Toward a More Textual, as Opposed to conceptual, Approach in Metaphor Research

A case study of *How to Cook a Husband*

Kow KURODA*, Keiko NAKAMOTO**, Yoshikata SHIBUYA*, and Hitoshi ISAHARA*

*NICT, Japan   **Bunkyo University, Japan

Abstract

This article proposes a new method of analyzing metaphorical expressions from a linguistic perspective. By comparing a metaphorical text and its unmetaphorized version, we suggest that a small set of lexical differences can lead to totally different interpretations. The proposed method captures this phenomenon by 1) describing how phrases in a text link to situational concepts and 2) representing the interpretation as a superimposition of these concepts through a newly introduced (usually ad hoc) superordinate schema. The proposed method has the advantages over the previous accounts in cognitive linguistics of being able to specify how target and base concepts are evoked in a text. **Keywords:** Pattern matching analysis, blending theory, metaphor identification

Introduction

Most theories of metaphor —especially ones in cognitive linguistics such as Cross-domain Mapping Theory (CMT) (Lakoff & Johnson, 1980) and Conceptual Blending Theory (CBT) (Fauconnier & Turner, 1998)— are concerned with the account of **how metaphors are understood** more than with **how metaphors are identified/recognized**. This is, however, an important problem of metaphor. We approach the latter problem from a linguistic perspective.

Basic properties of metaphors, especially creative metaphors, include: (i) simultaneous activation of different conceptual structures or "domains" and (ii) a feeling of deviance from the literal meaning that sometimes has poetic effects (Indurkhya, 1997; Pilkington, 2000; Richards, 1936).

A number of researchers in cognitive linguistics have made interesting observations on a variety of metaphors, accumulating useful descriptions of source-target correspondences. The two major approaches are CMT and CBT. In CMT, metaphor is characterized as a mapping from a conceptual domain called the source domain (which can be equated with the base structure of Structural Mapping Theory (SMT) (Gentner, 1983)), to another conceptual domain called the target domain. Accounts of metaphors under CMT boil down to **specification** of what source domain is mapped onto what target domain, of a given metaphoric expression. In CBT, by contrast, metaphor is characterized as a "blending" of two different domains called "input spaces" or simply inputs.[1] (To simplify grossly, blending is a kind of multiple inheritance.)

While these approaches have provided important insights into metaphor, they also have several shortcomings. First of all, CMT fails to differentiate creative metaphors from conventional metaphors under an operative definition, thereby failing to account for poetic effects that accompany creative metaphors and also the *aha* experience that accompany most analogies (Gentner, 1983; Holyoak & Thagard, 1994). All CMT can do is define conventional metaphors (like LOVE IS A JOURNEY (Lakoff & Johnson, 1980)) as conventionalized forms of originally creative metaphors without specifying exactly how conventionalization occurred. Some evidence suggests that most conventional metaphors do not occur through conventionalization in this sense but result from the accumulation of tiny modifications of word senses through daily use. In fact, semantic anomaly in such modification is usually very subtle and often goes unnoticed, suggesting that conventional and creative metaphors have different origins.[2]

Let us show, through an example in (1), how CMT fails to account for poetic effects that are evident in creative metaphor but missing in conventional metaphor.

(1) A good many **husband**s are utterly spoiled by mismanagement in cooking and so are not tender and good. Some women keep them constantly in hot water; others let them freeze by their carelessness and indifference. Some keep them in a stew with irritating ways and **words**. Some wives keep them pickled, while others waste them shamefully. It cannot be supposed that any **husband** will be tender and good when so managed, but they are really delicious when prepared properly. In selecting a **husband**, you should not be guided by the silvery appearance as in buying a mackerel; nor by the golden tint as if you wanted salmon. Do not go to the market for **him** as the best ones are always brought to the door. Be sure to select **him** yourself as tastes differ. It is far better to have none unless you will patiently learn how to cook **him**. Like crabs and lobsters, **husband**s are cooked alive. Make a clear, steady flame **of love, warmth, and cheerfulness**. Set **him** as near this as seems to agree with **him**. If **he** sputters, do not be anxious, for some **husband**s do this until they are quite done. Add a little sugar in the form of what confectioners call **kisses**; use no pepper or vinegar on any account. Season to taste with spices, good **humor** and **gaiety** preferred, but seasoning must always be used with great discretion and caution. Avoid sharpness in testing **him** for tenderness. Stir **him** gently. You cannot fail to know when **he** is done. If so treated, you will find **him** very digestible, agreeing with you perfectly; and **he** will keep as long as you choose unless you become careless and allow the **home fires** to grow **cold**. Thus prepared, **he** will serve a **life**time of **happiness**.

