# Constructions of Causation and Reasoning[*]
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## 1. Introduction

This article is concerned with the following three conjunctions of reason in English: *because*, *since* and *for*. It is well known that the conjunction *because* has a causal use, as in (1a), and an inferential use, as in (1b) (Rutherford (1970), Sweetser (1990), Hirose (1991, 1999), Nakau (1994), Dancygier and Sweetser (2000), among many others):

(1)  a.  He's not coming to class because he's sick.

b.  He's not coming to class, because he just called from San Diego.

(Rutherford (1970:97))

The *because*-clause in (1a) expresses the reason why he is not coming to class, while that in (1b) provides a premise from which to draw the conclusion that he is not coming to class.

Not only *because* but also *since* and *for* can introduce some kind of reason, as exemplified below:

(2)  a.  He bought a dog, *since* he was lonely.

b.  We stopped and bought some sandwiches, *for* we were hungry.

(Schourup and Waida (1988:97f.))

In (2a), his loneliness (expressed in the *since*-clause) is a reason for his buying a dog (expressed in the main clause). Similarly, in (2b), our being hungry (expressed in the *for*-clause) is a reason for our stop and purchase of some sandwiches (expressed in the main clause).

The aim of this article is to propose a framework that gives an integrated account of these conjunctions. Section 2 reviews previous studies on *because*, *since* and *for*. In order to give a unified account of these conjunctions, section 3 proposes schematic constructions that the conjunctions in question are used in and argues that it is necessary to consider not only the conjunctions themselves but also what constructions the conjunctions are used in. Section 4 shows how the proposed analysis handles some issues raised in the literature. Section 5 describes in terms of inheritance links (e.g. Goldberg (1995), Hirose (1999)) how the constructions analyzed in section 3 are related to each other and how they are related to other constructions. Section 6 is a brief conclusion.

## 2. Previous Studies

In this section, to show how the conjunctions of reason are treated in previous studies, I

review Sweetser's (1990), Nakau's (1994), and Hirose's (1999) analyses.

## 2.1. Sweetser (1990)

Sweetser argues that *because* and *since* are used in what she calls "content," "epistemic," and "speech-act" domains. These conjunctions, when used in the content domain, connect two real-world situations and the sentence denotes a causal relation between them.[2] In the epistemic domain, the sentence denotes an inferential process, in which the speaker draws the conclusion expressed by the main clause from the premise expressed in the subordinate clause. Used in the speech-act domain, the conjunctions introduce a reason why a certain speech-act is carried out in the main clause. Examples in which these conjunctions are used in the three domains are given below:

(3)  *because*

    a.  content:  John came back because he loved her.

    b.  epistemic:  John loved her, because he came back.

    c.  speech-act:  What are you doing tonight, because there's a good movie on.

(Sweetser (1990:77))

(4)  *since*

    a.  content:  Since John wasn't there, we decided to leave a note for him.

    b.  epistemic:  Since John isn't here, he has (evidently) gone home.

    c.  speech-act:  Since you are so smart, when was George Washington born?

(Sweetser (1990:78))

Sentence (3a) denotes the causal relation between his love and his coming back. In (3b), *because* does not introduce a cause of his love, but rather introduces a premise from which to draw the conclusion that he loved her. In (3c), the *because*-clause conveys the reason for asking what the addressee is doing that night. Likewise, in (4a-c), the *since*-clauses are understood as the reason for our decision, a premise to conclude that he has gone home, and the reason for asking the addressee when George Washington was born, respectively.

Another important discussion Sweetser presents is the correlation between the readings and a comma intonation between the main clause and the subordinate clause. She argues that in the epistemic or the speech-act domain, a comma intonation is required between the main clause and the subordinate clause, whereas in the content domain, a comma intonation is optional. This is because, Sweetser notes, without a comma intonation, sentence-initial main clauses tend to be understood as being presupposed (cf. Chafe (1984)). The main clauses in the epistemic and speech-act domains represent the speaker's logical conclusion and the speech-act being performed by the utterance, respectively. These elements are impossible to be taken as being presupposed. Hence, a comma intonation is required in order to indicate that

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[2] The word "situation" is used as a cover term for both event and state of affairs (cf. Lyons (1977:483)).

sentence-initial main clauses are asserted. Sweetser further notes that although *because* is triply ambiguous, *since* already has a strong tendency towards an epistemic or a speech-act reading, rather than towards a content reading. This seems a particularly important fact, and according to Sweetser, the fact affects the occurrence of *since* in a commaless context.

So far, we have seen Sweetser's analysis on *because* and *since*. Note in passing that although Sweetser does not deal with *for*, it seems that *for* is also used in the three domains, as exemplified below:

(5)  *for*

      a.   content:  John came back, for he loved her.

      b.   epistemic:  John must have loved her, for he came back.

      c.   speech-act:  What are you doing tonight, for there's a good movie on.

In (5a), the *for*-clause denotes the reason why John came back. The *for*-clause in (5b) gives a premise from which to draw the conclusion that John must have loved her. In (5c), the reason for asking the addressee what she is doing tonight is expressed by the *for*-clause. However, Kanbayashi (1989:48) notes that *for* has only an inferential use. This is not surprising if we assume that *for*, like *since*, has a strong tendency towards an epistemic or a speech-act reading.[3] Importantly, Sweetser argues that the conjunctions themselves are not polysemous but pragmatically ambiguous, i.e., one single meaning of the conjunction is pragmatically applied in different ways according to the context. Thus, it is difficult, if not impossible, for the meaning of *for* to be applied in the way to express the real world causation. It is then predictable that *for* is used with a comma intonation. Indeed, *for* has to be used with a comma intonation. In this sense, Sweetser's observation of the correlation between a comma intonation and the reading of the sentence is correct.

True, Sweetser's argument, especially on the correlation between the reading and a comma intonation, is insightful, but there are several problems that need to be solved. First, if, as Sweetser argues, the conjunction *because* itself is pragmatically ambiguous, that is, if *because* may freely be used in the three domains, why can sentence-initial *because*-clauses not be understood as an epistemic or a speech-act conjunction? Consider the following:

(6)    a. * Because the ground is wet, it has rained.             (Hirose (1991:27))

        b. * Because you are a linguist, what do you think of Chomsky?

