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Rhetorical Counterfactuals

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## Introduction

In this paper, I focus on a particular type of counterfactual interpretation found in the old Japanese and that is different from what is normally understood as counterfactual conditional. The typical counterfactual interpretation consists of assuming the most similar worlds to the actual worlds except the differences that are required by the antecedent, and it is rendered true when the consequent follows from such a (counterfactual) premise. However, the other counterfactual interpretation seems to have contrastive meaning. It assumes the impossibility of the antecedent, from which the impossibility of the consequent follows. In this reading, the counterfactual asserts the strong denial of the consequent. Let us call this type of counterfactual a “rhetorical counterfactual.” The purpose of this paper is to discover what contributes to the rhetorical reading.

The typical examples of the rhetorical counterfactual are found in *-koso -e* construction, one of the specific sentence styles known as “*kakarimusubi*” in old Japanese grammar. I will argue that there are two conditions responsible for the rhetorical reading: 1) the antecedent of the conditional is attached by *-koso* in *-koso -e* construction; and 2) the counterfactual has an antecedent that is not simply false but also impossible. I will also argue that the meaning of a rhetorical counterfactual represented in *-koso -e* construction is truth-conditionally equivalent to English “*only if ... , would...*”. The truth conditions of the rhetorical counterfactual follow from the semantics of “*only if*” in conjunction with the speaker’s belief that there is no possible world in which the antecedent is true among those that are accessible from the actual world. I conclude that rhetorical counterfactual is a semantically marked reading of the counterfactual conditional of the form “*only if... , would...*”.

## 1. Rhetorical Counterfactuals

Goodman (1946) stated that some kinds of counterfactuals present unique problems. Among them are “counteridentical,” “countercomparatives,” “counterlegals,” etc. Similar, and to be categorized in the lists of these unique counterfactuals is “rhetorical” counterfactuals. Most typically, the rhetorical counterfactual does not assert the truth of the stated consequent given the assumed truth of the antecedent. When uttered, this conditional has the strong implication that the stated consequent will not or definitely is not the case.

The typical examples of the rhetorical conditional are found in *-koso -e* construction in old Japanese<sup>1</sup> in (1-2).

- 1) ひさかたの天つみ空に照る月の失せなむ日 こそ吾が恋やまめ (万 3004)

Everlasting heavenly sky-in shine moon-Nom disappear day KOSO, my feeling for you stop-E  
“Only if moon disappeared from the everlasting nightly sky, would I stop thinking of you.”

- 2) 商変し領らすとの御法あらば こそわが下衣返したまはめ (万 3809)

Cancel business transactions force the law exist Cond. KOSO, my undergarment return-E

“Only if there was a law that forces the cancellation of the past transactions, would I return my undergarment.”

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<sup>1</sup> The sentence form marked by a pair of functional words “-KOSO, -E” is called *kakari-musubi* in old Japanese grammar. “Koso” is close to “only” in meaning; it takes any phrases and forms an emphatic phrase, and the sentence has to be ended with the verbal conjugation *-e*. In old Japanese, *-e* alone functions as a sentence conjunctive, in this case, *but*. *Kakarimusubi* construction (interaction of *-koso* with *-e*) is said to have been extinct, but the use of “-koso” remains almost unchanged.

In this counterfactual, the truth of the literal meaning of the conditional is not intended. What it actually intends is the strong denial of the consequent. In (1), the sentence does not intend the truth of “I will stop thinking of you,” given the literal truth of “the moon disappears from the sky.” It means that because “the moon will not disappear,” it follows that “I will not stop thinking of you.” In (2), what is expressed is the strong denial of the literal meaning of “I would return my undergarment.” It actually asserts the negation of what is stated, “Because there is no such a law, I will not return my undergarment.”

The contextually assigned meaning of the rhetorical conditional is the strong denial of the consequent which may be well represented by the word “never.” The meaning of rhetorical counterfactual is closest to the simple declarative sentences as follows:

- 3) a. I will not (never) stop thinking of you.
- b. I will not (never) return my undergarment.

In the following, I would like to examine the semantics of the rhetorical counterfactual. If a rhetorical counterfactual is to be categorized as a non-standard counterfactual, how is it different from the standard counterfactual in truth condition? What is the semantics of *-koso -e* construction, and what is contributing to the rhetorical reading?

## **2. Previous analyses of counterfactual conditional**

In this section, I review previous theories of the truth conditions of the counterfactual conditional.

## 2.1 Truth conditions of counterfactual conditional

Let us consider the following example of a counterfactual, cited from Goodman (1946):

4) If that piece of butter had been heated up to 150° F, it would have melted.

As Goodman points out, all the counterfactual conditionals would be true if material conditional<sup>2</sup> is used to analyze (4). Hence, (5) also holds:

5) If that piece of butter had been heated up to 150° F, it would not have melted.

It is obvious the counterfactual intends the opposite.

