

Metaphorical (In)Coherence in Discourse

Yeshayahu Shen and Noga Balaban
The Program of Cognitive Studies of Language and Its Uses
Tel Aviv University
Tel Aviv, Israel

This article introduces a critique of a version of the conceptual metaphor (CM) view (e.g., Lakoff & Johnson, 1980), regarding the issue of metaphorical coherence in natural discourse. The issue at stake is: Are metaphorical expressions in natural discourse coherently or incoherently distributed in discourse? The hypothesis derived from the theories developed by certain proponents of the CM view is that the occurrence of a conventional metaphorical expression (e.g., “We have reached a crossroads in our relationship”) that instantiates a certain root or conceptual conventional metaphor (e.g., *LOVE IS A JOURNEY*) will support the use of consistent metaphorical expressions, that is, expressions belonging with the same root metaphors (e.g., “Let’s change direction”). In this study, we compared 15 randomly selected passages taken from daily newspapers to a baseline of 15 newspaper passages that marked their deliberate, explicit use of an underlying root metaphor. Contrary to the prediction derived from (a certain version of) the CM view, we found significant differences between the 2 samples. These findings are discussed in light of a recent debate over the role played by conceptual metaphors in language use.

Traditionally, the study of metaphor, especially in the cognitive sciences, has focused on the analysis of individual examples, asking questions such as, How do we identify an expression as a metaphor? How do we interpret it? And so forth. The issue of the relation between metaphorical expressions and their distribution in authentic natural discourse, and what this may tell us about metaphorical thought, has been virtually ignored. Hardly any attention has been paid to the question of whether the extensive set of metaphorical expressions that occur in any discourse cohere in any systematic or structured manner. Recently, however, the issue has become a central concern within the framework of arguably one of the most influential theories of metaphor to have been proposed during the last 20

Correspondence and requests for reprints should be sent to Yeshayahu Shen, Department of Poetics and Comparative Literature, Tel Aviv University, 69978 Tel Aviv, Israel. E-mail: yshen@taunivm.bitnet

years or so, namely, the conceptual metaphor (CM) view as developed by Lakoff and his colleagues (Allbritton, McKoon, & Gerrig, 1995; Lakoff & Gibbs, 1990; Nayak & Gibbs, 1990). This article considers the distribution of metaphors in natural discourse in light of certain implications of this theory to achieve two complementary objectives: to provide an initial study of the relations between metaphors in discourse, and to examine assumptions that are compatible with the CM view of metaphor.

THE CONCEPTUAL METAPHOR THEORY

A basic tenet of the CM theory is that metaphorical expressions cluster together under conceptual root metaphors. Perhaps the most important insight of Lakoff and Johnson's (1980) highly influential theory of metaphor has been that the metaphorical expressions in ordinary language are systematic and not just one-shot expressions. This systematic nature is related to the idea that various conventional metaphorical expressions (that prevail in ordinary language) are strongly associated with underlying conceptual structures; that is to say, conventional metaphorical expressions cluster together because they share an underlying root metaphor. For example, according to Lakoff and Turner (1989):

Without such a conceptual metaphor as LIFE IS A JOURNEY, there would be *no conceptual unity* [italics added] to such ordinary conventional expressions as "making one's way in life," "giving one's life some direction," "getting somewhere with one's life," and so on. And there would be no explanation for the use of the same expressions, like "making one's way," "direction," and "getting somewhere," in the domains of both traveling and living. (pp. 116–117; see also Gibbs, 1994)

Other root metaphors registered in Lakoff and Johnson (1980) are *ARGUMENT IS WAR* (as in "Your claims are indefensible" and "His criticisms were right on target") and *IDEAS ARE FOOD* (as in "What he said left a bad taste in my mouth" and "This lecture recycles half-baked ideas").

