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Japanese Exception Phrases

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Abstract

In this paper, we will examine the semantics of exception phrases, *igaino* and *igaini*. My claim is that their interpretations are determined by their structural relations. First, *igai* phrases are, both *igaino* and *igaini*, additional in that sentences are acceptable without *igai* phrases. Thus, *igai* phrases add some meanings to them. How *igai* phrases add meanings are determined by structural relations. Since *igaino* phrases modify NPs, exclusion operations are applied between *igaino* phrases and NPs. In the case of *igaini* phrases, they modify VPs, and exclusion operations are applied between *igaini* phrases and VPs. Other implications *igai* phrases may convey are results of pragmatic inferences.

1. Introduction

In natural language conversation, a notion of exclusion is often used. Informally we know how such notion means. Formal surveys on this topic, however, are quite rare in the literature. In this paper, we will consider Japanese exception phrases, *igaino* and *igaini*, and I argue that semantic interpretations of these exception phrases are results of compositional constructions of them.[1]

2. Two Usages of Exception Phrases

In Japanese, two exception phrases exist; *igaino* and *igaini*, as shown in (1)–(2). *igaino* is a combination of *igai* and *no*. Intuitively we understand that *igai* means a notion of exclusion. Our concern here is a formal survey of *igai* phrases.

In Japanese, *no* is used as an NP modifier. Thus, we predict that *igaino* behaves as an NP modifier.

(1) Taro igai-no gakusei-ga kita
Taro IGAI-GEN student-NOM came
lit. 'A student except Taro came.'

In Japanese, *ni* is used as a VP modifier, like an adverb. *igaini* phrases, as a whole, behave as adverbs, so here it is glossed as ADV.[2]

[1] In Japanese, we have still other phrases which are semantically similar to *igai*; *dake* and *shika ... nai*. These seem to have syntactic restrictions, as well as semantic restrictions, so we do not consider them here.

[2] In Japanese two types of *ni*s exist; one is a dative case marker and the other is an adverbial.

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(2) Taro igai-ni gakusei-ga kita
Taro IGAI-ADV student-NOM came
lit. 'A student except Taro came.'

(1) and (2) are based on simple sentences shown in (3).

(3) Gakusei-ga kita
student-NOM came
'A student came.'

igai phrases are added to such base sentences. Then these sentences have three elements; *Taro*, *gakusei* 'student' and *kita* 'came'. So these sentences seem to convey three pieces of information, shown in (4).

(4) a. The relation between *Taro* and *gakusei*
Taro is a student (or not).
b. The relation between *Taro* and *kita*
Taro came (or not).
c. The relation between *gakusei* and *kita*
A student came (or not).[3]

As we will see in this paper, these three pieces of information differ between *igaino* and *igaini*, summarized in (5).

(5)

Information	*igaino* (1)	*igaini* (2)
Taro is a student.	obligatory	either is O. K.
Taro came.	either is O. K.	obligatory
A student came.	obligatory	obligatory

It is predictable that 'a student came' is obligatory since their base sentence is *gakusei-ga kita*, which means 'a student came.' The other two, which are results of *igaino* or *igaini*, are our main interests here. In Japanese, *-no* phrases only modify noun phrases, like adjectives, while *-ni* phrases only modify verb phrases, like adverbs. We assume this holds for exception phrases *igaino* and *igaini*. In (1), *Taro igaino* modifies *gakusei* 'student.' Therefore, *Taro* is excluded from the set which *gakusei* denotes. Then the set enters the relation with the set which *kita* denotes.

(6) Taro igaino gakusei -ga kita

As shown in (6), *Taro* and *gakusei* are connected directly, while *Taro* and *kita* are not connected directly. The semantic interpretation of (6) reflects the syntactic relation, as shown in (7).[4] In (7), student and *T* are first calculated, and then came is calculated.

[3]In Mizuno (2003), I argue that Japanese exception phrases have existential interpretations. See Mizuno (2003) for details.

[4]We do not consider here how we get the interpretation of *gakusei ga kita* 'a student came.' Here, we assume that it is interpreted as below.

