From ecological cognition to language: When and why do speakers use words metaphorically?

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ABSTRACT

The idea that metaphorical meaning is guided by speakers' experiences of the world is central to Conceptual Metaphor Theory. Yet little is known about the ways in which speakers' understandings of objects in the world around them influence how they use words in metaphorical and non-metaphorical ways. This article is a corpus linguistic analysis of the collocational patterns of metaphorical and non-metaphorical bridge instances from the Corpus of American English Corpus of Contemporary American English. The study shows that metaphorical and non-metaphorical uses of words are systematically linked to different types of real world experiences. It is argued that lexical metaphors are, in fact, lexic-encyclopedic conceptual metaphors (i.e., conceptual mappings that involve speakers' understandings of specific target concepts by means of the specific source concepts that they refer to in metaphorical language), and that they are constrained by cognitive salience.

Introduction

The English term bridge may be used both metaphorically and non-metaphorically (i.e., in literal or metonymic ways). Sentence 1 discusses a metaphorical bridge between the classroom and students' homes, and sentence 2 a garbage truck that disappears beneath a non-metaphorical bridge.

(1) The key, quite simply, is to forge a stronger bridge between the classroom and the students' homes. (Corpus of American English [COCA] [my emphasis])
(2) The garbage truck disappears beneath the bridge. (COCA [my emphasis])

But when and why do speakers use words metaphorically, and when and why do they use words non-metaphorically? Are some collocations (i.e., words that occur together more frequently than expected, Sinclair, 1991) of a given word metaphorically used, and others only non-metaphorically, and if so, which and why? This article is a corpus linguistic analysis of the most frequent collocations of the English term bridge from COCA. My main aim is to find out how speakers' knowledge of the world (in this case, that of real world bridges) influences their metaphorical and non-metaphorical uses of words (in this case, collocations including the term bridge).

Corpus linguistic analysis have previously shown that collocations tend be unique to either the source, or the target domain of a metaphorical mapping (Deignan, 1999, 2005). Moreover, collocations that are associated with both source and target domains generally display patterns (lexical or grammatical) that disambiguate between the two types of meaning (Deignan, 1999, 2005, p. 206). One example is the collocation death blow, which is primarily used in reference to the target domain.
of disappointment, but not typically to the source domain of physical violence (Deignan, 1999, pp. 28–29). Deignan (1999, p. 34) suggests that metaphorically used collocations like death blow go back to metaphorical mappings from the source domain (i.e., that of physical violence), onto the target domain (i.e., that of disappointment), and at the linguistic level, to metaphorical extensions of individual lexical items and their semantic relations from source domains onto target domains.

She, however, also finds that the tendency for death blow to be primarily metaphorical cannot be fully explained by metaphorical mappings between conceptual domains (Deignan, 1999, p. 34, 2005) nor by the linguistic meanings of the terms involved (Deignan, 1999, p. 29). The existence of metaphorical mappings (i.e., physical violence is disappointment) does not explain why the patterns of some collocations tend to be used in reference to the target domains. Moreover, there is nothing in the meaning of the words in the collocation (e.g., in the words death and blow) that would prevent them from being used in reference to the source domain of physical violence (Deignan, 1999, p. 29). Deignan (1999, p. 34) thus proposes that the tendency for some collocations to be metaphorical, and others to be non-metaphorical, derives from two linguistic tendencies that operate independently from conceptual mappings. On the one hand, speakers map creatively from source to target domains, and exploit lexical relations in so doing. On the other, they strive toward communicating effectively and avoiding ambiguity. Consequently, they use pre-packaged chunks, fixed and reused strings, and patterns that disambiguate between metaphorical and non-metaphorical meaning (Deignan, 1999, 2005).

The constant pull between creativity and communicative efficiency likely constrains the usage patterns of collocations (research shows that multiple interacting constraints are involved, Gibbs & Santa Cruz, 2012; Johansson Falck & Gibbs, 2012; Ruiz de Mendoza Ibáñez & Perez Hernandez, 2011), but it does not explain why speakers start using some collocations in metaphorical ways, and others in non-metaphorical ways. The fact that speakers are sometimes creative, and sometimes effective, does not explain why they are creative, or effective, in the ways that they are.

Another possibility is that linguistic meaning is more open-ended than suggested by Deignan’s claim (1999, p. 9) that there is nothing in the meaning of the word death that prevents it from collocating with non-metaphorical blow. According to Langacker (1987, p. 5), linguistic meaning is a matter of conceptualization (i.e., cognitive processing) and encyclopedic in nature. Accordingly, “[l]inguistic expressions are not meaningful in and of themselves, but only through the access they afford to different stores of knowledge that allow us to make sense of them” (Langacker, 1987, p. 155). Given this view, we should expect linguistic patterns, metaphorical as well as non-metaphorical, to be connected with the repositories of world knowledge that words afford, and that this knowledge, in turn, is shaped by speakers’ perceptions of the world they live in. In other words, we should expect lexical metaphors to be lexico-encyclopedic rather than lexical. Moreover, if linguistic meaning is “a matter of conceptualization” (Langacker, 1987, p. 156), we should expect lexico-encyclopedic metaphors to be conceptual as well. Conceptual metaphorical mappings at this level of generalization (henceforth lexico-encyclopedic conceptual [LEC] metaphors) involve speakers’ experiences of the specific concepts that they refer to by the lexical items that they use. They are thus more specific, and less schematic, than primary metaphors (i.e., basic metaphors such as action is motion and purposes are destinations “motivated by tight correlations in experience” (Grady, 1997)) and complex metaphors (i.e., metaphorical compounds of primary metaphors; e.g., life/love/a purposeful activity is a journey) (Lakoff & Johnson, 1980, 1999).

In this study, I investigate the relationship between speakers’ experiences of the world and metaphorical and non-metaphorical language patterns. I explore the hypothesis that patterns that disambiguate between metaphorical and non-metaphorical bridge collocations are explicable in terms of cognitive salience. More specifically, I expect metaphorical bridge collocations to go back to metaphorical mappings that involve people’s experiences of real world bridges, and that certain aspects of these experiences are more apt in metaphorical language than others. Our previous analyses of metaphorical path and road instances and psycholinguistic surveys of people’s mental images of real world paths and roads certainly suggest that this should be the case (Johansson Falck,
They show that metaphorical *path* and *road* instances are influenced by salient aspects of people’s experiences of real world paths and roads, and in particular by their functions. This type of focus is also seen in people’s mental imagery for paths and roads (Johansson Falck & Gibbs, 2012).

The focus on salient features in both mental imagery and metaphorical language makes sense given that “‘perceiving the environment’ cannot possibly mean perceiving all of it” (Mace, 2015, p. xxiii, emphasis in original). When interacting with the world, speakers simply have to focus on something, and this focus should influence how they later think and talk about experiences connected with these interactions.

### From affordance to metaphorical uses of the term bridge

The “affordances of the environment are what it offers the animal, what it provides or furnishes” (Gibson, 2015, p. 119, emphasis in original). The example below describes the affordances of a specific surface. The world, however, is full of entities (e.g. “shelters, water, fire, objects, tools, other animals, and human displays”) (Gibson, 2015), which all have their affordances.

