

Metaphor: Interface between the Cognitive View and the Truth-conditional View

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YoungEun Yoon. 2004. Metaphor: Interface between the Cognitive View and the Truth-conditional View. *Language and Information* 8.1, 163–181. Since metaphor was proposed to be a matter of thought instead of language over two decades ago, the research in this area has made most of its progress by the cognitivists. For the cognitivists represented by Lakoff, metaphor is not a mere poetic or rhetoric device, but is central to our everyday language. Furthermore, according to them, we categorize the world and break it into concepts mainly through metaphors, and truth conditions simply cannot account for metaphor. However, this cognitivists' view has been severely counterattacked by the truth-conditional semanticists. Their main criticism is that the cognitivists do not provide a way to go from our internal representations to the outside world. It is also criticized that the cognitive theory of metaphor as cross-conceptual domain mappings is too broad and general, and that they do not explain why a particular metaphorical expression should be subsumed under one mapping rather than another mapping, i.e., their schemes and structural relations are not predictive. In this context, the purpose of this paper is to propose a model for metaphor interpretation that combines the virtues of the two opposite views of metaphor. Truth-conditional semantics cannot ignore cognitive aspects of language, so-called states of affairs or mental representations, while cognitive theories cannot neglect vigorous representation of meaning with objective reality. This paper will try to present a preliminary outline of this combining model. (Ewha Womans University)

Key words: metaphor, truth-conditional semantics, cognitive semantics, cognitively accessible worlds, cognitive DRS, merging

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1. Introduction

The classical theory analyzed metaphor as a novel or poetic linguistic expression in which one or more words for a concept are used outside of their normal conventional meaning in order to express a similar concept. That is, the classical theorists regarded metaphor as a mere poetic or rhetoric device.

However, this standing view of metaphor has been refuted by the cognitivists, Lakoff et al. (Lakoff & Johnson 1980, Lakoff 1987, Lakoff & Turner 1989, Lakoff 1990, Lakoff 1993, Lakoff 1999). They argue that metaphor is not a mere poetic device, but it is central to our everyday language. Furthermore, we categorize the world and break it into concepts mainly through metaphors. According to them, truth-conditional semantics, which does not resort to mental representations, simply cannot account for metaphor.

The focus of metaphor research has moved from poetic or creative metaphor to everyday conceptual metaphor. Furthermore, Lakoff argues that there is no objective meaning of words and sentences, and that our mind categorizes the world into concepts. Some of these concepts become conventionalized, from which meaning arises. That is, meaning arises through the conceptualizations of the mind.

If so, is this influential theory of metaphor cruising without an adverse wind? The answer is definitely no. This cognitive theory of metaphor is being as severely criticized by the truth-conditional semanticists as the cognitivists criticize the truth-conditionalists. The main criticism by the truth-conditionalists is that the cognitivists do not provide a way to go from our internal representations to the outside world. It is also criticized that the cognitive theory of metaphor as cross-conceptual domain mappings is not vigorous enough. The cognitivists cannot explain why a particular metaphorical expression should be subsumed under one mapping rather than another mapping. That is, their schemes and structural relations are not predictive.

Given this situation, what we can observe is that this kind of tug-of-wars between opposite theories have been going on for a long time. If we take a brief look at some previous theories of metaphor, we will find that this is the case.

Metaphors were traditionally analyzed by the comparison view and the interaction view. The former is a theory that accounts for metaphors based on similarity, resemblance, or a comparison between objects, while the latter explains metaphors based on a verbal opposition or interaction between the content of the expression used metaphorically and the content of the literal context.

However, it was pointed out by Searle (1979: 91) that the former view is problematic in that a metaphorical expression gets the truth conditions of the metaphor, not of the literal meaning, as the following example illustrates:

- (1) Sally is a dragon.

The truth conditions of (1) do not require that a dragon should exist. Furthermore, the comparison view resorts to such a simple and ambiguous concept as similarity, but in fact, any two things could be similar in some respect or other. That is, what should be explained by such a theory is why some feature(s), but not other

features, of them are selected to be similar when two things are argued to be similar.

Searle also criticizes that the latter view wrongfully locates metaphor in sentence meaning rather than speaker meaning. Furthermore, the metaphorical meaning does not seem to be the result of an interaction between the metaphor and the literal context found in the remainder of the sentence, since the literal context can be paraphrased by another literal context and the metaphor remains the same, as in the following examples, in which *the skillful cellist* and *the famous musician* refer to the same person. Although the literal contexts are different in (2a, b), there is no difference in the metaphor.

- (2) a. The skillful cellist is a fox.
 b. The famous musician is a fox.

In line with his criticism against the semantic interaction view, Searle himself proposed a pragmatic theory of metaphor that argued what the speaker means differs from what the sentence means, as in the case of irony and indirect speech acts. He also argued that sentence meaning is not divided into literal and metaphorical meaning, and that sentence meaning is literal meaning and speaker's meaning is metaphorical meaning. Metaphors allow the speaker to mean more than, or something different from, what he or she says. Consequently, interpreting metaphorical or speaker's meaning demands something beyond semantic theory.

He also provided eight principles of metaphorical interpretation, which obviously depend on the interlocutors' world knowledge and cognitive abilities. In this respect, Searle's theory is closely related with a cognitive theory. The main difference between them is, however, that unlike Searle, cognitive linguists do not distinguish sentence or literal meaning from speaker or metaphorical meaning. Cognitivists also argue that metaphorical meaning is not obtained from the reinterpretation process, but from conceptualization based on world knowledge and experience. Nevertheless, we can still trace some of the important ideas of the cognitive theories from Searle's account.