        (cf. Because it has rained, the ground is wet. (Hirose (1991:27)))

In (6a), the speaker draws the conclusion that it has rained from the premise that the ground is wet. In (6b), the speaker asks about Noam Chomsky, a linguist at MIT, based on the knowledge that linguists in general have a good knowledge of Chomsky. In these cases, as

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[3] For reasons to be discussed in section 3.3, I will eliminate the distinction between the epistemic and speech-act domains and will treat them as a natural class. Then, if, as Kanbayashi observes, *for* has such a strong tendency towards an epistemic reading, it easily gets a speech-act reading, too.

opposed to the parenthesized example of the content domain, sentence-initial *because*-clauses are not allowed. As seen above, Sweetser argues that an essentially unitary semantic entity, e.g. *because*, cannot only be ambiguous but can even have different grammatical behavior, e.g. with or without a comma intonation, when applied to different domains. Turning to the unacceptability of sentence-initial *because*-clauses in (6a, b), we may predict that their unacceptability is also pragmatically conditioned. That is, some pragmatic factors prevent *because*-clauses from being in sentence-initial position. However, Sweetser does not give a clear account of the status of subordinate clauses in the epistemic and speech-act domains, and therefore we need to explain the reason for the unacceptability of (6a, b).

Second, and in the relation of the first question above, *since* may be interpreted as epistemic or speech-act conjunctions even in sentence-initial position. Why do the pragmatic factors that prevent *because*-clauses from being in sentence-initial position, if any, not prevent *since*-clauses from being in sentence-initial position? The relevant examples are repeated below:

(7)  a. Since John isn't here, he has (evidently) gone home.  (= (4b))

  b. Since you are so smart, when was George Washington born?  (= (4c))

The *since*-clause in (7a) conveys the reason for drawing the conclusion that John is not here, and that in (7b) the reason for asking when George Washington was born. Notice that the *since*-clauses precede the main clauses in these examples and that the sentences are perfectly grammatical (cf. (6a, b)). Why should this be so?

Third, while Sweetser acknowledges that *since* already has a strong tendency towards an epistemic or a speech-act reading, she still asserts that it can also express a content causal relation. Why then can *since*, as well as *because*, be used as a content conjunction? Sweetser gives the following paraphrases to sentences (3b, c), where *because* is used as an epistemic- and speech-act-conjunctions, respectively:

(8)  a. The speaker's knowledge of John's return causes the conclusion that John loved her.

  b. I want to know what you are doing tonight because I want to suggest that we go see this good movie.

<div align="right">(Sweetser (1990:77))</div>

The above paraphrases suggest that even in the epistemic and speech-act domains, certain causal relations hold. This is plausible, because the conjunction *because* lexically introduces a cause.[4] That is, while in the content domain, e.g. (3a), sentences express literal causal relations, sentences in the other domains, e.g. (3b, c), can be taken as expressing "metaphoric" causal relations (cf. Hirose (1999)). Thus, following Sweetser, we can say that in the epistemic and

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[4] It is worth noting that the conjunction *because* was originally the prepositional phrase that introduces a cause: *by cause>because*.

speech-act domains, *because*-clauses give a "cause" of drawing a certain conclusion and a "cause" of performing a certain speech act, respectively. We may also note that these causal relations are guaranteed by the conjunction *because*, which lexically expresses causation. It is then mysterious why *since* can also be used in the three domains. *Since*, unlike *because*, does not lexically express a cause (at least in the etymological sense).

I have pointed out three potential problems with Sweetser's (1990) analysis. I will give answers to these questions later on.

### 2.2. Nakau (1994)

Nakau argues that the full sentence meaning consists of the modal component and the propositional component (cf. Lyons (1977)). The modal component is defined as "a mental attitude on the part of the speaker only accessible at the time of utterance (Nakau (1994:42))," and the rest of the elements in a given sentence is a propositional element. His bistructure model of a sentence meaning can be schematized as in (9), where D-MOD indicates discourse modality, S-MOD sentence modality, and PROP proposition:

(9)      [D-MOD [S-MOD [PROP]]][5]

As in (9), Nakau divides the modal expressions into D-MOD and S-MOD: the former is an attitude towards the utterance, and the latter an attitude towards the proposition (Nakau (1994:21)). From this point of view, he observes in detail the mechanism of modifications by adverbial subordinate clauses including *because-* and *since*-clauses.

Crucially, Nakau (1994:101ff.) argues that *because* can be either a propositional element or a marker of D-MOD, while *since* is always a marker of D-MOD. It should be noted that conjunctions as propositional element roughly correspond to Sweetser's content conjunctions, while those as a marker of D-MOD roughly correspond to Sweetser's epistemic/speech-act conjunctions (Nakau (1994:453)). Thus, in terms of Nakau's bistructure model, the semantic structures of sentences (3)-(4) may be illustrated as follows:

(10)    a.    [$_{PROP}$ John came back *because* he loved her].

b.    [$_{S-MOD}$ Φ[$_{PROP}$ John loved her]], [$_{D-MOD}$ *because* [$_{S-MOD}$ Φ [$_{PROP}$ he came back]]].

c.    [$_{S-MOD}$ Φ[$_{PROP}$ What are you doing tonight]], [$_{D-MOD}$ *because* [$_{S-MOD}$ Φ [$_{PROP}$ there's a good movie on]]].

(11)    a.    [$_{D-MOD}$ *Since* [$_{S-MOD}$ Φ [$_{PROP}$ John wasn't there]]], [$_{S-MOD}$ Φ [$_{PROP}$ we decided to leave a note for him]].

b.    [$_{D-MOD}$ *Since* [$_{S-MOD}$ Φ [$_{PROP}$ John isn't here]]], [$_{S-MOD}$ Φ [$_{PROP}$ he has (evidently) gone home]].

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[5] In Nakau's terms, PROP does not have a monolayer structure, as described in (9), but has a quaternary layer structure. However, I simply represent PROP to cover all the layer of the propositional elements because the detailed internal structure of PROP is not necessary for the present discussion. For the detailed internal structure of PROP, see Nakau (1994:15).

    c.   [$_{\text{D-MOD}}$ *Since* [$_{\text{S-MOD}}$ Φ [$_{\text{PROP}}$ you are so smart]]], [$_{\text{S-MOD}}$ Φ [$_{\text{PROP}}$ <u>when was George Washington born</u>]]?

In the above structures, the italicized conjunctions modify the underlined expressions.　In (10a), the *because*-clause is a propositional element that modifies another propositional element.　In (10b, c) and in (11a-c), the *because*- and *since*-clauses are D-MOD elements that by definition restrict S-MOD elements.　In the b-examples, the null elements in the S-MOD slots of the main clause could be filled with what Nakau calls modality of truth judgment, e.g. *I think, must*, and the like, while in the c-examples and (11a), the slot could be fulfilled by some performative expressions, e.g. *I ask you, I say*, and the like.　All of these expressions are, of course, markers of S-MOD (cf. Nakau (1994:54ff.)).