> [i]f a terrestrial surface is nearly horizontal (instead of slanted), nearly flat (instead of convex or concave), and sufficiently extended (relative to the size of the animal) and if its substance is rigid (relative to the weight of the animal), then the surface affords support. (Gibson, 2015, p. 119)

Gibson does not elaborate on the affordances of bridges, but briefly mentions that artifacts such as “paths, roads, and stairways, and bridges over gorges and streams [—] facilitate human locomotion and obviate climbing.” Still, we can safely assume that similar to “larger tools, machines for cutting, boring, pounding, and crushing, and also for earth-moving, and for construction, and also, of course, for locomotion,” bridges are intimately connected with their function. Their function is their reason for being, and it should influence speakers’ metaphorical thoughts involving bridges.

The focus on function, however, should not have the same impact on non-metaphorical uses of the term *bridge*. My corpus analysis of metaphorical and non-metaphorical *path, road*, and *way* instances (Johansson Falck, 2010) shows that non-metaphorical language is qualitatively different from metaphorical language. It does reflect what speakers think the world is like, but speakers’ accounts of what is actually happening in the real world as it really is. Consequently, it is necessarily more heterogeneous than metaphorical language.

Based on these observations, we should expect speakers’ metaphorical uses of the term *bridge* to be more strongly connected with the affordances of real world bridges, than are non-metaphorical uses of this term. In the following, I will consider what predictions can be made based on CMT (third section), and on dictionary data (fourth section).

### CMT and bridge metaphors

Research within the framework of CMT shows that bridge metaphors are connected with metaphorical motion. Forceville, for instance, has argued that bridges are "highly meaningful structures within the metaphorical journey domain" (2006, p. 244). He discusses how, in the specific context of a Dutch political commercial, the image of a socialist leader’s crossing a bridge is used for suggesting the need for transitions, and for hinting at a bridging role.

Another example is Strack (2004, 2006, 2007, 2008), who has done numerous analyses of *bridge* metaphors. They show (Strack, 2004, 2006) how imagistic bridge motifs are incorporated into key turning points in novels (e.g., to portray someone’s “crossing” into death) (Strack, 2006, p. 8) and to demarcate the reversal of someone’s fortunes (Strack, 2006, p. 9). Moreover, based on an in depth analysis of more than 70 literary works that include extensive use of the bridge motif from many different languages and cultural backgrounds he has formulated a list of over twenty common bridge metaphor and metonymy aspects (Appendix, Strack, 2004, 2006). Eight
of them suggest that journey metaphors are relevant in metaphorical language about bridges, and seven of them someone’s crossing the bridge. Examples are the metaphors overcoming a difficulty in life is crossing a bridge, and making progress is crossing bridges (Appendix, Strack, 2004, 2006). Others focus on the notion of building a bridge (e.g., overcoming a difficulty in life is building a bridge and Developing a relationship is building a bridge) (Appendix, Strack, 2004, 2006).

The question remains if bridge collocations have the same focus as the bridge metaphors observed by Forceville and Strack. Given that there is no closed list of primary (Grady, 1997), and complex conceptual metaphors (Lakoff & Johnson, 1980, 1999, 2008), we cannot predict what collocations should result from them. Constraints on the usage patterns of metaphorical bridge collocations by primary, or complex conceptual metaphors likely involve seeing the abstract in terms of the concrete, but this fact does not explain why certain bridge collocations are metaphorical and others not (Deignan, 1999, 2007).

**Bridge collocations and dictionary data**

If linguistic meaning is “a matter of conceptualization (what else could it possibly be?)” (Langacker, 1987, p. 156), then dictionary meanings are nothing but lexicographers’ attempts at summarizing the gist of speakers’ conceptualizations. Dictionary meanings, in other words, have the same background as lexical patterns that result from LEC metaphors, and should be coherent with these. We cannot know which dictionary, or which individual speaker can provide the meanings that bridge has (not even dictionaries provide the same definitions of words). However, since COCA is a corpus of American English, I analyzed the senses of bridge in Webster (2006) to find out what can be expected from bridge collocations based on dictionary data.

From Webster (2006), we learn that the noun bridge is “a structure carrying a pathway or roadway over a depression or obstacle (such as a river).” Webster does not provide information on metaphoricity. However, following the metaphor identification procedure (Pragglejaz Group, 2007), we might expect both non-metaphorical bridge instances related to this sense, and metaphorical bridge instances that contrast with this meaning, and can be understood by means of it. Based on dictionary information alone, there should thus be no differences between metaphorical and non-metaphorical bridge collocations related to this sense of the noun bridge. Another sense of the noun bridge is that of “a time, place, or means of connection or transition” (Webster, 2006). Given that times cannot connect in a non-metaphorical way, we should expect all bridge instances about “a time [—] of connection or transition” to be metaphorical. However, bridge instances that refer to a “place, or means of connection or transition” might involve either non-metaphorical real world bridges, or metaphorical ones.

Webster (2006) also accounts for senses of the noun bridge that denote “something resembling a bridge in form or function.” Their uses likely contrast with one or more of the above senses, and seem explicable in terms of them. Consequently, I expect bridge instances that refer to these senses to be metaphorical. The senses are (a) “the upper bony part of the nose,” (b) “a piece raising the strings of a musical instrument,” (c) “the forward part of a ship’s superstructure [—] from which the ship is navigated,” (d) “gantry,” or (e) “the hand as a rest for a [billiards or pool] cue” (Webster, 2006).

The noun bridge is also used in the senses of “a [musical] passage linking two sections of a composition,” “a partial denture anchored to adjacent teeth,” “a connection (as an atom or group of atoms) that joins two different parts of a molecule,” or “an electrical instrument or network for measuring or comparing resistances[—], inductances, capacitances, or impedances” (Webster, 2006). Their uses are also likely contrast with, and possible to understand by means of bridge in either one of the senses of “a structure carrying a pathway or roadway over a depression or obstacle (such as a river),” or “a time, place, or means of connection or transition” (Webster, 2006). Given that speakers cannot use metaphorical senses of words in non-metaphorical ways, we should only expect
metaphorical bridge instances related to these senses, and to those that denote “something resembling a bridge in form or function” (Gibson, 2015).

The artifact bridge is part of the definition of the verb bridge. It reads “to make a bridge [—] over or across,” or “to provide with a bridge” (Webster, 2006). Both non-metaphorical and metaphorical bridge instances related to these senses should be possible.

All senses of the noun bridge, but none of the verbal senses, include information related to what the bridge does. Dictionary data thus suggest that all instances of the noun bridge, but no instances of the verb bridge, involve function.

Method

I studied the 70 most frequent bridge collocations from COCA sorted by their raw frequencies of occurrence. COCA contains more than 520 million words of text “equally divided among spoken, fiction, popular magazines, newspapers, and academic texts” (Corpus of Contemporary American English, 2016). The present study is based on data extracted from the corpus in March 2015.

As a first step, I searched for the 35 most frequent bridge collocations based on a four-word span to the left of the term bridge, and zero words to the right of this term (henceforth bridge 40 collocations). This step also included searching for the 35 most frequent bridge collocations based on a four-word span to the right, and zero words to the left, of bridge (henceforth bridge 04 collocations). Since my focus was on finding out how people’s experience of bridges have influenced uses of bridge collocations, both the noun and the verb bridge were included in the study.

At the next stage, I extracted 100 random instances of each bridge collocation with more than 100 instances from the corpus as well as all the instances of bridge collocations with 100, or less instances.