The difficulty that we face in the account of counterfactual conditionals is that material conditional vacuously assigns truth to the counterfactual conditionals. Material conditional identifies the meaning of a conditional as a logical function of the conditional predicate. However, it has been noted by many philosophers that the connection between the antecedent and the consequent of the counterfactual conditional may not be reduced to a logical function of the predicate alone. For example, Goodman (1983: 8-9) stated that the principle that permits

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<sup>2</sup> In classical logic, a conditional is translated to a material conditional with the symbol  $\supset$  (or equivalently, the arrow  $\rightarrow$ ), which is the predicate of two propositions, the antecedent and the consequent. The material conditional  $p \supset q$  is rendered true iff either  $\sim p$  or  $q$  holds. So, when  $p$  is false, the conditional  $p \supset q$  is unconditionally true.

inference of “the butter melted” from “the butter was heated up to 150° F” in conjunction with other requisite conditions in the actual world is not a law of logic but a natural or physical or causal law. Also, if the connection is characterized by a logical law alone, it follows that any conditional that has a logically impossible<sup>3</sup> antecedent or a tautological consequent will be true unconditionally. Obviously, such a consequence has to be avoided.

Stalnaker adopted Ramsey’s (1950) suggestion on the notion of “connection” in the counterfactual conditional, which states, “Add the antecedent (hypothetically) to your stock of knowledge (or belief), and then consider whether or not the consequent is true.” Stalnaker used the notion of possible worlds as ontological analogue of a stock of hypothetical beliefs, and made the above notion into a truth condition as follows:

- 6) Consider the possible world in which A is true, and which otherwise differs minimally from the actual world. “If A, then B” is true (false) just in case B is true (false) in that possible world.

That is, counterfactual conditionals are statements about particular possible worlds. We select a possible world(s) that otherwise differs minimally from the actual world.

Lewis set forth a system of spheres that assigns each possible world  $i$  a set  $S_i$  of sets of possible worlds that are accessible (resembles to a certain degree) to the actual world  $i$ . The system of spheres is meant to carry information about the comparative similarity of worlds. The degree of resemblance to the actual world is different for different spheres; the smaller the sphere is, the more similar to  $i$  a world is.

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<sup>3</sup>“logically impossible” means logically irrefutable, such as something is both A and not A.

Lewis developed Stalnaker's semantics of counterfactual and stated that the semantics of counterfactuals is *variably strict conditionals* based on similarity of worlds. Lewis formalized the truth conditions for counterfactual conditionals of the form "if..., would..." as follows:

- 7) The strict conditional  $\phi \square \rightarrow \psi$  is true iff
- i. No  $\phi$ -world belongs to the outermost sphere around  $i$ .
  - ii. Some sphere  $S$  contains at least one  $\phi$ -world, and  $\phi \rightarrow \psi$  holds at every world in  $S$ .

By "variably" it means that there is an assignment of a set of spheres of accessibility around  $i$ , some larger and some smaller. A particular counterfactual conditional selects the sphere of accessibility closest to  $i$ . Namely, we cannot select the possible world that is less similar to the actual world, or it could potentially make the consequent false even if the antecedent holds. Ignoring the impossible antecedent for now, the simplest form of Lewis's truth conditions for the counterfactual can be expressed as follows:

- 8)  $\llbracket \text{if } p, \text{ then } q \rrbracket^{w_0} = 1$  iff in all worlds  $w$  accessible from  $w_0$  in which  $\llbracket p \rrbracket^w = 1$ ,  $\llbracket q \rrbracket^w = 1$ .

## 2.2 Impossible antecedents

Lewis's theory of counterfactuals dismisses the distinction in truth conditions between the conditional with false antecedent and the conditional with impossible antecedent. Lewis formally stated it in the definition (i) of truth conditions, repeated as follows:

9) The strict conditional  $\phi \Box \rightarrow \psi$  is true iff

- i. No  $\phi$ -world belongs to the outermost sphere around i.
- ii. Some sphere S contains at least one  $\phi$ -world, and  $\phi \rightarrow \psi$  holds at every world in S.

In Lewis's system, the conditional is vacuously true iff there are no accessible worlds that render the antecedent true.

However, Lewis mentions that there might be a distinction between the false antecedents and impossible antecedents. Lewis describes that "...along with the *possible* possible worlds that differ from our world only in matters of contingent, empirical fact, there also are some *impossible* possible worlds that differ from our world in matters of philosophical, mathematical and even logical truth."

Lewis concludes that there is no need to discriminate in truth value among such counterfactuals, though he gave some examples that are sensible in such an assertion:

- 10) a. If there were largest prime p,  $p!+1$  would be prime.  
b. If there were largest prime p,  $p!+1$  would be composite.

And those that aren't:

- 11) a. If there were largest prime p, there would be six regular solids.  
b. If there were largest prime p, pigs would have wings.

Lewis reasons that we have to explain why that which we want to assert is true, but that we do not have to explain why that which we do not want to assert is false (such cases in (11)). From this he concludes that counterfactuals with impossible antecedent are vacuously true.

Nonetheless, Lewis suggests a stronger ‘would’ counterfactual that cannot be vacuously true, by leaving out the condition (i):

12)  $\phi \Box \Rightarrow \psi$  is true at a world  $i$  (according to a system of sphere  $\mathbb{S}_i$ ) iff there is some sphere  $S$  in  $\mathbb{S}_i$  such that  $S$  contains at least one  $\phi$ -world, and  $\phi \rightarrow \psi$  holds at every world in  $S$ .