CMT would interpret ⟨Cooking⟩ and ⟨Married life⟩ as the source and target domains for (1).[3] Concepts like ⟨Processing an ingredient so that you can eat it⟩ and ⟨Processing meat to your taste⟩ in ⟨Cooking⟩ serves as the source structures

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for concepts like ⟨ Treat your husband tactfully ⟩ and ⟨ Lead your husband by the nose ⟩ in ⟨ Married life ⟩.

As pointed out above, we emphasize that it is not enough to say that creative metaphors, like conventional metaphors, consist of a cross-domain mapping from a source domain onto a target domain, because it does not account for the **sense conflicts** such as that between the sense of *tender* to describe the quality of husband (or man in general) and the sense of *tender* to describe the quality of meat. It should be noted that this kind of sense conflicts are not evident (or very weak if ever noticed) in conventional metaphors: that is, they are not fully conventionalized in the true sense of the term, suggesting that the conflicts are not fully suppressed.

It appears that CBT has overcome this kind of problem, at least apparently. Unlike CMT, CBT does not assume a mapping from a source to a target in an explicit form. Instead, it treats mappings as a side effect of blending. CBT has a problem of its own, however. An additional assumption must be made to account for the distinction between inputs that serve as the source and target, respectively. In (1), readers should have a feeling that husbands are treated like ingredients, but why is there no feeling that ingredients are treated like husbands? And is this a side effect of blending, or is it a precondition? This is not clear in CBT. Thus, the most serious problem with CBT is that it fails to account for why conventional metaphors do **not** show the sense conflict we observe in creative metaphors. It is tautological to explain that this is because they are conventionalized.

Both accounts of CMT and CBT have the following more serious limitations: **it is not clear how conceptual domains or inputs are associated with particular linguistic expressions**, which are not always words. It is not given in CMT and CBT how a conceptual domain or input is triggered or evoked. It is not clear, either, exactly what structures need to be assumed for conceptual domains or inputs. In short, the problem of, and procedure for, **metaphor recognition/ identification** is completely overlooked in CMT and CBT. Without this procedure, we cannot tell whether or not a given expression is metaphorical, and if so, to what degree.[4] This paper outlines a textually oriented theory that deals with this problem. We assume several things such as the following:

(2) **(i)** A text/talk consists of phrases, or collocations, that evoke certain concrete situations (e.g., ⟨ Cooking a food ⟩, ⟨ Buying ingredients ⟩) independently of each other; **(ii)** Reading/hearing the phrases in sequential order results in a series of evocations of situations $[S_1, \ldots, S_n]$; **(iii)** Nothing special takes place if $S_1, \ldots, S_n$ are integrated without problems, but some adjustments must be made when problems like semantic mismatches between S_i and S_j (for source and target) arise in the integration process (in terms of, say, violations of selectional restrictions). Metaphors, at least novel ones, result from the recovery process caused by such problems. **(iv)** The recovery is achieved by implicit

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[4]See Veale (2006) for related research.

introduction of some super-ordinate concept/category S^*. Recognition of S^* often gives rise to certain rhetorical effects like the *aha* experience.

We conclude the paper by specifying a set of empirical problems that need to be solved in metaphor research.

Identifying metaphor dynamically

Method

Under the working title of differential approach, we will compare two texts with minimal lexical differences. One is a metaphorical text presented in (1), *How to cook a husband*, a relatively well-known joke. The other is the text presented in (3), *How to cook a X*, which we created by replacing all the words and phrases that trigger metaphorical interpretations with words and phrases that do not trigger such interpretations. The differences are indicated in boldface.

