1. Introduction

In a previous study I proposed another category of modality which I called Cognitive Modality: Causal, Temporal and Hypothetical, in order to explain sufficiently the meaning of conditional expressions in Japanese and Thai. In this paper, I focus on the logical constructions of conditional sentences and the functions of conditional expressions used in these sentences in both languages; namely, th̀̀a, hààk, m̀̀uàa and ph̀̀o in Thai and ba, to, tara and nara in Japanese respectively. The term logical construction used in this paper means the mental attitude of the speaker at the moment of utterance (I use P to refer to the antecedent and Q to refer to the consequence of a conditional sentence).

Look at the following sentences:

(1) Jikan ga at tara, sentorea kuukoo e kengaku ni ikitai desu ne.
(2) Eki ni tsui tara denwa o shite kudasai.
(3) Kinoo Tookyoo e it tara Yamada san to atta.

If we translate (1) into Thai, it will be as (1)’

(1)’ th̀̀a m̀̀i wee-laa ỳ̀aak pay th̀̀aaw s̀̀a-nâam-bin s̀̀en-th̀̀râ-aae na.

Any native speaker of Thai will know that (1)’ is a hypothetical sentence.

When one translates sentence (2) into Thai, one would add l̀̀aew (which expresses the meaning of completion ) after th̀̀a since sentence (2) holds the meaning of temporal supposition.

(2)’ th̀̀a th̀̀ung s̀̀a-th̀̀a-niì l̀̀aew ch̀̀uay thoo-râ-sàp maa na.

In the case of sentence (2)’, the word th̀̀a does not convey a hypothetical meaning anymore. Therefore th̀̀a can be omitted leaving l̀̀aew alone to express temporal relation of P and Q. In sentence (3), the word tara in Japanese is used. However, this sentence will be expressed in Thai by using the word t̀̀on, ph̀̀o or m̀̀uàa as shown below:
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(3)’ a. toon pay too-kiaaw chan phop khun yaa-maa-da dooy baar-soon.
   b. muaa pay too-kiaaw chan phop khun yaa-maa-da dooy baar-soon.

One should notice that in (3)’, both a and b express the time of the occurrences in Q. However, both toon and muaa do not hold the meaning of being surprised as in tara in Japanese. Thus, the adverb dooy baar-soon (unexpectedly) is required.

Let’s look at sentence (4) below:

(4) Mado o aketara/to, yuki ga futte ita.
    When I opened the window, I found that it had been snowing.

In the case of sentence (4), the action of opening the window in P and the discovery in Q occur in an instant. Thus, phoo is used instead of toon and muaa. Panthumetha (1984) explains the meaning of muaa that it denotes the occurrences in P and Q taking place at the same time. However, this does not imply that the two occurrences happen in an instant. (Nakagawa p.114)

(4)’ phoo pote na-taaw koo phop waaw hii-ma tok.
    When I opened the window, I found that it had been snowing.

Look at sentence (5) and sentence (6) of Japanese and the translations in Thai below:

(5) Haru ga kureba/to, hana ga saku.
    When spring comes, the cherry trees blossom.
(5)’ muaa/phoo thun ruj-duu baay-mayphit dook-may koo baan.

(6) Taro wa okane ga aru to, ryokoo o suru.
    Whenever Taro has money, he goes traveling.
(6)’ phoo thaa-rdo mi haaen koo pay thaaaw.

Sentence (5) and sentence (6) denote a causal meaning, that is, whenever P takes place Q will occur.

2. Cognitive Modality

Most grammarians explain the modality of conditional expressions in Japanese on the basis of objectivity and subjectivity. However, as illustrated in the sentences above, it is obvious that if one judges from the standpoint of objectivity and subjectivity this would not adequately explain Japanese conditionals and this applies to Thai conditional expressions as well. In the previous study, I proposed that in order to explain the meaning of conditional expressions in Japanese and Thai, one should know the speaker’s knowledge of what is true or not true in the domains of realis and irrealis. As Palmer (1986) points out, in conditionals, there exist subcategories of the speaker’s mental attitude. Thus, in the previous study I proposed another scale of mental attitude of the speaker along the scale of subjectivity and objectivity and this is the scale of what I call Cognitive Modality. Thus, the term modality used in the present study means the speaker’s knowledge of P which can be divided into three categories: causal, temporal
and hypothetical. In the previous study, I proposed the scale of cognitive modality which is illustrated in Fig.1. It should be mentioned here that unlike Akatsuka (1983), in this study both the domains of realis and irrealis are in the subjective world and they are on a continuum. The definitions of the three categories of modality are as follows:

a) causal modality: At the moment of utterance, the speaker believes that P is a fact and whenever P occurs Q would occur repeatedly; that is, P is the cause of the occurrence in Q as illustrated in sentences (5) and (6) above.