All in all, we could get an impression that a pragmatic approach to metaphor seems to be more promising than a semantic approach. However, Jaszczolt (2002) points out that a problem also arises for Searle's pragmatic account in the case of dead metaphors giving rise to polysemy such as in 'the mouth of the river' or 'the foot of the mountain', which is a semantic phenomenon called the metaphorical extension of meaning. These expressions that have become literal show that metaphors can enter the semantic domain. Besides, arguing that these expressions are now literal won't help.

The tradition of semantic analysis of metaphor has been continued from the interaction view to Davidson (1978), Cohen (1979), and recently to Stern (2000) and Leezenberg (2001). Davidson (1978) proposed that there exists no such thing as non-literal or metaphorical meaning in metaphorical interpretations, and that metaphors mean what the words literally mean. However, if metaphorical meaning doesn't exist, there is no point in pursuing it in the first place. Besides, metaphorical meaning does influence the truth conditions of the metaphorical

expression. Cohen (1979) also proposed a semantic approach, although it is not really a plausible theory. According to Cohen, metaphoric meaning is sentential meaning rather than speaker's meaning, and it is obtained by cancellation of some essential features of objects, reflected in semantic features of word meaning. For example, in the following sentence, *gold* is metaphorically interpreted because the feature 'metallic' is cancelled:

- (3) The clouds are made of pure gold.

Obviously, however, there is no universal principle in Cohen's theory based on feature cancellation that can reliably account for metaphor expressions. Although Cohen suggests the "empirical-inferential" feature distinction, the concept of a semantic category, an order of decreasing semantic importance, and/or the direction of cancellation, as the criteria for which semantic features are cancelled in metaphorical sentences, he never comes up with any one universal principle that works satisfactorily for all metaphor expressions.

Stern (2000) and Leezenberg (2001) also proposed semantic theories, both of which emphasize the context-dependence of metaphorical interpretations. According to Stern, for example, 'the sun' in the following sentences conveys various different metaphorical meanings:

- (4) Juliet is the sun.
 (5) Achilles is the sun.
 (6) Before Moses' sun had set, the sun of Joshua had risen.
 (7) The works of great masters are suns which rise and set around us. The time will come for every great work that is now in the descent to rise again. (Wittgenstein 1980)

(4) could mean that "she is exemplary and peerless, worthy of worship and adoration, one without whose nourishing attention another cannot live, one who awakens those in her presence from their slumbering, who brings light to darkness." On the other hand, 'the sun' in (5) expresses "Achilles' devastating anger or brute force", the one in (6) expresses "the uninterrupted continuity of righteousness", and the one in (7) expresses "the cyclicity and eternal recurrence of greatness, that things once great will be great again; that descent will be followed by ascent, by descent, and so on" (Stern 2000: 9-11).

Leezenberg also argues that what is interpreted metaphorically is not sentence-type but sentence in context. Leezenberg's analysis is not pragmatic in the sense that utterances do not carry metaphorical interpretations, in the sense that metaphorical interpretations survive under embedding, indirect quotation, negation, or other operations.

To sum up, as pointed out above, it could be concluded that the main trend in the research of metaphor has been a tug-of-war between a semantic account and a pragmatic or cognitive account.

Again, when it comes to cognitive semantics, which treats metaphor as a primary research thesis, it regards most linguistic expressions as metaphorical expressions and takes metaphor not as a mechanism of linguistic expression but as a mechanism that reflects the systems of human thoughts and experiences. It also defines metaphor as a cognitive process of conceptualization that depends on mappings between the source domain and the target domain.

Although this cognitive theory of metaphor has been supported by its numerous followers, the view that metaphors are solely the direct reflections of the categorization, conceptualization, and way of thinking of the language users still needs to be verified.

Furthermore, as pointed out by Jaszczolt (2002), cognitive theories focus on the conventionalization of metaphors as a mechanism of conceptualization, so that they tend to neglect the role of novel or live metaphors. However, on the contrary, others like Davidson and Searle emphasize novel metaphors with open-ended meanings rather than conventionalized metaphors. Sperber and Wilson's (1986) theory also emphasizes live metaphors, which communicate an indefinite number of feelings and beliefs. And yet, Sperber and Wilson's theory is not much different from cognitive theories, and it shows that metaphor cannot be accounted for separated from the process of conceptualization.

Given this, what seems to be called for is to combine the concept of objective reality by the truth-conditional view and the concept of mental representations by the cognitive view, in order to account for natural language phenomena including metaphor. Therefore, the purpose of this paper will be to propose a model for metaphor interpretation that combines the virtues of the two opposite views of metaphor. Truth-conditional semantics cannot ignore cognitive aspects of language, so-called states of affairs or mental representations, while cognitive theories cannot neglect vigorous representations of meaning with object reality. Our attempt will be a mere preliminary outline of this combining model.

This paper is organized as follows: In section 2 some virtues and problems of Lakoff et al.'s cognitive theory of conceptual metaphors will be briefly discussed. In section 3 two semantic accounts of metaphor, namely, Pustejovsky (1995) and Stern (2000), will also be briefly discussed. In section 4 an outline of a combining model for metaphor interpretation will be presented.

2. Cognitive View

According to Lakoff et al., most of our linguistic expressions are metaphors. In fact, they have collected a large corpus of data on metaphorical networks which present a taxonomy of metaphor systems.¹ Furthermore, these efforts have been recognized to result in dictionaries, including *Cobuild Metaphor Dictionary* (Deignan 1995), which is, as indicated in the preface, based on the basic concepts of Lakoff et al.'s metaphor theory.