Lewis then introduces a weakened ‘might’ counterfactual  $\phi \Diamond \Rightarrow \psi$ , vacuously true whenever its antecedent is impossible. ‘Might’ counterfactual is defined as the denial of the strict conditional of the form ‘if  $p$ , then not  $q$ ’:

13)  $\phi \Diamond \Rightarrow \psi =^{\text{df}} \sim(\phi \Box \Rightarrow \sim\psi)$

It has the following derived truth conditions:

14)  $\phi \Diamond \Rightarrow \psi$  is true at a world  $i$  (according to a system of sphere  $\mathbb{S}_i$ ) iff there is some sphere  $S$  in  $\mathbb{S}_i$  such that  $S$  contains at least one  $\phi$ -world at which  $\phi \& \psi$  holds.

With this truth condition, Lewis states that whenever the antecedent is impossible, one can say with a shrug, ‘if that were so, anything you like might be true!’

### 3. Rhetorical counterfactual has the conditional function “only if”

In this section, I provide a semantic analysis of the semantics of *-koso -e* construction, one of the elements responsible for the rhetorical reading of the rhetorical counterfactual. I argue that 1) *-koso* is an emphatic marker whose meaning is close to English “only,” and the rhetorical counterfactual is found when it is attached to an if/when-clause and forms “only if” complex; and 2) when *-koso* is attached to an if/when-clause and forms ‘*p-koso*’ in the *-koso -e* construction, *p* is a necessary condition. In this sense, ‘*p-koso, q-e*’ is truth-functionally equivalent to English ‘only if *p*, then *q*.’

#### 3.1 Rhetorical counterfactual is a conditional sentence embedded in *-koso -e* construction

In this section, I look at the morpho-syntactic aspect of the rhetorical counterfactual. What is *-koso -e* construction responsible for in the interpretation of the rhetorical counterfactual? First, *-koso -e* does not form a conditional construction. Previous studies of old Japanese grammar describe that *-koso* serves as a discourse marker to indicate the logical relation between phrases. Basically, the emphatic *-koso* can attach to any phrase, and serves as a syntactic device to mark the phrase as emphasized. *-E* is one of the verbal conjugations, and in old Japanese ending the sentence with *-e* can function as a sentence connective such as “and” or “but.” In *-koso -e* construction, *-e* works with *-koso* and unambiguously means “but.” The rhetorical counterfactual is found in a few among many other *-koso -e* constructions, in which *-koso* is attached to if/when clause.

Let us divide the syntactic constituents that *-koso -e* construction into two types: 1) non-conditional sentences and 2) conditional sentences. In the former, *-koso* attaches to phrases such as subject NP, locative or manner adverbials etc., and in the latter, *-koso* attaches to subordinate clauses dominated by *if*, *when*, or *because*, etc. Let us take a look at these constructions in turn.

### 3.1.1 Non-conditional sentence in *-koso -e* construction

Let us examine the first type of *-koso -e* construction. Let us adopt Hando's classification<sup>4</sup> of the semantic structures of *-koso* in old Japanese. The first type is 'emphasis by exclusion' as in (15), and the second type is 'emphasis by comparison' as in (16), found in the original contexts as follows:

15) 昔こそ 難波いなかと 言われけめ 今都引き 都びにけり (万巻三、312)

before-KOSO Naniwa countryside-Comp was called-E now capital move becomes city

'Naniwa was called countryside before, but it became a capital now.'

16) 花よりも 人こそあだに なりにけれ (伊勢十段)

flower than person-KOSO short-lived became-E

'Person became more short-lived and temporary than flower.'

The following schematized structures in (17) show where *-koso* and *-e* are placed in a sentence:

17) a. [[before-KOSO] it was called countryside-E]

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<sup>4</sup> See Hando (2003b), p. 22-27.

b. [[person-KOSO] is short-lived and temporary-E]

*-Koso* is attached to the time-adverbial in (17a), and to the subject NP in (17b), and *-e* is attached to the end of the sentence in both.

Hando (2003a) and other Japanese grammarians argue that there are two functions in *-koso*. First, it is similar to topic *-wa* in that it presents something as a topic and combines with the rest of the sentence which adds explanation to the presented topic. Secondly, *-koso* is similar to the particle *-dake* “only” in that it has a connotation that there are alternative (semantic) values to the uttered phrase. It is argued that the function of *-koso -e* construction is to strengthen the semantic connection between the topicalized phrase and the rest of the sentence. In other words, *-koso* adds a restriction on the range of possible semantic values that combines with the rest of the sentence. Let us examine the context in which *-koso -e* construction occurs:

18) a. [**Before** it was called countryside], but [now it is a capital (not countryside)]

b. [flower is short-lived and temporary], but [**person** is (most) short-lived and temporary]

The bold-faced words are the phrase emphasized by *-koso*. In (18a), the time adverbial *before* is presented as a topic to the rest of the sentence, *it is called countryside*. The connection of *before* and *it is called countryside* is emphasized by excluding the other connection of *now* with *it is called countryside*. In (18b), the connection between the topic and the rest of the sentence is strengthened by comparison with alternative values. In this case, the subject NP *person* is presented as a topic and is emphasized as used as the most short-lived among other alternatives, which include *flowers*.