(i) $\exists x[\text{student}'(x) \wedge \text{come}'(x)]$

See Chierchia (1998), Kurafuji (1999), Mizuno (2003) for details.

(7) Semantics of (1)
$\exists x[\text{student}'(x)]$
$\exists x[\text{student}'(x)] - T$
$\exists x[\text{student}'(T) \wedge \text{student}'(x) \wedge x \neq T]$
$\exists x[\text{student}'(T) \wedge \text{student}'(x) \wedge x \neq T \wedge \lambda y[\text{come}'(y)](x)]$
$\exists x[\text{student}'(T) \wedge \text{student}'(x) \wedge x \neq T \wedge \text{come}'(x)]$

Here, $\exists x[\text{student}'(x)] - T$ means that *Taro* is a student and that *Taro* is no longer considered as a candidate for *student*, since (1) denotes that a student, who is not Taro, came.

In (2), on the other hand, *Taro igaini* modifies *kita* 'came.' Therefore, *Taro* is excluded from the set which *kita* denotes. Then the set enters the relation with the set which *gakusei* denotes.

(8) Taro igaini gakusei-ga kita

(9) Semantics of (2)
$\lambda x[\text{come}'(x)]$
$\lambda x[\text{come}'(x)] - T$
$\lambda x[\text{come}'(T) \wedge \text{come}'(x) \wedge x \neq T]$
$\exists y[\lambda x[\text{come}'(T) \wedge \text{come}'(x) \wedge x \neq T](y) \wedge \text{student}'(y)]$
$\exists y[\text{come}'(T) \wedge \text{come}'(y) \wedge y \neq T \wedge \text{student}'(y)]$

In (2), there is no direct connection between *Taro* and *gakusei*, as shown in (8). Therefore, (2) is neutral whether Taro is a student or not.

So far we have used – for notational convenience, the definition is as following.

(10) Semantics of the "–" operation
Let **P** be a predicate, x a variable, and T an entity.
$\mathbf{P}(x) - T = \mathbf{P}(x) \wedge \mathbf{P}(T) \wedge x \neq T$

Since base forms, forms without *igai* phrases, are interpreted as $\mathbf{P}(x)$, this information is preserved when *igai* phrases are added. $\mathbf{P}(T)$ and $x \neq T$ are results of our computational systems, which are made to avoid unnecessary computations. If $x = T$, then (10) means $\mathbf{P}(x)$, same as the original one. Such operations are a waste of resources. In order for exclusions to be licit, the element(s) being excluded must be contained in the set. For example, *Taro igaino gakusei* is *gakusei–Taro*. Therefore, *Taro* must be a student.

As for the relation between *Taro* and *kita*'came', they are not related directly. That is, whether *Taro* came or not cannot be determined semantically.

In the case of *igaini*, it connects *Taro* and *kita*. It obligatorily conveys that *Taro* came. Since *Taro* and *gakusei* are not connected directly, whether *Taro* is a student or not cannot be determined semantically.

This explains the semantic interpretations of (1) and (2). In (1), it is obligatory that Taro is a student, since Taro is excluded from the set *student*. In (2), it is obligatory that Taro came, since Taro is excluded from the set *come*.

3. *Igai-no* is a NP modifier, and *Igai-ni* is a VP modifier

3.1 Containment Requirement

igai-no phrases modify noun phrases, but they cannot freely modify noun phrases of any type. In order for an *igai-no* phrase to be valid, it must attach to an NP with quantification power and it is contained by the set that NP denotes. Examples are shown in (11).

(11) a. Taro igai-no gakusei-ga kita
Taro IGAI-GEN student-NOM came

b. *Taro igai-no Hanako-ga kita
Taro IGAI-GEN Hanako-NOM came

c. *Taro igai-no onnanoko-ga kita
Taro IGAI-GEN girl-NOM came

When *Taro igai-no* attaches to *Hanako* as in (11b), it is unacceptable. In order to make (11b) licit, $H - T$ must be calculable, but it is not calculable since *Taro* is not contained in *Hanako*. (11c) is bad for the same reason, since *Taro* is usually a name for a boy and *Taro* is not contained in *onnanoko*.