Despite all the success of the cognitive theories, however, they are being dis-

¹ Refer to Kövecses (2002), which provides a comprehensive and systematic discussion of the theory of conceptual metaphors, including metaphorical mappings and metaphor systems.

credited by the truth-conditional semanticists, and they are not without problems. First of all, one of the main problems of the cognitive theories is that they don't provide an answer to the questions of why a particular metaphorical expression must be subsumed under one mapping rather than another mapping, and of how the proper level of mapping is decided, as also criticized by Stern (2000).

For example, as for the LOVE IS A JOURNEY metaphor, other activities such as LIFE and BUSINESS can also be conceptualized as a journey. One way to avoid this problem is to resort to generic vs. specific metaphors and to say that the LOVE IS A JOURNEY metaphor is a specific metaphor on the scale of generality derived from the generic metaphor PROCESS IS A JOURNEY. The LOVE IS WAR metaphor might also be regarded as a specific metaphor derived from the generic metaphor COMPETITION IS WAR. In the ARGUMENT IS A BUILDING metaphor, a numerous number of other concepts could replace ARGUMENT, such as RELATIONSHIP, CAREER, REPUTATION, TRUST, CONFIDENCE, THEORY, DEBT, KNOWLEDGE, PROGRAM, PLAN, TECHNOLOGY, LIFE, ORGANIZATION, and BUSINESS among others. Also in this case, it might be possible that a suitable generic metaphor could be picked up that could cover all the concepts. Nevertheless, the problem is that these metaphors or mappings could never be an exhaustive or appropriate set.

As an example, consider Grady's (1997) analysis. He proposes that there exist two primary metaphors in the complex metaphor ARGUMENT (THEORY) IS A BUILDING, namely, LOGICAL STRUCTURE IS PHYSICAL STRUCTURE and PERSISTING IS REMAINING ERECT. One benefit of this theory is that it provides an explanation for the partial nature of metaphorical mappings. That is, the partiality that there is a conventional interpretation for the 'foundation' of the theory but not for the 'walls' or 'windows' of the theory. Another benefit is that it provides an explanation for the relationship between different metaphors such as THEORIES ARE BUILDINGS and THEORIES ARE FABRICS. Notwithstanding, this proposal reveals the non-predictive nature of their structural relations and the fact that they merely provide constraints on the class of possible metaphors, as admitted by themselves.

Another problem is that the cognitivists are more or less ignoring novel, creative, or live metaphors, contrary to Davidson, Searle, Sperber, and Wilson among others. The conceptual metaphors could be regarded as alive metaphors, not as dead metaphors. However, they are based on expression types or tokens, and they are assumed to have the same interpretations regardless of the context, as pointed out by Stern. To take another similar example from Stern (2000: 183-186), in addition to the "sun" examples (4-7) in section 1,

(8) My job is a jail.

Lakoff (1993: 236) claims that he can account for the metaphor (8) in terms of the interaction of three conceptual metaphors, namely, ACTIONS ARE SELF-PROPELLED MOVEMENTS, PSYCHOLOGICAL FORCE IS PHYSICAL FORCE, and GENERIC IS SPECIFIC. Taking five steps, he reaches an interpretation that "my job imposes extreme psychological constraints on my actions."

However, more interpretations could be derived other than this interpretation depending on the context, and it seems to be doubtful that the application of the five steps can be verified. For one thing, Lakoff argues that in the first step, we begin with our ‘knowledge schema’, that is, our community-wide presuppositions about jails that includes “knowledge that a jail imposes extreme physical constraints on a prisoner’s movement.” And yet, as pointed out by Stern, it is not clear why we shouldn’t begin with the knowledge schema that includes knowledge that a jail imposes extreme “psychological constraints” as well as “physical constraints” on a prisoner’s movement.

All in all, what seems to be missing in the cognitive theory is that it doesn’t have the ability to account for the possible different interpretations of both a conventional metaphorical expression and a novel metaphorical expression in context. Although Lakoff et al.’s theory of conceptual metaphors has recognized the importance and prevalence of everyday common metaphors, the cognitive significance of these metaphors, and the existence of large-scale systematic networks, it does not seem to have constructed a predictive and systematic networks of metaphors. The collection of the metaphor data and the metaphor systems never seem to be sufficient. Furthermore, the cognitive theory does not provide a way to combine our internal representations with the outside world. In other words, it should provide a way to represent the internal workings with a vigorous formal model.

3. Formal Semantics’ View

Contrary to the cognitivists’ active and large-scale research on metaphor, the formal semanticists’ research on this issue has been quite rare. This phenomenon simply has not attracted an attention from the semanticists, and there does not exist any full-scale semantic theory of metaphor. Hence, in fact, there is not much to discuss in this section except for some semanticists’ fragmentary accounts on the issue.²

First, Pustejovsky (1995) provides an analysis of metonymic expressions like the following based on subtype coercion. For example, in (9),

(9) Mary drives a Honda to work

the relation between the type denoted by the object NP and the type that is formally selected for by the verb is a subtyping relation. Hence, it is proposed that if a function selects for type *a* and the actually occurring form is type *b*, where *b* is a subtype of *a* ($b \leq a$), type *b* should also be accepted by the function as a legitimate argument. The typing relation between the subtype **Honda** and the type selected by the governing verb *drive* is respected by the coercion relation, Θ , as shown below:

- (10) a. $\Theta[\text{Honda} \leq \text{car}]$: *Honda* \rightarrow *car*
 b. $\Theta[\text{car} \leq \text{vehicle}]$: *car* \rightarrow *vehicle*

² It should be pointed out that the term, formal semantics, is being used here in a broad sense, i.e., as a semantics that resorts to formalism.