The instances were then analyzed into metaphorical and non-metaphorical instances by means of a modified version of the Metaphor Identification Procedure (Pragglejaz Group, 2007). In this version, metaphorical bridge instances were identified by reading the concordance lines (or an extended context when necessary for the identification) of the bridge instances. Moreover, in order to focus on “the stores of knowledge” (Langacker, 1987, p. 155) that words afford rather than on what is considered to be the basic meaning of bridge in a given dictionary, the meanings evoked by the contexts of the noun bridge were compared with the concept of a real world bridge. The meanings evoked by the verb bridge were compared with the concept of an action that involves a real world bridge. I thus considered instances of the noun bridge metaphorical if they (a) symbolize a mental concept that contrasts with that of a real world physical bridge and (b) can be understood by means of this specific real world experience. I considered instances of the verb bridge metaphorical if they (a) evoke the concept of an action that contrasts with providing, or constituting a real world physical bridge and (b) can be understood by means of this specific real world experience.

A few bridge instances were identified in a slightly different manner. They evoke the concept of a real world physical bridge, which constitutes one part of a larger real world scenario that defines something else in a metaphorical way. An example is sentence 3, in which bridge evokes the mental image of a real world bridge that a man tests his way across. This particular bridge, however, constitutes an important aspect of a metaphorical scenario that describes someone’s taking a deep breath into an altered state of consciousness.

(3) A single deep breath took him deep into an altered state of consciousness. Carefully, like a man testing his way across a rickety bridge, he moved in spirit out of himself and into the borderlands of Gillian’s inner being. (COCA [my emphasis])

To accommodate for cases such as these, I also considered bridge instances metaphorical if they evoke a real world bridge scenario that somehow defines a contrasting experience. Some, but not all, of these instances are similes.
As a final step in my analysis, the immediate contexts (here defined as one concordance line) of the metaphorical and non-metaphorical bridge instances were analysed. This part of the analysis involved (a) identifying the terms that collocate with metaphorical and non-metaphorical bridge instances (henceforth bridge collocates) and the concepts that they refer to, (b) identifying the types of concepts involved (are they real world physical bridges like the Golden Gate bridge, other real world objects, abstract concepts, or actions that involve a real world, or a metaphorical bridge?), (c) establishing if the function of real world bridges is in focus in the contexts of the bridge instances, and (d) identifying the target concepts that are defined by means of the metaphorical bridge instances.

Based on my general hypothesis that metaphorical bridge collocations go back to LEC metaphors that involve salient aspects of people’s experiences of real world bridges, I expected metaphorical bridge instances to be intimately connected with the function of real world bridges (cf. Gibson’s 2015 theory of affordances). For the purpose of this study, bridge instances were considered functional if their immediate contexts include terms that explicitly refer to the connecting function of real world bridges, that is, to the function of bridges per se. However, since bridges have also been built for motion across the bridge, bridge instances were also considered functional if, from their immediate contexts, we learn that someone or something is moving onto, or across the bridge.

Bridge collocations with no metaphorical instances were expected to deal with bridge contexts that do not focus on these types of experiences.

**Bridge collocations and bridge collocates in COCA**

Table 1 shows information on the 35 most frequent bridge 40 collocations in COCA, and Table 2 shows information on the 35 most frequent bridge 04 collocations. In each table, column B shows the collocates of bridge, and column C the frequencies of these terms in COCA. Column D shows the frequency of each collocation in COCA, and column E their MI score. The MI score (i.e., mutual information score) is a statistical measurement of the co-occurrence of two collocates (e.g., of bridge and between) in a collocation (Church & Hanks, 1990). Words with an MI score above three are considered to co-occur often, and words with an MI score around zero not to collocate (Liu, 2013, p. 74). All bridge collocates in the tables have an MI score that is higher than 3, which means that they frequently co-occur with bridge. The bridge 40 collocations (7,088 instances Table 1, column C), are much more frequent than the bridge 04 collocations (4,729 instances, Table 2, column C). Accordingly, 25 out of 35 bridge 40 collocations occur more than 100 times in COCA (Table 1, rows 1–25). They include the collocates across, gate, golden, under, bay, Brooklyn, cross, street, build, crossed, crossing, river, bridge, near, George, suspension, onto, land, wooden, int., railroad, ext., covered, stone, and Holcomb. This can be compared with eight out of 35 bridge 04 collocations (Table 2, rows 1–8). They include the collocates between, gap, nose, road, river, across, bridge, and built.

Column F in Tables 1 and 2 shows the frequencies of the collocations excerpted from COCA. However, not all bridge instances evoke the concept of a bridge, metaphorical or non-metaphorical. Examples are all bridge club (which refer to “bridge clubs,” columns B and G, row 11), and bridge Rd instances (columns B and G, row 29), and the majority of the bridge road instances (which refer to the name of a road, e.g., the Bridge Road, columns B and G, row 4). They also include some instances of other collocations [e.g., one bridge built instance that refers to a “bridge worker” (columns B and G, row 8), and quite a few of the bridge crew (columns B and G, row 19), and bridge deck instances (columns B and G, row 16)]. Instances such as these (184 bridge 04 instances and 6 bridge 40 instances) as well as the majority of the bridge Kwai instances were not further analyzed. The latter instances were too closely connected with the movie The Bridge on the River Kwai to be possible to analyze into metaphorical/non-metaphorical meaning without having considered the context of the entire film. Column G shows the number of instances that remained after I had removed those that do not refer to bridges, or could not be further analyzed.
The number of *bridge* 40 instances (7,088 instances, Table 1, column C) is considerably larger than that of *bridge* 04 collocations (4,729 instances, Table 2, column C). The frequency difference is interesting considering that in English subjects and predicates typically precede adverbs. It suggests that in the contexts of these collocations, *bridge* is more often subject, or predicate than adverb. Moreover, given that "[e]ntities construed as participants function as the clausal subject and object, while the setting is expressed by an adverbal modifier" (Langacker, 2002, p. 30), we might assume that referents of the term *bridge* are more often participants in actions, or actions, than settings. The following sections will show if this is the case. The sixth section deals with an overview of the usage patterns of *bridge* collocations, and the first through fourth subsections with more detailed analyses of the contexts in which the collocations are used.

**Overview of the usage patterns of metaphorical and non-metaphorical *bridge* collocations**

Next, I analyzed the *bridge* instances into non-metaphorical and metaphorical *bridge* instances. The results are shown in Tables 3 and 4. Again, column B in each table shows the collocates. Column C shows the frequency of metaphorical instances of each collocation, and column D the proportions of them. Column E shows the proportions of *bridge* instances (of each collocation) that evoke the
function of real world bridges. The rest of the bridge instances do not evoke function. Column E, finally, shows the proportions of instances that include the noun bridge instances.

Statistical analyses were performed on the bridge collocations with 100 or more instances (see Table 3, rows 1–24, and Table 4, rows 1–3 and 5–8), but not on those with 100 or less instances (Table 3, rows 26–35 and Table 4, rows 4 and 9–35). With the exception of the bridge road instances (Table 4, row 4, see the fifth section), the latter instances make up all the instances of that collocation in COCA, and thus represent an analysis of all the instances of that collocation in a 520 million word corpus.

One cross bridge instance could not be analyzed into metaphorical, or non-metaphorical instances based on the information provided by their contexts, and was excluded from the analysis.

A comparison between Tables 3 and 4 (column C) shows that bridge 04 collocations are generally more metaphorical than bridge 40 collocations. Eleven out of 35 bridge 04 collocations (bridge between, bridge gap, bridge nose, bridge divide, bridge gaps, bridge differences, bridge crew, bridge loan, bridge troubled, bridge 21st, and bridge chasm) are primarily metaphorical (Table 4, columns D and E). This can be compared with two out of 35 bridge 40 collocations (i.e., the flying bridge and build bridge instances, Table 3, columns D and E).