Semantics of (11a)	
Taro is a student.	✓
Taro came.	N. A.
A student came.	✓

Semantics of (11b)	
Taro is Hanako.	*
Taro came.	N. A.
A student came.	✓

Semantics of (11c)	
Taro is a girl.	*
Taro came.	N. A.
A student came.	✓

In the case of an *igai-ni* phrase, it is not necessary to attach to an NP which contains it, as shown in (12).

(12) a. Taro igai-ni gakusei-ga kita
Taro IGAI-ADV student-NOM came

b. Taro igai-ni Hanako-ga kita
Taro IGAI-ADV Hanako-NOM came

c. Taro igai-ni onnanoko-ga kita
Taro IGAI-ADV girl-NOM came

In (12b), *Hanako* is a proper noun and of course does not contain *Taro*, but it does not matter. In my analysis, *Taro* is not directly connected to *Hanako*, hence no semantically obligatory relations between them. In a situation where Taro came, (12b) and (12c) are perfectly acceptable. Note that (12a) is also perfectly acceptable if *Taro* is not a student.

Semantics of (11a)	
Taro is a student.	N. A.
Taro came.	✓
A student came.	✓

Semantics of (11b)	
Taro is Hanako.	N. A.
Taro came.	✓
A student came.	✓

Semantics of (11c)	
Taro is a girl.	N. A.
Taro came.	✓
A student came.	✓

As for the relation between *Taro* and *kita*'came', *Taro* is directly connected to *kita* and the containment relation is obligatory between them. That is, *Taro* must have come.

3.2 Syntactic Evidence – Extraposition

When *igai* phrases are extraposed, they differ in acceptability. As shown in (13)–(14), *igaini* phrases can be extraposed, while *igaino* phrases cannot.

(13) a. Taro igai-ni gakusei-ga kita
Taro IGAI-ADV student-NOM came

b. gakusei-ga Taro igai-ni kita
student-NOM Taro IGAI-ADV came

(14) a. Taro igai-no gakusei-ga kita
Taro IGAI-GEN student-NOM came

b. *gakusei-ga Taro igai-no kita
student-NOM Taro IGAI-GEN came

Both (13a) and (13b) are acceptable and have almost the same meaning.[5] In (14), (14b) is clearly bad, since *igaino* phrase in (14b) remains in situ and only the head *gakusei* is extraposed.

3.3 VP is shared

In this section we will consider whether *igaini* phrases attach to a bare V or a VP. Consider an example (15).

(15) Taro igai-ni gakusei-ga Hanako-ni atta
Taro IGAI-ADV student-NOM Hanako-DAT met
'Other than Taro, a student met Hanako.'

In (15), Taro met Hanako. If a VP is shared, we naturally get the correct interpretation, by copying met'(, H), the information the VP convey, as shown in (16).

(16) $\exists x[\text{student}'(x) \wedge [\text{met}'(x, H)] \wedge [\text{met}'(T, H)]]$

If a bare V is shared, we only copy the information the verb convey, met', and would result in a wrong interpretation shown in (17).

(17) $\exists x \exists y[\text{student}'(x) \wedge [\text{met}'(x, H)] \wedge [\text{met}'(T, y)]]$

In (17), one of the arguments of *awu* is Taro, but the other is not determined. The person Taro met remains as a variable, and it wrongly predicts that (15) would be acceptable even if Taro did not meet Hanako, as long as he met somebody (a variable y in (17)).

An hypothesis which claims VP is shared is better since this hypothesis naturally explains the semantic interpretation of *igaini* sentences, by copying the verb and its argument(s).

4. Further Evidence—Ambiguity

4.1 Ambiguity of *Igai-ni*

So far we have considered only VPs which take only one argument. In such cases, we have only one option to determine the argument which is an argument of exclusion operation *igai* denotes. When VPs take two or more arguments, they are ambiguous since we can execute an exclusion operation from any of the arguments which VP takes.

Consider the example below.

(18) Taro igai-ni gakusei-ga sensei-ni atta
Taro IGAI-ADV student-NOM teacher-DAT met
'A student met a teacher, other than Taro.'