That is, $\text{Honda} \leq \text{car} \leq \text{vehicle}$ defines a relation between the type selected by the verb *drive* and the actual individual.

When it comes to the issue of metaphor, Pustejovsky (1995) pretty much ignores it concentrating on polysemy and metonymy. In a footnote at the end, he just adds that much of the literature including Fass (1988, 1993) and Martin (1990, 1992) assumes that most forms of metonymy, as discussed in the context of coercion, are no different from certain types of metaphorical inferencing.

As a matter of fact, it is not clear how metaphor could be treated within his generative lexicon framework. One of the things that should be dealt with here is the mismatch between the lexical structures of the verb and the argument in a metaphorical expression. Take a look at the following metaphor example:

- (11) Vivendi's net loss of 23.3 billion euros (\$25.6 billion) snatched the corporate record . . . (2003.3.6. *Associated Press*)

A partial lexical representation for the verb *snatch* in (11) could be as in (12).³

- (12)
$$\left[\begin{array}{l} \text{snatch} \\ \text{EVENTSTR} = \left[\begin{array}{l} E1 = e1: \text{process} \\ E2 = e2: \text{state} \\ \text{RESTR} = \prec \infty \\ \text{HEAD} = e1 \end{array} \right] \\ \text{ARGSTR} = \left[\begin{array}{l} \text{ARG1} = \boxed{1} \left[\begin{array}{l} \text{animate_ind} \\ \text{FORMAL} = \text{physobj} \end{array} \right] \\ \text{ARG2} = \boxed{2} \left[\begin{array}{l} \text{physobj} \end{array} \right] \end{array} \right] \\ \text{QUALIA} = \left[\begin{array}{l} \text{FORMAL} = \text{possess}(e2, \boxed{1}, \boxed{2}) \\ \text{AGENTIVE} = \text{snatch_act}(e1, \boxed{1}, \boxed{2}) \end{array} \right] \end{array} \right]$$

The argument structure of the verb *snatch* specifies that the subject argument should be an animate individual and the object argument, a physical object. And yet, the subject NP *Vivendi's net loss* and the object NP *the corporate record* in (11), both of whom are abstract concepts, do not satisfy the selectional restrictions.

Given this, it might be possible that we temporarily bestow necessary features to the arguments on top of their original features so that through some kind of conceptual operation such as “blending” (Fauconnier 1985, 2002; Fauconnier & Turner 1998), appropriate metaphorical interpretations are derived.

Take another example:

- (13) My mind had been placid until John threw it a stone.

A partial lexical representation for the adjective *placid* in (13) could be as in the following:

³ For the details on the workings of the generative lexicon theory, refer to Pustejovsky (1995).

$$(14) \left[\begin{array}{l} \text{placid} \\ \text{EVENTSTR} = [\text{E1} = \text{e1: state}] \\ \text{ARGSTR} = [\text{ARG1} = \boxed{1} \text{ air or fluid waves}] \\ \text{QUALIA} = [\text{FORMAL} = \text{placid}(\text{e1}, \boxed{1})] \end{array} \right]$$

It is not clear whether *placid* is a dead metaphor that has become lexicalized to mean “peace of mind” combined with ‘mind’. If it is regarded as a dead metaphor, the main clause does not violate selectional restrictions. And yet, *threw it a stone* in the subordinate clause violates the restrictions, since you cannot physically throw a stone to a person’s mind. Given this, we should find a way to interpret the utterance.

Setting aside this issue, however, the predicate *placid* does not select the NP as its appropriate argument. Given this, again, it might be possible that we temporarily assign the necessary features to ‘mind’ to conceptually derive the appropriate metaphorical meanings from the clause. Only then, the VP *threw it a stone* could also be interpreted: “John threw a stone to my mind to agitate it, which is a lake or a container with fluid.”

Second, as briefly discussed above, Stern (2000) and Leezenberg (2001) proposed similar semantic theories of metaphor that focus on the context-dependence of metaphorical interpretations. Although it should be recognized that their theories dealt with a valuable aspect of metaphor that must be taken into account, it doesn’t seem that they touched upon the core of the phenomenon. This point will be briefly discussed below in the remainder of this section, focusing on Stern’s (2000) theory.

Stern proposes that metaphor could be interpreted semantically in a similar way to indexicals and demonstratives, which have their unchanging linguistic meaning and changing contextual meaning. As in the following conversation, for example, each occurrence of ‘I’ always directly refers to the agent of the context, while the referent of each utterance of ‘I’ varies with its speaker:

(15) John: I went to the ball game last night.

Andy: I had some friends come over to my house to watch the game on TV together.

That is, when an utterance is interpreted metaphorically, the utterance is assigned to a different type, i.e., the type of the metaphorical expression ‘Mthat’ whose ‘character’ or meaning is different from that of the non-metaphorical expression, which is not a shift of meaning. The different truth-values are a function of the different ‘contents’ of the utterances in their respective contexts, and contents are not meanings. Characters are meanings. As with indexicals, one meaning or ‘character’ of a context-sensitive expression can determine different ‘contents’ in different contexts, and the same content can be determined even in the same context by different meanings or characters.

In other words, the interpretations of a metaphor type are the ‘contents’ its tokens express in their respective contexts. Since there is an unlimited, or not

antecedently fixed, number of different possible contexts in which those tokens can occur, there is an unlimited number of different possible contents those tokens can express metaphorically.