　　　　While Nakau's observation above is thoughtful and is of great help in developing my proposal to be discussed in section 3, it is still unclear why *because* can be either a propositional element or a marker of D-MOD, while *since* is always a marker of D-MOD.　I will explain the reason in section 4.1.

*2.3.　Hirose (1999)*

　　　　Hirose (1999), following Hirose (1991), fully discusses semantic peculiarities of the subject *because*-clause construction as exemplified by a sentence like (12) and describes relations among other related constructions:

　　　　(12)　　　Just because I'm a linguist doesn't mean that I speak many languages.

(Hirose (1999:596))

In the course of his analysis, Hirose suggests the existence of what he calls the causal *because*-clause construction and the inferential *because*-clause construction.　Hirose's observation of the causal *because*-clause construction and the inferential *because*-clause construction is summarized as follows.　The form of the causal *because*-clause construction is [P(,) *because* Q], and its meaning is "the situation Q causes the situation P as a result."　When the cause situation is contextually presupposed, the *because*-clause may precede the main clause, i.e., the form [*Because* P, Q] is possible.　As for the inferential *because*-clause construction, he notes that the form [Q, *because* P] corresponds to the function to present the premise Q from which to draw the conclusion P.　Since the situation expressed in the *because*-clause is newly presented by uttering the sentence, the *because*-clause cannot be contextually presupposed in the inferential *because*-clause construction.　Hence, sentence-initial *because*-clauses are incompatible with the (pragmatic) function of the construction.

　　　　However, Hirose does not investigate these constructions in detail, since his main interest is to discuss semantic peculiarity of the subject *because*-clause construction and to describe how it is related to the causal *because*-clause construction and the inferential *because*-clause construction.　In what follows, based on Hirose's observation of the causal *because*-clause construction and the inferential *because*-clause construction, I will analyze them in more detail

and show that the construction grammar approach not only explains the two uses of *because* but also provides a framework that explains conjunctions of reason in a comprehensive way.

## 3. A Construction Grammar Approach to the Conjunctions of Reason

In this section, I propose and analyze in detail constructions that *because*, *since*, and *for* are used in. In construction grammar, constructions are grammatical categories of form and meaning correspondences (e.g. Goldberg (1995)) and conceptualize our daily experience. Thus, it is helpful to consider how we conceptualize a causal relation and an inferential process.

*3.1.  Causal Relation and Inferential Process*

In this subsection, I am concerned with how we conceptualize a causal relation and an inferential process. First, to see how we conceptualize a causal relation, observe the following example:

(13)  It has rained and the ground is wet.

The sentence may be interpreted as expressing a causal relation among many possible readings (cf. Lakoff (1971), Blakemore and Carston (1999)). In the causal reading, the first conjunct *it has rained* is taken as the cause of the second conjunct *the ground is wet*. Thus, the sentence conveys almost the same meaning as a sentence like *the ground is wet because it has rained*.

What is important here is that the two conjuncts have a strong cohesion and form one proposition as a whole (Blakemore and Carston (1999), cf. Quirk et al. (1972); *combined process*). To see this, observe the following example:

(14)  Did Peter [[tell a lie] and [hurt his friend]]?          (Quirk et al. (1972:592))

What is asked by the sentence is whether the two processes denoted, i.e. *Peter told a lie* and *Peter hurt his friend*, occurred as a single process. Thus, the two coordinated verb phrases are taken as a single process.

Then, the fact that two situations coordinated by *and* are taken as a single process and a causal relation can hold between them, e.g. (13), suggests that given a causal relation, one sees the cause situation and the result situation as a single process.

Next, let us turn to considering how we conceptualize inferential processes. Compare the following examples:

(15)  a.  John broke his leg.  He tripped and fell.

  b.  John broke his leg and tripped and fell.

(Blakemore and Carston (1999))

In (15a), two sentences are simply juxtaposed, and in (15b), these two sentences are coordinated by *and*. Blakemore and Carston suggest that an inferential reading can be obtained in (15a), while in (15b), such an interpretation is not available. That is, sentence (15a) may express an inferential process, in which the speaker concludes that John broke his leg from the premise that he tripped and fell, while sentence (15b) may not. A possible interpretation that sentence (15b)

obtains is, for example, that John broke his leg for some reason *and then* he tripped and fell, i.e., the described situations occur in a temporal sequence. Recall that two situations coordinated by *and* are understood as a single process. The fact that two juxtaposed sentences, e.g. (15a), can describe an inferential process while *and*-conjunctions, e.g. (15b), cannot shows that in an inferential process, the speaker takes two situations separately and relates them based on his knowledge. For example, given the two situations *John broke his leg* and *he tripped and fell*, the speaker restores a relation based on his knowledge that tripping and falling generally cause someone to have a broken bone.

In sum, a causal relation requires the cause situation and the result situation to have a strong cohesion so that they can be understood as a single process, whereas an inference is a process in which the speaker perceives two situations separately and relates them based on his knowledge.

Based on the above observation, in the following subsections, I will investigate two schematic constructions, which I call the causal construction and the reasoning construction, respectively. Here, I use the term "reasoning" rather than "inferential" for the reason to be mentioned in section 3.3.

### 3.2. The Causal Construction

In this subsection, I investigate a schematic construction, which I refer to as the causal construction. The causal construction is defined as follows: the causal relation between P(roposition)$_1$ and P$_2$ is mapped onto either [C$_2$ *because* C$_1$] or [*Because* C$_1$, C$_2$], where C(lause)$_1$ and C$_2$ denote P$_1$ and P$_2$, respectively. That is, the causal construction, of which the schematic meaning of causal relation is specified, has two instances of different syntactic forms. Their form and meaning correspondences can thus be represented as follows:

(16)

| **causal construction** |
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| Sem: "P$_1$ is a cause of P$_2$" |
| Syn: [C$_2$ *because* C$_1$]    [*Because* C$_1$, C$_2$] |
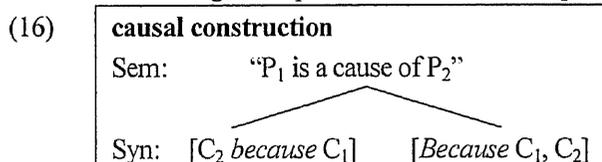
As argued in the previous subsection, in order for a causal relation to hold, the cause situation and the result situation need to be understood as a single process. Since the causal construction represents a causal relation, it must have this property. In what follows, I show that the causal construction has the general property of causal relations by showing that its two instances both have the property.

