

Asserting a scalar ordering: The non-temporal interpretation of *mae**

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Abstract

This paper argues that a non-temporal interpretation of *mae* ‘before’ in Japanese includes scalar ordering, but the scalar aspect of the non-temporal interpretation is neither an implicature nor a presupposition. The non-temporal *mae* ‘before’ asserts a scalar ordering of two propositions, with respect to an attitude holder’s belief about degrees of precision, instead of temporal precedence. It will also be argued that the non-temporal *mae* is syntactically different from the temporal one in that the former takes a VP as its complement.

1 Introduction

As shown in (1), Japanese has the temporal connective *mae* ‘before’, which determines a temporal order between two events.¹ In what follows, Δ stands for a covert noun coindexed with the subject of the matrix clause.

- (1) Temporal use of *mae* ‘before’
[Δ_1 *nemuru*] *mae-ni* [*Mary₁-wa tegami-o kaita*]
sleeps before-LOC Mary-TOP letter-ACC wrote
‘Mary wrote a letter before sleeping.’

This study focuses on a non-temporal use of *mae* ‘before’, which has received little attention in the literature. (2) is an example of the non-temporal use of *mae* ‘before’.

- (2) Non-temporal use of *mae* ‘before’
[Δ_1 *kyoosi dearu*] *mae-ni* [*Mary₁-wa kenkyusya desu yo*]
teacher COP before-LOC Mary-TOP researcher COP.POL SFP
Lit. ‘Mary is a researcher before she is a teacher.’
‘Mary is more a researcher rather than a teacher.’

It has been observed that *mae* only combine with a non-stative predicate under the temporal interpretation. (See [10] for an analysis of this property of the temporal use of *mae*.) Due to this selectional property of *mae*, (2) cannot receive a temporal interpretation, and only the non-temporal interpretation is available.

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¹The abbreviations used in this article are as follows: ACC = accusative; COP = copular; CONJ = conjunctive form; GEN = genitive; LOC = locative marker; NEG = negation; NOM = nominative; POL = politeness marker; PRS = present tense; PST = past tense; SFP = sentence final particle; TOP = topic marker

Under the non-temporal interpretation, we compare two propositions with respect to degrees of precision, instead of temporal precedence. For example, (2) is felicitous in the following context.

- (3) Context: Mary is a faculty member of the linguistic department. She has too many classes to teach, and she does not have time to do her own research. One day, John, Mary's friend in the department, made a complaint about her working condition to the head of the department.

In this context, a relevant scale is related to speaker's belief about degrees of precision. Hanako believes that the proposition that Mary is a researcher is more precise than the proposition that Mary is a teacher.

The non-temporal meaning of an item meaning "before" is observed in Romance languages such as Italian and Spanish. (4) is an example from Italian.

- (4) Italian
Maria è una ricercatrice prima di essere un insegnante.
 Maria is a researcher before of to.be a teacher
 'Maria is more a researcher rather than a teacher.'

This paper argues that a core aspect of the non-temporal interpretation of *mae* 'before' is scalar ordering. By comparing the non-temporal use of *mae* with the metalinguistics and the epistemic comparatives, it will be shown that the scalar meaning of the non-temporal interpretation is neither an implicature nor a presupposition. Rather, the non-temporal *mae* 'before' asserts a scalar ordering of two propositions with respect to attitude holder's belief.

2 Characteristics of the non-temporal use of *mae*

2.1 The non-temporal use vs. the temporal use

There are pieces of evidence that the non-temporal use of *mae* must be distinguished from the temporal use. First, the non-temporal *mae* cannot be modified by a measure phrase. As shown in (5a), a measure phrase can precede *mae* under the temporal interpretation. In (5a), the measure phrase specifies the range of a temporal gap between two events.