A speaker has a more abstract kind of knowledge apart from his knowledge of the particular content of each metaphorical token in its respective context. This more abstract piece of knowledge is the 'character' of the metaphor, just like the unchanging linguistic meaning of an indexical or demonstrative. That is, the 'character' determines different 'contents' for different contexts. The knowledge of the 'character' is semantic knowledge, knowledge of linguistic meaning, just as is the knowledge of the 'character' of indexicals and demonstratives.

He further proposes that a set of metaphorically presupposed properties determine the contents of the utterances, which is the part that is closely related to the cognitive theorists' network of conceptual mappings. He discusses exemplification, thematic networks, and inductive networks as some of the sources of the set of metaphorically presupposed properties. And yet, understandably, he leaves this part mostly unexplained.

As pointed out above, his theory, along with Leezenberg's theory, has made a contribution in its attention to the roles that the context plays in different stages of the interpretation process. However, let alone the problem of the dubious status of the operator 'Mthat', the main problem of his theory seems to be that for the most part it relies on pragmatic factors, although he claims that his theory is semantic. That is, his account determines the semantic contents of metaphors depending on pragmatic factors, not only in the sense that the contextual factors determine what is said, but also in the sense that he relies on a notion of presupposition as a relation between a sentence, a speaker, and a proposition. Consequently, what he proposes about the semantics of metaphor does not take up much part of the interpretation process of metaphors.

4. A Combining Model for Metaphor Interpretation

As pointed out by Sperber and Wilson (1986), metaphors approximate the speaker's thoughts rather than describing them precisely. The propositional form of a metaphorical utterance resembles the speaker's thought. Jaszczolt (2002) also points out that if no objective meaning could be derived from the relation between propositions and states of affairs, we have access only to mental representations. Then, truth conditions would have to be relativized to mental representations rather than to the world. And yet, as pointed out by Kamp and Reyle (1993: 10-11), accounting for natural language solely by referring to mental representations would only shift the problem of meaning to another language. Furthermore, what we speak or think about are things in the actual world, and for thoughts and utterances that concern the actual world there arises the question whether they are true or false. Also, in the context of practical reasoning, the truth conditions of the factual beliefs seem to be necessary. Given this, it might be argued that all these facts indicate that "the world-directed, truth value-determining aspect of meaning" is central in explaining thoughts and utterances. Again, however, object reality alone cannot explain metaphoric utterances, which obviously should

involve mental representations.

Given this, it seems that it has all come down to a task of coming up with an analysis which could combine the aspect of mental representations and the aspect of objective reality in accounting for natural language including the phenomenon of metaphor. The problem is, though, that this doesn't seem to be easy.

First, the only access to the language of thought is through the languages we speak. Obviously, to derive the contents of the thoughts is not an easily achievable task, as illustrated by Lakoff et al.'s not entirely successful efforts to derive the systematic networks of metaphors. Second, adding up the aspect of mental representations to the central model of objective reality doesn't seem to be an easy work either. As the fact that two disciplines of semantics, namely, formal and cognitive semantics, have been going their separate ways without finding any slight chance of compromise between them until now shows the difficulty of combining the two aspects.

Having provided only these two aspects of adversities involved, what will be presented in the remainder of this section is a preliminary outline of a metaphor interpretation model that tries to combine cognitive aspects of language with object reality.

First of all, to have the world-directed and truth value-determining aspect of meaning as the central part of the theory, the framework of model-theoretic semantics introduced by Richard Montague will be employed in our account. Furthermore, a dynamic semantics, namely, the Discourse Representation Theory(=DRT) (Kamp 1981, Kamp & Reyle 1993) will also be employed as a sub-framework.

As is well recognized, the Discourse Representation Structures or DRSs in DRT display the mental representations of the discourse processed by the language user, in line with the mechanisms of psychology, computer science, computational linguistics, and so forth. They represent the interpretation process of the language user's grasping of the meaning of his or her language by assigning a meaning to the strings of signs or sounds that he or she reads or hears and by recognizing their conforming to the grammar of the language. Given this, it seems that DRT could work as a nice theoretical framework to represent the interpretations of metaphors.

These DRSs are obtained through the application of the so-called DRS Construction Rules to the input sentences, and they also have well-defined truth conditions, as defined by DRT. However, in order to include the cognitive aspect of the interpretation of natural language including metaphors, in addition to the normal possible set of worlds model M (I will call this M_w), we add another model, namely, M_c , which is a cognitive model for the interpretation of the cognitive aspects of natural language.

The rationale for the addition of M_c could be explained as follows. Consider the following conversation:

- (16) Martha: So all of you had to go through that!
 Jenny: Yeah! Ms. Woodring is not a teacher.

Say that Martha and Jenny are classmates, and Ms. Woodring is their teacher. Ms. Woodring is a very strict teacher, and she punishes the students rather harshly

whenever they do not behave. In this situation, the extensional meaning of what Jenny says is false with respect to the possible world model. The problem is, however, that both Martha and Jenny know that Ms. Woodring is a teacher, and that it is highly unplausible for Jenny to make such a blatantly false statement. Furthermore, as in the case of presuppositional accommodation, the language users tend to try to find ways to interpret the fellow-speakers' utterances as relevant and true statements.

As a result of it, in (16), Martha rejects the false statement as a possibility, and finds another way to interpret it correctly. An alternative interpretation is such that Ms. Woodring does not reach Jenny's certain expectation as a teacher, so that she is not really a teacher. In this case, Jenny's expectation might be such that a teacher should be a person who is full of affection towards the students and so forth.