The Linguistic Hypothesis: The Use of Conventional Metaphorical Expressions Relies on the Use of Their Underlying Root Metaphor

What role do these root metaphors play in language use and understanding? Ray Gibbs, a major proponent of the CM view, proposed several hypotheses regarding this question (Gibbs, 1994). One of the hypotheses assumes the following role for root metaphors: "Figurative thought functions automatically in people's on-line use and understanding of linguistic meaning" (Gibbs, 1994, p. 18). Let us call this hypothesis *the linguistic hypothesis*. Under this hypothesis, if in a real discourse the conventional expression, "We have reached a crossroads in our relationship,"

is used, either the production or comprehension of that expression, or both, requires the functional activation and use of the entire root metaphor, *LIFE IS A JOURNEY*. The reason is that such conventional expressions acquire their meanings via their related preexisting metaphor, rather than being directly retrieved from our mental lexicon.

According to Lakoff and Turner (1989): "Without the LIFE IS A JOURNEY metaphor there would be no explanation for how we can understand such poetic expressions as Robert Frost's 'Two roads diverged in a yellow wood'" (pp. 116–117). Gibbs (1994) made a similar point, suggesting that:

Unlike many theories of metaphor . . . the conceptual structure view of metaphor provides an explanation for why so many metaphors are understood effortlessly, without conscious reflection. . . . Most metaphorical expressions are direct linguistic instantiations of preexisting conceptual mappings between conceptual domains and may thus be understood quite easily during the earliest moments of processing. (p. 251)

Clearly, if many metaphors are understood effortlessly because they rely on preexisting conceptual mappings, this would mean that the very occurrence of a given metaphorical expression reflects the use of that mapping during production and comprehension. This hypothesis is compatible with the CM view but is not necessarily derived from it. As Gibbs (1994) explained, there are other, less radical hypotheses regarding the role that conceptual metaphors can play in language use (e.g., that these metaphors motivate the linguistic meanings that have currency within linguistic communities or that they motivate an individual speaker's use and understanding of why various words and expressions mean what they do). A proponent of the CM view does not have to commit himself or herself to the strongest hypothesis possible. Recently, however, various studies have been conducted (e.g., Allbritton et al., 1995; Gibbs, 1994; Kemper, 1989) in which findings have been interpreted as supporting this hypothesis.

This linguistic hypothesis stands in direct contradiction to the way other theories in psycholinguistics (e.g., Glucksberg & Keysar, 1990; Glucksberg & McGlone, in press) would describe the process of meaning assignment to metaphorical expressions. Consider the expression, "We have reached a crossroads in our relationship." For these theories, the word *crossroad* is a polysemic word in which understanding would require no more than directly accessing the lexical entry for *crossroad* along with ordinary syntactic and pragmatic operations. In contrast, proponents of the linguistic hypothesis would claim that the term *crossroad* is not only a reflection of the metaphorical mapping *LOVE IS A JOURNEY* but also that this root metaphor is functionally activated and used to understand expressions containing this term.

The main difference between the two alternatives, then, pivots on whether the use of conventional expressions requires the functional activation of the underlying root metaphor (as some CM theories would argue) or whether conventional

expressions are directly accessed from the mental lexicon without making any recourse to the root metaphor in question, as the "direct access" view would maintain (see Keysar, Shen, & Glucksberg, 1998).

THE EVIDENCE FOR AND AGAINST THE LINGUISTIC HYPOTHESIS

What evidence can be adduced in support of the linguistic hypothesis? Gibbs (1994, p. 255) presented some of the relevant findings. In general, the evidence that is assumed to support the CM theory rests on the following critical assumption: If people access the relevant root metaphor when they comprehend a certain instantiation of that root metaphor, then it will have a higher facilitation effect for the comprehension of (immediate) subsequent consistent expressions (namely, other instantiations of the same root metaphor) than for inconsistent expressions (i.e., expressions belonging with different root metaphors).

