

# Three Types of Metaphoric Utterances That Can Synthesize Theories of Metaphor

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This article argues that there are three types of metaphoric utterances that can be defined by (a) the contextual stability of the utterance's interpretation and (b) the presence or absence of a conceptual source–target mapping. Evidence for these three types of metaphoric utterances comes from introspective evidence about metaphor-in-language, from a survey-based study of metaphoricity, from a computational model of metaphoricity, and from a meta-study of the examples used in published metaphor research. These three types of metaphoric utterances are used to narrow the scope of existing theories of metaphor and thus to synthesize them, showing that competing theories describe and are concerned with different types of metaphoric utterances.

This article argues that there are three distinct types of metaphoric utterances which differ in the properties of their interpretation or meaning. Existing theories of metaphor can be synthesized by limiting their scope to a certain kind of metaphor-in-language. This is important because existing theories of metaphor (e.g., Conceptual Metaphor Theory and the Relevance Theory approach to metaphor) examine a small and unrepresentative subset of metaphors and incorrectly generalize from these to metaphor as a whole (evidence for this claim is seen below in the meta-study of published metaphor research). Part of the argument of this article is that language, the primary vehicle for metaphor and the main source of evidence about metaphor, needs to be involved in theories of metaphor and linguistic details attended to.

First, some metaphoric utterances have a direct and stable meaning but others have a purely inferential meaning that varies according to interpreter (see discussion in Dunn, 2013c). These inferential metaphors, as in examples (1) and (2), we will call Interpretive metaphors:

- (1) “*Christ was a chronometer.*”
- (2) “*Jack is a real lion.*”

Second, some direct-meaning metaphoric utterances are based on a conceptual source–target mapping. These direct-meaning metaphors, as in examples (3) and (4) below, we will call Source–Target metaphors:

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(3) *“That idea went out of style years ago.”*

(4) *“Marxism is currently fashionable in western Europe.”*

A third group consists of direct-meaning metaphoric utterances which do not have a source–target mapping. These metaphors, as in examples (5) and (6), we will call *Modulated metaphors* because the metaphoric elements in the utterance modulate the meaning of the other elements of the utterance so that the utterance as a whole has a stable metaphoric meaning (cf. Dunn, 2011). The modulated elements of the utterance cannot be called a target, however, nor can the modulating elements be called a source and neither influences the inferences licensed by the utterance.

(5) *“China has chased a trade agreement with the European Union.”*

(6) *“A lady on high heels clacked along, the type my mother says invests all of her brainpower in her looks.”*

This three-way division of metaphoric utterances can be explained in reference to two questions:

1. Does the utterance have a contextually stable interpretation?
2. Does the utterance contain (or reflect) a source–target mapping?

The first question has to do with the meaning of the metaphoric utterance: is it contextually stable or contextually unstable? Another way of phrasing this question is whether the metaphor has a direct expression and is part of the linguistic meaning, *What Is Said*, or whether the metaphor has an indirect expression and is part of the speaker’s meaning, *What Is Communicated* (Bezuidenhout, 2001; Black, 1979; Davidson, 1978; Gibbs, 2002; Reimer, 2001). All metaphors do not fit into one category or the other. Rather, some metaphors have metaphoric meaning as part of *What Is Said* and others as part of *What Is Communicated*. Thus, the first question is whether the metaphor in question is best described by the direct or indirect expression view of metaphor; and the most useful diagnostic for this distinction is the contextual stability of the interpretation. Direct expression metaphors, a part of *What Is Said*, should be just as contextually stable as non-metaphors; indirect expression metaphors, on the other hand, a part of *What Is Communicated*, should be relatively contextually unstable (cf. Dunn, 2013c).

The second question has to do with the conceptual source–target mapping underlying the linguistic metaphor: is there one or isn’t there? This is a more difficult question to answer, in part because there are many ways to go from linguistic metaphor to conceptual metaphor and none of them are particularly reliable. The standard used here is one of explicitness: is there an explicit source–target mapping visible or available in the linguistic metaphor? Does the posited source–target mapping appear in other metaphoric utterances and does it produce other felicitous metaphoric expressions as expected? Does the posited source–target mapping influence the inferences of the metaphoric utterance in a systematic manner? If the answer to any of these questions is no, this could mean that there is no source–target mapping at all or that the mapping is mediated and not present in the utterance (Shannon, 1992).

Table 1 summarizes these two properties of metaphoric utterances. Each of the posited types of metaphoric utterance has a unique combination of properties. Interpretive metaphoric utterances have contextually unstable interpretations and no conceptual source–target mapping that is capable of influencing reasoning. Source–Target metaphoric utterances have both a contextually

TABLE 1  
Relevant Properties of Metaphoric Utterances

Type	Interpretations	Conceptual Mapping
Interpretive	Unstable	No
Source–Target	Stable	Yes
Modulated	Stable	No

stable interpretation and an explicit source–target mapping that is capable of influencing reasoning. Modulated metaphoric utterances have a contextually stable interpretation but no explicit source–target mapping that is capable of systematically influencing reasoning. We will now look more closely at each of the three types of metaphoric utterances.

INTERPRETIVE METAPHORIC UTTERANCES

Interpretive metaphoric utterances exhibit the properties of contextually unstable interpretations (thus making them instances of indirect expression metaphors) and the lack of conceptual source–target mappings. The purpose of this section is to provide introspective evidence for this analysis. It is important to note that these metaphors have contextually unstable interpretations and contextually unstable inferences/implications in part because they are not based on conceptual source–target mappings, so that the inferences and implications must be determined only by the context and not by an underlying mapping.

Example (7) could be metaphoric or non-metaphoric depending on the surrounding context (making it a saturated metaphoric utterance; cf. Dunn, 2013c). Thus, its interpretation is already contextually unstable because its metaphoric and non-metaphoric readings will be quite different. Even within its metaphoric reading, the *puff of dust* could refer to a number of things: it could refer to the sign of an impending disaster or it could refer to the result of a past disaster. This contributes further to the contextual instability of the utterance. Further, there is no explicit source-target mapping here: is the *puff of dust* the source or the target? Does *on the horizon* represent the source or the target? It isn't clear, and any analysis which posits an underlying conceptual metaphor for this utterance has the burden of proving why such an analysis is justified.

(7) “*But there is a puff of dust on the horizon.*”

Example (8) has only a metaphoric interpretation, but that interpretation is underspecified: the context is required to fill in what the *female soil* refers to and what action the *possessed and misused* refers to, thus making its interpretation relatively contextually unstable. Further, what is the relationship between the *female soil* and the *masculine force*, and does this connect with a larger view of gender relations? And, again, there is no explicit source–target mapping: what conceptual metaphor underlies this utterance? What other utterances are instances of this same conceptual metaphor? Again, the burden of proof lies on those who posit a mapping for this utterance.

(8) “*The female soil was possessed and misused by the masculine force of the Spanish invaders.*”

Example (9) is saturated, with both metaphoric and non-metaphoric readings (it was used in a metaphor originally). Within its metaphoric interpretation, it is contextually unstable: *some paint* could be a way of covering up serious flaws in order to disguise them, or it could be a way of presenting something in the best possible way, highlighting good qualities. There is no explicit source–target mapping present in the utterance.