(3) A good many **X**s (e.g., **chicken**s) are utterly spoiled by mismanagement in cooking and so are not tender and good. Some women keep them constantly in hot water; others let them freeze by their carelessness and indifference. Some keep them in a stew with irritating ways and **Y** (e.g., **manners**). Some wives keep them pickled, while others waste them shamefully. It cannot be supposed that any **X** (e.g., **chicken**) will be tender and good when so managed, but they are really delicious when prepared properly. In selecting an **X** (e.g., **chicken**), you should not be guided by the silvery appearance as in buying a mackerel; nor by the golden tint as if you wanted salmon. Do not go to the market for **X#** (e.g., **it**) as the best ones are always brought to the door. Be sure to select **X#** (e.g., **it**) yourself as tastes differ. It is far better to have none unless you will patiently learn how to cook **X#** (e.g., **it**). Like crabs and lobsters, **X**s (e.g., **chicken**s) are cooked alive. Make a clear, steady flame of **Y** (e.g., **fire**). Set **X#** (e.g., **it**) as near this as seems to agree with **X#** (e.g., **it**). If **X#** (e.g., **it**) sputters, do not be anxious, for some **X**s (e.g., **chicken**s) do this until they are quite done. Add a little sugar in the form of what confectioners call **Y** (e.g., **magic powder**); use no pepper or vinegar on any account. Season to taste with spices, good **Y** (e.g., **white wine and lemon**) preferred, but seasoning must always be used with great discretion and caution. Avoid sharpness in testing **X#** (e.g., **it**) for tenderness. Stir **X#** (e.g., **it**) gently. You cannot fail to know when **X#** (e.g., **it**) is done. If so treated, you will find **X#** (e.g., **it**) very digestible, agreeing with you perfectly; and **X#** (e.g., **it**) will keep as long as you choose unless you become careless and allow the **Y** (e.g., **refrigerator**) to grow **Y** (e.g., **too warm**). Thus prepared, **X#** (e.g., **it**) will serve a **Y** (e.g., **long**) -time of **Y** (e.g., **satisfaction**).

X identifies an ingredient, **X#** a pronominal reference to **X**, and each occurrence of **Y** is a co-variable of **X**.

The Problem

Comparing the texts in (1) and (3) , it is easy to notice that surface-true differences in words and phrases in boldface between (1) and (3) are relatively few. The details of the 31 lexical differences are the following: *husband* is replaced with a variable **X** (e.g., *chicken*) (5 places). *he*, *his* and *him* are replaced with **X#** (e.g., *it*, *its* and *it*) (12 places) nouns and adjectives inappropriate to describe foodstuffs (e.g., *humor*) are replaced with a variable **Y** with appropriate lexical items (e.g., *white wine*) or removed (e.g., *cheerfulness*) (14 places).

Both (1) and (3) consist of 298 words. There are only 31 different words between them. This is only 10.4% (= 31/298)

of the text, not a big number. Furthermore, out of the 31 differences, ten are pronominal words and 21 are content words. There are not many content words. Nevertheless, these small differences are enough to make the text in (1) metaphorical. How is this ever possible? This is the question that we want to address in this paper.
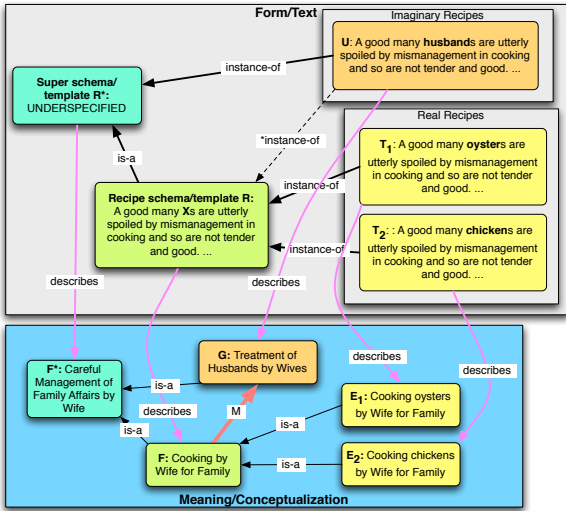
Figure 1: **F**: ⟨ Cooking by wife for family ⟩ is evoked by a recipe schema/template **R** (with instances **T1** and **T2**). **F***: ⟨ Careful management of family affairs by wife ⟩ is a super-ordinate of **F** paired with an underspecified super-schema/template **R***. **G**: ⟨ Dealing with Husband by Wife ⟩, a subtype of **F***, is evoked by **U**, serving as the "target" of **F** when relation **M** is interpreted as a "metaphorical mapping."

Identifying potential texts

The intuition that guided us to our approach is the following:

(4) Most, if not all, poetic effects attributed to the metaphor, or set of metaphors, relevant to the text in (1) come from a small number of violations in the proper terminology (e.g., collocations like *Some Xs do this until they are quite done, Stir X gently*) that normally constitute a recipe.