### Table 2. Bridge 04 collocations in COCA.

| Collocates  | Frequency of collocates | Frequency of collocations | MI score | Frequency of excerpted instances | Frequency of analyzed instances |
|-------------|-------------------------|---------------------------|----------|----------------------------------|---------------------------------|
| between     | 306,106                 | 1059                      | 4.16     | 100 r                            | 99                              |
| gap         | 14,979                  | 638                       | 7.79     | 100 r                            | 99                              |
| nose        | 22,773                  | 430                       | 6.61     | 100 r                            | 100                             |
| road        | 78,855                  | 357                       | 4.55     | 100 r                            | 13                              |
| river       | 56,399                  | 314                       | 4.85     | 100 r                            | 86                              |
| across      | 134,542                 | 266                       | 3.36     | 100 r                            | 99                              |
| bridge      | 22,408                  | 167                       | 5.27     | 100 r                            | 96                              |
| built       | 48,475                  | 142                       | 3.92     | 100 r                            | 98                              |
| creek       | 17,059                  | 94                        | 4.84     | 94                               | 71                              |
| divide      | 8,316                   | 89                        | 5.82     | 89                               | 89                              |
| 43,656      | 84                      | 3.32                      | 84       | 0                                |                                 |
| gaps        | 4,152                   | 82                        | 6.68     | 82                               | 82                              |
| differences | 42,081                  | 77                        | 3.25     | 77                               | 76                              |
| nowhere     | 12,199                  | 72                        | 4.94     | 72                               | 40                              |
| traffic     | 24,185                  | 64                        | 3.78     | 64                               | 43                              |
| deck        | 12,000                  | 62                        | 4.74     | 62                               | 10                              |
| spans       | 1,577                   | 59                        | 7.60     | 59                               | 59                              |
| spanning    | 1,040                   | 58                        | 8.18     | 58                               | 58                              |
| crew        | 20,993                  | 53                        | 3.71     | 53                               | 12                              |
| crossed     | 12,624                  | 51                        | 4.39     | 51                               | 51                              |
| Kwai        | 66                      | 50                        | 11.94    | 50                               | 2                               |
| connects    | 2,455                   | 49                        | 6.69     | 49                               | 47                              |
| loan        | 13,306                  | 48                        | 4.23     | 48                               | 48                              |
| construction| 29,987                  | 48                        | 3.05     | 48                               | 48                              |
| tunnel      | 7,639                   | 45                        | 4.93     | 45                               | 38                              |
| troubled    | 8,577                   | 44                        | 4.73     | 44                               | 44                              |
| highway     | 17,576                  | 43                        | 3.66     | 43                               | 43                              |
| connecting  | 4,314                   | 41                        | 5.62     | 41                               | 41                              |
| 5,076       | 41                      | 5.39                      | 41       | 0                                |                                 |
| span        | 4,980                   | 40                        | 5.38     | 40                               | 40                              |
| 21st        | 5,644                   | 39                        | 5.16     | 39                               | 39                              |
| collapsed   | 7,090                   | 38                        | 4.80     | 38                               | 38                              |
| crosses     | 860                     | 37                        | 7.80     | 37                               | 37                              |
| chasm       | 4,551                   | 37                        | 5.40     | 37                               | 37                              |
| canal       | 6,253                   | 36                        | 4.90     | 36                               | 35                              |
| Row total:  | 4,729                   | 2,156                     | 1,818    |                                   |                                 |
Tables 3 and 4 also show that the majority of bridge collocations that are primarily metaphorical (column C and D) are part of contexts in which the functions of real world bridges tend
to be in focus (column E). This is true of one out of two bridge 40 collocations (build bridge, Table 3, row 9), and of nine out of 11 primarily metaphorical bridge 04 collocations (81% (48–97)). The latter group includes the most frequent of all bridge 04 collocations bridge between (1,059 instances, Table 2, row 1, column D), but also collocates that potentially refer to metaphorically bridged concepts. The collocates are gap, gaps, divide, differences, and bridge loan (Table 4, rows 2, 12, 10, 13, and 23), and the collocations 21st and crosses (Table 4, rows 31 and 33). The only exceptions are the flying bridge instances (Table 3, row 27) and the bridge nose and bridge crew instances (Table 4, row 3).

However, the focus on the function is not unique to metaphorical bridge instances. Eight out of 33 primarily non-metaphorical bridge 40 collocations (24% (12–43), Table 3, columns C and D) are primarily used in contexts that evoke the function of real world bridges (column E). They include the collocates across, golden, cross, crossed, crossing, onto, land, and wooden (Table 3, rows 1, 3, 7, 10, 11, 17, 18, and 19, respectively). Thirteen out of 23 primarily non-metaphorical bridge 04 collocations (56% (35–76), Table 4, columns C and D) are primarily functional (column E). They include the collocates river, across, creek, nowhere, traffic, spans, spanning, crossed, Kwai, connects, connecting, crosses, and canal (Table 4, rows 5, 6, 9, 14, 15, 17, 18, 20, 21, 22, 28, 33, and 35, respectively).

| Collocates | Frequency of metaphorical instances | Proportion of metaphorical instances | Proportion of functional instances | Proportion of nominal bridge instances |
|------------|-------------------------------------|--------------------------------------|-----------------------------------|----------------------------------------|
| 1          | between 91/99                       | 91% (84–96)                          | 97% (91–99)                       | 56% (45–65)                            |
| 2          | gap 99/99                           | 100% (95–100)                       | 100% (95–100)                     | 0% (0–5)                               |
| 3          | nose 100/100                         | 100% (95–100)                       | 0% (0–5)                          | 100% (95–100)                         |
| 4          | road 0/13                            | 0%                                   | 15%                               | 100%                                   |
| 5          | river 1/86                           | 1% (0–7)                             | 80% (70–88)                       | 100% (95–100)                         |
| 6          | across 9/99                          | 9% (4–17)                            | 82% (84–96)                       | 99% (94–100)                           |
| 7          | bridge 5/96                          | 5% (2–12)                            | 25% (17–35)                       | 100% (93–100)                         |
| 8          | built 8/98                           | 8% (4–16)                            | 44% (34–54)                       | 100% (95–100)                         |
| 9          | creek 0/71                           | 0%                                   | 80%                               | 100%                                   |
| 10         | divide 88/89                         | 99%                                 | 99%                               | 1%                                     |
| 11         | NA                                  | NA                                  | NA                                | NA                                     |
| 12         | gaps 81/82                           | 99%                                 | 100%                              | 0.0                                    |
| 13         | differences 76/76                   | 100%                                | 100%                              | 0.0                                    |
| 14         | nowhere 4/40                         | 8%                                  | 98%                               | 100%                                   |
| 15         | traffic 0/43                         | 0%                                  | 72%                               | 100%                                   |
| 16         | deck 4/10                            | 40%                                 | 10%                               | 100%                                   |
| 17         | spans 4/59                           | 7%                                  | 98%                               | 94%                                    |
| 18         | spanning 2/58                        | 3%                                  | 100%                              | 100%                                   |
| 19         | crew 10/12                           | 77%                                 | 13%                               | 100%                                   |
| 20         | crossed 5/51                         | 10%                                 | 94%                               | 100%                                   |
| 21         | Kwai 0/2                            | 0%                                  | 100%                              | 100%                                   |
| 22         | connects 10/47                       | 21%                                 | 100%                              | 100%                                   |
| 23         | loan 48/48                           | 100%                                | 100%                              | 100%                                   |
| 24         | construction 1/48                    | 2%                                  | 15%                               | 100%                                   |
| 25         | tunnel 0/38                          | 0%                                  | 40%                               | 97%                                    |
| 26         | troubled 44/44                      | 100%                                | 100%                              | 100%                                   |
| 27         | highway 0/43                         | 0%                                  | 42%                               | 100%                                   |
| 28         | connecting 11/41                     | 27%                                 | 100%                              | 100%                                   |
| 29         | NA                                  | NA                                  | NA                                | NA                                     |
| 30         | span 2/40                            | 5%                                  | 50%                               | 78%                                    |
| 31         | 21st 39/39                           | 100%                                | 100%                              | 100%                                   |
| 32         | collapsed 1/38                       | 3%                                  | 40%                               | 100%                                   |
| 33         | crosses 2/37                         | 5%                                  | 97%                               | 100%                                   |
| 34         | chasm 32/36                          | 89%                                 | 100%                              | 25%                                    |
| 35         | canal 0/35                           | 0%                                  | 89%                               | 100%                                   |