In this context, it might be argued that Jenny's utterance is in an intensional context, and that such an expression like 'I believe' or 'I think' is omitted from the utterance. And yet, the utterance cannot be claimed to receive the intensional interpretation. Jenny already knows that Ms. Woodring is a teacher. She cannot believe that Woodring is not a teacher. This case should be differentiated from the following case, in which the speaker does not know whether Ms. Woodring is a teacher or not:

(17) Susan: Is Ms. Woodring a teacher?

Lucy: I don't know for sure, but I believe she is not a teacher.

Lucy's utterance in (17) should be interpreted to be in an intensional context.

Given this, it is proposed to posit M_c , which contains a set of cognitively accessible worlds. For example, in (16), Jenny's utterance should be interpreted with respect to M_c , which includes a cognitive world where the concept 'is-not-a-teacher' is *accessible* to the concept 'Ms. Woodring'.⁴ In other words, an utterance which contains a triggering concept which is not compatible with and/or accessible to the target concept in the cognitive model M_c cannot be interpreted. However, if it is compatible with the target concept, the utterance is interpreted with respect to M_c .

In sum, we need M_c in addition to M_w for the interpretations of those expressions that cannot be interpreted with respect to the possible set of worlds close to the actual world since they contain contradictory propositions within one same possible world, although they are judged to be informative utterances. This model M_c is proposed to be composed of all the cognitive knowledge and/or state of affairs such as the social, cultural, emotional, and other connotations associated with each word in the lexicon, the categorization networks of concepts in a similar

⁴ Sweetser and Fauconnier (1996: 7) propose the principle of access as the following:

. . . An expression which names or describes one entity (the trigger) can be used to access (and hence refer to) an entity (the target) in another domain only if the second domain is cognitively accessible from the first, and if there is a connection between trigger and target.

Rather obviously, this principle of access seems to be quite closely related to our notion of cognitively accessible world model.

sense of Lakoff (1987), the concepts of boundaries and extended entities created by our cognition (Smith 1999), and other various knowledge dependent on our cognition.

It is further proposed that utterances like the one in (16) will be processed in DRSs of cognition which represent the cognitive interpretation processes which are rendered by the cognitive model, and that these cognitive DRSs are proposed to occupy separate space in the universal DRS.

Those utterances that should be interpreted with respect to the cognitive model include utterances involving connotations like Jenny's utterance in (16), metaphorical utterances, possibly ironic utterances and utterances involving humor, and others, which require cognitive workings beyond the set of possible worlds boundary.

In sum, all the basic definitions and notions of model-theoretic semantics and DRT are assumed as they are in our new combining account, in addition to the following basic defined notions:

- (18)
- i M_w : A set of possible worlds model
 - ii M_c : A set of *cognitively accessible* worlds model
 - iii Cognitively accessible worlds: Cognitive worlds in which a triggering concept is compatible with or accessible to a target concept in an utterance. It is possible that a triggering concept is accessible to a target concept in more than one way within an utterance.
 - iv Accessibility selection: When a triggering concept is accessible to a target concept in more than one way in an utterance, one of the multiple possibilities of accessibility is selected by the contextual information.
 - v Cognitive DRSs: DRSs that represent the cognitive interpretation processes which are rendered by the cognitive model.
 - vi *Merging*: A process in which the properties of a triggering concept and those of a target concept are merged to create a new concept which contains elements of both, in a similar sense to Fauconnier's notion of 'blending'.
 - vii Verification and truth: A division of labor is assumed between M_w and M_c in that the truth values of cognitive utterances are verified with respect to M_c while the rest are with respect to M_w . It is assumed that the judgement on whether an utterance is a cognitive utterance or not is made when the utterance is judged whether to violate selectional restrictions or not. If the clashes between the semantic features of the subject and those of the predicate exist, but the utterance still seems to make sense, it is assumed to be interpreted with respect to M_c as a cognitive utterance. Furthermore, an utterance is also judged to be a cognitive utterance when the utterance is an obviously false statement, but the hearer finds a way to interpret it as a meaningful utterance.

As discussed above, one of the problems of the cognitive theories of metaphor is that they are neglecting the role of novel or live metaphors. Another problem is that they cannot account for the possible different interpretations of both a conventional metaphorical expression and a novel metaphorical expression in context. However, since the cognitive model proposed in (18) relies on the notion of *accessibility*, instead of systematic networks of conceptual metaphors, these problems could be solved. In other words, if only a possibility of *accessibility* between a triggering concept and a target concept can be found in context, based on various sources of the language user's knowledge, the metaphorical and/or cognitive utterance could be interpreted.

It should also be assumed that there exists a scale for this notion of *accessibility*. Especially, for the case of novel metaphors, although a possibility of *accessibility* between the two concepts is found in context, the interpretation of the metaphor expression cannot be readily made if the degree of the accessibility is not high enough. Or the process of finding a possibility of *accessibility* itself could be difficult. This is why, for example, the metaphors in poems are sometimes very difficult to be properly interpreted.

Now, based on this framework, let's consider several metaphorical utterance types. First, take a look at the following examples:

- (19) a. His love for her was burning.
 b. His callousness towards her was burning.

First of all, the language user realizes that s/he cannot interpret either (19a) or (19b) with respect to M_w , since the predicate 'burn' does not select an abstract NP like 'love' or 'callousness' as an argument. The next step is to try to process these utterances with respect to M_c . As for (19a), the triggering concept 'something burning' could be found to be accessible to the target concept 'love' without much effort, since these two concepts are quite often used together being merged in our daily language. On the other hand, when it comes to (19b), not one accessibility can be found between the concept 'something burning' and the concept 'callousness'. Consequently, (19b) cannot be processed either with respect to M_w or M_c .