In one study (Allbritton et al., 1995), the reader was provided with texts that contained potential instantiations of a particular mapping. For example, one text stated that "The city's crime epidemic was raging out of control," and it later stated that "Public officials desperately looked for a cure." Both sentences presumably reflect the mapping *CRIME IS A DISEASE*. Using a postcomprehension cued-recognition measure, Allbritton et al. found that recognition of the first sentence was facilitated when cued with the second, suggesting that a link in memory had been established between these two sentences.

Another study (Nayak & Gibbs, 1990, Experiment 6) examined a similar hypothesis regarding the root metaphors underlying idioms. Note that idioms such as "He blew his stack" are said to be motivated by mappings such as *ANGER IS HEATED FLUID IN A CONTAINER*. The researchers presented people with stories that were motivated by this root metaphor, using expressions such as "She was getting hotter with every passing minute" and "As it got closer to five o'clock the pressure was really building up." The participants' task was to judge which of two target idioms represented a more appropriate ending for the preceding scenario. They assumed that:

If subjects accessed the metaphoric mapping reflected in an idiom's lexical structure, they would interpret *blew her top* as being more appropriate than *bit his head off* even though both phrases are grammatically and conceptually appropriate for the given scenario. (Nayak & Gibbs, 1990, p. 326)

The findings showed that people preferred to complete such texts with idioms that were metaphorically consistent with the earlier ones (e.g., "blew her top") rather than with idioms that were not (e.g., "bit his head off"). These findings and others (e.g., Kemper, 1989) have been taken to support the linguistic hypothesis.

Such studies, however, have been criticized (e.g., Glucksberg & McGlone, in press; Keysar et al., 1998; Kreuz & Graesser, 1991; McGlone, 1996) on the grounds that both the facilitation and inhibition effects reported could be explained by a lexical priming effect rather than by the use of conceptual metaphors. In other words, conventional expressions such as “laid siege” can be said to prime related expressions such as “assault” and “defenses.”

Under the “direct access” view, Keysar et al. (1998) suggested that the crucial test for the CM hypothesis cannot depend on whether another conventionalized expression is supported by the preceding conventionalized expressions. Rather, if a conceptual mapping is really being used, then it should be able to support the use of a subsequent novel consistent instantiation as much as it supports the use of consistent conventional instantiations. Participants’ reading times were measured for a target sentence that was preceded by one of several scenarios: an implicit mapping scenario (a scenario that made use of several conventional instantiations of the root metaphor), an explicit mapping scenario (a scenario containing an explicit mention of the root metaphor and several novel instantiations of that metaphor), and a literal meaning scenario (for which the target sentence was assigned a literal meaning). It was assumed that the explicit scenario was one in which the root metaphor should be functionally active due to the explicit mention of the root metaphor and the use of novel instantiations. Under the CM view, there should be no facilitation differences between the target sentence in the implicit and explicit conditions because this view assumes that, in both cases, the root metaphor is activated. However, the results showed that target sentences were read faster in literal and novel scenarios than in the implicit scenario. This finding may suggest that no use was made of the root metaphor in the implicit condition and that some additional means (such as the use of novel instantiations) are required for readers to access the root metaphors. Similar findings were obtained by Gentner and Boronat (1992), and Boronat and Gentner (1999). Thus, the empirical evidence at hand does not provide unequivocal support for the linguistic hypothesis made by (some of) the proponents of the CM theory. Note, however, that the rationale underlying all of the aforementioned studies (both those in favor and those against the linguistic hypothesis) was the same. That is, the assumption that, if a certain metaphorical expression in the context supports the comprehension (or enhances the appropriateness) of subsequent consistent expressions (more than it did for nonconsistent expressions), then this may be taken as evidence supporting the hypothesis that the online use of the former relied on the relevant root metaphor.