Row total: 777/1818
If we look at the bridge 40 collocations with no metaphorical bridge instances (Table 3, columns C and D), we find that none of them are primarily functional (column E). Four out of seven bridge 04 collocations (57%) with no metaphorical bridge instances are functional. They are bridge creek, bridge traffic, bridge Kwai, and bridge canal (Table 4, columns C, D, and E).

We may conclude that speakers mention the function of real world bridges in the contexts of both metaphorical and non-metaphorical bridge instances, but that the focus on function is more prominent in metaphorical contexts. This result is coherent with the hypothesis explored in the current article, but could not be predicted by means of dictionary data (see the fourth section). Webster (2006) did suggest that the function of real world bridges should be relevant to instances of the noun bridge, but not that it is more relevant to metaphorical bridge instances. We may also conclude that few collocations are primarily verbal bridge (Tables 3 and 4, column F), but that all of them are all primarily metaphorical (Table 4, columns C and D), and primarily functional (column E). Neither their metaphoricity, nor their tendency to be used in contexts that evoke function could be predicted by means of dictionary data.

### Table 5. Frequencies of functional (column 4), and nominal (column 5) bridge instances of the bridge 40 collocation. Column 3 shows the total number of these instances.

| Collocates | Total no. of analyzed instances | Frequency of functional instances | Nouns |
|------------|---------------------------------|----------------------------------|-------|
| across     | 100                             | 86                               | 99    |
| gate       | 100                             | 16                               | 100   |
| golden     | 100                             | 86                               | 99    |
| under      | 100                             | 4                                | 100   |
| bay        | 100                             | 42                               | 99    |
| Brooklyn   | 86                              | 28                               | 86    |
| cross      | 99                              | 99                               | 99    |
| street     | 97                              | 23                               | 97    |
| build      | 94                              | 70                               | 94    |
| crossed    | 100                             | 98                               | 100   |
| crossing   | 99                              | 96                               | 98    |
| river      | 100                             | 31                               | 100   |
| bridge     | 97                              | 29                               | 97    |
| near       | 100                             | 8                                | 100   |
| George     | 100                             | 34                               | 100   |
| suspension | 100                             | 32                               | 100   |
| onto       | 98                              | 71                               | 98    |
| land       | 98                              | 66                               | 98    |
| wooden     | 95                              | 58                               | 95    |
| int        | 100                             | 5                                | 100   |
| railroad   | 100                             | 39                               | 100   |
| ext        | 100                             | 21                               | 100   |
| covered    | 97                              | 23                               | 97    |
| stone      | 98                              | 39                               | 98    |
| Holcomb    | 6                               | 0                                | 6     |
| London     | 92                              | 5                                | 92    |
| flying     | 87                              | 1                                | 87    |
| pedestrian | 86                              | 46                               | 86    |
| below      | 76                              | 5                                | 76    |
| Memorial   | 70                              | 26                               | 71    |
| Beneath    | 71                              | 5                                | 71    |
| Avenue     | 62                              | 15                               | 62    |
| highway    | 60                              | 15                               | 60    |
| jump       | 59                              | 0                                | 59    |
| foot       | 57                              | 13                               | 57    |
| Row total: | 3,085                           | 1,241                            | 3,081 |
Table 6. Frequencies of functional (column 4), and nominal (column 5) bridge instances of the bridge 04 collocation. Column 3 shows the total number of these instances.

| Collocates | Total no. of analyzed instances | Frequency of functional instances | Nouns |
|------------|---------------------------------|-----------------------------------|-------|
| 1          | between                         | 99                                | 96    | 55 |
| 2          | gap                             | 99                                | 99    | 0  |
| 3          | nose                            | 100                               | 0     | 100|
| 4          | road                            | 13                                | 2     | 13 |
| 5          | river                           | 86                                | 69    | 86 |
| 6          | across                          | 99                                | 91    | 98 |
| 7          | bridge                          | 96                                | 24    | 96 |
| 8          | built                           | 98                                | 43    | 98 |
| 9          | creek                           | 71                                | 57    | 71 |
| 10         | divide                          | 89                                | 88    | 1  |
| 11         | NA                              | NA                                | NA    |    |
| 12         | gaps                            | 82                                | 82    | 0  |
| 13         | differences                     | 76                                | 76    | 0  |
| 14         | nowhere                         | 40                                | 39    | 40 |
| 15         | traffic                         | 43                                | 31    | 43 |
| 16         | deck                            | 10                                | 1     | 10 |
| 17         | spars                           | 59                                | 58    | 58 |
| 18         | spanning                        | 58                                | 58    | 58 |
| 19         | crew                            | 12                                | 2     | 13 |
| 20         | crossed                         | 51                                | 48    | 51 |
| 21         | Kwai                            | 2                                 | 2     | 2  |
| 22         | connects                        | 47                                | 47    | 47 |
| 23         | loan                            | 48                                | 48    | 48 |
| 24         | construction                    | 48                                | 7     | 48 |
| 25         | tunnel                          | 38                                | 15    | 37 |
| 26         | troubled                        | 44                                | 44    | 44 |
| 27         | highway                         | 43                                | 18    | 43 |
| 28         | connecting                      | 41                                | 41    | 41 |
| 29         | NA                              | NA                                | NA    |    |
| 30         | span                            | 40                                | 20    | 31 |
| 31         | 21st                            | 39                                | 39    | 39 |
| 32         | collapsed                       | 38                                | 15    | 38 |
| 33         | crosses                         | 37                                | 36    | 37 |
| 34         | chasm                           | 36                                | 36    | 9  |
| 35         | canal                           | 35                                | 31    | 35 |
| Row total: | 1,818                           | 1,326                             | 1,390 |

Metaphorical bridge 40 collocations

Figure 1 is a summary of the usage patterns of metaphorical bridge 40 collocations. The focus is on the types of bridges that the collocations are associated with, and on whether or not the instances of these collocations evoke function. The bars show the proportions of the types of bridges evoked by bridge in these instances. The vertical lines with show the proportion of bridge instances that are part of contexts that highlight the connecting function, or motion across the bridge.

Four main types of bridges were identified; one that refers to abstract concepts or relationships (145/274 instances, or 52%, blue bars), and three that have new physical referents. The latter types of bridges refer to “a specific piece of a musical instrument” (2/274 instances, or 1%, green bars), a specific part of a ship (105/274 instances, or 40%, Figure 1, purple bars), or a bridge of the nose (22/274 instances, or 8%, red bars).