(9) “I’ll give it *some paint*.”

Example (10) is a more traditional A is B form. Its interpretation is underspecified: *dog* denotes negative qualities, but what those qualities are is not clear. A source–target mapping along the lines of “A HUMAN IS AN ANIMAL” is not descriptively accurate. One reason for this is that instances of these two concepts receive very different interpretations. For example, “*That girl is a giraffe*” and “*That girl is a cat*” differ from the original utterance, as do the uses of different breeds of dog: “*He’s a real chihuahua*” versus “*He’s a real bloodhound*.” Thus, such a source–target mapping does not show up in other utterances.

(10) “*That girl is a dog*.”

Example (11) has only a metaphoric interpretation, but the meaning of *mechanical millipedes* is contextually unstable (in this case it refers to a type of public transportation vehicle). It is unstable because the most relevant interpretation depends heavily on the situation of use. There is again no explicit source–target mapping and a candidate like “*TRAINS ARE INSECTS*” first of all does not account for the presence of *mechanical* as a modifier of *millipedes* and second does not appear in other utterances.

(11) “*Visitors will have to look at these mechanical millipedes for years to come*.”

Example (12) has only a metaphoric interpretation, but again this interpretation is contextually unstable because we do not know what the *stains on the carpet* represent. In fact, we do not know if these stains are literal stains which are used to represent a larger property or if they are entirely metaphorical. Again, no source–target mapping adequately describes this utterance.

(12) “*The stains on the carpet have survived every name change*.”

Example (13) again has both metaphoric and non-metaphoric interpretations, depending on context: this could be an actual gift which is used, such as a new screwdriver, or it could be metaphoric gift, such as the ability to remember long sequences of numbers. We could posit a source–target mapping along the lines of “*NATURAL ABILITIES ARE PRESENTS*.” However, this would imply the acceptability of metaphors like “*This year she got the ability to sing*,” “*I gave you your ability to sing and I can take it away*,” and “*I can’t wait to unwrap my ability to sing*.”

(13) “*The use of her gift came at a price, however*.”

Example (14) has both metaphoric and non-metaphoric readings: the rubble could be the physical remains of a building which has been destroyed by an enemy, and thus functions as an actual memorial; the rubble could also be the emotional or mental state of an individual who remains in turmoil because they are unwilling to move beyond a certain event, for example, when preceded by (14a). We could posit a source–target mapping along the lines of “*MENTAL STATES ARE BUILDINGS*.” However, this would imply the acceptability of metaphors like “*We are trying to*

*reconstruct his happiness,*” “*Marriage is a blueprint for happiness,*” and “*His family is his foundation.*” While such metaphors are acceptable, they do not seem unmarked enough to be firmly rooted in the conceptual system and they do not systematically influence the inferences licensed by the utterance.

(14) “*The rubble has been left undisturbed as a memorial.*”

(14a) He is still single after his wife left him and destroyed him emotionally.

The sentence in (15) has only a metaphoric reading, but that reading is underspecified: are these repeating thoughts continued simply because the people are too lazy or incompetent to come up with new ideas, or do they repeat because they stand up to the test of time? In other words, we don’t know the implications of this metaphor. Finally, the sentence in (16) also has only a metaphoric reading, but it is highly metaphoric and does not have a stable interpretation.

(15) “*The same favored thoughts ran through the same heads again and again.*”

(16) “*They get talked into being old.*”

The Interpretive metaphoric utterances discussed in this section show the properties of being contextually unstable and lacking an explicit or reasonable source–target mapping. One important reason for the contextual instability of these metaphors is that they are highly metaphoric and also that they are not conceptual in nature and so are not connected with non-linguistic reasoning processes. Thus, the implications and inferences of these metaphors must be determined on a case-by-case basis. In other words, they are instances of metaphor as What Is Communicated (i.e., Indirect Expression metaphors). Yet they remain attested instances of metaphor which need to be described by a full-coverage theory of metaphor.

### SOURCE–TARGET METAPHORIC UTTERANCES

Source–Target metaphoric utterances exhibit the properties of contextually stable interpretations (thus making them instances of direct expression metaphors) and explicit source–target mappings. The purpose of this section is to provide introspective evidence for this analysis by examining a number of examples.

Example (17) has only a metaphoric interpretation and this interpretation is relatively stable: *building our state* means to institute policies and a general culture which meet certain shared expectations. The reason for this stable interpretation is that the utterance is based on an underlying source–target mapping, something like “*GOVERNMENTS ARE BUILDINGS.*” An important piece of evidence for this mapping is that it appears in many other metaphoric utterances.

(17) “*In general our policy should be to proceed with building our state block by block.*”

Example (18) has a stable metaphoric interpretation, caused by the same underlying source–target mapping as the utterance in (17). A third metaphoric utterance based on a similar source–target mapping, in (19), also has a stable interpretation. The fact that a small number of closely related source–target mappings can be used to explain the stable interpretations of a large number of instances of metaphoric utterances is good evidence for these mappings.

(18) “*His long-term ambition to rule a large south Slav kingdom finally collapsed.*”

(19) “*These influences laid the foundations for his blend of the naive and the sophisticated.*”

Example (20) again has a stable interpretation and is based on the source–target mapping “*MORE IS UP*.” Example (21), again with a stable interpretation, is based on the same mapping. Example (22) is based on a similar source–target mapping, again with a stable interpretation.

(20) “*The cost has gone through the barn roof.*”

(21) “*Now that would be a great leap forward.*”

(22) “*You can be miles ahead in the polls but when you get to the last three weeks things change.*”

The metaphor in example (23) has a conceptual source–target mapping along the lines of “*SEEING IS PHYSICAL CONTACT*.” This same mapping appears in a number of other unmarked metaphoric expressions, such as “*We made eye contact*” and “*He couldn’t keep his eyes off me.*” The recurring nature of this metaphor is evidence that there is a conceptual source–target mapping. Similarly, the metaphor in example (24) has a conceptual mapping along the lines of “*PROBLEMS ARE LOCKED CONTAINERS*”. This conceptual mapping appears in other unmarked metaphoric expressions like “*We need to break this case open wide*” and “*The truth finally came out.*” Again, this unmarked reoccurrence, hand-in-hand with the influence of the metaphor on the inferences licensed by the utterance, is evidence for a conceptual mapping.