### 3.1.2 Conditional sentence in *-koso -e* construction

Now let us examine the conditional sentence in *-koso -e* construction. The original context in which this construction is found is as follows:

19) 死なばこそ 相見ずあらめ 生きてあらば 白髪児らに 生ひざらめやも (万 3792)

Die-Cond.-KOSO each other see not remain-E alive remain-Cond. gray hair children-Dat. Grow not will not  
'If I died, I wouldn't see my children, but if I was alive, I would see my children grow gray hair.'

In the conditional, *-koso* is attached to the antecedent of the conditional and *-e* is attached to the end of the main clause as in (20):

20) [[if I died-KOSO], I would not see my children-E]

In this case, *-koso* attaches to the antecedent (if-clause). Japanese is the head-final language, and so, *-koso* comes after the conditional particle *-ba*. Thus, it is reasonable to assume that the entire if-clause is emphasized, exactly as “only” is attached to the if-clause in “only if.”

### 3.2 The antecedent marked by *-koso* is a necessary condition

In this section, I argue that the logical form of “*-koso -e*” in which *-koso* attached to if-clause is equivalent to English “*only if... would...*”. I support this view by proving that the antecedent marked by *-koso* is a necessary condition. Namely, “*p-koso, q-e*” that expresses

rhetorical counterfactual is best translated to “*Only if p, would q*” in English. Let us examine the original form of *-koso -e* repeated here as (21).

21) 月の失せなむ日こそ吾が恋やまめ

moon-Nom disappear day KOSO, my feeling for you stop-E

I will prove that it is semantically equivalent to “*Only if p, would q*” in English as follows:

22) [[if moon disappears-KOSO], I stop thinking of you -E]

=Only if the moon disappeared, would I stop thinking of you.

In English conditionals, the antecedent of the “only if” conditional signifies *necessary condition*, whereas the antecedent of the “if” conditional signifies *sufficient condition*. Compare the following examples<sup>5</sup>:

23) a. If Smith bribes the instructor, then Smith will get an A.

b. Only if Smith bribes the instructor, Smith will get an A.

In (23a), Smith’s bribing the instructor is a *sufficient condition* for Smith to get an A. This implies that: 1) all that is required for Smith’s getting an A is bribing the instructor; and 2) there is a way of getting an A without bribing the instructor, such as by doing excellent work. In (23b), Smith’s bribing the instructor is a *necessary condition* for Smith to get an A. This implies that:

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<sup>5</sup> The definitions and examples of conditionals are cited from Forbes (1994).

1) bribing the instructor is required for getting an A; and 2) there is no other way of getting an A without bribing the instructor. Let us represent  $p$  and  $q$  as sentential variables.

24) a. 'if  $p$  then  $q$ ' and 'q if  $p$ ' are symbolized ' $p \rightarrow q$ '.

b. 'q only if  $p$ ' is symbolized ' $q \rightarrow p$ '.

Let us examine whether the antecedent marked by *-koso* is a necessary condition or a sufficient condition for the consequent.

First, we test whether the truth of the antecedent is required for the truth of the consequent by determining whether the assumed truth of the consequent implies the truth of the antecedent. Let us assume that it is actually the case that the consequent is true ("I stop thinking of you"). Then, from the meaning of the rhetorical counterfactual, we can conclude that the antecedent must be true ("the moon disappears"). Thus, the following paraphrases are possible:

25) a. If I ever stop thinking of you, the moon has disappeared.

b. If I ever return my undergarment, there has been such a law.

What (25) shows is that the assumption that the consequent is true inevitably implies that the antecedent is true; it means that there is no way of obtaining the consequent without achieving the antecedent. This meets our intuition. Therefore, it seems correct that the antecedent of rhetorical conditional is a necessary condition.

Secondly, let us test whether the truth of the antecedent is sufficient for the truth of the consequent. If it is a necessary condition, the truth of the antecedent does not necessarily lead to

the truth of the consequent because it may not be a sufficient condition. Let us assume that the antecedent is true (“the moon disappears” in this case). Does this assumption inevitably lead to the truth of the consequent (“I stop thinking of you”)? From the meaning of the rhetorical counterfactual, the truth of the consequent is not conclusive. Thus, the following paraphrases are possible:

26) a. Even if the moon disappears, I may not stop thinking of you.

b. Even if there is such a law, I may not return my undergarment.

The paraphrases in (26) show that the truth of the antecedent does not necessarily imply the truth of the consequent. This suggests that the antecedent of the rhetorical counterfactual is not a sufficient condition.

Thus, it seems correct to suppose that denotation of conditional with *-koso -e* is equivalent to English “only if.”

27)  $\llbracket p \text{ koso } q \text{ e} \rrbracket = \llbracket \text{only if } p, q \rrbracket$

The semantics of English ‘if’ and ‘only if’ are stated as follows:

28) a.  $\llbracket \text{if } p, q \rrbracket^{w_0} = 1$  iff

$\{w: \llbracket p \rrbracket^w = 1 \text{ and } w \text{ is accessible from } w_0\} \subseteq \{w: \llbracket q \rrbracket^w = 1 \text{ and } w \text{ is accessible from } w_0\}$ .

b.  $\llbracket \text{only if } p, q \rrbracket^{w_0} = 1$  iff

$\{w: \llbracket q \rrbracket^w = 1 \text{ and } w \text{ is accessible from } w_0\} \subseteq \{w: \llbracket p \rrbracket^w = 1 \text{ and } w \text{ is accessible from } w_0\}$

The semantics of *-koso* seems close to what “only” contributes in the context– it gives emphasis to the antecedent by strengthening the semantic connection between what is emphasized and the rest of the sentence, and the antecedent marked by *-koso* signifies a necessary condition just as “only if” does in English.