Let us first consider cases in which *because*-clauses follow the main clauses. Sentence-final causal *because*-clauses are inside the scope of matrix questions. Consider the following example:

(17)    Is the ground wet because it has rained?

The arrow indicates that the rising intonation is used at the end of the sentence. This suggests

that both the main clause and *because*-clause are inside the scope of the matrix question. By uttering this sentence, the speaker does not simply ask whether the ground is wet or not, but asks whether the rain has caused the ground to become wet or not. Thus, sentence (17) performs one speech act as a whole. Therefore, in analogy with the case of *and*-conjunctions, e.g. (14), we can say that the situations described in sentence-initial main clauses and sentence-final *because*-clauses are understood as a single process.

Let us now turn to the construction with sentence-initial *because*-clauses. First, as Hirose (1991, 1999) observes, sentence-initial *because*-clauses generally convey old information. To see this, take the following conversation as an example:

(18)    A:    Why is the ground wet?

B: # Because it has rained, the ground is wet.

B': The ground is wet because it has rained.

The above conversation shows that using sentence-initial *because*-clauses are not appropriate to answer *why*-questions, whereas using sentence-final ones are appropriate. As we have already seen, when sentence-final *because*-clauses are used, the cause situation and the result situation are understood as a single process. Then, the answer given by speaker B', which expresses a causal relation between the rain and the wet ground, is informative to speaker A, even if speaker B' repeats a given piece of information, i.e. the ground is wet (cf. Lambrecht (1994)). On the other hand, speaker B's utterance is not appropriate. The inappropriateness stems from sentence-initial *because*-clauses being presupposed. Although speaker A asks the reason why the ground is wet, the answer given by speaker B, using the sentence-initial *because*-clause, indicates the reason is already known to speaker A. Hence, incompatibility.

Second, not only are sentence-initial *because*-clauses presupposed but also they cannot perform speech acts on their own. Lakoff (1987) observes that speech act constructions do not occur in sentence-initial *because*-clauses.[6] An example is given below:

(19)    *    Because here comes my bus, I'm leaving.                    (Lakoff (1987:474))

In (19), the deictic *here* construction *here comes my bus*, a kind of speech act construction, cannot occur in the sentence-initial *because*-clause. This suggests that sentence-initial *because*-clauses cannot perform speech acts on their own.

Thus, sentence-initial *because*-clauses are presupposed and cannot perform speech acts on their own. In other words, they alone cannot make sense. It is not until the main clause is given that sentence-initial *because*-clauses make sense. Sentence-initial *because*-clauses are thus interpreted depending upon the main clauses following them, and it is in this manner that the two situations described are seen as a single process.

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[6] Note that, as we shall see in section 3.3.1, speech act constructions *do* occur in inferential *because*-clauses. That is, just because *because*-clauses are subordinate clauses, it does not mean that speech act constructions, a.k.a. root transformations (Emonds (1970)) do not occur in them (cf. Hooper and Thompson (1973), Lakoff (1987), etc.).

To sum up, there are two instances of the causal construction, as shown in (16). Whether the *because*-clause is in sentence-final position or in sentence-initial position, the cause situation and the result situation are understood as a single process, which is found in causal relations in general.

### 3.3. The Reasoning Construction

In the previous subsection, I investigated the causal construction. In this subsection, I analyze another schematic construction, which I refer to as the reasoning construction. Before that, however, I make clear the reason for using the term "reasoning" rather than "inferential."

As seen in section 2.1, Sweetser (1990) argues that conjunctions of reason are used in the content, epistemic, and speech-act domains. However, the distinction between the epistemic and speech-act domains, I believe, is not crucial for discussing conjunctions of reason for the three reasons mentioned below. Hence, I do not distinguish the speech-act domain from the epistemic domain, and use the term "reasoning process," rather than "inferential process," as a cover term for causal relations that hold in Sweetser's epistemic and speech-act domains. The reason that I avoid using the word "inference" is that the word seems to refer only to causal relations in the epistemic domain and sounds misleading.

A first reason to eliminate the distinction between the epistemic and speech-act domains is that sentences in these two domains behave so similarly as listed in (20):

(20)   a.   Sentence-initial *because*-clauses are not allowed.[7]   (e.g. Hirose (1991, 1999))

         b.   The main clause and the subordinate clause form two separate intonation units.

                                                          (sections 3.3.1-3.3.2)

         c.   What Lakoff (1987) calls speech act constructions may occur within *because*-clauses used in these domains and *since*-clauses. (sections 3.3.1-3.3.2)

         d.   *Because*-clauses are not nominalized into *because of.*       (section 4.2)

Of the four properties or behaviors listed above, I have already mentioned the first one; the others will be discussed in the sections specified in the parentheses. What is important is that none of them is observed in *because*-clauses used in the content domain. Thus, while the distinction between the content domain, on one hand, and the epistemic and the speech-act

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[7] With an expression that explicitly indicates the speaker's thought or request of information in the main clause, however, some speakers accept sentence-initial *because*-clauses. Examples are given below:

   (i)      Because the ground is wet, {*I think* it has rained/it *must* have rained}.         (cf. (6a))

   (ii)     Because you are a linguist, *I want to know* what you think of Chomsky.        (cf. (6b))

Presumably, such speakers may accept these sentences not as irregular instances of reasoning constructions but as instances of causal constructions. For example, those who can recognize a causal relation between the ground being wet and the speaker concluding that it has rained may accept sentence (i). Without those italicized expression, that is, if a causal relation cannot be recognized at all, the sentences are not acceptable. Therefore, even if the italicized expressions in these examples denote the speaker's thought or request of information, such semantic features are overridden by the sentence forms and the interpretations of the sentences are coerced into the causal ones. For the arguments of coercion, see de Swart (1998) and Michaelis (2004), for example.

domains, on the other, is important, there is no positive reason to distinguish the epistemic domain from the speech-act domain.