b) temporal modality: At the moment of utterance, the speaker believes that P is true or P will be realized in the future time. This is illustrated in sentence (2) and sentence (3), see p.41.

c) hypothetical modality: At the moment of utterance, the speaker knows that it is possible that P would realize or the speaker knows that it is impossible that P would be realized. Sentence (1) belongs to this category.

**Fig.1:** Japanese and Thai cognitive modality and the epistemic scale

<table>
<thead>
<tr>
<th>Tim / Space</th>
<th>Actual World</th>
<th>Subjective World</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Past</td>
<td>Future</td>
</tr>
<tr>
<td>Actual</td>
<td>Realis</td>
<td>Irrealis</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Linguistic World</th>
</tr>
</thead>
<tbody>
<tr>
<td>realized, unexpected, temporal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Meaning</th>
<th>Actual World</th>
<th>Subjective World</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japanese</td>
<td>tara, to</td>
<td>ba,tara, to</td>
</tr>
<tr>
<td>Thai</td>
<td>mūaaphɔɔ</td>
<td>mūaaphɔɔ, thaa hāak thaa..... lææw</td>
</tr>
</tbody>
</table>

3. Prototypes of conditional expressions
It can be seen that many of the conditional expressions in both Japanese and Thai can be replaced by others. In other words, many conditional expressions have a usage in their own domain and at the same time they can be used in other domains. This notion of expansion has been introduced by Masuoka (1993) In the previous study, I adopted the notion of characteristic expansion in explaining the meaning and usage of these conditional expressions and I divided Cognitive Modality into 3 prototypes, namely “Causal Prototype”, “Temporal Prototype” and “Hypothetical Prototype” as shown in Fig.2
Fig. 2: Prototypes of conditional expressions in Japanese and Thai

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Japanese</th>
<th>Thai</th>
</tr>
</thead>
<tbody>
<tr>
<td>Causal Prototype</td>
<td>ba, to</td>
<td>mūaa, phɔɔ, thāa, hàak</td>
</tr>
<tr>
<td>Temporal Prototype</td>
<td>tara, to</td>
<td>mūaa, phɔɔ, thāa, hàak</td>
</tr>
<tr>
<td>Hypothetical Prototype</td>
<td>ba, to, tara, nara</td>
<td>thāa, hàak, mūaa</td>
</tr>
</tbody>
</table>

4. Logical Constructions of conditional sentences and the functions of conditional expressions

One can observe that each prototype shown in the table above has various expressions. Causal Prototype, for example, has *ba* and *to* in Japanese and *mūaa, phɔɔ, thāa, hàak* in Thai. One question would arise, what is the difference among them? To answer the question, it is significant to find out what the logical construction the conditional sentence has in using each of these expressions.

a) Causal modality

As explained before, causal meaning denotes that at the moment of utterance, the speaker believes that P is a fact and whenever P occurs Q would occur repeatedly; that is, P is the cause of the occurrence in Q. However, let’s look at the following sentences again:

(5) Haru ga kure *ba* /to/, hana ga saku.
    When spring comes, the cherry trees blossom.

(5’) *mūaa* /phɔɔ* thūŋ ruŋ-duu bay-māvphī tɔɔk-māy kɔɔ baan.

(6) Taro wa okane ga aru *to*, ryokoo o suru.
    Whenever Taro has money, he goes traveling.

(6’) *phɔɔ* thā-tōo mii Ṷōan kɔɔ pay thāaw.