(23) “*I felt his glance on the back of my shoulder.*”

(24) “*He finally found the key to the problem.*”

The metaphor in example (25) has a conceptual source–target mapping along the lines of “*IDEAS ARE OBJECTS*.” This same mapping appears in other unmarked metaphoric expressions such as “*She threw a new idea at me*” and “*We traded ideas at the conference.*” The mapping also influences reasoning and the IDEAS in these metaphoric expressions have the same inferences and implications as physical objects, which is not the case in Interpretive and Modulated metaphors. Finally, the metaphoric expression in (26) has a conceptual source–target mapping along the lines of “*INTIMACY IS PHYSICAL CONTACT*,” which appears in other unmarked metaphoric expressions like “*We connected over dinner*” and “*I was touched by his sincerity.*”

(25) “*The teacher took the idea and held it up to scrutiny in front of the class.*”

(26) “*They’ve talked and talked but she can’t seem to reach him.*”

The examples in this section share a stable interpretation that seems to be a result of a conceptual source–target mapping. The construct of the source–target mapping receives support from the fact that many instances of metaphoric utterances seem to systematically depend on the same sort of mappings. Thus, the mapping is a useful explanatory tool and the study of these mappings is an interesting way to explore a particular cultural-conceptual system. Further, these posited mappings have a systematic influence on the inferences licensed by a metaphoric utterance. However, it is important not to assume that because some metaphoric utterances are best analyzed in this way that all metaphoric utterances must have the same properties.

## MODULATED METAPHORIC UTTERANCES

Modulated metaphoric utterances exhibit the properties of contextually stable interpretations (thus making them instances of direct expression metaphors) along with the lack of an explicit source–target mapping (as evidenced by the lack of a systematic influence on the inferences

licensed by the utterances). The purpose of this section is to provide introspective evidence for this analysis.

Example (27) has a single, relatively stable, metaphoric interpretation: *being bludgeoned* into doing something is to be forced to do it. But what is the source–target mapping for this metaphor? One possible candidate is “*SOCIAL FORCE IS PHYSICAL FORCE*.” But other metaphoric utterances based on this candidate mapping are not acceptable: “*He was beaten until he made dinner*,” or “*She stabbed him into admitting he had cheated*” simply do not receive felicitous metaphoric interpretations, which we would expect under this analysis. Thus, there seems to be no reason to posit an underlying source–target mapping.

(27) “*There are few things worse than being bludgeoned into reading a book you hate.*”

Example (28) has only a metaphoric interpretation, which is relatively stable: the Arsenal team would have done well and possibly won the game in question. But is there a source–target mapping here? One candidate is “*HOLDING IS CONTROLLING*.” If this were the case, we would expect other metaphoric utterances to be instances of the same mapping. However, “*The team would have juggled the match*” and “*The team would have tossed the match around*” do not receive the same interpretation. It seems that the particular phrase *kept a grip*, along with a few others, receives the metaphoric interpretation, but this does not justify a general mapping.

(28) “*An Arsenal team in peak health would have kept a grip on the match.*”

Example (29) has only a metaphoric interpretation and again it is contextually stable. But what source–target mapping could we posit here? One candidate is “*WIPING THE FACE IS CLEANING*.” But what other instances of this mapping are possible? Both “*She scrubbed the tears away with a handkerchief*” and “*She brushed her eyes*” receive only non-metaphoric interpretations. There is no reason, then, to posit an underlying mapping.

(29) “*She took out a handkerchief and mopped her eyes.*”

Example (30) has only a stable metaphoric interpretation. But, again, is there a source–target mapping? One candidate is “*MAKING PLANS IS GARDENING*.” However, other instances of this mapping are not felicitous: “*His task was to pluck the courses out of the calendar*” and “*His task was to uproot the courses from the calendar*.” There is no reason, then, to posit a generalized mapping to describe a single instance of metaphor.

(30) “*His final task was to weed out of the calendar the rowing courses made unfair by the wind.*”

Example (31) again has only a stable metaphoric interpretation. One candidate for a source–target mapping is “*LOOKING WITH THE EYES IS A LONG-DISTANCE MOVEMENT*.” Other instances of this mapping could be “*The police driver hurled a face at Jamie*” and “*The police driver threw a stare at Jamie*.” However, these metaphors are infelicitous.

(31) “*The police driver shot Jamie a look of enquiry.*”

Example (32) has a stable metaphoric interpretation but no source–target mapping that occurs in other metaphoric utterances. Similarly, example (33) has only a metaphoric reading and has a consistent interpretation and implications, but is a sort of one-off metaphor which is not productive. These metaphors have some consistent implications, but the reasoning possible from the metaphor is limited (e.g., very few of the properties of tadpoles apply to the nurses).

- (32) *"The few straggling trees struggled to keep their precarious hold in the uncompromising soil."*  
 (33) *"The nurses are so overworked that they have been called tadpoles."*

The metaphor in example (34) has only a metaphoric reading and has a consistent interpretation across contexts. However, there is no productive conceptual mapping underlying the metaphoric expression. One mapping we could posit for both (34) and (35) is something along the lines of *"EYES ARE PHYSICAL CONTAINERS."* However, such a mapping would lead to inferences that could be made from these metaphoric expressions, such as *"His eyes were locked"* and *"I finally found the keys to his eyes,"* and *"His eyes were all burned out."* These metaphoric expressions are possible, of course, but they are not unmarked and productive and involved with reasoning in the same way that source–target metaphors are.

- (34) *"He smiled suddenly, but his eyes still held sadness."*  
 (35) *"The flashing lights played off her face, shot sparks from her eyes."*

Finally, example (36) has only a metaphoric reading with a consistent interpretation, but it does not influence the inferences possible from the metaphoric expression (e.g., we cannot infer that the waves of casinos will wash away other businesses) and there is no underlying source–target mapping which produces related unmarked metaphoric expressions.

- (36) *"But what started with a splash has turned into a wave of competing casinos."*

Modulated metaphors have a stable interpretation, a direct expression that is part of What Is Said, but they do not have an explicit source–target mapping. Further, possible source–target mappings do not occur widely in other utterances, often produce infelicitous utterances, and do not systematically influence the inferences which an utterance licenses.

## SURVEY-BASED EXPERIMENTS

The basic hypothesis here is that there are three types of metaphoric utterances which differ in their relative contextual stability and in the presence or absence of conceptual source–target mappings. The first source of empirical evidence for the claim comes from a set of survey-based experiments with native speakers of English (defined here as those whose elementary education was conducted in English). The experiments gather a survey-based measure of an utterance's level of metaphoricity as a dependent variable using an existing methodology (Dunn, 2014a). The metaphoricity of an utterance is then tested across different linguistic contexts.

First, the dependent variable is an utterance's level of metaphoricity. This is determined by asking a number of participants (in this case,  $n = 20$ ) whether a given sentence is Metaphoric or Literal.<sup>1</sup> The more metaphoric a sentence is, the more conscious participants will be that the sentence is metaphoric. Thus, more participants will agree that a sentence is metaphoric if it is more metaphoric. The metaphoricity value is computed by taking the number of participants who

<sup>1</sup>Because there are many types of figurative language, it is more technically precise to ask whether a sentence is Metaphoric or Non-Metaphoric, as opposed to Literal. However, because the study uses naïve participants, this is simplified to a Metaphoric/Literal opposition.



labelled a sentence as metaphoric over the total number of participants (MetaphoricN/TotalN; for other formulations of this measure, see Dunn, 2014a).