Each collocation typically involves one of the four types of bridges. Bridge collocations that refer to a specific piece of an instrument include two (out of three) metaphorical below bridge instances, and those that refer to a specific part of a ship, include all metaphorical flying bridge and int. bridge instances (86 and 19 instances, respectively, Table 3, rows 27 and 20). Those that refer to bridges of the nose are the majority of the metaphorical across bridge instances (12/14 instances, Table 3, row
1), one out of three below bridge instances, and all metaphorical onto bridge (three instances), golden bridge (one instance), and near bridge (three instances) instances (Table 3, rows 29, 17, 3, and 14). They are part of phrases such as light freckles more visible across the bridge of her nose, he slid sunglasses onto the bridge of his nose, a bump just below the bridge of her nose, Golden freckles across the bridge of his nose, and near the bridge of his nose. Bridge instances that refer to these three types of real world physical entities are metaphorical in the sense that their referents “resemble[e real world] bridges in form, or function” (Webster, 2006). Accordingly, we may understand their contextual meanings by means of our experiences of real world bridges. However, as shown in Figure 1, these types of bridges (red, green, or purple bars) tend neither to be used in contexts that evoke the connecting function of real world bridges (orange vertical line), nor in ones that refer to someone’s or something’s crossing the bridge (blue vertical line). Their focus is instead on their new real world referents and their contexts.

Interestingly, only bridge instances that define abstract concepts or relationships (blue bars) are used in contexts that evoke connection, or crossing the bridge (orange or blue vertical lines). All the cross, crossed, and crossing bridge instances (28/99, 9/100, and 12/99 instances), about half the number of build bridge instances (28/60 instances), and two bridge bridge instances include terms that refer to motion across the bridge (Figure 1, blue vertical line). The cross bridge instances typically include a form of the proverb I’ll/we’ll cross that bridge when I/we come/get to it. Those crossing the metaphorical bridge are typically people, but abstract concepts or organizations (e.g., [e] very industrializing economy, NATO, and the future) do so too. In these instances, the act of crossing the bridge metaphorically symbolizes dealing with something difficult, or doing something that involves a decisive change. A similar usage is reflected in the metaphorical jump bridge (e.g., we’ll jump off that bridge when we get to it) and crossing bridge instances. They too involve people’s crossing the bridge, but also a decisive change or transition rather than troubles that those crossing the bridge have to deal with. In the crossing bridge instance in sentence 4, the act of crossing the bridge is used to symbolize a decisive change in someone’s life:

(4) Crossing back over your bridge to normal life, wind down the window and revel in the winds of change. (COCA [my emphasis])

The usage patterns of the metaphorical instances of the cross, crossed, and crossing bridge collocations are coherent with Forceville’s (2006) and Strack’s (2004, 2006, 2007) observations that bridge metaphors illustrate transitions, and with the structure of the primary metaphor change is
motion. However, the connection between crossing the bridge and the beginning of something new does not fall from this metaphor. It can be explained by dictionary data (the noun bridge in the sense of a time, place, or means of connection or transition), but more importantly, from the knowledge that crossing a real world bridge involves leaving one area and entering another one.

The other half of the build bridge instances (36/60 instances, Table 3, column C, row 9) occur in contexts that evoke the connecting function of real world bridges (Figure 1, orange vertical line) as do four out of six bridge bridge instances and the George bridge instance. metaphorical (see sentence 3). Sixteen of the build bridge instances refer to “a time [—] of connection or transition” (Webster, 2006) and should be metaphorical based on dictionary data. However, the contexts of the build bridge instances suggest that they are not merely uses of the noun bridge in this specific sense. They do not simply refer to an abstract connection, but to an entity that can be built. This fact suggests that an artifact is involved, and this artifact is what provides the connection. The instances deal with people (e.g., we, you, Ron, Reagan, and Gorbachev), organizations (e.g., Spain’s government), or abstract concepts (e.g., art, money, or love) that build bridges between, of, or to someone or something (e.g., between antiquity and modern times, of trust to these people, and to continued prosperity). The bridge bridge instances refer to elaborations of specific metaphorical themes within one, or more adjoining sentences. Sentence 5 is a suggestion to build a bridge that is wide, strong, and possible to cross.

(5) Let us shape the hope of this day into the noblest chapter in our history. Yes, let us build our bridge, a bridge wide enough and strong enough for every American to cross over to a blessed land of new promise. (COCA [my emphasis])

The George bridge is a request to someone called George to help [—] bridge the gap here a little bit.

The metaphorical under bridge (19 instances) and beneath bridge (one instance) instances are exceptions to the tendency for bridges that define abstract concept or relationships to evoke the connecting function of real world bridges, or to crossing the metaphorical bridge thanks to this function. They are all variations of the proverb “it’s/that’s water under that bridge,” and refer to specific bridge scenarios that are used to communicate that time is perpetually moving no matter what people do. In these scenarios, the bridge is a scaffolding for parallel, but independent events; the motion of time is like water flowing under the bridge while, at another level, people live their lives independently of this motion. It suggests that time has gone by for someone, or something, independently and out of control of someone else. In 6 and 7, those watching from the bridge are somehow distanced from the time, events or people that are flowing by below.

(6) Love, where are you today? Don’t tell me you’ve drifted away like water under the bridge.

Dream, you glamorous dream. Don’t tell me you’re caught in the stream of water under the bridge. (COCA [my emphasis]))

(7) So much had happened since they’d last seen one another, so much water had passed beneath the proverbial bridge, that he didn’t really know where to begin. (COCA [my emphasis])

According to Strack (2004, p. 237), instances such as these are structured by the metaphor seeing from a transcendent viewpoint is seeing from a bridge, and explicable in terms of a combination of the time is a river metaphor and people’s understandings of bridges (Strack, 2004, p. 237). Because bridges are associated with high elevation, they may also be associated with superior understanding. When combined with the time is a river metaphor they provide “a superior understanding of life itself or the events of history seen in the context of the passage of time” (Strack, 2004, p. 237). Strack’s analysis thus shows that instances such as these are coherent with primary and complex metaphors such conscious is up, ideas are objects, understanding is seeing, life is a fluid, and time is
a river. Yet speakers do not seem to need all these metaphors to conceptualize the passage of time as the flow of water under the bridge. As long as they see some sort of connection between the passage of time and the flow of water, the rest of the relationships will fall from relationships in the real world. From them we know that water under bridges flows independently from the lives of those watching from the bridge.

We may conclude that metaphorical bridge 40 instances are indeed connected with crossing the metaphorical bridge, and with the connecting function of real world bridges. This tendency, however, is only found in the contexts of the bridge instances that define abstract concepts, or relationships.

As was expected from the fact that bridge 40 collocates precede the term bridge, bridge 40 collocates are more closely connected with crossing the metaphorical bridge than with the connecting function per se. This focus is coherent both with Forceville’s (2006) and Strack’s (Strack, 2004, 2006, 2007, 2008) findings that bridge metaphors are connected with motion metaphors, but not possible to predict based on this data.

The metaphorical instances of the noun bridge that refer to times that connect were expected to be metaphorical based on dictionary data. Those that refer to metaphorical places, or means of connection might equally well have been non-metaphorical based on this information (see sentence 4).