One can notice that sentence (5) in both languages indicate general events of which *ba* or *to* is used in Japanese and *mūaa* or *phɔɔ* is used in Thai. In sentence (6), only *to* in Japanese and *phɔɔ* in Thai is used respectively. One can see that in sentence (5), the occurrence in P and the occurrence in Q is related in terms of temporal and it is a general matter while the event in (6) is a specific matter. Look at sentence (7)

(7) pā-kā-tī thāa lūk-khāa mii nōy ráan kɔɔ pít rew.
    Usually when there are few customers, the shop will close early.

We can see that *thāa*, which expresses a hypothetical meaning, can be used in a causal relationship between P and Q especially for specific events. In this case, the word pā-kā-tī (usually) is optional. However, when *thāa* is used, it implies the nuance of possibility.

The logical construction of both general and specific events of causal meaning: The speaker believes that when the occurrence in P is realized, the occurrence in Q will take place and this will occur repeatedly.
The logical constructions of conditional sentences

In Japanese, both *ba* and *to* can be used to denote causal meaning. However, *ba* and *to* in Japanese, as Matsushita (1928) explains, have different nuances. That is *ba* expresses the meaning of causal relation of P and Q on logical reason while *to* denotes the meaning of causal relation between P and Q in the sense of actual event. Thus, one can see that in sentence (6) which is a specific event and the speaker focuses on the actual causal relation of P and Q rather than the time reference as in (5), *to* is used. Surprisingly, in Thai, we can also see that when the speaker focuses on the cause-effect, like *to* in Japanese, *phọọ*, which has the meaning of cause-effect, is used. Thus, the logical construction of the sentence of causal relation expressed by each expression can be categorized as shown in Fig.3 (t is used for true, f is used for false).

![Table](image)

**Fig. 3: The logical constructions of causal modality**

<table>
<thead>
<tr>
<th>Conditional Sentence</th>
<th>Conditional Expressions</th>
<th>P</th>
<th>Q</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japanese</td>
<td><em>ba</em></td>
<td>t</td>
<td>t</td>
<td>logical causal relation</td>
</tr>
<tr>
<td></td>
<td><em>to</em></td>
<td>t</td>
<td>t</td>
<td>actual causal relation</td>
</tr>
<tr>
<td>Thai</td>
<td><em>mùaa</em></td>
<td>t</td>
<td>t</td>
<td>temporal</td>
</tr>
<tr>
<td></td>
<td><em>phọọ</em></td>
<td>t</td>
<td>t</td>
<td>actual causal relation</td>
</tr>
<tr>
<td></td>
<td><em>pàkà-tì... thâa/hàak</em></td>
<td>t</td>
<td>t</td>
<td>possibility</td>
</tr>
</tbody>
</table>

Note that both *to* in Japanese and *phọọ* in Thai are used in statements describing events, in other words, the two words are used for sentences describing propositions in P and Q. Thus, expressions such as demand, request and so forth can not be used with *to* and *phọọ*.

**b) Temporal modality**

Temporal modality means that at the moment of utterance, the speaker believes that P is true or P will be realized. This is illustrated in sentence (2) and sentence (3).

(2) Eki ni tsui *tara* denwa o shite kudasai.
When you arrive at the station, give me a call.

(2)’ *thâa* thünk *sa-thâa-nii lâeaw chuâay thoo-râ-sáp maa ná.

(3) Kinoo Tookyoo e it *tara* Yamada san to atta.
Yesterday when I went to Tokyo, I happened to meet Mr. Yamada.

(3)’ *mùaa* pây too-kiaaw chân phóp khun yaa-maa-dâ dooy bæŋ-noon.

(4) Mado o aketara/*to*, yuki ga futte ita.
When I opened the window, I found that it had been snowing.

(4)’ *phọọ* pàcot nà-tànji phóp wâa hî-mâ tòk.
When I opened the window, I found that it had been snowing.

(8) Taro wa heyâ ni hairu to denki o tsuketa.
When Taro went into the room, he turned on the light.

(8)’ *phọọ* thaa-roo khaâ hööñ kòo pàcot fay.
In Japanese, *tara* has been treated as a conditional expression expressing with a high degree of subjectivity. However, Akatsuka (1983) cites that *tara* also expresses temporal meaning. Sentence (2) is one example of temporal meaning. In this sentence, the speaker believes that the occurrence in P will be realized in the near future and therefore the speaker expresses a request in Q. Since *tara* implies a high degree of subjectivity, it can be used with sentences expressing commands, requests and so forth.