Based upon Lewis’s semantics of counterfactual of the form “if p, would q,” we can write the truth condition of the counterfactual of the form “only if p, would q” as in (29):

29) Truth condition of the counterfactual conditional “only if..., would...”

$\llbracket \text{only if } p, \text{ would } q \rrbracket^{w_0} = 1$  iff for all worlds w accessible from  $w_0$  in which  $\llbracket q \rrbracket^w = 1$ ,  $\llbracket p \rrbracket^w = 1$ .

Now the rhetorical reading in the rhetorical counterfactual in *-koso -e* construction is accounted for by the difference in the conditional function of the conditional.

To summarize, I have shown that *-koso -e* construction strengthens the semantic connection between the emphasized phrase and the rest of the sentence. In the conditional sentence in *-koso -e* construction, *-koso* marks the if-clause and adds more restriction to the meaning of conditionality. I have shown that the antecedent marked by *-koso* in the rhetorical counterfactual is best translated to English “only if” because the antecedent is presented as a necessary condition, not a sufficient condition. Based on Lewis’s truth condition of the counterfactual of the form “if then,” we have derived the truth condition of the counterfactual of the form “only if.”

#### 4. Rhetorical counterfactual as a counterfactual with impossible antecedent

In this section, I argue that there is another factor that contributes to rhetorical reading of the counterfactual: impossible antecedent. I propose that among the falsity of the antecedent, there are “impossible antecedents” that give rise to the different implication (namely, the rhetorical reading) in the counterfactual conditional.

##### 4.1 English counterfactual with “only if”

I have shown that the denotation of the rhetorical counterfactual found in *-koso -e* construction in old Japanese is equivalent to that of English “*only if... would...*” in which the antecedent is a necessary condition. Thus, the semantics of “only if” contributes to the rhetorical reading of the counterfactual. However, it is not wholly responsible for rhetorical reading.

There are similar English subjunctive conditionals<sup>6</sup> of the form “*only if... would...*” that allow rhetorical reading as follows:

30) a. Only if I had nine lives, would I dive into the air without fear.

b. Only if you were a perfect person in every sense, would you never have to repent.

Here the rhetorical reading seems salient. In (30a), for example, the sentence means that as I have only one life, I will never dive into the air. In the rhetorical reading, the interpretation

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<sup>6</sup> I would like to thank graduate students of linguistics at the University of Washington who generously provided me with the helpful comments on these data.

requires that the antecedent indicated by “only if” is something unachievable, and as a result, it implies that diving into the air is impossible. Likewise in (30b), the rhetorical reading requires that the antecedent is impossible to achieve and that one must therefore repent.

Though it is true that the semantics of “only if” elicits the rhetorical reading, it is not wholly responsible for the rhetorical reading. In fact, “only if” can be used in the normal conditional or in the counterfactual conditional without eliciting the rhetorical reading:

31) a. Only if the match was scratched, would it be lighted.

b. Only if the butter was heated up to 150° F, would it be melted.

In (31), there is no such implication that the match will never be lighted or that the butter will never be melted. “Only if” being used in the counterfactual conditional, the conditions are presented as necessary to obtain the truth of the consequent in the most similar world.

Why is there such a difference in interpretation between (30) and (31)? In the case of (31), “only if” does not make the antecedent impossible but only imposes the fulfillment of all the conditions that together brings the consequent<sup>7</sup>. So, in what case does the “only if” counterfactual obtain the rhetorical reading and imply the strong denial of the consequent? In the next section, I argue that it is the presupposition that the antecedent is impossible.

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<sup>7</sup> In this case, the antecedent of “only if” is presented as the necessary condition in addition to all other conditions to make the consequent true. In (5a), the other conditions are: there is enough oxygen, the match is dry, etc.

## 4.2 Rhetorical counterfactual has impossible (“unimaginable”) antecedent

In this section, I will argue that the rhetorical reading of the counterfactual is elicited by another factor - an impossible antecedent. Namely, the rhetorical counterfactual conditional presupposes that there are no possible worlds at which the antecedent holds, which implies (from the relation between  $p$  and  $q$  depicted in (28b)) that the consequent is impossible as well.

But exactly in what case is the antecedent impossible and not just false? First, let us assume the following:

32) An impossible proposition is the denial of a necessarily true proposition. A necessarily true proposition is true in all the possible worlds.

33) A false proposition is the denial of a true proposition in the actual world.

An impossible proposition cannot be true in any accessible possible world, whereas a false proposition in the actual world can be a true proposition in some accessible possible world.

Let us consider the “only if” counterfactuals. (34a) is an example of a rhetorical counterfactual and (34b) is an example of a non-rhetorical counterfactual:

34) a. Only if the moon disappeared, would I stop thinking of you.

b. Only if that piece of butter was heated up to 150°F, would it be melted.