The metaphorical instances that have new physical referents, that is, those that refer to a part of the nose, a part of a ship, and a piece of an instrument of bridge 40 collocations were expected to be metaphorical considering dictionary data (Webster, 2006). Contrary to dictionary information, their contexts do not evoke the function of real world bridges.

**Non-metaphorical bridge 40 collocations**

The bridge 40 collocations with no metaphorical instances are qualitatively different from metaphorical bridge 40 collocations. None of the collocates gate, street, int., railroad, ext., covered, stone, London, pedestrian, memorial, avenue, highway, or foot collocates are used together with metaphorical bridge instances. Quite a few instances of these collocations refer to specific bridges. The gate instances (Table 2, row 2) refer to the Golden Gate Bridge, the street instances (Table 2, row 8) to bridges such as the Center Street Bridge and Front Street Bridge, and the int. instances (Table 2, row 20) to bridges such as the 10 Int. Excelsior Bridge and 46 Int. Enterprise bridge. The London instances (Table 2, row 26) refer to bridges such as the London Bridge and London’s Waterloo Bridge, the memorial instances (Table 2, row 30) to bridges such as The Memorial Bridge and the Memorial Park Conservancy’s Bridge, and the Avenue instances (Table 2, row 32) to bridges such as The Congress Avenue Bridge and the Michigan Avenue Bridge.

Other non-metaphorical bridge collocations (i.e., the railroad, ext., covered, stone, pedestrian, highway, and foot instances) refer to specific types of bridges (e.g., to railroad bridges, covered bridges, stone bridges, stone arch bridges, pedestrian bridges, and foot bridges), or to a specific part of the bridge (i.e., the foot of the bridge). The bridge foot instances refer to a manner of walking (i.e., on foot). A few of these instances refer to other artifacts located near bridges (e.g., to highways and streets), or to abbreviations for exits to bridges (e.g., EXT. ROSEMAN BRIDGE, or EXT. STAIRS TO BRIDGE).

Taken together these instances suggest that non-metaphorical instances are typically associated with bridge experiences that are quite rich, or quite specific. Presumably, specific bridges, and specific types of bridges, carry too much information to be versatile source domain concepts. Moreover, speakers do not need this level of detail in order to conceptualize something else by means of salient properties of bridges. However, one out of two metaphorical wooden bridge instances (Table 3, column C, 19) shows that there are exceptions to this rule. It shows that we can use the image of an army tramping over a wooden bridge to define the sound of someone’s heart.
(8) In the bewildering silence the sound of my heart is an army tramping over a wooden bridge. Will it break? (COCA [my emphasis])

The fact that the bridge is wooden appears highly relevant to this context. It adds aspects of meaning (the sound of someone’s heart is muffled, yet marches on, and is on the verge of breaking) that would not have been possible to communicate by means of our experiences of ordinary bridges.

Comparisons with dictionary data show that non-metaphorical bridge 40 instances are related to bridge in the sense of “a structure carrying a pathway or roadway over a depression or obstacle (such as a river)” (Webster, 2006, see sentence 3). The dictionary meanings of bridge, however, do not explain why the bridge 40 collocations gate, street, int., railroad, ext., covered, stone, London, pedestrian, memorial, avenue, highway, and foot collocates are not used together with metaphorical bridge instances. Contrary to the information given by the dictionary, none of these instances are used in contexts that evoke the function of a real world bridge.

**Metaphorical bridge 04 collocations**

Figures 2(a) and 2(b) show the types of bridges in the metaphorical instances of bridge 04 collocations. Bar charts show the types of bridges that were identified. Vertical lines show the proportions of instances that evoke the connecting function of real world bridges (orange line), or motion across the bridge (blue line). A clear majority of these bridge instances define abstract concepts or relationships (657/777 instances, or 85%). They include all, or the majority of the bridge between, gap, river, across, bridge, built, divide, gaps, differences, nowhere, spans, spanning, crossed, connects, loan, construct, troubled, connecting, span, 21st, collapsed, chasm or crosses instances. The rest of these bridge instances refer to bridges of the nose (i.e., the bridge nose instances), a specific part of a ship (i.e., the bridge deck instances, and all but one of the bridge crew instances), and a denture anchored to teeth. The bridge instances that refer to bridges of the nose make up 13% (100/777 instances) of metaphorical bridge 04 instances, and those that refer to a specific part of a ship 2% of these instances (13/777 instances). One bridge instance (i.e., one of the bridge bridge instances) refers to a denture anchored to teeth (>1% of metaphorical bridge 04 instances).

The vertical lines show that bridge 04 collocations are more closely connected with the connecting function of real world bridges (649/777 instances, or 84%), than with motion across the bridge (instances 114/777, or 15%). Twice as many of these collocations than the metaphorical bridge 40 collocations in Figure 1 (85% vs. 40%) involve the connecting function.

Metaphorical bridge 04 collocations that highlight the connecting function include collocates that refer to bridged concepts, connecting activities, or relationships between entities. Metaphorical instances of the collocations bridge loan, bridge river, bridge bridge, bridge collapsed, and bridge nowhere also have this focus.

Collocations that refer to bridged concepts include metaphorical instances of the collocations bridge gap, bridge divide, bridge gaps, bridge differences, and bridge chasm. They are all highly metaphorical. I analyzed 99 bridge gap instances and 76 bridge differences instances, all of which are metaphorical (Table 4, rows 2 and 13). Moreover, 88 out of 89 bridge divide instances are metaphorical (Table 4, row 10), as are 81 out of 82 bridge gaps instances and 32 out of 36 bridge chasm instances (Table 4, rows 12, and 34). As good as all these instances are verbs (Table 3). They are explicable in terms of bridge in the dictionary senses of “mak[ing] a bridge [—] over or across,” or “provid[ing] with a bridge.” However, with the exception of the bridge difference instances (which can only refer to abstract entities), the metaphoricity of these collocations cannot be predicted based on the senses of the verb bridge (see the third section). Accordingly, the contexts of several of these instances show that not only dictionary meaning is involved. They involve elaborations of metaphorical scenarios that clearly involve speakers’ experiences of real world bridges. Sentence 9 is a case in point. First, a gap is mentioned, and then information about the width of the gap is added.
(9) And while I think it unlikely that Monk’s mental problems did anything to shape the music that he wrote in his peak years, I have no doubt that they made it harder for him to bridge the gap between artist and audience—a gap that had already been widened by the coming of modernism... (COCA [my emphasis])

The collocates bridge build, bridge spans, bridge spanning, bridge connects, bridge connecting, bridge span, and bridge crosses include the noun bridge combined with a verb that refers to connecting activities. Eight out of 98 bridge built instances are metaphorical (Table 4, row 8). They refer to metaphorical bridges that have been, or will be, built between abstract concepts (e.g., between mere abstraction and concrete existence) or people (e.g., between them). The bridges may be understood as “means of connection” (Webster, 2006), but are not just connections, but also entities that can be built. Two out of 59 bridge spanning instances (Table 4, row 18) are metaphorical, as are 10 out of 49 bridge connects instances (Table 4, row 22), and 11 out of 41 bridge connecting instances (Table 1, row 28). They refer to the bridging of abstract divides between people, between people and
their feelings, between theory and practice, between film and text, or between musings, faith positions, communities, issues, worlds, internal worlds, or galaxies. Several of these instances involve entities that we find in the context of real world bridges. In sentence 10, we first learn about a specific abstract connection between people, and then that the connection is a bridge that spans a chasm that separates people from one another.