In the Thai language *thāa*, which is usually used to express hypothetical meaning, can be used to express the meaning of temporal when used together with *lāeaw* (which denotes the meaning of completion). When denoting temporal meaning, *thāa* is optional.

Sentence (3) indicates that at the moment of utterance, the speaker knows P is true and it occurred in the past which was an unexpected event. However, since such a sentence expresses an occurrence in the past which can be replaced by *toki* (when), it is included in the temporal category in this study. In Japanese, *tara* and *to* can be used with no significant difference. In Thai, *mūaa* and *phōo* are used with different meanings.

In the case of sentence (4), the action of opening the window in P and the discovery in Q occur in an instant. Thus, *phōo* is used instead of *tōon* and *mūaa*. As mentioned previously, Panthumetha (1984) explains the meaning of *mūaa*, that it denotes the occurrences in P and Q taking place at the same time. However, this does not imply that the two occurrences happen in an instant. (Nakagawa p.114) The meaning of sentence (3) is ambiguous; it could be that meeting Mr. Yamada took place right after having arrived in Tokyo or took place any time during my stay in Tokyo. Therefore *mūaa* and can be used but not *phōo* since *phōo* denotes merely an instant occurrences of P and Q. In sentence (8), the speaker expresses the occurrences in P and Q which occurred in an instant; therefore, *to* and *phōo* are used in Japanese and Thai respectively. See Fig. 4

**Fig. 4:** *The logical constructions of temporal modality*

<table>
<thead>
<tr>
<th>Conditional Sentence</th>
<th>Conditional Expressions</th>
<th>P</th>
<th>Q</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Japanese</strong></td>
<td><em>Tara</em></td>
<td>t</td>
<td>t</td>
<td>temporal</td>
</tr>
<tr>
<td></td>
<td><em>Tara, to</em></td>
<td>t</td>
<td>t</td>
<td>past event : discovery</td>
</tr>
<tr>
<td></td>
<td><em>to</em></td>
<td>t</td>
<td>t</td>
<td>past event: instant</td>
</tr>
<tr>
<td><strong>Thai</strong></td>
<td><em>thāa</em> <em>hāak</em>...<em>lāeaw</em></td>
<td>t</td>
<td>t</td>
<td>temporal</td>
</tr>
<tr>
<td></td>
<td><em>mūaa</em> <em>tōon</em>...<em>doooy ban-saa</em></td>
<td>t</td>
<td>t</td>
<td>past event: discovery -instant</td>
</tr>
<tr>
<td></td>
<td><em>phōo</em></td>
<td>t</td>
<td>t</td>
<td>past event : discovery +instant</td>
</tr>
</tbody>
</table>
c) Hypothetical meaning
At the moment of utterance, the speaker knows that it is possible that P would be realized or the speaker knows that it is impossible that P would be realized. Look at the following sentences:

(1) Jikan ga at taru/ ba, sentorea kuukoo e kengaku ni ikitai desu ne.
If I have time, I would like to go to see Centrair Airport.
(1)’ thāa mii wee-laa yāak pay thīaaw sā-nāam-bin sen-thōā-āee nā.

(9) Hayaku okinai to maniawanai yo.
If you don’t get up early, you won’t be in time.
(9)’ thāa māy rīp tiūun kō cā māy than nā.

(10) motto benkyoo sureba, seiseki ga agaru deshoo.
If you study harder, your grade would probably be better.
(10)’ thāa i hāak /mūaa thō khā-yān riaan kwāa nī khā-āee knhō cā dī khūn.

(11) Yamada san ga dekirunara, watashi mo dekiru.
If Mr. Yamada can do it, I can do it, too.
(11)’ thāa i mūaa khaun yaa -maa-da tham-dāy chān kō tham-dāy.

(12) Edojidai ni umarete ireba, Tokugawa ieyasu ni aeta kamoshirenai.
If I were born in the Edo era, I might have been able to see Ieyasu Tokugawa.
(12)’ thāa/hāak chān kō at nā sā-māy ee-dōo chān āat cā mīi oo-kāat phóp kāp
too-kū-ŋa-wāa ii-ee-yaa-suī kō dāy.