A second reason for eliminating their distinction is that in both the epistemic and speech-act domains, a mental attitude on the part of the speaker is involved. In other words, whether such a mental attitude is present or not is important (cf. Nakau (1994)). In the epistemic domain, the speaker draws a conclusion from a given premise. For example, in a sentence like *he's not coming to class, because he just called from San Diego* (= (1b)), the speaker arrives at the conclusion that he *cannot* come to class from the premise that he is in San Diego, a city far away from their school. In the speech-act domain, too, a mental attitude on the part of the speaker must be present, because it is the speaker of the sentence that performs the speech act. Take sentence (3c), repeated as (21), for example:

(21)　　What are you doing tonight, because there's a good movie on.　　　(= (3c))

Suppose that the speaker utters this sentence in order to ask out the addressee that night. The speech act of question in the main clause may be performed according to a script like the following:

(22)　a.　The speaker *knows* that there is a good movie on tonight.

　　　b.　The speaker *wants to* ask the addressee out for the movie if she is not busy tonight.

　　　c.　The appropriate way to do that *must* be asking what she is doing tonight.

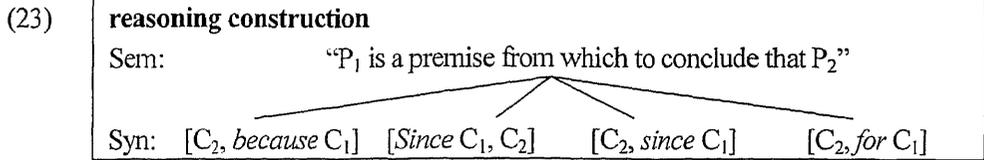　　　d.　The speaker *says*, "What are you doing tonight?"

In the above script, expressions of mental attitudes on the part of the speaker are italicized.

The last reason for not distinguishing the speech-act domain from the epistemic domain is that, as Sweetser (1990) observes, *since* has a strong tendency towards these two readings. This observation suggests that Sweetser herself acknowledges that the distinction between the epistemic and the speech-act domains is less important than the distinction between the content domain and the epistemic/speech-act domains.

For the above reasons, I integrate causal relations that hold in Sweetser's epistemic and speech-act domains and call them reasoning processes. Let us now turn to defining the reasoning construction. The reasoning construction has four instances and they are defined as follows: the reasoning process in which the speaker draws the conclusion (expressed by the main clause) from the premise, i.e. situation described in the subordinate clause, is mapped onto either $[C_2, \text{ because } C_1]$, $[\text{Since } C_1, C_2]$, $[C_2, \text{ since } C_1]$, or $[C_2, \text{ for } C_1]$.[8] That is, the reasoning construction, of which the schematic meaning of reasoning process is specified, has four instances of different syntactic forms, and their form and meaning correspondences can be

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[8] Note incidentally that no matter what form is used, the main clause and the subordinate clause of the reasoning construction are separated by a comma intonation. The presence of the comma intonation symbolically reflects the characteristics of a reasoning process, i.e., the situations described are perceived separately (section 3.1).

represented as follows:

(23)

| reasoning construction |
|---|
| Sem: "P$_1$ is a premise from which to conclude that P$_2$" |
| Syn: [C$_2$, *because* C$_1$]   [*Since* C$_1$, C$_2$]   [C$_2$, *since* C$_1$]   [C$_2$, *for* C$_1$] |

For the convenience of reference, I refer to the reasoning construction in which *because, since* and *for* are used as the reasoning *because* construction, the reasoning *since* construction, and the reasoning *for* construction, respectively.

As one may notice, *since* and *for* are used in the reasoning construction, but not in the causal construction. Then, a question arises: how do we deal with examples in which *since* and *for* are used in Sweetser's content domain, i.e. sentences that express causal relations by *since* or *for*? The relevant examples are repeated below:

(24)  a.  Since John wasn't there, we decided to leave a note for him.          (= (4a))

      b.  John came back, for he loved her.          (= (5a))

According to Sweetser, sentence (24a) describes the causal relations in the real world, and therefore it is an example in which *since* is used in the content domain. Similarly, as seen in section 2.1, *for* may be used in the content domain.[9] Here, I assume following Nakau (1994) that *since*-clauses are always modal expressions. Although sentence (24a) seems to represent real world causation, it does not express the causal relation but expresses the reasoning process. We can explain in the same way the reason that *for* seemingly can express real world causation, assuming, along the line of Kanbayashi (1989), that *for* has only an inferential use. That is, even if it is indeed John's love of Mary that has caused him to come back in the real world, sentence (24b) does not express the causal relation between them but expresses the speaker's reasoning process.

To see the validity of these assumptions, consider the following:

(25)      John died {because/?since/?for} the bullet hit him in the head.

Sentence (25) describes the causal relation between John's death and the bullet hitting him in the head. The causal relation expressed by the sentence is so direct and so easy to understand that it is difficult for the speaker's reasoning to lie between the two situations. In such a context, i.e. a context in which an inferential reading is difficult to gain, *since* and *for* are less acceptable than *because*. Thus, even if it seems that a given sentence expresses a causal relation in the real world, *since*- and *for*-clauses should be understood as providing a premise from which to draw a conclusion.

As discussed in section 3.1, in a reasoning process, two situations or propositions are

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[9] Although, as mentioned in section 2.1, Sweetser (1990) does not discuss *for*, I take sentence (24b) as an example in which *for* is used in the content domain, because the sentence has the same logical meaning as the sentence *John came back because he loved her* (= (3a)).

perceived separately, and they are related based on the speaker's knowledge. Reasoning constructions, conceptualizing reasoning processes, must have this property. In the following subsections, I will investigate the reasoning constructions in detail.

### 3.3.1. Reasoning Because *Constructions*

As described in (23), there are four instances of the reasoning construction. In this subsection, I investigate the reasoning *because* construction. Since *because* is used both in the causal construction and in the reasoning construction, I compare its behaviors in the reasoning construction with those in the causal construction, making clear the difference between these two constructions.

As we have seen in section 3.1, a reasoning process needs two situations independent of each other, and the speaker relates them based on his knowledge. The main clause and the *because*-clause of the reasoning *because* construction should thus be understood as forming separate information units. Assuming that one speech act corresponds to one information unit, I analyze how the reasoning *because* construction forms speech acts to show that the main clause and the *because*-clause form separate information units. First, compared with a question sentence of the causal construction, e.g. (17), that of the reasoning *because* construction has a different intonation pattern. Observe the following question sentence of the reasoning *because* construction:

(26)    Has it rained, because the ground is wet.

As indicated by the arrows, the rising intonation is used at the end of the main clause, and the sentence-final *because*-clause is pronounced with falling intonation. Note also that a period, rather than a question mark, is used. These facts show that the *because*-clause is not inside the scope of matrix question. In (26), then, the main clause performs a speech act on its own, and the *because*-clause another, i.e. the question in the main clause and the statement in the *because*-clause.