What are denied by the premise in (34a-b) are, according to the definition in (32-33), a necessarily true proposition in (35a) and a true proposition in (35b):

35) a. The moon does not disappear. (a necessarily true proposition)

b. That piece of butter is not heated up to 150° F. (a true proposition)

In any normal situation that does not involve unusual circumstances, a necessarily true proposition cannot be made into a counterfactual premise while a true proposition can.

36) a. Only if the moon did not disappear, I would not stop thinking of you.

b. Only if that piece of butter was not heated up to 150° F, it would not be melted.

The truth expressed by the antecedent in (36a) is self-evident and thus nothing contrary-to-fact is hypothesized. However, the truth expressed by the antecedent in (36b) is contingent on facts including the possible changes through time. This explains the differences between the impossible antecedent in (34a) and the false antecedent in (34b).

However, the definition of “impossible proposition” is unsatisfactory because it does not distinguish illogical/contradictory propositions from the impossible proposition that the speaker considers to be false at all the accessible worlds. Let us redefine the notion of “impossible proposition” as follows:

37) An impossible proposition that is based on the contingent matters corresponds to an “unimaginable” proposition. The speaker considers a proposition to be unimaginable when there is no world at which the proposition comes out true among those that are accessible from the actual world.

An unimaginable proposition is accessible but cannot be a true proposition in any accessible possible world. The distinction between a false proposition and an unimaginable proposition can be formalized as follows:

- 38) a. When  $p$  is a false proposition, the speaker believes that there is at least one  $w$  in which  $\llbracket p \rrbracket^w = 1$  among those that are accessible from  $w_0$ .
- b. When  $p$  is an unimaginable proposition, the speaker believes that there is no  $w$  in which  $\llbracket p \rrbracket^w = 1$  among those that are accessible from  $w_0$ .

#### 4.3 Truth conditions of a rhetorical counterfactual conditional

In this section, I show that the semantics of “only if” and the unimaginable proposition in the antecedent are the two factors responsible for the rhetorical reading in the counterfactual conditional. By using the semantics of “only if” and the notion of unimaginable antecedent, I derive: 1) the distinction between the rhetorical counterfactual and the non-rhetorical counterfactual presented in the previous section; and 2) truth conditions of a rhetorical counterfactual.

Let us implement the distinction between false propositions and unimaginable propositions using the examples from (39) and examine how the difference is reflected on their interpretations.

- 39) a. Only if that piece of butter was heated up to 150° F, would it be melted.
- b. Only if the moon disappeared, would I stop thinking of you.

(39a) is the non-rhetorical counterfactual while (39b) is the rhetorical counterfactual that is the equivalent to *-koso -e* construction. As discussed in the previous section, the antecedent in (39a) is a false proposition and the antecedent in (39b) is an unimaginable proposition. So, it is reasonable to assume that unimaginable antecedent contributes to rhetorical reading.

How is it so? Let us review the semantics of “only if,” repeated in (40):

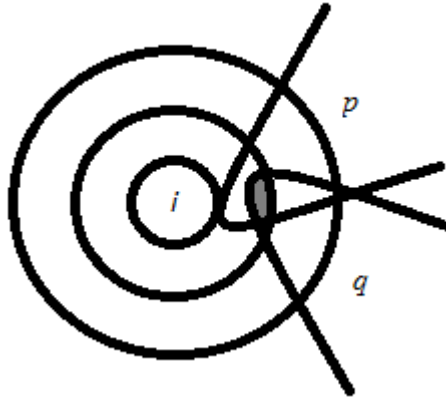
40)  $\llbracket \textit{only if } p, \textit{ would } q \rrbracket^{w_0} = 1$  iff

$\{w: \llbracket q \rrbracket^w = 1 \text{ and } w \text{ is accessible from } w_0\} \subseteq \{w: \llbracket p \rrbracket^w = 1 \text{ and } w \text{ is accessible from } w_0\}$

Let us apply (40) to the propositions in (39). In (39a), the antecedent *p* is a false proposition, as the following holds:

41) There is at least one *w* in which  $\llbracket \textit{the butter is heated up to } 150^\circ \text{ F} \rrbracket^w = 1$  among *w* that are accessible from *w*<sub>0</sub>.

Now, let us express the truth of “only if *p*, would *q*” with the false (but not impossible) antecedent in the diagram in Figure 1. Figure 1 depicts the non-vacuous truth of the non-rhetorical counterfactual of the form “only if *p*, would *q*.”



**Figure 1.**

The truth of the non-rhetorical counterfactual “only if p, would q.”

Figure 1 shows the (non-vacuous) truth of the non-rhetorical counterfactual of the form “only if p, would q.” The shaded area is where the truth of the counterfactual with the false antecedent such as (39a) comes out true. Based on Lewis’s truth condition of the counterfactual of the form “if then,” we have defined the truth condition of the form “*only if... would...*” as follows:

42) Truth condition of the counterfactual conditional “*only if... would...*”

$[[\textit{only if } p, \textit{ would } q]]^{w_0}=1$  iff for all worlds  $w$  accessible from  $w_0$  in  $S$  in which  $[[q]]^w=1$ ,  $[[p]]^w=1$ .