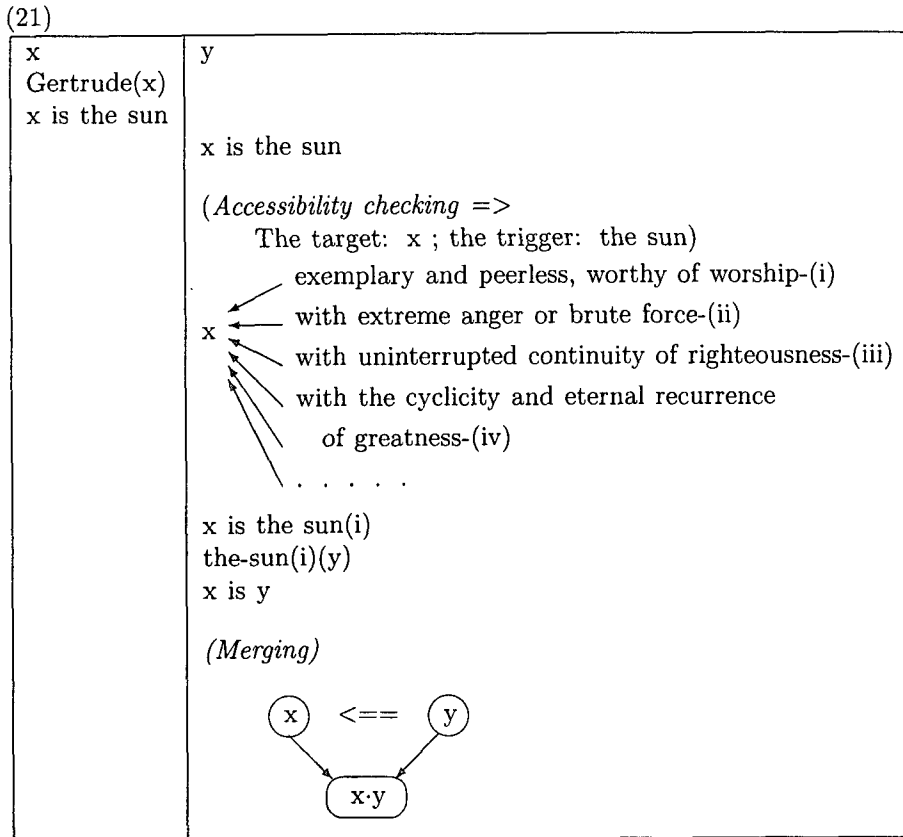
Second, consider several metaphorical examples which have a form of A is B.

- (20) a. Gertrude is the sun.
 b. Gertrude is a Cleopatra.
 c. Gertrude is a princess.

All the above examples could be interpreted with respect to M_c , and they could have more than one metaphorical interpretation depending on the context. For example, as for (20a), properties associated with "the sun" could be numerous ranging from "worthy of worship and adoration" to "source of extreme anger or brute force", as discussed in section 1. It is also the case for both (20b) and (20c). 'Cleopatra' could be associated with someone that is a very seductive woman,

someone that has an exuded charisma, and/or someone that is a shrewd politician. A 'princess' could also be associated with someone who is from a good family and raised well without any difficulty, someone who is beautiful and well-mannered, someone who acts like a princess, etc.

Then, let's give a DRS representation to (20a) as an example:⁵



As described above, (20a) will be processed in the level two DRS, which is the DRS on the right side in (21), and it will be interpreted with respect to M_c . The concept 'the sun' will be processed to find whether it is accessible to the concept 'Gertrude'. Since there is more than one possibility of accessibility as shown in the level two DRS in (21), the process of selection is made, and one accessibility (i) is selected.

When it comes to the *merging*, this is needed in order to be able to process a continuing utterance like the following, which is connected to the previous utterance (20a):

⁵ Following one reviewer's suggestion, we will use Hong's (2001) two-tiered DRSs to represent cognitive utterances. The basic idea of the two-tiered or leveled DRSs is that "the DRSs should be divided into two levels, whose discourse referents are essentially available to each other: level one for the representation of purely linguistically motivated discourse referents and conditions, and the other level for extra-linguistically motivated ones." (Hong 2001: 26)

(22) She shines everywhere and everyday.