A further piece of evidence for the *because*-clause performing a speech act independent of the main clause comes from Lakoff's (1987) observation. Lakoff observes that speech act constructions that convey statements can occur in sentence-final *because*-clauses, as in (27):

(27)    I'm leaving, because here comes my bus!                    (Lakoff (1987:473))

In (27), the deictic *here* construction occurs in the *because*-clause. This means that the *because*-clause performs a speech act on its own.

Note in passing that although Lakoff observes that speech act constructions conveying statements can occur in *because*-clauses only when they are in sentence-final position, it is not sufficient. Consider the following examples:

(28)    a. * He's not going out for dinner because Japanese food, his wife is cooking.

        b.    He's not going out for dinner because his wife is cooking Japanese food.

(b: Hooper and Thompson (1973:494))

In (28a), the topicalization, a kind of speech act construction conveying a statement, cannot occur in the *because*-clause although it is in sentence-final position. Original sentence (28b), in which the *because*-clause is inside the scope of matrix negation, is an instance of the causal construction (cf. Rutherford (1970)). The ungrammaticality of (28a) shows that in a causal *because*-clause, even if it is in sentence-final position, speech act construction cannot occur. Hence, in order to give an appropriate description of the occurrence of speech act constructions in *because*-clauses, simply saying that *because*-clauses should be in sentence-final position is not sufficient: what provides the sufficient condition is the *because*-clause of the reasoning construction.[10] If one takes into consideration the fact that the *because*-clause of the reasoning construction forms an information unit independent of the main clause, it is quite natural that speech act constructions can occur in the *because*-clause of the reasoning construction. At the same time, we can straightforwardly explain the reason why speech act constructions are not allowed in the *because*-clause of the causal construction. In the causal construction, the cause situation and the result situation are understood as a single process (see section 3.2). Its *because*-clause cannot perform a speech act on its own, and therefore speech act constructions cannot occur in the *because*-clause of the causal construction.
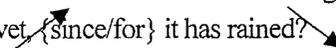
To sum up, the main clause and the *because*-clause of the reasoning *because* construction, as is expected, form independent information units.

### 3.3.2. *Reasoning* Since *Constructions and Reasoning* For *Constructions*

In the previous section, I analyzed the reasoning *because* construction and showed that the main clause and the *because*-clause are understood as forming separate information units. This subsection investigates the reasoning *since* construction and the reasoning *for* construction. First, in section 3.3.2.1, I argue that they are similar in that they both have similar behaviors to the reasoning *because* constructions. By comparing reasoning *since/for* constructions with the reasoning *because* construction, I show that not only are the reasoning *since/for* constructions similar to each other but also they are similar to the reasoning *because* construction. Next, I point out in section 3.3.2.2 that there is also a difference between the reasoning *since* construction and the reasoning *for* construction, which stems from the fact that *since* and *for* belong to different syntactic categories.

### 3.3.2.1. *Similarities*

The reasoning *because/since/for* constructions are similar in that they show similar behaviors. Firstly, a rising intonation of question sentences is used at the end of the main clause, not at the end of the sentence. Consider the following examples:

(29) a. Is the ground wet {since/for} it has rained?
b. * Is the ground wet, {since/for} it has rained?

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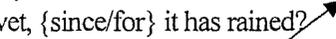
[10] Since the *because*-clause of the reasoning construction is always in sentence-final position, the analysis here is not incompatible with Lakoff's observation.

The sentence should be read with the intonation pattern indicated in (29a). It is impossible to read the sentence with the intonation pattern indicated in (29b). This suggests that the *since*- and *for*-clauses are not inside the scope of matrix question, which is parallel to the reasoning *because* construction (cf. (26)), and opposite to the causal construction (cf. (17)).

Secondly, the main clause of the reasoning *since/for* constructions perform a speech act on its own. Observe the following sentences:

(30)  a.  Since you are smart, when was George Washington born?  (= (4c))

b.  What are you doing tonight, for there's a good movie on.  (= (5c))

In these sentences, the main clauses perform the speech acts of question independent of the subordinate clauses. Thus, the main clause of the reasoning *since/for* constructions, like that of the reasoning *because* construction, performs a speech act on its own.

Thirdly, speech act constructions can occur in *since*- and *for*-clauses, as exemplified below:

(31)  a.  I'm going to cheat my taxes, since who will ever find out? (Lakoff (1987:479))

b.  ...since in no real sense could they be said to have had the opportunity of availing themselves of the action project, they are omitted...from most of the following analysis.  (British National Corpus [BNC])

c.  Gay, she knew, must be desperate to write a letter like that, for never before had she lowered her flog to such an extent.  (BNC)

In (31a), the rhetorical question occurs in the sentence-final *since*-clause. In (31b, c), the subject-auxiliary inversions occur in the sentence-initial *since*-clause and the *for*-clause. They are all speech act constructions that convey statements (Lakoff (1987)), and therefore, these *since*- and *for*-clauses perform speech acts of statements independent of the main clauses. This, too, is the same behavior as reasoning *because*-clauses.

In sum, the reasoning *since* construction and the reasoning *for* construction show similar behaviors. The behaviors are similar to those of the reasoning *because* construction, i.e., the main clause and the subordinate clause perform speech acts on their own. This fact suggests that the main clause and the subordinate clause are understood as forming separate information units.

### 3.3.2.2. Dissimilarity

In the previous subsection, we observed similarities between the reasoning *since* construction and the reasoning *for* construction. However, they do not have exactly the same behaviors. Consider the following contrast:

(32)  a.  * For he was unhappy, he asked to be transferred.  (Quirk et al. (1985:922))

b.  Since he was unhappy, he asked to be transferred.

The above contrast shows that *for*-clauses cannot be in sentence-initial position, while *since*-clauses can.

Quirk et al. (1985) note that *for* is a "semi-coordinator," which has properties of both a coordinator and a subordinator. They argue that *for* is like a subordinator in that it does not allow subject ellipsis, as exemplified in (33a); otherwise it behaves like a coordinator.

(33)   a.   He did not want it, for *(he) was obstinate.

          b.   I may see you tomorrow or (I) may phone later in the day.

<div align="right">(Quirk et al. (1985:923f.))</div>

          c.   John is happy, since *(he) is rich.