Let us apply this truth condition to the non-rhetorical counterfactual in (39a):

43) The truth condition of (39a)

$[[\textit{Only if that piece of butter was heated up to } 150^\circ\text{F, it would not be melted}]]^{w_0}=1$ , iff

For all the  $w$  accessible from  $w_0$  at which  $[[\textit{the butter melts}]]^w=1$ ,

$[[\textit{the butter is heated up to } 150^\circ\text{ F}]]^w=1$ .

Now let us apply (40) to (39b). The antecedent  $p$  is impossible, as the following holds:

44) There is no  $w$  in which  $\llbracket \textit{the moon disappears} \rrbracket^w = 1$  among  $w$  that are accessible from  $w_0$ .

When a proposition  $p$  is impossible, the set of worlds at which  $p$  is true is empty. When the denotation of  $p$  is empty, it entails that the denotation of  $q$ , a subclass of  $p$ , is also empty.

45) Assume  $\{w: \llbracket q \rrbracket^w = 1 \text{ and } w \text{ is accessible from } w_0\} \subseteq \{w: \llbracket p \rrbracket^w = 1 \text{ and } w \text{ is accessible from } w_0\}$ . Whenever there is no  $w$  in which  $\llbracket p \rrbracket^w = 1$  among  $w$  that are accessible from  $w_0$ , there is no  $w$  in which  $\llbracket q \rrbracket^w = 1$ .

Therefore, the truth condition for the rhetorical counterfactual is derived from the semantics of “*only if*” and the assumption that the antecedent is an unimaginable (impossible) proposition.

When the counterfactual of the form “*only if p, would q*” has an impossible antecedent, the impossibility of the antecedent implies the impossibility of the consequent. What is asserted by the example of a rhetorical counterfactual in (39b) can be stated as follows:

46) Truth condition of (39b)

$\llbracket \textit{only if the moon disappeared, would I stop thinking of you} \rrbracket^{w_0}=1$ , iff

whenever the speaker believes that there is no world  $w$  at which

$\llbracket \textit{the moon disappears} \rrbracket^w=1$  among  $w$  that are accessible from  $w_0$ , there is no world at which  $\llbracket \textit{I stop thinking of you} \rrbracket^w=1$ .

However, this truth condition is unsatisfactory because the impossibility of the antecedent should not be imposed as a part of the truth condition of “*only if...*, *would...*” counterfactual. In the next section, I argue that the rhetorical counterfactual is a marked interpretation of the “*only if...*, *would...*” counterfactual.

#### 4.4 Rhetorical counterfactual as a marked interpretation of the “only if” counterfactual

In this section, let us review the relation between the non-rhetorical interpretation and rhetorical interpretation of the counterfactual of the form “*only if...*, *would...*”. The truth conditions of the “*only if...*, *would...*” counterfactual are summarized as follows:

47)  $\llbracket \textit{only if } p, \textit{ would } q \rrbracket^{w_0}=1$  iff

- i. There is no  $p$ -world that is accessible from the speaker, and  $q \rightarrow p$  holds; or
- ii. Some sphere  $S$  contains at least one  $p$ -world, and  $q \rightarrow p$  holds at every world in  $S$ .

I have argued that the rhetorical counterfactual of the form “-*koso* -*e*” is true if and only if the consequent is impossible when the antecedent is impossible (unimaginable). Thus, the truth condition of the rhetorical counterfactual of the form “...*koso*, ...*e*” has been stated as in (48):

48) Truth condition of the rhetorical counterfactual “...*koso*, ...*e*”

$\llbracket p \text{ *koso*, } q \text{ *e* } \rrbracket^{w_0}=1$  iff whenever there is no world  $w$  at which  $\llbracket p \rrbracket^w=1$  among  $w$  that are accessible from  $w_0$ , there is no world  $w$  at which  $\llbracket q \rrbracket^w=1$ .

However, the problem is that the impossibility of the antecedent cannot be imposed by the semantics of the “*only if* ..., *would* ...” counterfactual; it depends on the speaker’s perception, or the context in which the statement is made. One possible solution is to state that (47i) is the marked interpretation of the “*only if*..., *would*...” counterfactual and that (47ii) is the unmarked interpretation which is provided as a default truth condition<sup>8</sup>.

49) Truth condition of “*only if*..., *would*...”-*koso* -*e*” counterfactual conditional

$\llbracket \textit{only if } p, \textit{ would } q \rrbracket^{w_0}=1$  iff whenever the speaker believes that there is no  $p$ -world among  $w$  that are accessible from  $w_0$ . Otherwise, some sphere  $S$  contains at least one  $p$ -world, and  $q \rightarrow p$  holds at every world in  $S$ .

Now, we can restate (46) as follows:

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<sup>8</sup> I am unable to present the best solution as to how the distinction between the rhetorical and non-rhetorical reading is encoded in grammar. The rhetorical reading has a tone of emphasis while non-rhetorical reading does not. The grammatical mechanism that allows assertion of opposite polarity requires additional research.