This suggests that the reader of (1) does a "dual" reading in that he or she reads a potential text in (3) while reading the real text in (1), where **husband** is understood as a deviant instance of **X**. Based on a linguistic analysis, we argue that the understanding of the text in (1) requires a network illustrated in Fig. 1. Note that identification of **R** as a template is not sufficient to account for the metaphoric effect. **R***, a super-schema/template for recipe **R** and non-recipes, is necessary. For this, note that (1) is not a proper instance of a recipe template/schema **R**, which is characterized in (3). Rather, it is an instance of the implicit **R***. Importantly, introduction of **R*** requires an **ad hoc abstraction** of **R** and a generalization of it into **R***. For reasons specified later, this process must be as much conservative as possible to avoid overgeneralizations.

Basically, the *aha* experience comes, at least in part, from the unexpected discovery of **R*** that follows the understanding of (1). In the next section, we will show how to guarantee that the text in (1) is not a proper instance of **R**.

Sample PMA for metaphor identification

Figure 2: States 1 to 6 in the PMA parse of (5) in Phase 1

Identifying relevant "syntax of words"

Let us briefly examine the lexical information that encodes the syntax relevant to the "co-compositioinal" process with the example in (5). To this aim, we use (Parallel) Pattern Matching Analysis (PMA) (Kuroda, 2000).

(5) *Some women keep **them** constantly in hot water.*

Figure 2 illustrates how the PMA parse of (5) goes, showing its incremental, word-wise updates over the "pattern matrix" *M* (of seven rows and seven columns, because we hypothesized that (5) consists of seven segments (= words, in this case).The final state in Fig 2 corresponds to the Result of Phase 1 in Fig 3. Some important details in Fig 2 are to be explained, but we will be very brief due to space limitations.

Phase 1 This phase prepares the initial phase shown in Fig 3. Each row of the matrix *M* characterizes "lexical, distributed syntax" in that each segment of a sentence undergoes a context-sensitive representation, which we call a "subpattern." A subpattern p_i for word w_i is encoded as a sequence of variables DET, SUBJ, OBJ, VERB, PREP. It identifies the (hypothetically abstracted) co-occurrence pattern of w. For example, *keep* is represented as a subpattern "SUBJ . . . keep* . . . OBJ . . . (COMP)," where "SUBJ" and "OBJ" encode subject and object NPs, and "COMP" encodes a complement of a particular kind.[5] The lexical "head" of a subpattern is

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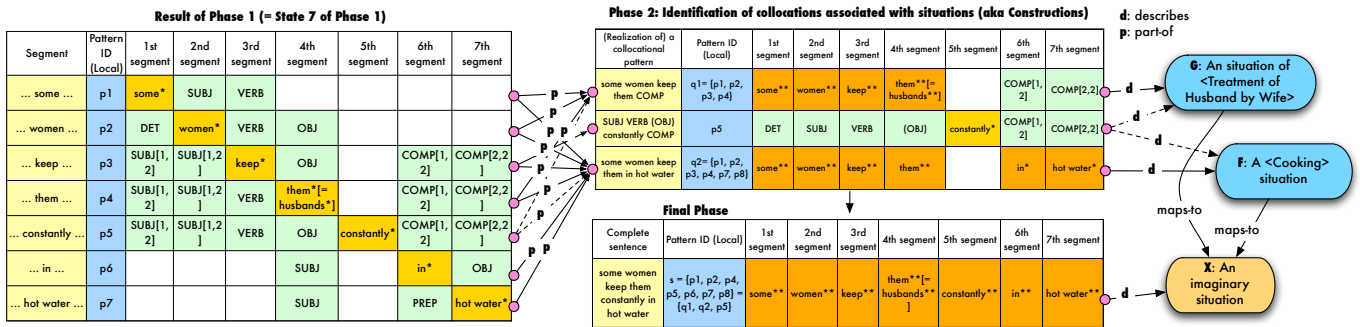[5] $X[i, j]$ indicates that it is the ith part of X of j parts.

