality of (27) in the GB framework.

- (27)=[D31] *kodomo-ga [_{VP} wa-ni natte 5-nin odotta].
 children-Nom circle-in 5-cl danced
 'Five children danced in a circle.'

According to Miyagawa, then, a subject-oriented NQ is allowed only with unaccusative verbs. This leads one to predict that sentences (28)-(32), where verbs are unergative or transitive should be ungrammatical. This prediction is in fact supported by the judgements of my informants on all the sentences in group D except (33).

- (28)=[D28] kodomo-ga [_{VP} kono kagi-de 2-ri doa-o aketa].
 children-Nom this key with 2-cl doors-Acc opened
 'Two children opened a door with this key.'

- (29)=[D29] gakusei-ga [_{VP} zibun-no okane-de 5-nin DENWA-shita].
 students-Nom self-Gen money-with 5-cl telephoned
 'Five students telephoned using their own money.'

- (30)=(27) kodomo-ga [_{VP} wa-ni natte 5-nin odotta].
 =[D31] children-Nom circle-in 5-cl danced
 'Five children danced in a circle.'

- (31)=[D32] gakusei-ga [_{VP} BENKYOO-o 3-nin shita].
 students-Nom study-Acc 3-cl *suru*-past
 'Three students studied.'

- (32)=[D33] gakusei-ga [_{VP} hon-o 3-nin katta].
 students-Nom books-Acc 3-cl bought
 'Three students bought books'

The verb *warau* in (33 =[D30]) is an ergative verb and therefore it is not expected to allow a semantic relation between a NQ and the subject. However, nearly a third of my informants accepted this sentence.

- (33)=[D30] kodomo-ga [_{VP} geragera-to 3-nin waratta].
 children-Nom loudly 3-cl laughed
 'Three children laughed loudly.'

Conversely, (25), which should be grammatical because the verb is unaccusative, is in fact rejected by about a third of my informants. Moreover,

(34) involving an unaccusative verb and accusative case on the compound noun was also rejected by as many as two thirds of the informants, although it should have been more acceptable (cf. [A14]).

(34)=[D36] shinkansen-ga Tokyoo-eki-ni 5-hensei TOOCHAKU-o shita.

Miyagawa's theory also predicts ungrammaticality for (35), in which a subject-oriented NQ is scrambled and the trace is properly governed by V^0 . Contrary to this prediction, half of the informants rejected it.

(35)=[D37] 5-hensei Tokyoo-eki-ni shinkansen-ga TOOCHAKU-shita.

These facts seem to suggest that the mutual c-command requirement between a NQ and the subject might not be involved in the interpretation of a subject-oriented NQ in Japanese. If that is the case, then Miyagawa's argument based on NQs, which Tsujimura puts forward for secondary evidence for her analysis, will collapse.

Finally, group (E) shows that a resultative must not follow the Sino-Japanese noun: we can contrast the high acceptability of (36) and (38) on the one hand with the low acceptability of (37) and (39). This suggests that the resultative is a dependent of the noun, and not of *suru*, as does the fact that it can be marked by *-no*, not by *-ni*, as in (36) and (38).

(36)=[E44] saiboo-ga nibai-no KAKUDAI-o shita.
 cell-Nom double-Gen enlargement-Acc *suru*-past
 'The cell doubled in size.'

(37)=[E45] saiboo-ga KAKUDAI-o nibai-ni shita.

(38)=[E46] gijutsu-ga senshinkoku-nami-no
 technology-Nom developed countries-average-Gen
 KOOZYOO-o shita.
 improvement-Acc *suru*-past
 'The technology improved to the level of the average developed countries.'

(39)=[E47] gijutsu-ga KOOJOO-o senshinkoku-nami ni shita.

5 Conclusion

In this paper I have mainly argued that contrary to Tsujimura's analysis based on GB, on Burzio's generalization, and on Baker's theory of incorporation,

there are some Sino-Japanese complex predicates of unaccusative type with the light verb *suru* which do assign accusative case to the Sino-Japanese compound. It seems that there are logically two ways to explain the appearance of the *-o* case marker. One is to deny Burzio's generalisation totally, but I think this would not be reasonable right now, partly because the present data are insufficient. This suggests that further research and more data are needed. The other is to assume that Argument Transfer to the light verb *suru*, originally claimed by Grimshaw and Mester (1988), does occur in the relevant examples, but that the inability to assign objective case is not transferred to *suru* in these examples. At this point we tentatively take the second possibility, which implies that the verb *suru* can assign accusative case to its object regardless of the unaccusativity of the compound noun in the construction concerned.