- (5) a. [Δ_1 *nemuru*] *ichi-zikan mae-ni* [*Mary₁-wa nikki-o kaku*]
 sleeps one-hour before-LOC Mary-TOP diary-ACC write
 'Mary writes her diary one hour before she sleeps.'
- b. * [Δ_1 *kyoosi dearu*] *ichi-zikan mae-ni* [*Mary₁-wa kenkyuusya dearu*]
 teacher COP one-hour before-LOC Mary-TOP researcher COP

On the other hand, the non-temporal *mae* cannot co-occur with a measure phrase, as in (5b).

Second, the non-temporal *mae* requires a predicate in its complement clause be a present tense form. Under the temporal interpretation, a past tense form cannot be used when a predicate immediately precedes *mae*, as in (6a). However, if *mae* and its complement clause are not adjacent to each other, this restriction is relaxed, as in (6b).

(6) Temporal use of *mae* ‘before’

- a. * [*John-ga kita*] *mae-ni Mary-wa kaetta*
 John-NOM came before-LOC Mary-TOP went.home
 ‘Mary went home before John came.’
- b. [*John-ga kita*] *sono mae-ni Mary-wa kaetta*
 John-NOM came its before-LOC Mary-TOP went.home
 Lit. ‘Mary went home its before John came.’
 ‘Mary went home before the time when John came.’

In contrast, the non-temporal *mae* cannot co-occur with a past tense form, even when a complement clause is not adjacent to it. As shown in (7b), a past tense form makes the sentence ungrammatical even if there is an intervening item between *mae* and its complement clause.

(7) Non-temporal use of *mae* ‘before’

- a. * [Δ_1 *kasyu deatta*] *mae-ni Mary₁-wa hahaoya deatta*.
 singer COP.PST before-LOC Mary-TOP mother COP.PST
 ‘Mary was more of a researcher rather than she was a teacher.’
- b. * [Δ_1 *kasyu deatta*] *sono mae-ni Mary₁-wa hahaoya deatta*.
 singer COP.PST its before-LOC Mary-TOP mother COP.PST
 Lit. ‘Mary was a singer before the time when she was a mother’
 ‘Mary was more of a researcher rather than she was a teacher.’

Third, an external argument cannot be realized in an adverbial clause under the non-temporal use of *mae*. As shown in (8a), an external argument can be realized in a temporal clause. On the other hand, non-temporal *mae* does not allow the presence of an external argument in its complement clause, as in (8b). Notice also that although an external argument cannot be overtly realized in a non-temporal clause, it must be interpreted as the same referent of the external argument in the main clause, as can be seen in the translation of (2).

(8) a. Temporal use of *mae* ‘before’

Mary₁-wa [kanozyo₁-ga sinu] mae-ni isyo-o kaita.
 Mary-TOP she-NOM die before-LOC will-ACC wrote
 ‘Mary wrote her will before she died.’

b. Non-temporal use of *mae* ‘before’

* *Mary₁-wa [kanozyo₁-ga kyoosi dearu] mae-ni kenkyuusya dearu*.
 Mary-TOP she-NOM teacher COP before-LOC researcher COP
 ‘Mary is more a researcher rather than a teacher.’

These data indicate that the non-temporal interpretation of *mae* is not derived from its temporal interpretation. The non-temporal use must be distinguished from the temporal use.

2.2 The non-temporal use vs. metalinguistic comparatives

One might consider that the non-temporal interpretation is an example of metalinguistic comparatives (for analyses of metalinguistic comparatives, see [1], [9], [2], and references therein). However, there are some properties observed only in the non-temporal use of *mae*.

First, the non-temporal use of *mae* is different from metalinguistic comparatives (hereafter MCs) in that compared propositions are entailed in the non-temporal use of *mae*. [1] and [9] observe that a compared proposition is not entailed in English and Greek MCs, and hence

cancelable. Japanese MCs also have the same property. (9a) is an example of Japanese MCs. (9b) denies the proposition that Mary is a teacher, and (9c) denies the proposition that Mary is a researcher. These sentences can be uttered after (9a).