Figure 3: Relation of subpattern parse of (5), collocational patterns and evoked situations. Unified heads are indicated by **.

marked with "*". This means that *keep* is a word that is preceded by a subject NP, followed by an object NP, and optionally followed by a complement.[6] Variables like SUBJ, OBJ are not merely syntactic variables to specify syntactic functions/categories. Rather, they are "lexicalized" for a particular head segment. For example, OBJ in "SUBJ kill* OBJ" (= "*S kill O*") needs a semantic specification [+animate]. This is a very simple example, but all variables of a subpattern have (often complex) semantic specifications at an appropriate granularity. In this way, the ith row in the matrix M encode the lexical syntax of ith segment, but the state of M updates segment-wise and the syntactic specification for the subpatterns recognized later may (and usually do) alter the specification of the previous ones.

Incremental parse is not the only interpretation of how PMA goes. We can think of a PMA parse as an optimization process in which all segments are assigned subpatterns simultaneously and completely in parallel. If this interpretation is adopted, we may think that the result of Phase 1 is given all at once. This discards the state-wise development diagrammed in Fig 2.

Given a pattern matrix M, pattern compositions over M are interpreted as column-wise unifications with and without overrides.[7] The unification process is often called "superposition" of subpatterns in the following sense: given two subpatterns, **p1** = "The dog V" and **p2** = "S bites (O)." They unify to produce **p0** = "The dog bites" if and only if (i) the semantics of "the dog" of **p1** and of S of **p2** unify, (ii) the semantics of V of **p1** and of "bites" of **p2** unify, and (ii) the semantics of NULL string[8] of **p1** and of (O) of **p2** unify. A pattern composition/superposition ends without overrides if all subpatterns are unified without meeting incompatiblities; otherwise, unification requires overrides of one specification over another. Metaphor and metonymy are good examples of pattern composition with overrides.
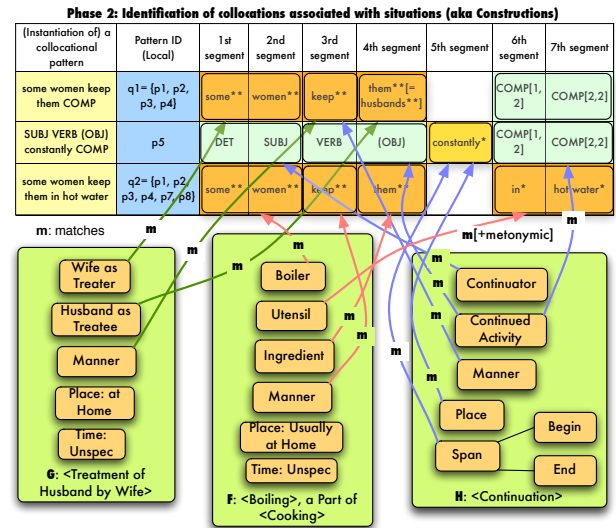

Figure 4: Elements of F, G, and H match segments of composite patterns **q1**, **q2**, and **p5** via parallel pattern recognition

Phase 2 This phase consists of complex, collocational patterns that are coupled with semantic structures/conceptualization patterns that are identified in terms of "(semantic) frames" in the sense of Frame Semantics (Fillmore, 1985) and the Berkeley FrameNet (BFN) (Fontenelle, 2003; Ruppenhofer, Ellsworth, Petruck, & Johnson, 2005). The way situations F, G, and H are associated with collocational patterns in Phase 2 is diagrammed in Fig. 4.[9]

It is assumed in PMA that meanings are more strongly encoded by collocational patterns, elements of Phase 2, than by lexical items, i.e., elements of Phase 1.[10] For example, **q2** (= *some women keep them in hot water*), integration of

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[6]Obviously, the possible form of subpattern needs to be constrained. An important constraint is that all subpatterns meet the "surface-true" generalizations.

[7]Most overrides are semantic ones, but there are certain cases in which they result in a phonological/phonetic modification.

[8]Simply, a null string is assumed to have an arbitray semantics.

[9]BFN has not started the description of what composite units evoke. Some measures need to be taken to deal with such distributed evocations. In our attempt, the correspondences between segments and frame elements are specified with *Multilayered Semantic Frame Analysis* (MSFA) (Kuroda & Isahara, 2005). While there is no space to go into details in this paper, it needs a mention that word sense disambiguation is better handled by MSFA than PMA.