The logical constructions of sentence(1) and (9)~(12) can be explained as follows: The speaker is not certain that P will be realized, but if it is realized, then Q will occur. In Japanese ba is used when the speaker wants to express formality.

In sentence (9), The speaker is not certain that P will be realized, in case it is realized, Q will occur and usually in an undesirable result.

In sentence (10), the speaker utters a sentence expressing logical hypothetical relation between P and Q. Usually, when Q is a desirable result, ba will be used in Japanese while thāa, hāak and mūaa can be used freely.

In sentence (11) in both Japanese and Thai, the speaker utters the sentence after having learned the new information from the listener. The speaker expresses the hypothetical attitude towards the information just learned from the listener implying the meaning that “if what has been told is true, then Q will occur”.

Sentence (12), the speaker knows that P is not true and Q would never be realized. The logical construction of the hypothetical modality can be summarized in Fig. 5.
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**Fig. 5:** The logical constructions of hypothetical modality

<table>
<thead>
<tr>
<th>Conditional Sentence</th>
<th>Conditional Expressions</th>
<th>P</th>
<th>Q</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Japanese</strong></td>
<td><strong>ba</strong></td>
<td>f</td>
<td>f</td>
<td>hypothetical, possible, desirable result, formality</td>
</tr>
<tr>
<td></td>
<td><strong>to</strong></td>
<td>f</td>
<td>f</td>
<td>hypothetical, possible expressing undesirable result</td>
</tr>
<tr>
<td></td>
<td><strong>tara</strong></td>
<td>f</td>
<td>f</td>
<td>hypothetical, possible</td>
</tr>
<tr>
<td></td>
<td><strong>nara</strong></td>
<td>f</td>
<td>f</td>
<td>hypothetical towards information, possible</td>
</tr>
<tr>
<td></td>
<td><strong>ba, to, tara, nara</strong></td>
<td>f</td>
<td>f</td>
<td>hypothetical, impossible</td>
</tr>
<tr>
<td><strong>Thai</strong></td>
<td><strong>thāa, hàak</strong></td>
<td>f</td>
<td>f</td>
<td>hypothetical, possible</td>
</tr>
<tr>
<td></td>
<td><strong>hàak</strong></td>
<td>f</td>
<td>f</td>
<td>hypothetical possible, expressing formality</td>
</tr>
<tr>
<td></td>
<td><strong>thāa, hàak</strong></td>
<td>f</td>
<td>f</td>
<td>hypothetical, impossible</td>
</tr>
<tr>
<td></td>
<td><strong>müaa</strong></td>
<td>f</td>
<td>f</td>
<td>hypothetical towards information, possible</td>
</tr>
</tbody>
</table>

**5. Conclusion**

As illustrated in the examples above, it can be concluded that in explaining Japanese and Thai conditional expressions, it is crucial to examine the mental attitude of the speaker at the moment of utterance towards the realization of P in the domain of realis and irrealis. From this, one can know the semantic characteristics of each expression that can be appropriately used for the suitable conditional sentence to fit its logical construction. The findings of the study of the logical constructions of conditional sentences and the functions of the conditional expressions are as follows:

1) In both Japanese and Thai, conditional expressions in the same prototype; namely causal prototype, temporal prototype and hypothetical prototype have different nuances and functions.

2) In Japanese to has a wide range of usage while in Thai language thāa is used widely with different meanings.

3) tara in Japanese and thāa in Thai share the similarity in that they both express hypothetical as well as temporal meanings. Besides, to in Japanese is similar to phō in Thai in many aspects; they are used to combine two events that occur in an instant and both share the same feature in expressing causal relation of P and Q.

4) ba in Japanese is similar to hàak in Thai as expressing formality.

5) nara and müaa express hypothetical meaning towards the information given by the listener of the conversation.

6) to, tara in Japanese is used in the past event and it expresses the meaning of
discovery an unexpected event. In Thai, *phaa* is used with the same meaning. However, unlike *to* and *tara* in Japanese, *phaa* is used in the case of instant occurrences only. When it is a discovery and the two events in P and Q do not occur in an instant, either *muua...dooy baan-son* or *ten...dooy baan-son* is used.

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