These studies have focused on the role played by root metaphors in discourse comprehension. However, the CM theory also generates predictions regarding the distribution of metaphorical expressions in natural discourse, as a reflection of the use of root metaphor in the production of discourse (Freeman, 1995; Lakoff & Turner, 1989). In this article, our main goal is to examine the CM view with regard to this aspect of language use, namely, the distribution of metaphorical ex-

pressions in natural discourse. We examine this aspect by using a similar rationale to the one that has been applied in the comprehension studies. Under this rationale, the use of a certain root metaphor in comprehending one of its instantiations should facilitate the use of subsequent consistent instantiations. Applying the same logic to the issue of the distribution of metaphorical expressions in discourse, we assume that the use of a given root metaphor in the production of one of its instantiations should support the subsequent use of consistent instantiations. In other words, we assume that the use of a given root metaphor should give rise to subsequent uses of consistent rather than inconsistent instantiations, at least within the boundaries of the same discourse unit (all other things being equal). This prediction can be summarized under the *metaphorical coherence principle*, which can plausibly be derived from the linguistic hypothesis:

The occurrence of a conventional expression that is linguistically related to a certain conventional root metaphor will support the use of consistent (i.e., compatible) metaphorical expressions (i.e., expressions belonging to the same root metaphor) at least for the immediate discourse unit of discourse.

The major goal of this article is to test this principle with respect to natural discourse.

Clearly, the analysis we are reporting is not an online production analysis. Rather, it constitutes an analysis of the textual products of the (online) production process, that is, the metaphorical expressions that appear in the text. Our assumption is that, if a root metaphor has been used in the production process, it will leave some traces in the pattern of use of these metaphorical expressions. Our goal is to infer from the coherence or incoherence of the relation between these metaphorical expressions whether such activation of the root metaphor has indeed occurred, at a certain point in the production of that discourse. Needless to say, the online production of discourse is a complex process in terms of the various factors that must be involved in it, such that online processing is a separate issue that we will not try to address here. However, we do share with major proponents of the CM view (e.g., Freeman, 1995; Gibbs, 1994; Lakoff & Turner, 1989) the assumption that the metaphorical expressions that appear in natural discourse reflect the use, or lack of use, of the root metaphor(s) that might have motivated such expressions in the first place.

THE DISTRIBUTION OF METAPHORICAL EXPRESSIONS IN DISCOURSE

The analysis of the distribution of metaphorical expressions in natural discourse as a reflection of the use of root metaphors in the production of discourse has been addressed by proponents of the CM theory (e.g., Freeman, 1995; Lakoff & Turner, 1989). Such studies have, no doubt, made an important contribution to the

study of poetic discourse. It is proposed that the metaphorical structure of a given discourse (poetic or nonpoetic) is not only reflected at the linguistic level but at other levels as well. Typically, these studies (e.g., Freeman, 1995) have analyzed either global aspects such as plot units, characters, and themes, or local linguistic units, that is, the selection of metaphorical expressions.

However, none of these studies has provided a systematic examination of the distribution of metaphorical expressions in discourse. The unit of analysis employed in these studies is never defined in theory, and in practice, it varies from linguistic to nonlinguistic units. By contrast, this study seeks systematically to test the metaphorical coherence hypothesis by addressing the question of whether metaphorical expressions are coherently distributed in authentic discourse, as the CM theory of metaphor would predict.

THE TEXTUAL ANALYSES

The Research Goals

We intend to examine whether conventional metaphorical expressions are coherently distributed in local units of discourse (e.g., paragraphs), as the metaphorical coherence principle predicts. We will argue that, as far as the distribution of conventional metaphorical expressions in discourse reflects the use of a root metaphor at a certain point in the production of that discourse, these root metaphors are not normally used, in regular or unplanned discourse. To evaluate the level of metaphorical coherence of normal, unplanned pieces of discourse, we need to compare such examples of discourse to some baseline. We have taken pieces of metaphorically planned discourse; that is, discourse that makes deliberate, intended use of a certain root metaphor can be taken as our baseline. Such deliberate use can be marked by various linguistic means indicating the producer's awareness of, and intention to use, a particular root metaphor (e.g., an explicit introduction of the root metaphor in question, such as in the prefatory statement, "Often an argument is like war"). These pieces of planned discourse, then, can provide us with the baseline level of metaphorical coherence that a discourse can achieve when a root metaphor is being used, to which we can compare the level of metaphorical coherence of normal or unplanned pieces of discourse. If the linguistic hypothesis is right, then there should be no difference in the level of metaphorical coherence between the two types because the root metaphor is supposed to be functionally active in both and should therefore generate the same amount of metaphorical coherence. If, however, the alternative view (e.g., the direct access view previously mentioned) is correct, then planned discourse should display a significantly higher level of metaphorical coherence than normal discourse.