[10]Those patterns can be identified as "constructions" in the sense of Construction Grammar (Goldberg, 1995).

p1, **p2**, **p3**, **p4**, **p7**, and **p8**, evokes a scene of ⟨ Boiling ⟩, which is an instance of ⟨ Apply_heat* ⟩ of BFN,[11] if *them* is understood to refer to certain ingredients. By constrast, **q1** (= *some women keep them COMP*), integration of **p1**, **p2**, **p3**, and **p4**, evokes a general wife-husband interaction like [[some [women as ⟨ Wives ⟩]] keep doing something to [them as ⟨ Husbands ⟩]] if *them* is understood to refer to husbands.

At the same time, word sense disambiguation (WSD) needs to occur between Phases 1 and 2. Most verbs are polysemous, and blending analysis would not work unless it came with a proper mechanism for WSD. It should be noted that PMA, by itself, does not carry out the WSD task: it is only useful for specification of units for sense description.[12] Most importantly, it is very hard to identify meanings of collocational units like "*S* keep *O* in hot/cold water" because their meanings are usually not reducible to lexical meanings. Searching on the Internet, it is easy to see that "*S* keep *O* (constantly) in hot water" is an established metaphor to mean "*S* torture *O*," whereas "*S* boil *O* in hot water" and "*S* keep *O* in cold water" are not so, and are more likely to be found in recipes. This is why we need superlexical specifications in Phase 2, as detailed in Fig. 4, no matter how redudant they might seem.

Final Phase, and what is special about it? Identified collocations, **q1** and **q2**, specified in Phase 2 do not unify: they are in competition in that the situations they evoke are in conflict with each other. This mismatch can be resolved if the sense of **q2** is modified to match the semantics of **q1**, and this is what we believe actually takes place. In this sense, what is usually called metaphor, at least in this case, is a set of semantic adjustments to the semantics of a verb (or a verb phrase) that shifts its sense so that it is compatible with the semantics of the subject (and object).

In general, sense conflict between two subpatterns p_1 and p_2 that evoke contradictory situations F and G, respectively, is resolved in the form of metaphor in the following way:[13]

(6) p_1 serves as the source of metaphor if and only if F^*, an **ad hoc abstraction** of F, is introduced as the superordinate class for F and G, i.e., $\neg\,(F$ is-a $G) \,\&\, \neg\,(G$ is-a $F) \,\&\, F$ is-a $F^* \,\&\, G$ is-a $F^* \,\&\, \neg\,F$ is-a G^*. Alternatively, p_2 serves as the source if and only if G^* is introduced as the superordinate class for F and G, i.e., $\neg\,(F$ is-a $G) \,\&\, \neg\,(G$ is-a $F) \,\&\, F$ is-a $G^* \,\&\, G$ is-a $G^* \,\&\, \neg\,(G$ is-a $F^*)$.

This implies that metaphor is a by-product of semantic interaction, rather than a cause of semantic reinterpretation.

The blended space in the sense of CBT corresponds to **X** described by **s** of Final Phase of Fig 3, but conceptual and textual blends need to be distinguished. While **X** is a conceptual blend of G, F and H, **s** is a textual blend of **q1**, **q2** and **p5**. Despite this, for the sake of simplicity, we do not distinguish textual blends from conceptual blends in the following.

Unlike the blending effects that occurred in Phase 2, blending of **q1** and **q2** requires semantic adjustments, because conceptualizations evoked by **q1** and **q2** are mutually incongruous. **q2** expects OBJ to be an ingredient type, resulting in a type mismatch with the semantic specifications for **them**, part of **q1**, which refers to *husbands*. In the case of (1), we have the resolution diagrammed in Fig 1, where the end product is two-fold: **(i)** the recognition of the **instantiation relation** between super schema/template **R*** and the text in (1); and **(ii)** the recognition of the **description relation** between **R*** and ⟨ Careful management of family affairs ⟩, as in Fig 1.

Note that it is hard to say that the sense of ⟨ Careful management of family affairs ⟩ in Fig 1 is either blended or co-composed. It seems better to argue that a potential categorization between **R*** and **R** is discovered. We suggest that this is a feature shared with analogies (Gentner, 1983; Holyoak & Thagard, 1994) and differentiates creative metaphors from conventional ones. We will return to this issue below.