Second, we use preceding linguistic context to test the behavior of metaphoric utterances across conditions. Preceding linguistic context is operationalized as a single sentence that comes before the metaphoric utterance in question. Two conditions are tested: (1) a change in context, operationalized using two alternating non-metaphoric sentences, one from a PHYSICAL domain and one from a MENTAL domain; (2) the influence of priming for a posited conceptual source–target mapping, operationalized using two alternating sentences, one metaphoric containing the source–target mapping in question and one non-metaphoric from a PHYSICAL domain. One issue when setting up this experiment is to find instances of similar source–target mappings for those metaphors which are hypothesized not to contain a source–target mapping (e.g., Interpretive metaphors). In these cases, source–target metaphors are taken from the Master Metaphor List (Lakoff, Espenson, & Schwartz, 1991) which contain the target concept represented by the test sentence.

Third, because we are concerned with the behavior of metaphoric utterances across linguistic contexts, we take the difference between the utterance’s metaphoricity under the two conditions. Thus, low numbers reflect stability across the conditions and high numbers reflect instability across contexts. The difference is computed by subtracting the smaller value from the larger value.<sup>2</sup>

Fourth, we use *t*-tests to compare the distributions in question, rather than an ANOVA or a MONOVA, because we are testing specific hypotheses, rather than simply a difference across classes. Specifically, we hypothesize that only Interpretive metaphors have a difference across contexts and only Source–Target metaphors have a difference across priming/non-priming contexts. These expectations are shown in Table 2. Thus, we use three *t*-tests: (1) between Interpretive metaphors and Source–Target metaphors we expect a significant difference in the change in metaphoricity across contexts; (2) between Source–Target metaphors and Modulated metaphors we expect a significant difference in the change in metaphoricity across priming/non-priming contexts; (3) between Non-Metaphoric and Metaphoric sentences we expect a significant difference in metaphoricity, tested here using the Mental context.<sup>3</sup> This design is used instead of simply testing the variance across all classes and conditions because we hypothesize that the significant differences occur in precisely these locations.

Fifth, the study is implemented using MechanicalTurk. There are 20 sentences in each class (see Appendix C), for a total of 60 metaphors. Each metaphor in each condition is rated by 20 participants, with the metaphoricity calculated as the percentage of participants who choose the Metaphoric label. Each HIT (“Human Intelligence Task,” the minimal unit on MechanicalTurk) consists of six questions: one demographic question to ensure the participant is a native speaker of English as defined above, one grammatical question to ensure the participant is fluent in English, and four metaphor rating questions (two of which are metaphors and two of which are not metaphors to avoid biasing participants by over-representing one class). Each participant can answer a particular HIT only once, but there is no limit to the number of HITs a participant can answer. There are a total of 80 HITS, each with four metaphor rating questions and each answered by 20 participants.

<sup>2</sup>It doesn’t matter which context is more metaphoric because the contexts themselves are not being tested.

<sup>3</sup>This hypothesis is meant merely to validate this measure of metaphoricity in the first place as marking distinctions between metaphoric and non-metaphoric language.

TABLE 2  
Hypothesized Behaviors of Types of Metaphoric Utterances Across Conditions

<i>Class</i>	<i>Difference Across Contexts</i>	<i>Difference Across Priming</i>
Interpretive	Yes	No
Source–Target	No	Yes
Modulated	No	No

Sixth, the selection of metaphoric and non-metaphoric sentences is centered around the choice of main verbs. The Corpus of Contemporary American English was used to choose the 20 most frequent active transitive content verbs (e.g., excluding “do” and “have” because they are function verbs, and “begin” and “try” because of their argument structure) in English (see Appendix A; words with one sense that is functional were also excluded, for example, “use”). Each verb is used as the main verb once for each type of metaphor. Thus, the comparison of types of metaphor controls for the main verb and thus for frequency/familiarity of the main verb. In addition, three literal uses of each main verb were included in order to balance the metaphor sentences on each HIT (because each individual task contains, in addition to competence tests, two metaphoric passages and two non-metaphoric passages). All test sentences (i.e., all literal or metaphoric sentences selected according to their main verb) were adapted from attested sentences from the Corpus of Contemporary American English, with no genre restrictions, with the exception of Source–Target metaphors. Source–Target metaphors were taken from the Master Metaphor List (Lakoff et al., 1991).

Adaptations to attested sentences include (a) simplifying sentences for length and syntactic complexity and (b) resolving ambiguities created by referential statements (either to previous linguistic occurrences or to uncommon named entities). All context sentences were created in order to fit the requirements of the study (e.g., a proceeding literal physical context that is coherent with the test sentence). All selected verbs and context sentences were grammatically past tense with singular subjects to control for variations in the use of the verbs in question. In cases where a verb had several non-metaphoric senses an effort was made to represent the most common senses within the non-metaphoric category. Examples of metaphoric sentences and the linguistic context used are given in Appendix B and a complete list of metaphoric sentences by utterance type is given in Appendix C. Descriptive statistics for the participant-based metaphoricity measure within the mental domain are shown in Table 3. As we see below, however, the change in the measure across domains is the important marker within the metaphoric category.

TABLE 3  
Descriptive Statistics for Metaphoricity Measure in Mental Domain

	<i>Average</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Non-metaphoric	0.086	0.125	0.000	0.550
Interpretive	0.777	0.181	0.400	1.000
Source–Target	0.812	0.203	0.350	1.000
Modulated	0.789	0.223	0.100	1.000

*Note.* Data in Table 3 and all other data for the article are available at <http://www.jdunn.name>.

## RESULTS AND DISCUSSION OF SURVEY-BASED PARTICIPANT EXPERIMENTS

The first hypothesis is that the Metaphoric sentences will have a significantly higher metaphoricity value than the non-metaphoric sentences. This hypothesis is tested on the metaphoricity values from the Literal Mental context. Using the unpaired *t*-test to test the hypothesis that the sentences come from the same population, that hypothesis is rejected with a two-tailed  $p < .0001$ . This supports the use of this measure of metaphoricity as a dependent variable in this study (for further support of this measure, see Dunn, 2014a), as it clearly distinguishes between metaphoric and non-metaphoric sentences.

The second hypothesis is that Interpretive metaphors will vary significantly in their metaphoricity value across linguistic contexts, reflecting the fact that they have contextually unstable interpretations. This is examined using the difference between the metaphoricity values for metaphoric utterances in (a) a non-metaphoric physical context and (b) a non-metaphoric mental context. The unpaired *t*-test was used to compare Interpretive metaphors with Source–Target utterances. The null hypothesis is rejected with a two-tailed  $p < .0001$ , supporting the claim that Interpretive metaphors have contextually unstable interpretations. The same test was used to compare the stability of metaphoricity values across contexts for Modulated and Source–Target categories, which are hypothesized to have equal contextual stability. In this case, the null hypothesis was not rejected. This evidence supports that claims that Interpretive metaphors, and only Interpretive metaphors, are relatively contextually unstable. Two reasons are posited for this behavior: first, the lack of source–target mapping; second, that these are cases of Indirect Expression metaphors.