- (9) a. Metalinguistic comparatives
Mary-wa kyoosi toyuu-yori kenkyuusya dearu.
 Mary-TOP teacher COMP.say-than researcher COP
 ‘Mary is more of a researcher rather than she is a teacher.’
- b. *honntoo-wa kyoosi-de-wa nai kedo ne.*
 really teacher-COP-TOP NEG but SFP
 ‘To tell the truth, she is not a teacher, though.’
- c. *honntoo-wa kenkyuusya-de-wa nai kedo ne.*
 really researcher-COP-TOP NEG but SFP
 ‘To tell the truth, she is not a researcher, though.’

In contrast, compared propositions in the non-temporal *mae* cannot be canceled. (10b,c) are infelicitous after (10a).

- (10) a. Non-temporal use of *mae*
 $[\Delta_1 \text{ kyoosi dearu}] \text{ mae-ni } [Mary_1\text{-wa kenkyuusya dearu}]$
 teacher COP before-LOC Mary-TOP researcher COP
 ‘Mary is more a researcher rather than a teacher.’
- b. # *honntoo-wa kyoosi-de-wa nai kedo ne.*
 really teacher-COP-TOP NEG but SFP
 ‘To tell the truth, she is not a teacher, though.’
- c. # *honntoo-wa kenkyuusya-de-wa nai kedo ne.*
 really researcher-COP-TOP NEG but SFP
 ‘To tell the truth, she is not a researcher, though.’

The infelicity of (10b,c) shows that compared propositions are entailed. There is another piece of evidence that compared propositions must be entailed under the non-temporal interpretation of *mae*. (11) is an example of German MCs, excerpted from [8].

- (11) German
Das is eher eine japanische als eine chinesische Maschine.
 this is more a Japanese than a Chinese machine
 ‘This is more likely a Japanese than a Chinese machine.’

A similar example of MCs in Japanese is given in (12a). However, we cannot express the same meaning by using the non-temporal *mae*, as can be seen in (12b).

- (12) a. Metalinguistic comparatives
kore-wa kokusansya to-yuu yori gaisya dearu.
 this-TOP domestic.car COMP-say than foreign.car COP
 ‘This is more a foreign car rather than a domestic car.’
- b. Non-temporal use of *mae*
 **kore-wa kokusansya dearu mae-ni gaisya dearu.*
 this-TOP domestic.car COMP-say than foreign.car COP
 Int. ‘This is more a foreign car rather than a domestic car.’

I suggest that (12b) is unacceptable because a single car generally cannot be a domestic one and a foreign one at the same time. Under the present analysis, compared propositions are presupposed in the non-temporal *mae*. If compared propositions cannot be true at the same time, the resulting sentence becomes unacceptable. This restriction is not observed in MCs. The contrast between (12a,b) thus shows that compared propositions in the non-temporal use of *mae* are entailed, in contrast to MCs.

Second, only a nominal predicate can be used in the complement clause of the non-temporal *mae*. [9] observes that English MCs are cross-categorical and can compare different syntactic categories. Again, the same behavior holds in Japanese MCs. In (13a), an adjectival predicate is used, and the sentence is acceptable. On the other hand, when an adjectival predicate occurs in the complement clause of the non-temporal *mae*, the resulting sentence is unacceptable, as in (13b). Remember that temporal use of *mae* is incompatible with stative predicates, and the temporal interpretation is unavailable in (13b).

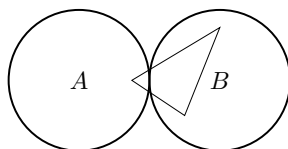
- (13) a. Metalinguistic comparatives
 [Δ_1 [_{AP} *kasikoi*] *to-yuu* *yor* [_{Mary₁-wa} [_{AP} *zurui*]]
 clever COMP-say than Mary-TOP sly
 ‘Mary is more clever than sly.’
- b. Non-temporal use of *mae*
 ?*[Δ_1 [_{AP} *kasikoi*] *mae-ni* [_{Mary₁-wa} [_{AP} *zurui*]]
 clever before-LOC Mary-TOP sly
 Int. ‘Mary is more clever than sly.’