As shown in (33b), coordinators can, in essence, connect either clauses or clause constituents, e.g. verb phrases, while, as in (33c), subordinators cannot connect clause constituents. However, given the property of the reasoning construction, we can explain the reason for *for*-clauses not connecting clause constituents without postulating such a fuzzy category as semi-coordinator: we only have to say that *for* is a *coordinator* used in the reasoning construction. If it is a coordinator, why then can *for* not connect clause constituents? Taking into consideration that the main clause and the subordinate clause of the reasoning construction form separate information units, we can account for the reason as follows. Since the construction that *for* is used in is the reasoning construction, *for*-clauses have to perform a speech act independent of the main clause.[11] If, like other coordinated structures, subject ellipses were allowed in *for*-clauses, the *for*-clauses would not perform speech acts on their own. For example, if sentence (33a) were acceptable without the parenthesized *he*, the interpretation of the *for*-clause would have to depend on that of the main clause, i.e., it would be *he* in the main clause that *was obstinate*. Therefore, despite the category that can essentially connect clause constituents, *for* has to connect two clauses because of the property of reasoning constructions.

Thus, the reason for *for*-clauses not being in sentence-initial position is that *for* is a coordinator, i.e., sentence (34a) is no more grammatical than sentence (34b) is:

(34)   a. * For he was unhappy, he asked to be transferred.        (= (32a))

          b. * Or they are spending a vacation there, they are living in England.

          (cf. They are living in England, or they are spending a vacation there.)

<div align="right">(Quirk et al. (1985:921))</div>

### 3.4.  Summary

In sum, the categories of the conjunctions in question and the constructions that these conjunctions are used in can be described as follows:

(35)   a.  *Because* is a subordinator used in the causal construction and the reasoning construction.

          b.  *Since* is a subordinator used in the reasoning construction.

          c.  *For* is a coordinator used in the reasoning construction.

---

[11] If *for* is a coordinator, the term "main clause" may not be appropriate. Here, for want of a better term, I use the term to refer to the clause that expresses the conclusion.

## 4. Further Issues

So far, I have investigated the causal construction and the reasoning construction. In this section I show that the proposed analysis not only gives answers to the questions raised in section 2 but also explains some facts observed in the literature. The issues to be discussed in this section are listed below:

(36)  a.  Why can *since* not be used in the causal construction?

(Nakau (1994); cf. Sweetser (1990))

b.  In the reasoning construction, *since*-clauses can be in sentence-initial position, while *because*-clauses cannot. The reason for *because*-clauses not being in sentence-initial position has already been explained (e.g. Hirose (1991, 1999)). Why then can *since*-clauses be in sentence-initial position?

c.  Why can causal *because*-clauses be nominalized into *because of* {NP/Gerund}, while reasoning *because*-clauses cannot? (cf. Rutherford (1970))

d.  Why may *since*-clauses not be nominalized into *since* {NP/Gerund}?

(cf. Wickboldt (1998))

The answers to questions (36a) and (36b) are intimately related, and so are the answers to questions (36c) and (36d). I will first give answers to questions (36a, b) in section 4.1, and then to questions (36c, d) in section 4.2.

### 4.1.  Since *as a Subordinator Used Only in the Reasoning Construction*

As summarized in (35), while *because* is used in both the causal construction and the reasoning construction, *since* is used only in the reasoning construction. In order to answer question (36a), we need to consider two types of metaphorical extensions. It is important to note that metaphorical extensions makes it possible for both *because* and *since* to be used in the reasoning construction. More important is that the source of each metaphor, i.e. what a reasoning process is compared to, is different. Recall first that Sweetser sees a reasoning process as a metaphoric causal relation (see section 2.1). Thus, when *because* is used, a reasoning process is compared to a causal relation, and hence, *because*, which introduces a cause of another situation, may also be used to introduce a premise from which to draw a conclusion. As for *since*, it is often pointed out that its meaning of reason is developed from its temporal meaning (e.g. Traugott and König (1991)). Thus, when *since* is used, a reasoning process is compared to a period of time that begins with the premise introduced by *since* and ends with drawing a conclusion.[12]

Here, Lakoff and Johnson's (1980:56ff.) argument on metaphorical mappings should be considered. They argue that metaphorical mappings occur unidirectionally: abstract concepts are compared to concrete ones, and not vice versa. Note also that as Sweetser (1990:23ff.)

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[12] The question remains open why the temporal meaning of *since* extends to the reasoning one, not to the causal one.

discusses at length, we conceptualize our internal mental world by mapping it onto the external world. Then, we may say that reasoning processes can be compared to causal relations, but not vice versa, because causal relations, which occur in the external world, is more concrete than reasoning processes, which occur inside the speaker's internal mental world. Therefore, *because* can be used in both the causal construction and the reasoning construction by the metaphorical mapping of a reasoning process onto a causal relation, while *since* cannot be used in the causal construction, because a casual relation cannot be mapped onto a reasoning process.

Let us now turn to question (36b). As argued above, *since* is used only in the reasoning construction. Then, either in sentence-initial or sentence-final position, *since*-clauses are understood with no ambiguity as providing a premise from which to draw a conclusion. *Because*, on the other hand, is ambiguous: it can be understood as introducing either a cause or a premise. Thus, in order to disambiguate the two readings, *because* is used in the different sentence forms.

*4.2. Nominalizations of* Because- *and* Since-*Clauses*

In this section, I give answers to questions (36c, d). Rutherford (1970) observes that causal *because*-clauses can be nominalized into *because of* {NP/Gerund}, while reasoning *because*-clauses cannot. Observe the following:

(37)　a.　He's not coming to class because of his sickness.　　　(Hirose (1992:85))

　　　(cf. He's not coming to class because he was sick.　(= (1a)))

　　　b. * He's not coming to class, because of his having just called from San Diego.

　　　　　　　　　　　　　　　　　　　　　　　(b: Rutherford (1970:105))

　　　(cf. He's not coming to class, because he just called from San Diego.　(= (1b)))

The above contrast shows that the nominalization of *because*-clauses is allowed in the causal construction, e.g. (37a), while it is not allowed in the reasoning construction, e.g. (37b).

The contrast stems from the different properties of the constructions discussed in sections 3.1 through 3.3. Recall that the main clause and the subordinate clause in the causal construction are understood as forming one information unit as a whole, while those in the reasoning construction are understood as forming two separate information units. If *because*-clauses are nominalized, they will no longer perform speech acts on their own. As a result, the information conveyed by such nominalized *because*-clauses cannot be seen as an independent information unit, but is regarded as merely a part of larger information unit. Hence, the nominalization of a *because*-clause is incompatible with the reasoning construction, whereas it is compatible with the causal construction.