The third hypothesis is that Source–Target and Modulated metaphors, both of which have equally stable metaphoricity values across non-metaphoric contexts, differ in the stability of their metaphoricity values with and without priming by a related source–target metaphor. This hypothesis was operationalized as above. The null hypothesis was rejected with a two-tailed  $p < .05$ . This supports the claim that only Source–Target metaphors have an underlying conceptual source–target mapping and that these metaphors thus behave differently in the presence of previous conceptual mappings. The finding is not as robust as the previous findings, in large part because it is more indirect (e.g., there are a large number of priming factors, and many of these metaphors are partially fossilized). Nonetheless, the hypothesis that Modulated and Source–Target metaphors behave in the same way when preceded by conceptual mappings is significantly rejected.

These survey-based experiments thus support the hypotheses made about the three types of metaphoric utterances, hypotheses consistent with the introspective evidence discussed above. Interpretive metaphoric utterances have contextually unstable interpretations and are instances of Indirect Expression metaphors. Modulated and Source–Target metaphoric utterances have contextually stable interpretations and are instances of Direct Expression metaphors, but differ in the presence or absence of an underlying conceptual source–target mapping. A third source of evidence for this view of metaphor-in-language comes from computational modeling.

## COMPUTATIONAL EXPERIMENTS

The basic hypothesis here is that there are three types of metaphor-in-language which differ in their relative contextual stability and in the presence or absence of conceptual source–target

mappings. The third source of evidence, from computational modelling, takes the form of a system which takes a sentence of unprocessed natural language text and assigns that sentence a scalar metaphoricity value comparable to the dependent variable used in the study above. The computational model does not have access to linguistic context beyond the sentence-level or to non-linguistic context. In order to interpret the results of the model, we first need to understand how it works.

## The System

The computational metaphor identification system described here uses a combination of machine learning techniques (for testing features; Dunn 2014a, 2014b) and knowledge-based resources to assign a scalar metaphoricity value to an input sentence. Taking as input a single natural language sentence in textual form (e.g., this particular sentence could be used as input), the first module of the system maps the sentence onto concepts in the Suggested Upper Merged Ontology (Niles & Pease, 2001). The second module builds a feature vector to represent the input sentence using a number of variables derived from properties of the ontological concepts, properties taken from a knowledge base created specifically for this metaphor identification system (for discussions of an earlier implementation of the system, see Dunn 2013a, 2013b).

The text is first processed using Apache OpenNLP for tokenization, named entity recognition, and part of speech tagging. Morpha (Minnen, Carroll, & Pearce, 2001) is used for lemmatization. At this point word sense disambiguation is performed using SenseRelate (Pedersen & Kolhatkar, 2009; a context window of 5 was used, along with part of speech coercion), mapping the lexical words to the corresponding WordNet senses. These WordNet senses are first mapped to SynSets and then to concepts in the SUMO ontology, using existing mappings (Niles & Pease, 2003).

Thus, the input to the second part of the system is the set of SUMO concepts which are pointed to by the input text. No grammatical information is retained in order to generalize the search for metaphors away from using grammatically related words as candidates for directly expressed source concepts and target concepts (e.g., Dunn et al. 2014; Gandy et al., 2013; Shutova, Teufel, & Korhonen, 2013). The concepts in the SUMO ontology are enriched with properties from a separate knowledge base designed for this system. The system presented here relies on six concept properties, listed in Table 3 and described below. The outline of the system is visualized in Figure 1, showing the path from input text to the feature vectors which ultimately are evaluated as a model of metaphor-in-language.<sup>4</sup>

A few examples will help to explain the ontological properties shown in Table 4. First, the Domain of the Referent and the Domain of the Sense are the domains of the object to which the concept refers and the domain of the sense of the concept, respectively. Take, for example, the concepts MINISTER and PROFESSOR. Both concepts refer to physical objects, to human beings with physical bodies which are subject to physical actions. At the same time, the distinguishing features of these concepts are socially defined. Thus, the difference between a minister and a professor is a social property of the roles, responsibilities, and expectations of these two socially constructed entities. The importance of this distinction between the Domain of the Sense and the Domain of the Referent can be seen from the following sentences. The sentence in

<sup>4</sup>The system resources and all other data for this article can be found at [www.jdunn.name](http://www.jdunn.name)

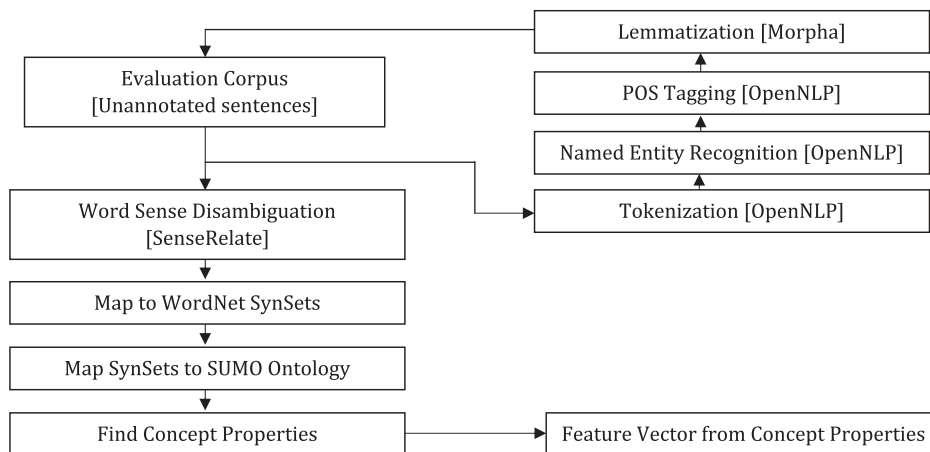


FIGURE 1 System description.

TABLE 4  
Ontological Features and Values

Feature	Values
Domain–Referent	MENTAL, PHYSICAL, SOCIAL, ABSTRACT
Domain–Sense	MENTAL, PHYSICAL, SOCIAL, ABSTRACT
Event–Status	OBJECT, STATE, PROCESS
Animacy	HUMAN, ANIMATE, INANIMATE
Function	PHYSICAL-USE, NON-AGENTIVE, INSTITUTIONAL, NONE
Fact–Status	PHYSICAL, NON-INTENTIONAL, INTENTIONAL, COLLECTIVE

(37) describes a physical action involving the physical properties of the minister, while the sentence in (38) describes a social action involving the social role of the minister. A metaphor could occur on either level, and thus the two properties are necessary for finding all possible metaphors. The Event-Status property marks a difference between processes, states, and objects. The animacy property distinguishes inanimate objects from animate objects and humans.

(37) The minister threw a curveball at his bishop during the annual parish baseball game.

(38) “*The minister threw a curveball at his bishop in his weekly homily.*”

Searle’s (1995) distinction between different sorts of facts points out that concepts can have a range of ontological statuses. A screwdriver, for example, is a physical object that exists as such separate from human perception. It is a physical-fact. Searle distinguishes physical-facts (which, like the screwdriver, exist independently of humans) from non-intentional mental facts (e.g., sensations), intentional mental facts (e.g., beliefs), and collective mental facts (e.g., institutions and social objects like currency), none of which exist independently of humans. This is an important property for metaphor because most concepts used metaphorically are human-dependent. Metaphor is an especially powerful force in shaping these individual and collective mental facts

because these concepts only exist when humans entertain them and only have certain properties because humans give them those properties.