[5]Which of (13a) and (13b) is a base form is a matter of problem, but we do not consider here.

In (18), *atta* 'met' takes two arguments, an agent and a patient. In (18), *Taro* can be excluded from either an agent or a patient, hence (18) is ambiguous.[6] These two interpretations are shown in (19).

(19) a. (A student met a teacher, and) Taro met a teacher.
b. (A student met a teacher, and) A student met Taro.

When Taro is excluded from the agent, Taro shares the property 'agent' and we get the interpretation (19a). When Taro is excluded from the patient, Taro shares the property 'patient' and we get the interpretation (19b). Note that in both cases *Taro* does not have to be a student nor a teacher. That is, in (19a) Taro shares a property of agent, not a property of student, and in (19b) a property of patient, not a property of teacher. *Taro* is not directly connected *gakusei* nor *sensei*.

In my analysis, *igai-ni* phrases modify verb phrases. When a verb takes two or more arguments, as in *awu* 'meet', it becomes ambiguous, since we can exclude *igai-ni* phrases any of the arguments. These ambiguities come from whether *Taro* shares the property of agent or that of patient, both are arguments of the verb *meet*.

In order to handle predicates with two arguments, (10) is modified, as in (20).

(20) Semantics of the "−" operation
Let **P** be a predicate, x y variables, and T an entity.

$$\mathbf{P}(x,y) - T = \begin{cases} \mathbf{P}(x,y) \wedge \mathbf{P}(T,y) \wedge x \neq T & -(a) \\ \mathbf{P}(x,y) \wedge \mathbf{P}(x,T) \wedge y \neq T & -(b) \end{cases}$$

We have two candidates for an exclusion operation, x and y. The existence of two candidates results in the possibility of two interpretations.

(20) correctly derives two interpretations of (18), as shown in (21).

(21) $\exists x \exists y[\text{student}'(x) \wedge \text{teacher}'(y) \wedge [\text{met}'(x,y)] - T]$

$$\begin{cases} a)\ \exists x \exists y[\text{student}'(x) \wedge \text{teacher}'(y) \wedge [\text{met}'(x,y) \wedge \text{met}'(T,y) \wedge x \neq T] \\ b)\ \exists x \exists y[\text{student}'(x) \wedge \text{teacher}'(y) \wedge [\text{met}'(x,y) \wedge \text{met}'(x,T) \wedge y \neq T] \end{cases}$$

When we apply (20a), we get the interpretation (21a). When we apply (20b), we get the interpretation (21b). In either case, T is neutral whether T is a student or not, and whether T is a teacher or not.

4.2 No Ambiguity of *Igai-no*

In contrast to *igaini*, *igaino* phrases are not ambiguous, even when there are two NPs.

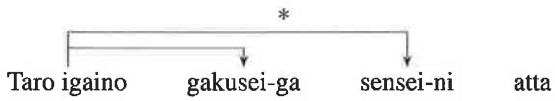
(22) Taro igai-no gakusei-ga sensei-ni atta
Taro IGAI-GEN student-NOM teacher-DAT met
'A student met a teacher, other than Taro.'

Since (22) has two NPs, it may seem that (22) is ambiguous; one interpretation is that *Taro* is excluded from *gakusei* and the other is that *Taro* is excluded from *sensei*. In fact, (22) is not ambiguous. *Taro* can be excluded from *gakusei*, but cannot from *sensei*. This constraint results from locality. As shown in (23), *Taro* and *gakusei* are adjacent, while *Taro* and *sensei* are not.

[6] Of course, not all sentences are ambiguous. For example, (i) is not ambiguous in normal conversation, since it is quite unlikely that a man is a patient of a verb *yomu*.

(i) Taro igaini gakusei-ga hon-o yomu
Taro IGAI-ADV student-NOM book-ACC read

(23)



The only candidate is the NP which *igaino* phrase modifies, in this case *gakusei*.

When *igaino* phrases are placed next to *sensei*, as in (24), the only interpretation is that *Taro* is excluded from *sensei*, since in Japanese modifiers are usually placed before the phrases they modify.

(24)

In either case, there is no ambiguity in *igaino* phrases.