Note that the methodology we will be using and, in particular, the use of planned passages as our baseline, to which we compare the unplanned regular discourse, make the inference from the textual products to the use (or lack of use) of root

metaphors during the text production a plausible inference. Although there are many factors involved in the production process, these may apply equally to both text types. Therefore, if we can find significant and reliable differences between the level of metaphorical coherence in these two text types, beyond a specific writer or a specific topic, we can ascribe such differences to the activation or nonactivation of the relevant root metaphors rather than to other factors affecting the production process.

METHOD

Materials

Fifteen passages, each one paragraph in length (between 100 and 187 words), were randomly selected from 15 different opinion articles dealing with current political issues and events. Each article was written by different authors in the daily newspaper *Ha'aretz*. All passages that contained less than six metaphorical expressions were discarded and replaced by other passages to ensure a minimal number of expressions for the analysis of the degree of metaphorical coherence in each discourse. Fifteen additional passages, which we called *planned paragraphs*, were chosen as the baseline. These passages varied in length from 60 to 461 words and were characterized by various means explicitly marking the producer's deliberate use of some root metaphor throughout the entire passage. Two criteria defined a passage as planned: the inclusion of an explicit statement of the root metaphor in question, and the use of a set (at least three) of novel instantiations belonging with this root metaphor. Explicit mention of the root metaphor was taken to indicate planning because passages do not normally tend to include such a statement of intent. The use of novel instantiations also indicates deliberate use of a root metaphor because their meaning is not conventionally stored in our mental lexicon and can be acquired only on the basis of construction "on the fly" of the root metaphor in question (for an elaboration of this point, see Keysar et al., 1998).

Here is a translation of one of the planned passages used as a baseline in our study (the metaphorical expressions are italicized).

The Israeli government is a *long dog* with its *tail* in Washington and its head in Jerusalem. Usually the policy of the *long dog* flows from *tail* to *head*. So, usually Rubinstein [head of the Israeli delegation] *wags* Rabin who *shakes* his *head* in Jerusalem from *side to side* to mean that the negotiations are progressing from side to side. When do we know that something has gone wrong? When El-Shafi [head of the Palestinian delegation] *steps* on Rubinstein's *tail* in Washington and we hear an *angry bark* from Jerusalem.

Planned passages such as this were used to determine the level of metaphorical coherence that characterizes discourse that makes deliberate use of a root metaphor. This level of metaphorical coherence then served as a baseline to which

we could compare the metaphorical coherence of normal, or unplanned, discourse. If the CM theory is correct, there should be no difference in the degree of metaphorical coherence between the two discourse types because the root metaphor was functionally active in both. If, however, only the planned discourse reflects the true use of a root metaphor, then it should outrank normal discourse with respect to coherence.

Procedure

To conduct the analysis, we first had to select the metaphorical expressions we were to analyze. This was done as follows: All the metaphorical expressions in each passage were extracted and underwent a twofold classification by two judges. For each expression, the judges explicitly stated the relevant target and source domains, and accordingly, the relevant root metaphor. (Any disagreement between the two judges was resolved by a third judge.) This process resulted in the following:

1. The exclusion of isolated metaphorical expressions for which no conventional root metaphor was identified. Here the judges sought other conventional expressions in Hebrew instantiating the same root metaphor. If no such expressions were found, the expression in question was discarded as being an isolated metaphor.