The final ontological property is Function. This is a property which indicates the purpose or use of a concept. For example, a screwdriver is only distinguished from other similar physical objects (e.g., a short rod) when humans assign it a function: this object is used for turning screws. The system uses four values for the Function property: “None” for those concepts which do not carry function information; “Non-Agentive” which carry natural or intrinsic functions independent of humans (e.g., the function of a heart is to move blood through the body); “Physical-Use” which are assigned by humans based on the physical use of an object (for example, screwdrivers are used to turn screws and hammers are used to drive nails); finally, “Institutional” functions are those in which humans assign a social function to a social object which would not exist if humans did not collectively agree that it exists (e.g., the U.S. Constitution is able to function only in so far as the majority of American citizens accept that it exists and consent to its edicts).

The concept AUTOMOBILE, for example, (shown in Table 5) belongs in the physical domain both as a referent and as a sense. It is an inanimate object, is a physical fact, and its main function is its physical-use (e.g., transportation). The concept COLLEGE, on the other hand, refers to a physical object (at least, for traditional colleges with campuses) but the sense is social, encompassing the social framework that distinguishes COLLEGE from, for instance, HOSPITAL. It is also an inanimate object, but it has a collective fact-status, in that students, faculty, employers, etc. must agree to recognize the college as such for it to truly exist. Further, it has an institutional function because the purpose of the college could not be fulfilled if the participants did not will it to be fulfilled. The concept CONTRACT has a social sense, in that it exists as a social relationship, but unlike COLLEGE it has no physical referent, instead having an abstract referent. Like COLLEGE, CONTRACT has a collective fact-status and institutional-function, reflecting that it is a socially constructed object (with, of course, a much reduced physical status). The concept LEARNING belongs in the mental domain, for both referent and sense. It is an animate process with an intentional fact-status, indicating that it exists as a conscious mental activity. Here it has no function because its function is specific to a particular instance. Finally, the concept MIGRANT belongs in the physical domain as a referent (a human being) but in the social domain as a sense (because which humans are considered migrants is socially defined). It is a human object with a collective fact-status, indicating that the difference between a human being and a migrant only exists if everyone consents to accept such a difference. These examples are only a small selection of the knowledge base of concept properties (which is available on the author’s website).

TABLE 5  
Example Concepts and Their Properties

<i>Concept</i>	<i>Domain, Referent</i>	<i>Domain, Sense</i>	<i>Animacy Status</i>	<i>Event Status</i>	<i>Fact Status</i>	<i>Function Status</i>
AUTOMOBILE	physical	physical	inanimate	object	physical	physical-use
COLLEGE	physical	social	inanimate	object	collective	institutional
CONTRACT	abstract	social	inanimate	object	collective	institutional
LEARNING	mental	mental	animate	process	intentional	none
MIGRANT	physical	social	human	object	collective	institutional

The purpose of these properties is to distinguish the concepts from one another without using instance-specific information, such as information derived from frames or schema in which the concept often occurs.

It is important to note that the system does not use non-linguistic knowledge; in this sense the system’s resources operationalize the otherwise fuzzy line between linguistic and non-linguistic meaning. For our purposes here, direct or linguistic meaning can be defined as (a) having access only to sentence context and not to extra-linguistic context or extra-sentential context; (b) having access only to lexical knowledge and not to world knowledge; (c) being independent of reasoning, and thus not having access to implicatures, explicatures, presuppositions, etc. This definition is problematic, of course, but it is useful to make the point that the computational system only has access to the linguistic meaning of a single sentence.

These ontological properties of the concepts which represent the input sentence are used to create a feature vector to numerically represent the input sentence. The gradient measure was trained by using a participant-based measure of metaphoricity similar to that used above to test the correlations between individual features and the sentence’s overall metaphoricity (see Dunn, 2014a). In all, 11 features were found to be correlated with metaphoricity and capable of predicting a sentence’s metaphoricity (without context) at a reasonable level, given the difficulty of the task and the many factors not included in the model.

Results and Discussion of Computational Experiments

The important point of the model is that it applies equally to all metaphoric utterances and that it does not take linguistic context into account. If all types of metaphoric utterances are the same, then we expect the model to apply equally in all cases. If, however, we have a division such as the one hypothesized in this article, we expect some difference in performance across the types of metaphoric utterances. Here we are taking the survey-based metaphoricity values as the gold standard against which to evaluate the computational measure. The evaluation is conducted using the Pearson R to see the correlation between the survey-based and computational measures. The computational measure does not take linguistic context into account and thus is evaluated separately for the survey-based measure in the non-metaphoric mental context and the non-metaphoric physical context (for which each metaphor has a different metaphoricity value in the survey-based experiment), as shown in Table 6.

The first point to notice is that the computational measure has a somewhat low performance throughout (comparable to its initial evaluation; Dunn, 2014a) which is largely a result of not modeling a number of factors (e.g., frequency/familiarity of the metaphoric expression) and of

TABLE 6  
Pearson Correlation Between Computational and Survey-Based Metaphoricity

<i>Class</i>	<i>Mental Context</i>	<i>Physical Context</i>
Interpretive	0.4	0.1
Modulated	0.0	−0.1
Source–Target	0.4	0.2



using a single model to represent three types of metaphoric utterances. Second, we see that the computational measure is closer to the survey-based metaphoricity measure in the Mental context than in the Physical context. It is not clear why this is the case.

Third, and more importantly, there are clear differences between the types of metaphoric utterances (no significance tests are used here given the nature of the data). The system performs equally on the Interpretive and Source–Target utterances (0.4 correlation), much better than on the Modulated utterances (no correlation at all). This clear difference in performance is further evidence for a distinction between these categories (at least, Interpretive and Source–Target vs. Modulated). But what is the cause of this difference in performance? The basic idea behind the system is that metaphors cause a mismatch among constituent concepts. In other words, metaphoric utterances are characterized by a diffusion of the ontological properties of concepts discussed above across the utterance (especially fact-status and function-status properties: Dunn, 2014b).

This expectation of diffusion, however, is satisfied by Interpretive and Source–Target utterances for different reasons. For Source–Target utterances, as in example (39), material is present from both the Source and the Target domains, leading to the diffusion required by the model. In this case, the diffusion is present by the combination of *felt* and *glance*. For Interpretive utterances, however, as in example (40), the diffusion comes not from the presence of Source and Target domains but from the unstable interpretation itself: this is an indirect expression metaphor and much of its meaning comes from What Is Communicated rather than What Is Said. Given this, much of the meaning is supplied by context (rather than by an underlying mapping) so that the linguistic sentence itself, which is all that the system has access to, has a mismatch of ontological properties. In other words, because much of the meaning is not directly expressed, the remaining directly expressed material is mismatched.