Notice that this restriction on the type of predicate holds in the complement clause of *mae*, but not in the matrix clause that an adverbial clause attaches to. In (14a), an adjectival predicate is used in the complement clause of *mae*. In this case, the sentence is unacceptable even though the matrix predicate is nominal. On the other hand, if a nominal predicate is used in the complement clause of *mae*, the sentence is acceptable as in (14b). Notice that the matrix predicate is an adjective in (14b).

- (14) a.*[Δ_1 [_{AP} *kasikoi*] *mae-ni* (*somosomo*) [_{Mary₁-wa} [_{NP} *kinben*] *dearu*]
 clever before-LOC to.begin.with Mary-TOP industrious COP
 Int. ‘(To begin with,) Mary is more industrious than clever.’
- b. [Δ_1 [_{NP} *kinben*] *dearu*] *mae-ni* (*somosomo*) [_{Mary₁-wa} [_{AP} *kasikoi*]]
 industrious COP before-LOC to.begin.with Mary-TOP clever
 ‘(To begin with,) Mary is more clever than industrious.’

Verbal predicates also cannot be used in the complement clause of the non-temporal *mae*. Let us consider the figure in (15).

(15)



We can describe (15) by using a MC as in (16a). On the other hand, the non-temporal *mae* cannot be used to describe the figure in (15). (16b) is unacceptable.

- (16) a. Metalinguistic comparatives
sankaku-wa en A-ni kasanat-teiru to-yuu yori
 triangle-TOP circle A-with overlap-ASP COMP-say than
en B-ni kasanat-teiru.
 circle A-with overlap-ASP
 ‘A triangle is overlapping with the circle B rather than the circle A.’
- b. Non-temporal use of *mae*
 **sankaku-wa en A-ni kasanat-teiru mae-ni en B-ni kasanat-teiru.*
 triangle-TOP circle A-with overlap-ASP before-LOC circle A-with overlap-ASP
 ‘A triangle is overlapping with the circle B rather than the circle A.’

Notice that compared propositions in (16) are independently true, and the semantic requirement of the non-temporal use of *mae* is satisfied. (17) is true in the context.

- (17) *sankaku-wa { en A-ni | en B-ni } kasanat-teiru.*
 triangle-TOP circle A-with circle B-with overlap-ASP
 ‘A triangle is overlapping {with the circle A | with the circle B}.’

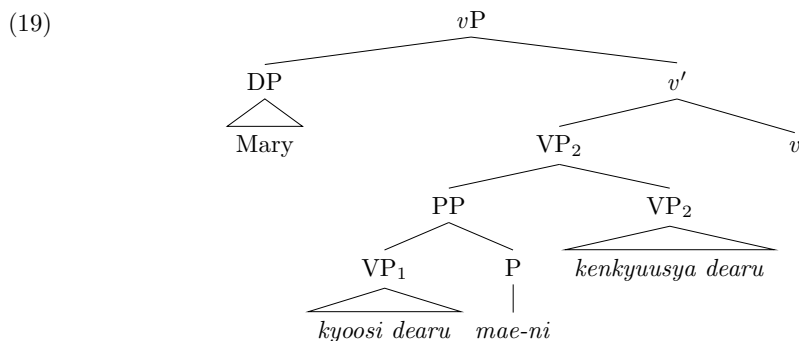
This means that there is no presupposition failure in (16). Nevertheless, (16b) is unacceptable. The unacceptability of (16b) can be captured if we assume that the non-temporal use of *mae* requires a nominal predicate in its complement clause. It seems that a similar restriction on predicates is observed in Italian. My consultant found that (18) is unacceptable, although the degradedness of (18) seems to be subject to speaker variation.

- (18) Italian
 ?* *Giovanni è intelligente prima di essere giovane.*
 Giovanni is clever before of to.be young
 Int. ‘Giovanni is more clever rather than young.’

To sum up, the data in this section indicate that the non-temporal use of *mae* is different from MCs in several respects.