2. The exclusion of all expressions belonging to ontological or orientational metaphors, following Lakoff and Johnson's (1980) distinction between these and structural metaphors. Ontological and orientational metaphors (e.g., *MORE IS UP, AN IDEA IS AN OBJECT, THE MIND IS A CONTAINER*, etc.) are highly abstract and, therefore, only loosely associated with their instantiations. In contrast, structural metaphors, such as *ARGUMENT IS WAR, LOVE IS A JOURNEY, and IDEAS ARE FOOD*, contain far richer conceptual mappings (because they are far more specific) as well as a correspondingly rich repertory of conventional instantiations linked to their root metaphors by strong semantic relations. Structural metaphors, then, represent an appropriate level at which significant and nontrivial relations can be perceived. (Indeed, proponents of the CM theory have typically employed structural metaphors as their experimental materials.)

This procedure yielded the set of all metaphorical expressions to be analyzed in each passage. The average number of metaphorical expressions for the unplanned passages was 10.4, and for the planned ones, 13.5.

RESULTS AND DISCUSSION

Four analyses were performed: (a) linear coherence, (b) global coherence, (c) global coherence and conventional expressions, and (d) the analysis of alternative expressions to the metaphorical shifts. We discuss each of these in turn.

Analysis 1: Linear Coherence

The linear coherence of a discourse represents the extent to which successive metaphorical expressions are consistent. It was measured by calculating percentage of shifts versus coherent continuations, out of the total number of transitions from one metaphorical expression to the next, for the same target. For example, if *politics* was metaphorically treated as a building and was followed by another instantiation of the same root metaphor, this was counted as a coherent continuation. If it was followed by an instantiation of a different root metaphor—for example, *POLITICS IS WAR*—this was counted as a shift.

The results were unequivocal. Using a *t* test for unpaired variables, we found a significant difference between the unplanned and planned discourse types, $p < .001$. The randomly selected passages yielded an average of 68% shifts ($SD = 0.32$) and 6% shifts ($SD = 0.1$), respectively, for the unplanned and planned discourse types. Not only did the planned passages exhibit a much higher degree of linear coherence than the unplanned ones but the former reached (on average) an extremely high degree of coherence, in fact, almost the maximum degree possible. Given that the unplanned passages operated far below this level, it would seem that such a high level of coherence requires special planning in the construction of a discourse segment around a given root metaphor and is not the default strategy that producers of discourse naturally and unconsciously adopt.

The following translation of one example is typical of our sample of the unplanned type of discourse (the metaphorical expressions are italicized, and the root metaphors appear in italicized capital letters and parentheses):

Before *landing* (*POLITICS IS A JOURNEY*) in the Labor party he had *flirted* (*POLITICS IS ROMANTIC RELATIONS*) with the Likud party; nevertheless, his *roots* (*POLITICIANS ARE PLANTS*) have always been in the Labor party ideology.

Another interesting finding was that metaphorical shifts in the unplanned passages occurred not only at the intersentential level but also at the intrasentential level, that is, within the boundaries of the sentence unit. In other words, metaphorical shifts were found even at the clausal level. The following examples (taken from a different sample) illustrate these kinds of shifts:

The peace process is *moving forward* and *ripening* (*FOREIGN POLICY IS A JOURNEY/FRUIT*).

The first *step* [of the Oslo agreement], the real *embryonic* one, actually *works well* (*FOREIGN POLICY IS A JOURNEY/A PERSON/A MACHINE*).

Violence is *eating away* the *foundations* of democracy (*THE POLITICAL SYSTEM IS A FOOD/A BUILDING*).