(39) “*I felt his glance on the back of my shoulder.*”

(40) “*They get talked into being old.*”

Modulated metaphoric utterances are not detected by the system, largely because they are, as their name implies, modulated. In other words, there is no mismatch or diffusion of ontological properties because the concepts are, metaphorically speaking, negotiating a meaning which is supplied neither by context (as in Interpretive metaphors) or by a conceptual mapping (as in Source–Target metaphors). Thus, the model identifies Interpretive and Source–Target metaphors for different reasons and does not find Modulated metaphors at all. The computational model of metaphoricity discussed here provides a different source of evidence that these three types of metaphors are distinct. The question now is whether these types of metaphoric utterances are acknowledged in the literature.

## TYPES OF METAPHORIC UTTERANCES IN PUBLISHED RESEARCH

Given this classification of metaphoric utterances and the evidence supporting it, a meta-study was conducted to find out what types of metaphor are used as examples in different schools of metaphor research, looking at Conceptual Metaphor Theory, Relevance Theory, and Philosophy of Language. Further, the meta-study asked what linguistic forms (e.g., A is B) the examples took. To answer these questions, fifty metaphoric utterances were taken from publications from



TABLE 7  
Sources Used in Meta-Study

<i>School</i>	<i>Sources</i>
Conceptual Metaphor Theory	Lakoff & Johnson, 1980
Relevance Theory	Sperber & Wilson, 1995; Wilson & Carston, 2006; Sperber & Wilson, 2008; Pilkington, 2000; Song, 1998
Philosophy of Language	Davidson, 1978; Searle, 1981; Martinich, 1984

these three areas and annotated for these two properties by the author. The list of sources used is shown in Table 7. More sources are listed for Relevance Theory and Philosophy of Language because publications from these schools tend to include fewer linguistic examples. For Conceptual Metaphor Theory, which uses a large number of examples, examples were selected from multiple parts of the source in order to avoid over-representing a particular chapter.

The distribution of types of metaphoric utterance, shown in Figure 2, is interesting because Conceptual Metaphor Theory patterns differently than the other two schools. First, interpretive metaphoric utterances are the majority in both Relevance Theory and Philosophy of Language, but are barely represented in Conceptual Metaphor Theory. Source–Target metaphoric utterances, on the other hand, are the majority in Conceptual Metaphor Theory, but are barely represented in Relevance Theory and the Philosophy of Language. This means that there is little overlap in the schools in terms of what types of metaphoric utterances they examine. The third type, modulated metaphoric utterances, which are not well-described in the literature, are an under-represented minority in all three schools, with a similar number used in each.

The distribution of linguistic forms across the schools, shown in Figure 3, contains a similar grouping, with Conceptual Metaphor Theory differing from Relevance Theory and the Philosophy of Language. The three types of linguistic form annotated for are A is B (e.g., “*The lawyer is a shark*”), Verbal (e.g., “*Stock prices skyrocketed after the announcement*”), and Other (which includes all other types; e.g., adjective–noun metaphors such as “*His grapevine hair fell past his shoulders*”). Conceptual Metaphor Theory uses mostly verbal forms, with a small

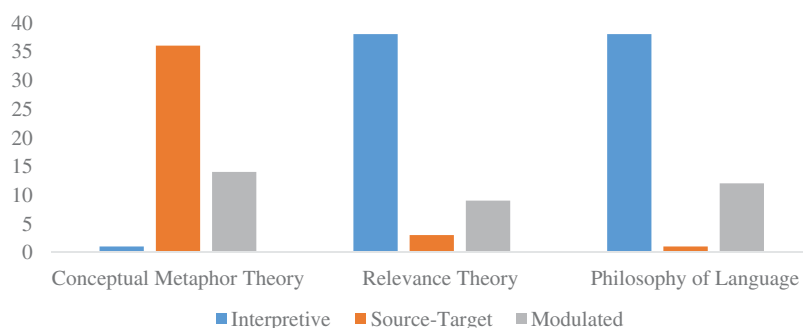


FIGURE 2 Number of examples of metaphor by type of metaphoric utterance.

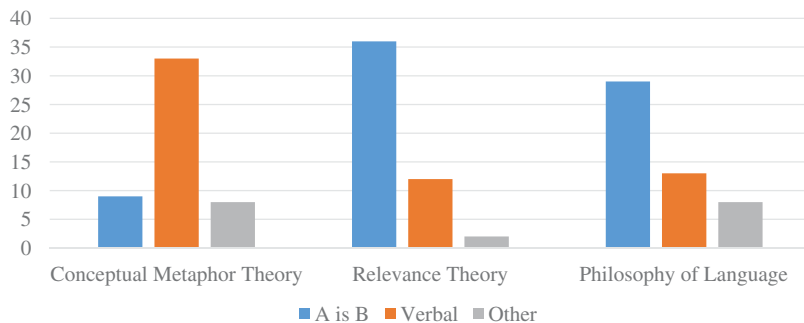


FIGURE 3 Number of examples of metaphor by linguistic form.

minority of the other types. Relevance Theory and Philosophy of Language, however, use mainly A is B forms, with a decent number of Verbal forms and a small minority of other forms. Again, we see a very different distribution across the two groups, with the result that there is little overlap between the sorts of examples used by Conceptual Metaphor Theory and those used by Relevance Theory and the Philosophy of Language.

Given the results of this meta-study, it is not surprising that the analysis of metaphor-in-language in Conceptual Metaphor Theory and Relevance Theory/Philosophy of Language differ so markedly: the theories are describing different metaphors, with little overlap. This is one piece of evidence that the analysis presented here can help to synthesize these approaches to metaphor-in-thought by more precisely defining the characteristics of metaphoric utterances.

### SYNTHESIZING THEORIES OF METAPHOR-IN-THOUGHT

It is not surprising that different theories and schools of thought seem to focus on, and thus to describe, different types of metaphoric utterances. Tendahl (2009) argues that “different perspectives often focus on some kinds of metaphor and ignore others, i.e. they only have a particular kind of metaphor in mind and make generalized statements about metaphor as a whole” (p. 139). This has been shown empirically by the meta-study above. Steen (2007, 2011) distinguishes between different approaches to the study of metaphor, one of which is especially relevant here: metaphor-in-thought versus metaphor-in-language. The purpose of this article has been to take evidence from metaphor-in-language (from which most evidence for theories of metaphor comes) in order to clarify and synthesize theories about metaphor-in-thought (which most theories of metaphor are really about). Most existing theories of metaphor are imprecise about the properties of metaphoric utterances and, as a result, overgeneralize from evidence from subsets of metaphoric utterances to theories about metaphor as a whole.