3 Analysis

I propose that the non-temporal *mae* ‘before’ takes a VP as its complement. A *mae*-clause then attaches to another VP. The structure of (2) is given in (19). Following [3], I assume that an external argument is merged as a specifier of *vP*.



Semantically, I would like to pursue an analysis in which the non-temporal *mae* compares two propositions based on attitude holder's belief about degrees of precision. The semantic denotation of the non-temporal *mae* is given in (20). Here, ε is the type of events and t is the type of truth values. The non-temporal *mae* asserts a scalar ordering, and ' $p <_{\pi} q$ ' roughly means that an attitude holder believes that p is more precise than q .

$$(20) \quad \llbracket mae \rrbracket^{w, c, g} = \lambda P \in D_{\langle \varepsilon, t \rangle} . \lambda Q \in D_{\langle \varepsilon, t \rangle} . \lambda e \in D_{\varepsilon} : P(e) \wedge Q(e) . [P(e) <_{\pi} Q(e)]$$

The proposal can capture the properties of the non-temporal use of *mae*. The complement clause of the non-temporal *mae* is a VP under the present analysis. I assume that when a VP is not c-commanded by the head of TP, a verb has a present tense form in Japanese. With this assumption, a verb cannot be a past tense form under the non-temporal interpretation of *mae* because there is no TP in the complement clause of the non-temporal *mae*. Notice that the restriction on tense morphology is observed in other languages as well. For example, finite clauses cannot be used in a non-temporal adverbial clause in Italian, as shown in (21).

- (21) Italian
 **Maria è una ricercatrice prima che sia un insegnante.*
 Maria is a researcher before that be.3SG.PRS.SUBJ a teacher
 'Mary is more of a researcher rather than she is a teacher.'

(21) is reminiscent of the restriction observed in the non-temporal use of *mae*. The unacceptability of (21) can be captured by assuming that the non-temporal *prima* also selects a defective clause, but not a full finite clause.

The absence of a TP can capture the other properties of the non-temporal use of *mae*. A measure phrase that specifies the range of a temporal gap between two events cannot be used because there is no information about tense due to the absence of a TP. The non-temporal *mae* takes a VP as its complement, and there is no position for an external argument in an adverbial clause. Therefore, an external argument cannot be realized under the non-temporal interpretation.² However, an external argument in the complement clause of the non-temporal *mae* must be coindexed with the subject of the matrix clause. Two VPs semantically share their external arguments because of the AGENT function introduced by the *v* head.

Remember that two compared propositions must be entailed under the non-temporal interpretation. I suggest that compared propositions cannot be canceled because they are presuppositions, in contrast to MCs.

Under the present analysis, the scalar meaning is encoded in the at-issue meaning. There is a piece of evidence for this assumption. As shown in (22), negation can scope over only the scalar aspect of the non-temporal interpretation.

- (22) Non-temporal *mae* 'before'
Mary₁-wa [Δ_1 *kyoosi dearu*] *mae-ni kenkyuusya de-nai.*
 Mary-TOP teacher COP before-LOC researcher COP-NEG
 'Mary not is more a researcher rather than a teacher.'

(22) does not mean that the speaker believes that "Mary is not a teacher" is more precise than "Mary is a researcher". Under this interpretation, negation takes scope over the proposition expressed by an adverbial clause. Moreover, negation cannot take scope over the matrix clause,

²See [11] for an analysis of reduced clausal metacomparatives in Greek. It seems that his analysis cannot be applied to the non-temporal use of *mae* because an external argument cannot be overtly realized even when the parallelism requirement on ellipsis is respected.

excluding an adverbial clause. (22) does not mean that the speaker believes that “Mary is a teacher” is more precise than “Mary is not a researcher”. If the compared two propositions belong to the at-issue meaning, the unavailability of these interpretations is not expected. Based on this, I assume that compared propositions are presupposed. (22) is true only when the speaker believes that it is not true that “Mary is a researcher” is more precise than “Mary is a teacher”. Under this interpretation, negation takes scope only over a scalar aspect of the non-temporal interpretation.