Analysis 2: Global Coherence

Global coherence represents the homogeneity of the discourse in question, as measured by the ratio between the number of root metaphors instantiated in a passage and the total number of metaphorical expressions it contains. The reason such an additional analysis is needed is that linear coherence measures only sequential step-by-step shifts, but only a global coherence measure is sensitive to the total number of root metaphors that have been used throughout the passage. This measure represents another aspect of the metaphorical coherence of a discourse.

Basically, the least coherent discourse would be one in which the number of root metaphors equals the number of metaphorical expressions, yielding a score of 1; the higher the score, that is, the higher the number of metaphorical expressions that cluster under a smaller number of root metaphors, the higher the global coherence of the passage.

Using a *t* test for unpaired variables, we found a significant difference in global coherence between the planned and unplanned passages, $p < .001$. Planned passages ($M = 6.77$, $SD = 5.12$) exhibited a much higher level than unplanned passages ($M = 1.42$, $SD = 0.24$). In other words, the ratio between the number of metaphorical expressions in a passage divided by the number of root metaphors they represented was much higher for the planned passages than for the unplanned ones.

Analysis 3: Global Coherence and Conventionality

Although the global coherence of the planned passages was much higher than that of the unplanned ones, this analysis did not distinguish between conventional and novel expressions. We were interested in finding out to what extent the use of the underlying root metaphors in the planned passages supported the use of consistent conventional expressions. Recall that the linguistic assumption maintains that the use of a certain conventional expression reflects the use of the corresponding root metaphor. This should also work in the opposite direction; that is, when the root metaphor is being used, it should support the use of corresponding conventional expressions. If this is correct, we would expect to find that intensive use of a certain root metaphor also supports the use of clusters of the conventional metaphorical expressions that, according to the CM view, tend to cluster together.

We thus conducted the following analysis: First, we extracted all the clusters (either conventional or novel instantiations, or both) of consistent metaphorical expressions. Each cluster contained at least three instantiations that belonged with the same root metaphor. We then calculated the percentage of conventional instantiations within each cluster.

The results were unequivocal: The percentage of conventional expressions within each cluster was, on average, 9.7%. That is, in practice the only clusters of consistent metaphorical expressions found in the planned passages consisted of

novel expressions. Thus, even passages that clearly made use of certain root metaphors did not support the use of their corresponding conventional expressions.

Analysis 4: Shifts and Alternative Expressions

The previous analysis showed a significant difference in the level of metaphorical coherence between the two text types. Note, however, that one potential objection to this analysis is that the predominance of metaphorical shifts in the unplanned discourse (as opposed to the planned type) might derive from the lack of available conventional expressions belonging to the same root metaphor, compelling the producer of the discourse to make use of instantiations of different root metaphors. For example, in a phrase such as “he cooked up a trap,” which represents a shift from the domain of food to that of hunting, perhaps there is no conventional metaphorical expression from the domain of food corresponding in meaning to *trap*, so that the producer of the sentence had no alternative but to create a shift. Thus, the analysis should examine whether alternative expressions (which are equally conventional and represent the same meaning) were available to the discourse producer but were not used.

To examine if this is indeed the case, we conducted another analysis in which alternative conventional expressions were sought for each shift. The more alternatives we could identify, the stronger the case against the CM theory.

Procedure of analysis. The first step was to decide which root metaphors would serve as the basis for our analysis. We immediately encountered a serious problem with this task because all the randomly selected unplanned passages contained a very large number of root metaphors. According to Lakoff and Johnson (1980), all those root metaphors must have been functionally activated, so that theoretically we had to treat every root metaphor as a main metaphor in the passage. However, it seemed unreasonable to analyze each of these many root metaphors as potentially the main root metaphors for the entire passage. Consequently, we used two criteria for selecting the root metaphors to be analyzed. The first criteria was to select the first root metaphor to be instantiated. The second criteria involved the selection of any other root metaphor with at least two instantiations in the passage. The rationale behind this decision was that, if we accept the CM theory, then the first root metaphor instantiated, or one that is instantiated more than once, can logically be assumed to have been used deliberately.