50) Truth condition of (39b)

$\llbracket \textit{only if the moon disappeared, would I stop thinking of you} \rrbracket^{w_0}=1$ , iff

whenever there is no world  $w$  at which  $\llbracket \textit{the moon disappears} \rrbracket^w=1$  among  $w$  that are accessible from  $w_0$ , there is no world at which  $\llbracket \textit{I stop thinking of you} \rrbracket^w=1$ . Otherwise, for all the  $w$  accessible from  $w_0$  at which  $\llbracket \textit{I stop thinking of you} \rrbracket^w=1$ ,  $\llbracket \textit{the moon disappears} \rrbracket^w=1$ .

To sum up, the assumed separation between the counterfactual with the false antecedent and the counterfactual with the impossible antecedent works. It explains why some counterfactual conditionals of the form “*only if... would...*” have rhetorical reading and some do not.

Additionally, I have shown that the rhetorical counterfactual is a marked interpretation of the counterfactuals of the forms “*only if... would...*” and “*-koso -e.*”

## 5. Conclusion

I have discussed the semantics of rhetorical counterfactual by introducing examples of conditionals with a special Japanese sentence style called *kakarimusubi* which is extinct in the modern Japanese but once existed in the old Japanese. The rhetorical counterfactual of the form “*-koso -e*” is different from standard counterfactuals of the form “*if... then...*” in the truth condition. What is asserted by the rhetorical counterfactual is a strong denial of the consequent, and the rhetorical counterfactual is rendered true when the impossibility of the antecedent implies the impossibility of the consequent.

First, I have argued that rhetorical reading is elicited by the conditional function “only if.” I have shown that “*-koso -e*” construction in the old Japanese functions as an emphatic marker. When “*-koso*” attaches to the if-clause of the conditional, the conditional of the form “*p-koso, q-e*,” is truth-functionally closest to English “*only if p, would q*.” In this logical form, *p* is a necessary condition rather than a sufficient condition. In the sentential logic, the logical form of “only if *p*, would *q*” is represented as a material conditional  $q \rightarrow p$ .

Secondly, I have shown that another factor that contributes to rhetorical reading is the impossible antecedent. I have made a distinction between the impossible antecedent and the false antecedent by attributing impossibility to the denial of a universally true proposition and falsity to the denial of a true proposition that is subject to change. I have further analyzed that the impossible antecedent means “unimaginable” proposition, which is accessible from the speaker but there is no possible world at which the antecedent holds. Thus, the truth condition of the rhetorical counterfactual is given non-vacuously.

I have proposed that the rhetorical counterfactual is best explained as a marked interpretation of the counterfactual conditional of the form “*only if..., would...*” and “*...koso, ...e*.” The impossibility of the antecedent is only introduced as a marked case when the speaker feels that the antecedent is an impossible proposition. Otherwise, we will evaluate the counterfactual by the default truth condition, which is the revised truth condition of the “*only if..., would...*” counterfactual based on Lewis’s theory. From these truth conditions, the semantics of the rhetorical counterfactual is derived from the semantics of the “*only if..., would...*” counterfactual with the assumed impossibility of the antecedent.

The hallmark characteristic of counterfactual is the obvious falsity of the antecedent. I made a distinction among these ‘false antecedents’ in counterfactuals: one is to be a possible

truth at the closest possible world, and the other is simply impossible and cannot be true at any accessible worlds. The separation of the impossible antecedent from the false antecedent provides the effective way to describe the semantics of the rhetorical counterfactual which is found in the old Japanese language.

## References:

- Arita, S. (1993). "Nihongo Jokenbun Kenkyu no Hensen," in Masuoka, T. eds., 1993 *Nihongo no Joken Hyogen*, Kuroshio syuppan.
- Forbes, G. (1994). *Modern Logic, A Text in Elementary Symbolic Logic*, Oxford University Press.
- Goodman, N. (1946). "The problem of counterfactual conditionals," *The Journal of Philosophy* Vol. 44, No. 5, 113-128.
- Goodman, N. (1983) *Fact, Fiction and Forecast*, Fourth Edition. Harvard University Press.
- Hando, H. (2003a). *Kakarijoshi to kakarimusubi no honshitsu*, Shintensya Kenkyugyosho Vol. 153.
- Hando, H. (2003b). *Kakarimusubi to kakarijoshi*, Daigakukyoku Syuppan.
- Koda, N. (1995). "Kankei Hyogen no Keifu," Shiga Daigaku Kyoiku-gakubu Kiyu II, Vol. 48, 143-155.
- Lewis, D. (2001). *Counterfactuals*, Malden, Mass.: Blackwell Publishers.
- Long, P. (1959). "Modality and Tautology," *Proceedings of the Aristotelian Society*, Vol. 60, 27-36.
- Mori, A. (2007). *Yakubun Manyoshu*, Kasama Shoin.
- Morino T. (2002). "Tokuritsu o okonau koso no henyo o megutte," *Waseda Nihongo Kenkyu* Vol. 10.
- Ohno, S., Satake, A. & Maeda, K. (1993). *Kogojiten* (translated as 'Old Japanese Dictionary' in English), fourth edition, Iwanami.
- Stalnaker, R. (1986). "A Theory of Conditionals," in William L. Harper, et al., eds., 1981 *Ifs*, Dordrecht: Reidel.