4 A loose end: comparison with epistemic comparatives

It is observed that epistemic comparatives are relativized to an attitude holder ([7]). In this respect, the non-temporal use of *mae* is similar to epistemic comparatives. For instance, a scale ordering is defined according to John rather than the speaker in (23).

- (23) a. *John-wa [Mary₁-wa [Δ_1 kyoosi dearu mae-ni] kenkyuusya dearu] to*
 John-TOP Mary-TOP teacher COP before-LOC researcher COP COMP
omot-teiru
 think-ASP
 Lit. ‘John thinks that Mary is a researcher before she is a teacher.’
 ‘John thinks that Mary is more a researcher rather than a teacher.’
- b. *John-niyoruto [Δ_1 kyoosi dearu mae-ni Mary₁-wa kenkyuusya dearu]*
 John-according.to teacher COP before-LOC Mary-TOP researcher COP
 Lit. ‘According to John, Mary is a researcher before she is a teacher.’
 ‘According to John, Mary is more a researcher rather than a teacher.’

The sentences in (23) are true regardless of whether or not the speaker believes that the proposition that Mary is a researcher is more precise than the proposition that Mary is a teacher. John’s belief is crucial for the felicity of (23a,b).

However, it seems that the non-temporal use of *mae* is not an example of epistemic comparatives. First, [7] observes that the simple indicative present cannot be used in Italian epistemic comparatives. (24) is excerpted from [7].

- (24) Italian
 **Gianni è in ufficio piuttosto che a casa.*
 Gianni is in office sooner than at home
 Int. ‘It is more plausible_{speaker} that Gianni is at work than at home.’

As for the non-temporal use of *prima*, this type of restriction is not observed. An example of the non-temporal use of *prima* is repeated here as (25).

- (25) Italian
Maria è una ricercatrice prima di essere un insegnante.
 Maria is a researcher before of to.be a teacher
 ‘Maria is more of a researcher rather than she is a teacher.’

Second, [5] observes that German epistemic comparatives are incompatible with first person desire reports. Their example is given in (26).

(26) German

#*Ich will eher nach Wien fahren als in Bregenz bleiben.*
 I want EHER to Wien travel than in Bregenz stay
 Int. ‘I prefer go to Vienna than stay in Bregenz.’

[5] argues that (26) is infelicitous because of a semantic conflict. Epistemic comparatives are felicitous when there is no direct evidence. However, preference generally requires self-awareness, and self-awareness is seen as direct evidence when it comes to a comparison of epistemic confidence in one’s desires. Importantly, this kind of conflict is not observed in the non-temporal interpretation of *mae*, as in (27).

(27) Non-temporal use of *mae* ‘before’

[Δ_1 *kasyu dearu*] *mae-ni watasi₁-wa zyoyuu deari-tai.*
 singer COP before-LOC I-TOP actress COP.CONJ-want
 ‘I want to be more an actress rather than a singer.’

(27) is acceptable and roughly means that the speaker wants to make the proposition “I am an actress” to be a more precise description than the proposition “I am a singer”. Notice also that German epistemic comparatives cannot be used in the context given in (3), as in (28).

(28) Context: Mary is a faculty member of the linguistic department. She has too many classes to teach, and she does not have time to do her own research. One day, John, Mary’s friend in the department, made a complaint about her working condition to the head of the department.

#*Marie ist eher eine Forscherin als sie Lehrerin ist.*
 Marie is more a researcher than she teacher is
 ‘Mary is more a researcher than a teacher.’

Based on these data, I conclude that the non-temporal interpretation discussed in this paper should be distinguished from epistemic comparatives, although they share some properties.

Lastly, let me make a brief comment on an asymmetry between BEFORE and AFTER, regarding availability of the non-temporal uses. To the best of my knowledge, there is no language in which AFTER derives a non-temporal interpretation like BEFORE. It has been observed that there are asymmetries between BEFORE and AFTER (see [4], [6] and references therein). The non-temporal uses may be counted as another asymmetry between BEFORE and AFTER.

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