Once we had selected root metaphors using this procedure, the judges tried to look for available alternative expressions in Hebrew. Naturally, we did not find an alternative for each shift, either because of lack of creativity on our part or because, in many cases, no such conventional alternative exists.

We then conducted two tests to ensure that the alternatives we identified were indeed appropriate for the original expressions, that is, that they were similar in

meaning and equally conventional. For the first test, five judges graded (on a scale from 1 to 5) the extent to which the two expressions shared the same meaning. We discarded all alternatives that scored less than 3. For the second test, five different judges graded (on a scale from 1 to 5) the frequency of occurrence of each metaphorical expression in ordinary discourse. We selected only those alternatives that were rated as either more conventional or up to one-half point less conventional than the original expressions they replaced. The following are translations of alternatives that survived all the selection criteria (metaphorical expressions are italicized, and metaphorical alternatives are underlined):

He *cooked up* (alternative: set) a trap.

The peace process is *moving forward* and *ripening* (alternative: getting closer to its destination).

Results

The results clearly indicate the existence of a relatively large number of potential appropriate alternatives that were not used. On average, we found 2.2 appropriate alternatives per passage (out of 10.4 metaphorical expressions). Moreover, two factors may have prevented us from identifying an even higher number. First, we restricted our search to only one or two root metaphors for each passage, and second, we might simply not have been creative enough to come up with more alternatives even where such alternatives do exist in the language.

GENERAL DISCUSSION

The picture that emerges from this analysis regarding the metaphorical coherence hypothesis is clear: None of the analyses supports the claim that, as a default, unplanned discourse exhibits a coherent distribution of metaphorical expressions. Contrary to the metaphorical coherence principle (which is compatible with the CM view), we found that unplanned discourse displays a significantly lower level of both linear and global coherence than does planned discourse. The use of metaphors in unplanned discourse appears more like free, uncontrolled “navigation” between a large number of root metaphors than a consistent elaboration of any unifying root metaphors. Indeed, special planning seems to be required to make discourse metaphorically coherent.

Furthermore, contrary to the predictions derived from the linguistic hypothesis, our third analysis of the distribution of consistent conventional (as opposed to novel) metaphorical expressions revealed that they do not tend to cluster together in natural discourse. That is, no co-occurrence of more than two or three conventional expressions sharing the same root metaphor (out of a much larger set of

conventional expressions available in the language) was found in the 30 passages we analyzed: The passages contained either many conventional expressions representing different root metaphors (generally the unplanned discourse) or a large number of consistent novel expressions (usually the planned discourse).

To the extent that metaphorical coherence (or lack of it) reflects the use of root metaphors at some point in the production of the discourse in question, we found no evidence supporting the linguistic hypothesis. Rather, the fact that conventional metaphorical instantiations of a given metaphor appear in a given discourse does not necessarily seem to reflect a corresponding activation (in the producer's mind) of the root metaphor. Perhaps this means that the use of conventional expressions in real discourse is autonomous in that, under such conditions of natural discourse production, they do not rely on the functional activation of the entire root metaphor and, in that sense, their meanings are divorced from the underlying conceptual metaphors posited by the CM theory. The conventional expressions we use in ordinary language may have acquired a conventional meaning of their own and do not necessarily rely on the activation of the complex mapping of what are assumed to be their corresponding root metaphors (see Glucksberg & Keysar, 1990; McGlone, 1996).

Admittedly, our analyses are not online production analyses and may even be flawed in that they ignore certain potential factors that might influence the use of metaphorical expressions in discourse and bias unplanned discourse toward a metaphorically noncoherent structure (e.g., online production factors, norms of writing, genre characteristics, etc.). Future research in these areas is needed to get a fuller picture of the role played by conceptual metaphors in discourse production.

We might conclude that, although the conceptual root metaphors may be the metaphors we "live by," the actual use of metaphorical expressions in authentic natural discourse does not necessarily indicate that they are employed in the generation of that discourse.

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