Given this answer to question (36c), the answer to question (36d) is straightforward. Wickboldt (1998), among others, observes that *since*-clauses cannot be nominalized. Consider the following example:

(38)　　* Since having written the book, Mary was writing the blurb.

(cf. Since Mary has written the book, she was writing the blurb.)

(Wickboldt (1998:92))

Recall that *since* is used only in the reasoning construction. Then, we can explain the reason why *since*-clauses are not nominalaized into *since* {NP/Gerund} by analogy with *because*-clauses of the reasoning construction. If *since*-clauses are nominalized, they cannot form an independent information unit, and this is incompatible with the property of the reasoning construction. Therefore, *since*-clauses are not nominalized.

## 5. Relations among Constructions

In this section, I describe how the proposed constructions are related to each other and how they are related to other constructions. In order to capture the relations among constructions, Goldberg (1995) proposes the notion of inheritance links. She notes, "by postulating abstraction hierarchies in which lower levels inherit information from higher levels, information is stored efficiently and made easily modifiable (Goldberg (1995:72))." There are several types of inheritance links, among which instance links and metaphorical extension links (defined in (39a, b), respectively) are helpful to describe relations among the constructions under discussion.

(39) a. Instance links are posited when a particular construction is a special case of another construction. (Goldberg (1995:79))

b. Metaphorical extension links are posited when two constructions are found to be related by a metaphorical mapping. (adapted from Goldberg (1995:81))

With the notion of inheritance links, relations among the constructions that we have seen and other related constructions thus can be represented as follows:

(40)
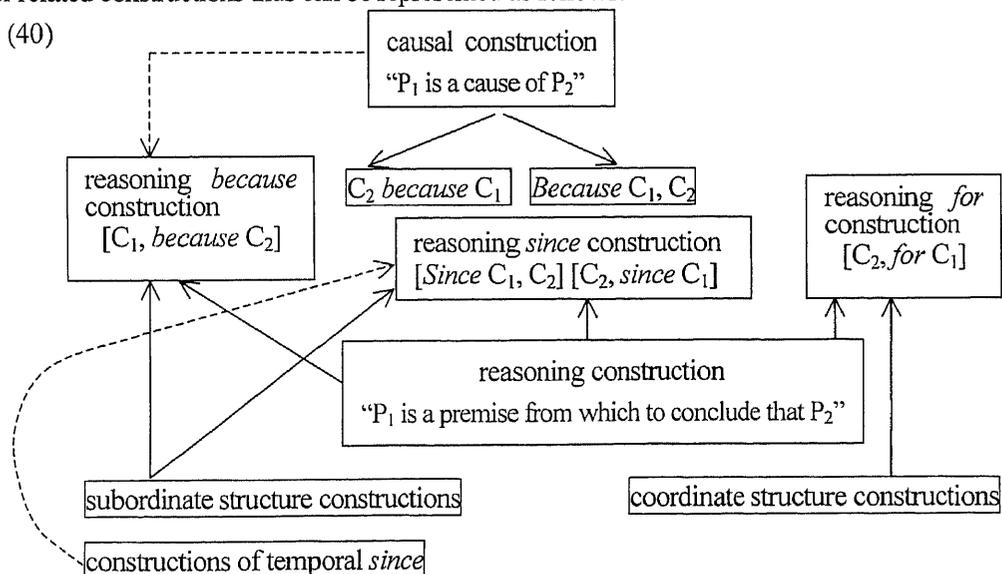
In the above diagram, the boxes represent constructions whose names and/or semantic or syntactic specifications are represented therein. The solid arrows and the broken arrows indicate instance links and metaphorical extension links, respectively. Correlations between the arguments through the article and what are illustrated in (40) are noted below.

Firstly, as I argued in sections 3.2 and 3.3, each of the syntactic forms of causal constructions and reasoning constructions is an instance of the schematic constructions of which meanings are specified. For example, $[C_2$ *because* $C_1]$ is an instance of the causal construction; hence, an instance link is posited between them. Note here that if two constructions are syntactically distinct and semantically synonymous, then they must be pragmatically distinct (Goldberg (1995:67)). Indeed, the two instances of the causal construction are information-structurally distinct, i.e., sentence-initial *because*-clauses are contextually presupposed (e.g. Hirose (1991)). The two instances of the reasoning *since* construction must be pragmatically distinct, but how they are distinct cannot be answered at this point.[13] I leave it for future research.

Secondly, the reasoning *because* construction is an instance of the reasoning construction, and at the same time, it is related to the causal construction by a metaphorical mapping. The reasoning processes expressed by the reasoning *because* construction may be understood as metaphoric causal relations due to the meaning of *because* (cf. Sweetser (1990), Hirose (1999)). A metaphorical extension link is thus posited between the causal construction and the reasoning *because* construction.

Thirdly, like the reasoning *because* construction, the reasoning *since* construction is an instance of the reasoning construction, but it is not related to the causal construction. In the reasoning *since* construction, a reasoning process is compared to a period of time (section 4.1). Therefore, a metaphorical extension link is posited between constructions of temporal *since* and the reasoning *since* construction. It is in this way that the difference between the reasoning *because* construction and the reasoning *since* construction may be captured.

Lastly, the difference between the reasoning *since* construction and the reasoning *for* construction can be captured by considering what syntactic categories *since* and *for* belong to (section 3.3.2.2). The former is a subordinator and the latter a coordinator. Thus, the reasoning *since* construction is an instance of subordinate structure constructions, while the reasoning *for* construction can be analyzed as an instance of coordinate structure constructions.[14]

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[13] Some linguists observe that sentence-initial *since*-clauses are preferred to sentence-final equivalents (e.g. Ford (1993), Swan (2005)). It is also well known that *since*-clauses convey given or old information (e.g. Schourup and Waida (1989), Swan (2005)). These facts could be a key to the question.

[14] Of course, the causal construction, in which *because* is used, is an instance of subordinate structure constructions. For the sake of simplification, however, the arrow that indicates the inheritance relation is not represented in diagram (40).

## 6. Conclusion

In this article, I have proposed two schematic constructions that *because*, *since*, and *for* are used in, i.e. the causal construction and the reasoning construction. Analyzing these constructions in detail, I have claimed that both similar and different behaviors of the conjunctions are best accounted for not by focusing only on the conjunctions themselves but by considering what constructions the conjunctions are used in.

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