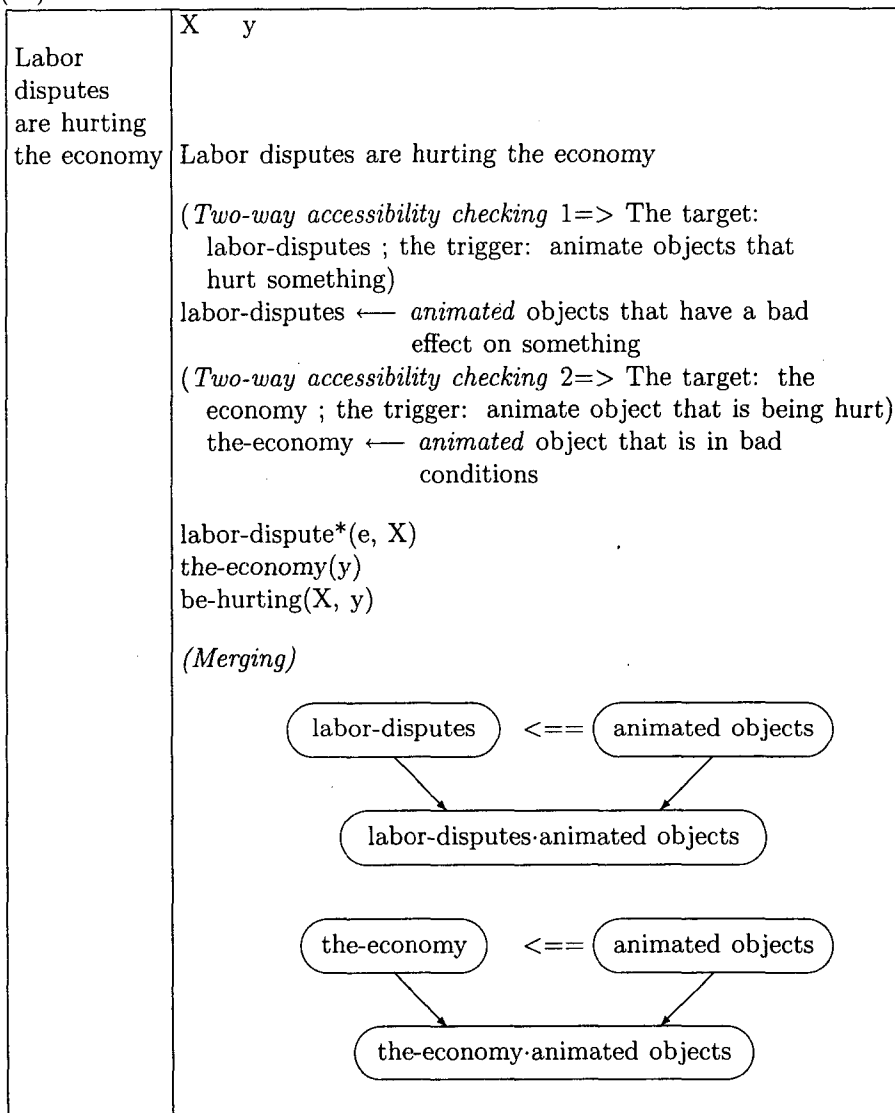
And yet, without (20a) preceded, the merging process can be induced by (22) alone.

Now, take a look at a typical example of metaphor, which involves “personification”:

(23) Labor disputes are hurting the economy.

The predicate ‘hurt’ selects animate objects as its arguments, but neither ‘labor disputes’ nor ‘economy’ is an animate object. A rough DRS representation of (23) is as follows:

(24)



As for (23), one might argue that it is interpreted with respect to M_w , since the predicate 'hurt' can lexically select abstract NPs as its arguments. If it can, (23) is an example of lexicalized dead metaphor. If not, it is an example of a typical personification metaphor. One thing to note is that in (24), two concepts involve personification, so that two-way accessibility checking is performed.

Take a look at one more example before we close this section:

(25) Joanne threw a stone to Matthew's placid mind.

In (25), a human mind is represented by a lake, which is an example of the most typical metaphor type in the sense that the so-called mapping between the source domain and the target domain is clearly represented. (25) could roughly be represented by our framework as follows:

(26)

x y	m n
Joanne(x) Matthew(y) x threw a stone to y's placid mind	x threw a stone to y's placid mind (<i>Accessibility checking</i> => The target: mind ; the trigger: something placid and something to which a stone is thrown) mind ← lake (waves, fluid in a container, etc.) stone(m) y's mind(n) placid(n) threw(x, n, m)
	(<i>Merging</i>) <pre> mind <=== lake v v mind·lake </pre>

In (25), expressions like *placid* and *threw a stone* indicate what the trigger is to the target 'mind', and the possibility of accessibility seems to be singular, as presented in (26).

Concerning the truth values and verifications of the DRSs, for lack of space, we are not able to get into that here. And yet, if you are familiar with DRT, everything must be pretty clear. Just one thing to note is that the truth values of normal DRSs are verified with respect to M_w , while those of DRSs of cognition should be verified with respect to M_c .

5. Conclusions

To summarize, one of the main focuses of this paper was to emphasize the need to combine the virtues of the cognitive and truth-conditional semantics approaches in order to account for the phenomenon of metaphor. For this purpose, we have discussed the problems and merits of each of the two theories, and we have tried to show that the best way to solve this situation is to combine the virtues of the two views.

Furthermore, the other main focus of this paper was to present a model for metaphor interpretation that successfully accounts for metaphor with combined concepts of the two views. In doing that, we have proposed new concepts such as the cognitive model, cognitive accessibility, cognitive representations (DRSs of cognition), and merging. The basic idea of the new model was to add a cognitive dimension to the model-theoretic semantics framework.

However, as pointed out by one reviewer, the proposed model has some problems. One of them is that it is still not entirely characterized by the notion of predictability. Although the concept of cognitive accessibility has replaced that of an incomplete set of conceptual metaphors, we still cannot clearly predict what metaphorical expressions can be derived. As argued by Kövecses (2002), one could argue that metaphor has motivation, not prediction, since metaphor is not based on a limited set of rules, but based on continuously increasing and changing folk theories such as world knowledge, cultural stereotypes, people's specific goals and interests, etc. Another problem is that 'merging' and 'accessibility checking' included in the cognitive DRS are procedural representations rather than declarative representations which characterize the typical DRSs of DRT. To solve these problems, obviously more research should be done. And yet, it still seems to be certain that the phenomenon of metaphor including numerous, or probably all, other semantic phenomena cannot be accounted for only by semantic aspects of language. Given this, the direction taken by this research seems to be on the right track.

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