Discussion

Comparison with blending account

CBT, like CMT, is more interested in explaining why such and such interpretations are constructed against a specific text, but its explanation is essentially *post hoc*, because it does not show why the suggested interpretations cannot be otherwise.[14] To avoid the *post hoc* nature of explanation, we need to be well informed of *what words or phrases can (and cannot) trigger what knowledge sources*, before we try an explanation. Without this, any attempt to give a full account for a metaphoric interpretation is *post hoc*. Explanations in CMT and CBT are no exception. For one, the text in (1) would not sound metaphorical unless readers already know what "*S* keep *O* in hot water" and "*S* keep *O* in the refrigerator" mean. Most words are polysemous and a blending analysis would not be revealing unless a proper mechanism for sense disambiguation is provided. In CMT and CBT, it is taken for granted how such knowledge sources are accessed via linguistic units, $U(T) = u_1, u_2, \ldots, u_n$ that comprise a text T, but it is far from well-known exactly what the units really are. Thus, any attempt to explain away by saying that access to such knowledge sources are (part of) the meanings of u_1, $u_2, \ldots, u_n$ just begs the question. This is exactly what makes accounts in CBT *post hoc* and why we need a structural analysis as provided in PMA.

Structural analysis is not enough, though. First, it is necessary to clarify the way collocational patterns comprise a text. To this end, we need a database of collocational patterns with a good coverage. A serious problem with such a database is how to describe such patterns. PMA is designed to describe collocational patterns in terms of subpatterns, but no serious effort has been made to provide a database of subpatterns in this framework. This is one of the limitations of the framework. Second, we need to accumulate enough situations/semantic frames at appropriate granularity levels. A

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[11] http://framenet.icsi.berkeley.edu/index.php?option=com_wrapper&Itemid=118&frame=Apply_heat&

[12] We simply assume that MSFA achieves WSD.

[13] This is applicable to CBT as a condition for generic space.

[14] Similar points are made in Veale (2006).

key aspect that helps us explain them would be that the source domain utilized in the metaphor is not simply ⟨ Cooking ⟩ in general, but ⟨ Cooking for family by wife ⟩ as a ⟨ Housework ⟩ performed by a ⟨ Housekeeper ⟩, under the equation ⟨ Wife ⟩ = ⟨ Housekeeper ⟩. This means that implicit narrowing of the general notion of ⟨ Cooking ⟩ is at work.

In the present study, as in CMT and CBT, situations/semantic frames are assumed in the *post hoc* fashion, which makes our analysis *post hoc*, too. This is regrettable, but we still believe that our analysis deals with creative metaphors better than CMT and CBT. Clearly, a wide-coverage database of knowledge sources could not be dispensed with to avoid the *post hoc* nature of analysis. A database of conceptualizations being developed in BFN mentioned above, for one, should be useful.

Creative and conventional metaphors

Before concluding, let us turn briefly to a general issue. (1) illustrates a case of creative metaphor with poetic effects. It is not a case of conventional metaphors in the sense of Lakoff and Johson (1980). This is why we get the impression that the text in (1) is a parody of a recipe. Thus, it is inadequate to explain the metaphorical effects in (1) by saying that we have the HUSBAND IS AN INGREDIENT metaphor in the style of CMT. First of all, such metaphors need to be either invented or discovered when one reads the text, because they are not conventional. The question is not **what** metaphor one comes up with, but **how** one can invent or discover something for whatever metaphor. As previous studies (Coulson & Matlock, 2001; Coulson & Van Petten, 2002; Noveck et al., 2001) suggest, it takes more mental effort to interpret creative metaphors than literal expressions. Furthermore, Blasko & Connie (1993) report that children begin to interpret creative metaphors later in life than conventional metaphors.

Given that metaphorical and literal meanings are constructed independently and in parallel, these experimental results would allow two possible explnations for conventional metaphors: one possibility is that, in constrast with creative metaphors, pattern integration in Phases 2 and 3 is half routinized in conventional metaphors. Another possibility is that conventional metaphors have distinctive collocational patterns that bypass the transition from Phase 1 to Phase 2, achieving both meaning construction and WSD at the same time. People may still detect poetic effects in the first possibility, but it is unlikely that they do so in the second possibility. While no research has been done to differentiate the two possibilities, they are unlikely to be mutually exclusive, given the fact that different conventional metaphors have different degrees of conventionality (Goatly, 1997).

Concluding remarks

PMA is not a standard analysis. We believe, however, that, if coupled with BFN, it can be a useful tool to interface between collocational/textual structures and conceptual structures. The analysis of metaphor as we provided in this paper is a demonstration of such an account. We hope that syntactic analysis such as PMA could make an important contribution to metaphor research.

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