Having said that, Figure 4 represents the posited connection between the types of metaphoric utterances and the theoretical descriptions of metaphor-in-thought which describe those particular utterances. Interpretive metaphoric utterances, those with contextually unstable interpretations and no conceptual source–target mapping, are well-described by Relevance Theory, in which there is no clear distinction between metaphor and other instances of loose meaning. The fact that

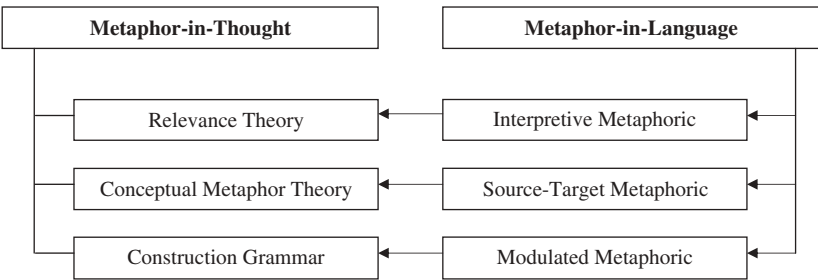


FIGURE 4 Correspondence between metaphor-in-thought and metaphor-in-language.

the interpretations are contextually unstable follows, in the theory, from the fact that the hearer is searching for the most relevant interpretation of the utterance. But which interpretation is most relevant depends heavily on the context and situation of use, with the result that the interpretation is relatively contextually unstable.

Source–Target metaphoric utterances, those with contextually stable interpretations and conceptual source–target mappings that systematically influence reasoning, are well-described by Conceptual Metaphor Theory, in which the stable interpretations are attributed to underlying conceptual mappings. In other words, conceptual metaphors are posited to describe why these metaphoric utterances have stable interpretations and inferences across contexts and speakers.

Modulated metaphoric utterances, those with contextually stable interpretations but without explicit source–target mappings, are not currently described by any theory of metaphor. However, they can be described by Construction Grammar and the idea that there is a negotiation between the lexical items and the construction, so that the final meaning of the words is coerced. Another way of saying this, which reflects the terms used here, is that the meaning of the metaphor is modulated according to the construction in which it is used and the words it is used with. Modulated metaphoric utterances are described, perhaps, by Camp’s (2006) Contextualism and Recanati’s (2001) idea that the meaning of words in metaphors and non-metaphors is adjusted according to their situation of use. Thus, these sorts of metaphors have been described, but not in the same systematic way as the other two types.

The basic argument of this article is that these types of metaphor-in-language are described by different theories of metaphor-in-thought and, because there is little overlap, can be used to narrow the scope of individual theories. This narrow scope is in addition to the narrower scope argued for by Steen (2007, 2011) in his division of metaphor as a phenomenon. Both are important for the same reason: although these narrow scopes may disrupt grand narratives about metaphor, they nonetheless help us to more accurately describe it.

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## APPENDIX A: VERBS FOR METAPHORICITY STUDIES

Know  
Think  
Take  
See  
Come  
Look  
Find  
Give  
Tell  
Work  
Call  
Ask  
Need  
Feel  
Leave  
Put  
Help  
Talk  
Turn  
Show

## APPENDIX B: SAMPLE CONTEXTS USED IN METAPHORICITY STUDIES

Literal Sentence: I called and called over the course of a month.

Metaphoric Context: Insurance companies are often called snakes.

Physical Context: The dishwasher broke while under warrantee and I was determined to have it fixed free of charge.

Mental Context: I was desperate to get back together with my old boyfriend after we had coffee once.

Interpretive Metaphor: I felt something tremendous just slam into me.

Metaphoric Context: I've hit a brick wall in trying to remember what happened to me the night of the accident.

Physical Context: I remember when I was hit by a car on my parent's street.

Mental Context: I remember when my husband told me that he was leaving me for another woman.

Modulated Metaphor: The nurses are so overworked that they have been called tadpoles.

Metaphoric Context: The doctors have been called lions.

Physical Context: The hospital is completely full during the long, hot summer months.

Mental Context: The hospital administrator is starting to worry about the budget situation.

Source-Target Metaphor: I felt his glance on the back of my shoulder.

Metaphoric Context: He just couldn't take his eyes off me.

Physical Context: I walked away from the gas station clerk slowly.

Mental Context: I didn't like the gas station clerk.

## APPENDIX C: METAPHOR LIST

### Interpretive Metaphors

We passed the rock pile once called the village of Perales.

The use of her gift came at a price, however.

I felt something tremendous just slam into me.

What faces were found in every town, every village, around every corner.

The flames were vivid and hot to the eye, but they gave no heat really.

That tart is impressively shaped, helped along by a heaping scoop of sauce.

I soon passed the house in which the King of the Beats once held court.

Now he was flying so high he barely knew what planet he was on.

The rubble has been left undisturbed as a memorial.

They looked like inside-out versions of the stuffed olives her mother served with cocktails.

He says performing is the only drug he's ever needed.

Schooling is another of the arbitrary tricks history has played on their young people.

It's better to put it on the table and deal with it than to push it under the rug.

The same favored thoughts ran through the same heads again and again.

And that's when I saw it: it was the size of a small Aleutian island.

They just sat around and waited for it to show up on their doorstep.

A morning free of sorrow's shadows took him away from our house forever.

They get talked into being old.

The energy giant Eni has turned up the thermostat, especially in its main offices.

She worked her way up the social ladder glass by glass.

### Modulated Metaphors

The nurses are so overworked that they have been called tadpoles.  
 The words came out of her mouth fast, too fast.  
 I just felt my heart come out my throat.  
 I told the story in an Irish accent which I found unexpectedly infectious.  
 Crime gave to both sides a little electric charge.  
 Rising prices and higher taxes have helped cause pain at the gas pump.  
 He smiled suddenly, but his eyes still held sadness.  
 They asked him if he knew where he was going over the next ten years.  
 Most may have thought the nation left behind in the last century.  
 He looked like a million dollars—no, he looked like \$5 million.  
 She had a lot on her mind, and she needed to vent.  
 The flashing lights played off her face, shot sparks from her eyes.  
 We put females who we think are perfect up on pedestals.  
 Clinton ran into a firestorm of military and congressional opposition.  
 They were disturbed when they saw an erosion of the army's code of ethics.  
 Her skin was pale as daisies and showed every drop of blood in her cheeks.  
 Propping up borrowers who took a gamble on a house and lost reinforces gambling.  
 My lawyer talked himself blue in the face trying to persuade me to sell out and move.  
 But what started with a splash has turned into a wave of competing casinos.  
 He sat up slowly and sweat popped out of his face as he worked the arm.

### Source–Target Metaphors

The new drug under development has been called a magic bullet.  
 After we changed all the cylinders, the engine just came to life.  
 I felt his glance on the back of my shoulder.  
 He finally found the key to the problem.  
 The President's re-election gave Democrats a shot in the arm.  
 China's demand has helped drive up oil prices to record highs.  
 The teacher took the idea and held it up to scrutiny in front of the class.  
 I had thought I knew what I was getting into.  
 Parents fear they'll be left in the dark about diagnosis and treatment.  
 After a long recession, the future finally looked brighter.  
 I found that I needed a jump start on Monday mornings.  
 I'm playing with the idea of a trip to Hawaii.  
 The music put a new idea in my head.  
 In the first few years that he was CEO he ran a tight ship.  
 That night he finally saw through her lies and understood the truth.  
 The wise woman showed him the way.  
 We need to backtrack on this problem: we took a wrong turn.  
 They've talked and talked but she can't seem to reach him.  
 We had a fight and our relationship turned down a dead-end street.  
 The scientists worked to assemble the theory from spare parts of previous work.