Appendix

(i) A Complete List of the Sentences Tested

The sentences below were given in a random order in the original questionnaire. Here I have regrouped them into four sets:

- (A) Unaccusative Sino-Japanese predicates with a resultative and Acc-*o*,
- (B) Unaccusative Sino-Japanese predicates without a resultative,
- (C) Scrambled version of sentences in (B),
- (D) Examples involving a numeral quantifier (NQ),
- (E) Others.

A. Unaccusative Sino-Japanese predicates with a resultative and the accusative case *-o*

- [1] *saiboo-ga* *nibai-ni* *KAKUDAI-o* *shita.*
 cell-Nom double-to enlargement-Acc *suru-past*
 'The cell doubled in size.'
- [2] *gijutsu-ga* *senshinkoku-nami-ni*
 technology-Nom developed countries-average-to
 KOOZYOO-o *shita.*
 improvement-Acc *suru-past*
 'The technology improved to the level of the average developed countries.'

- [3] chi-ga kataku GYOOKO-o shita.
 blood-Nom hard solidification-Acc *suru*-past
 'Blood solidified hard.'
- [4] secchakuzai-ga shiroku GYOOKO-o shita.
 glue-Nom white solidification-Acc *suru*-past
 'The glue solidified white.'
- [5] ie-ga makkuro ni ZENSHOO-o shita.
 house-Nom black to complete burning-Acc *suru*-past
 'The house burned down completely black.'
- [6] hune-ga kaichuu hukaku CHINBOTSU-o shita.
 boat-Nom in the sea deep submersion-Acc *suru*-past
 'The boat sank deep in the sea.'
- [7] David-wa ookiku SEICHOO-o shita.
 David-Top big growth *suru*-past.
 'David grew big.'
- [8] ondo-ga 30-do-ni JOOSHOO-o shita.
 temperature 30 degrees-to rise-Acc *suru*-past
 'The temperature rose to 30°C.'
- [9] bakudan-ga konagona-ni HARETSU-o shita.
 bomb-Nom pieces-into burst-Acc *suru*-past
 'The bomb burst into pieces.'
- [10] kuuki-ga karakara-ni KANSOO-o shita.
 air-Nom extremity-to dryness-Acc *suru*-past
 'The air dried out.'
- [11] pilot-ga chijoo-ni RAKKA-o shita.
 pilot-Nom ground-to fall-Acc *suru*-past
 'The pilot fell to the ground.'
- [12] Ya-ga mato-ni MEICHUU-o shita.
 arrow-Nom target-to hit-Acc *suru*-past
 'The arrow went precisely to the target.'

- [13] John-wa buchoo-ni SHOOSHIN-o shita.
 John-Top section-chief-to promotion-Acc *suru*-past
 'John obtained promotion to section chief.'
- [14] Densha-wa Koobe-ni TOOCHAKU-o shita.
 train-Top Koobe-to arrival-Acc *suru*-past
 'The train arrived in Kobe.'
- [15] yen-no kachi-ga hanbun-ni DAUN-o shita.
 yen-Gen value-Nom half-to down-Acc *suru*-past
 'The value of yen went down by half.'

B. Unaccusative Sino-Japanese predicates without a resultative

- [16] iinkai-ga SEIRITSU-o suru.
 committee-Nom existence-Acc *suru*-present
 'The committee is formed.'
- [17] hooan-ga SEIRITSU-o shita.
 bill-Nom existence-Acc *suru*-past
 'The bill passed.'
- [18] ondo-ga JOOSHOO-o shita.
 temperature rise-Acc *suru*-past
 'The temperature rose.'
- [19] kazan-ga HUNKA-o shita.
 volcano-Nom eruption-Acc *suru*-past
 'The volcano erupted.'

C. Scrambled version of sentences in [B]

- [20] KAKUDAI-o saiboo-ga nibai-ni shita.
- [21] KOOZYOO-o gijutsu-ga senshinkoku-nami-ni shita.
- [22] GYOOKO-o chi-ga kataku shita.
- [23] GYOOKO-o secchakuzai-ga shiroku shita.
- [24] ZENSHOO-o ie-ga makkuro ni shita.
- [25] CHINBOTSU-o hune-ga kaichuu hukaku shita.

- [26] SEICHOO-o David-wa ookiku shita.
 [27] SHOOSHIN-o John-wa buchoo-ni shita.