4.3 Why *igaino* and *igaini* are Different?

We have seen that *igaini* phrases can be ambiguous, but *igaino* phrases cannot. If they both derive from *igai*, why do they behave differently in their semantic interpretations? Are they completely different?

I claim that the semantic operation of *igai* is exclusion, and this operation is shared by both *igaino* and *igaini*. The difference between them is, *igaini* consists of *igai* and an adverbial modifier *ni*, while *igaino* consists of *igai* and a nominal modifier *no*. That is, their difference is the difference of the elements they modify. Their difference in ambiguity, is nothing but a by-product of elements they modify. Verbs sometimes take two arguments and that leads to the existence of ambiguity in *igaini* phrases. Nouns, on the other hand, take only one argument and that leads to the absence of ambiguity in *igaino* phrases.

5. Not All Information is Important

In the previous section we have seen that there are three pieces of information when we use *igai* phrases. That is, *igai* phrases are heavy in that they are simple sentences and nevertheless convey three pieces of information. When we use *igai* phrases, however, we do not consider all of the three pieces of information they convey, probably because of the limitation of our information processing resource. In this section, we will consider several cases where we concentrate on some parts of the information *igai* phrases convey and neglect the rest.

5.1 Conditionals

Conditionals are good examples to show that we do not consider all of the information *igai* phrases could convey.

(25) Taro igai-no gakusei-ga kitara denwa-siro
Taro IGAI-no student-NOM come-COND phone-do
'If a student other than Taro comes, call me.'

When we hear the utterance (25), we are to behave in a manner shown in (26).

(26) a. Taro comes. → no call
b. A student (≠ Taro) comes. → call
c. Taro and a student come. → call

Whether Taro comes or not is not crucial. Rather, whether other student(s) comes or not is crucial. The utterance (25) is more concerned with a student, rather than Taro.

5.2 Emotional Expressions

When *igaino* is embedded, this sentence is about a student, rather than Taro. In (27), the teacher is surprised at the attendance of a student, not that of Taro. The teacher is surprised when a student came, and whether Taro came or not have no affect.

(27) Taro igai-no gakusei-ga kita koto-ni sensei-ga odoroita
Taro IGAI-no student-NOM came fact-DAT teacher-NOM was_surprised
'The fact that a student other than Taro came surprised the teacher.'

(28) a. Taro came. → no surprise
b. A student (≠ Taro) came. → surprise
c. Taro and a student came. → surprise

Note that the behaviors shown in (28) are parallel to that shown in (26).

5.3 Modals

When modals are present, *igaino* phrases behave in the similar way.

(29) Taro igai-no gakusei-ga kuru daroo
Taro IGAI-no student-NOM come may well
'A student, other than Taro, may well come.'

In (29), the speaker is more concerned with whether a student (≠ Taro) comes or not, rather than whether Taro comes or not.

(30) a. Taro comes. → expectation is incorrect
b. A student (≠ Taro) comes. → expectation is correct
c. Taro and a student come. → expectation is correct

What makes us behave in such ways? In other words, why do we interpret *igai* phrases as in (5) and still neglect the second part of the information 'Taro comes.' These are explained by the fact that our information processing resources are limited. With limited resources, we cannot consider all of the information *igai* phrases convey. Since the relation between *Taro* and *kita* are not primary, as we have seen before, we give up this part of information as less important, compared to the other parts of information, 'Taro is a student' and 'a student comes.'

6. Summary

Our investigations on *igai* phrases are summarized below.

1. *igai* is a function from a predicate and an argument to a predicate.
2. The argument of *igai* is excluded from any of the arguments of the predicate of *igai*.
3. The predicate *igai* takes is determined by the postpositions, that is, *no* is a nominal modifier and *igaino* takes NP while *ni* is a adverbial modifier and *igaini* takes VP.
4. Accordingly, *igaino* phrases are primarily related to NPs and *igaini* phrases are primarily related to VPs.
5. The relations between *igaino* phrases and NPs are obligatory and the relations between *igaini* phrases and VPs are obligatory.
6. These are semantic interpretations of *igai* and other information comes from pragmatic inferences.

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