D. Sentences involving a Numeral Quantifier

D.1. NQ + unergative complex predicate/transitive verb

- [28] kodomo-ga [_{VP} kono kagi-de 2-ri doa-o aketa].
 children-Nom this key with 2-cl doors-Acc opened
 'Two children opened a door with this key.'
- [29] gakusei-ga [_{VP} zibun-no okane-de 5-nin DENWA-shita].
 students-Nom self-Gen money-with 5-cl telephoned
 'Five students telephoned using their own money.'
- [30] kodomo-ga [_{VP} geragera-to 3-nin waratta].
 children-Nom loudly 3-cl laughed
 'Three children laughed loudly.'
- [31] kodomo-ga [_{VP} wa-ni natte 5-nin odotta].
 children-Nom circle-in 5-cl danced
 'Five children danced in a circle.'
- [32] gakusei-ga [_{VP} BENKYOO-o 3-nin shita].
 students-Nom study-Acc 3-cl *suru*-past
 'Three students studied.'
- [33] gakusei-ga [_{VP} hon-o 3-nin katta].
 students-Nom books-Acc 3-cl bought
 'Three students bought books'
- [34] 3-nin, hon-o gakusei-ga katta.

D.2. NQ + Unaccusative complex predicate

- [35] shinkansen-ga Tokyoo-eki-ni 5-hensei
 TOOCHAKU-shita.
 Super-Express-Nom Tokyo-Station-in 5-cl
 arrival-*suru*-past
 'Five Super Express trains arrived at Tokyo Station.'

[36] shinkansen-ga Tokyoo-eki-ni 5-hensei TOOCHAKU-o shita.

[37] 5-hensei Tokyoo-eki-ni shinkansen-ga TOOCHAKU-shita.

[38] 5-hensei Tokyoo-eki-ni shinkansen-ga TOOCHAKU-o shita.

E. Others

[39] kinoo tomodachi-ni DENWA-o shita.
 yesterday friend-Dat telephone-Acc *suru*-past
 '(I) telephoned my friend yesterday.'

[40] DENWA-o kinoo tomodachi-ni shita.

[41] kyonen imooto-ga yooroppa-he RYOKOO-o shita.
 last year sister-Nom Europe-to trip *suru*-past
 'My younger sister made a trip to Europe last year.'

[42] London-he-no RYOKOO-wa John-ga shita.
 London-to-Gen trip-Top John-Nom *suru*-past
 'John made a trip to London.'

[43] RYOKOO-wa John-ga London-he shita.

[44] saiboo-ga nibai-no KAKUDAI-o shita.
 cell-Nom double-Gen enlargement-Acc *suru*-past
 'The cell doubled in size.'

[45] saiboo-ga KAKUDAI-o nibai-ni shita.

[46] gijutsu-ga senshinkoku-nami-no
 technology-Nom developed countries-average-Gen
 KOOJOO-o shita.
 improvement-Acc *suru*-past
 'The technology improved to the level of the average developed countries.'

[47] gijutsu-ga KOOJOO-o senshinkoku-nami ni shita.

(ii) The Results

For various reasons, every sentence is not judged by a total of 29 informants. Some of them were presented to a group of 3, 5, 7, or 22.

	No of sentence	ok (%)	? (%)	*
A	[1]	10(35)	2	17
	[2]	11(38)	3	15
	[3]	1 (14)		6
	[4]	9 (40)	2	11
	[5]	8 (31)	3	18
	[6]	11(50)	2	9
	[7]	15(68)	2	5
	[8]	13(59)	2	7
	[9]	16(55)	4	9
	[10]	15(52)	3	11
	[11]	14(48)	6	9
	[12]	13(45)	2	14
	[13]	14(48)	5	10
	[14]	15(52)	3	11
	[15]	9 (40)	4	16
B	[16]	3 (43)	4	
	[17]	1 (14)	2 (29)	4
	[18]	3		
	[19]	5		
C	[20]			29
	[21]	1	2	26
	[22]			7
	[23]		2	20
	[24]		1	28
	[25]		1	21
	[26]		1	21
	[27]	1 (3)	2	26

D.1	[28]	1	1	27
	[29]			7
	[30]	8 (28)	2	19
	[31]	3	1	23
	[32]		1	28
	[33]			22
	[34]			22
D.2	[35]	17	2	10
	[36]	8	4	17
	[37]	9	3	10
	[38]	3	2	17
E	[39]	29		
	[40]	17	4	8
	[41]	7		
	[42]	4	1	
	[43]	3		2
	[44]	17	1	4
	[45]	5	1	16
	[46]	20		2
[47]	5	1	16	

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