(10) If the client struggles to hold tears back, wait and try not to shed your own tears, as it may interrupt the established connection. Be acutely aware of the actions and behaviors to be mirrored. Hence, you will have connected at a level previously only imagined. ”Empathy is the bridge spanning the chasm that separates us from each other… COCA [my emphasis]

In sentence 11, the idea of an “inner bridge” or “pathway” that spans some entities, and connects others describes the soul energy that someone feels after having received spiritual transmission.

(11) There is a saying in both the Hebrew Kavanoth and the Arabic Fan/Baq t that alludes to an inner bridge or pathway that connects heaven and earth in one’s being and spans the confusion of knowing and notknowing [sic!]. By spanning these states, we develop a sense of trust and affection for the unknown and the strange. Dualistic views are no longer the controlling aspects of our consciousness. (COCA [my emphasis])

In sentence 12, a metaphorical bridge that is expected to connect large gaps once it has been built.

(12) Let us be clear: the bridge connecting Mormonism with Evangelicalism has not been completed. There are gaps, in some cases large ones, between these respective faith positions, but we are in the business of engaging the issues, wrestling over doctrinal matters, acknowledging differences, and rejoicing in similarities and agreements. (COCA [my emphasis])

Four out of 59 bridge spans instances (Table 4, row 17) are metaphorical. They include both verbal and nominal bridge instances. They deal with the bridging of abstract gaps, or of distances between people (as in, e.g., build the bridge to span the gap between the generations and to bridge the dangerous span of hours).

Metaphorical instances of the bridge between and bridge across collocations define relationships between entities. The bridges in the bridge between instances are more often metaphorical than the bridges in the bridge across instances (91/99 instances vs. 9/99, Table 4, rows 1 and 6). Their contexts provide information on relationships that involve metaphorical bridges. They bridge abstract relationships between people (e.g., bridge between her son and grandson and bridge and establish connections across members of the consultation constellation), and between abstract concepts (e.g., the bridge between evolution and intelligent design and a slender bridge across the abyss of Annihilation Everlasting). Bridge across is also used in reference to bridges that connect geographical areas in metaphorical ways (e.g., the main security bridge across the Atlantic).

The bridge loan instances are used in the sense of “money that a bank lends you for a short period of time until you receive the money that you are getting from another source (such as from selling your house)”(Webster, 2006). They appear related to the knowledge that bridges are of great help until people get to the other side. The majority of them (36 out of 48 instances, Table 4, row 23) are used in contexts that highlight the connecting function, the rest (12 instances) highlight both the connecting function, and motion across the bridge. Sentence 13, for instance, raises the question where the bridge loan really leads.

(13) If there is going to be a bridge loan, my question is a bridge to what? What happens when you get there? You just don’t want a loan that lets you lose this many billion dollars more every month until that money runs out. ROSEN: The clash over a bailout has revived competing theories about why the U.S. auto industry has landed in its latest and deepest ditch. (COCA [my emphasis])
The metaphorical *bridge river, bridge bridge, and bridge collapsed* instances also involve elaborations of bridge scenarios that involve the connecting function of real world bridges. The *bridge river* instance deals with the distance between life and death, and involves entities such as a distance, mountains, a big valley, and a small river:

(14) “Maybe the *distance between* life and death isn’t as great as you think.” And I said, “You mean it’s not a *chasms*? Two mountains and that big valley between?” This is my words now: “You mean, it’s only a little bridge across a small river?” (COCA [my emphasis])

The metaphorical *bridge collapsed* instance bridges a temporal distance:

(15) … the reader and the monk, and through “a biblicized physiognomy” *provided the bridge*, or “*collapsed the time*,” between the founding persons of the Christian… (COCA [my emphasis])

The *bridge troubled* instances (44 instances) and the majority of the *bridge 21st* (38/39 instances) instances are used in contexts that refer both to the connecting function and to motion across the bridge. Some of the *bridge troubled* instances refer to the song *Bridge over Troubled Water* by the American singer-songwriters Paul Simon and Art Garfunkel from 1970. They deal with someone’s being like a bridge over someone else’s troubled waters (i.e. their sorrows). Other *bridge troubled* instances are elaborations on this theme. One example involves the *meeting of musical minds* in sentence 16. It both connects and allows motion across the bridge:

(16) … it was a *meeting of musical minds, a musical bridge over the troubled waters that have separated the United States and Cuba for half a century.* (COCA [my emphasis])

Another example is the bridge over the troubled waters of a marriage in sentence 17, which is first constructed, and then crossed.

(17) Through sheer will, my parents *forged a bridge over their troubled waters* and were able to *cross over*. (COCA [my emphasis])

The *bridge 21st* instances (*Table 4*, row 31) provide information on where the metaphorical bridge leads. All 39 instances of this collocation refer to bridges to the 21st century, and are thus bridges in time rather than in space. They are coherent with the source-path-goal schema and with primary and complex conceptual metaphors such as action is motion, time is motion, and purposeful activities are journeys, and might be influenced by patterns such as these. Sentence 18, however, shows that the act of crossing of the bridge also symbolizes the beginning of something new (a new century), which does not fall these from more schematic conceptual mappings such as these, but can be explained by the fact that leaving a real world bridge involves entering another body of land.

(18) To those who say the *progress* of the last eight years was an accident, that we just *coasted along*, let’s be clear: America’s success was not a matter of chance, it was a matter of choice. “In another section, he notes and repeats a slogan he used in his 1996 convention address. He says, quote, “My fellow Americans, tonight we say with confidence: We *built our bridge to the 21st century, we crossed it together and we’re not going back.*” (COCA [my emphasis])

A few metaphorical *bridge* collocations are primarily connected with motion across the bridge. They include the *bridge nowhere* and *bridge crossed* instances. Four out of 40 *bridge nowhere* instances, and five out of 51 *crossed* instances (*Table 4*, rows 14 and 20) are metaphorical. The
crossed instances refer to someone’s motion over the metaphorical bridge, which in turn, symbolizes a given stage in a process (e.g., in life, or the slippery bridge of adolescence).

As was suggested by the fact that in bridge 04 instances, bridge is more likely to be a subject (and refer to a bridge that connects), or a predicate (and refer to something that bridges) than to a setting, there is a striking focus on the connecting function of real world bridges among these collocations. The focus is in line with the more schematic conceptual metaphor abstract is concrete, but not predictable from it. It does, however, fall from Gibson’s (2015) that people understand the world around them through affordances.

Metaphorical bridges that bridge abstract concepts or relationships are coherent with the noun bridge in the dictionary sense of “a time, place, or meaning of connection or transition.” However, only those that involve time were expected to be metaphorical based on this considering this data.

The metaphorical bridge 04 instances that refer to a part of the nose (100/100 bridge nose instances) or ship (4/4 bridge deck instances and 9/10 bridge crew instances), or a denture (1/5 bridge bridge instances) were expected to be metaphorical considering dictionary data. This data, however, did not suggest that they should not evoke the function of real world bridges (see sentence 4).

**Non-metaphorical bridge 04 collocations**

The non-metaphorical bridge 04 collocations fall into categories that are qualitatively different from metaphorical bridge 04 collocations. They include collocates that refer to waterways (i.e., creek, and canal), or to other artifacts located close to, or on a bridge (i.e., tunnel and highway). Contrary to metaphorical bridge instances, but similar to the non-metaphorical bridge 40 collocations, they provide quite specific information about the bridges and their surroundings.

The bridge creek instances refer to bridges over, or across specific creeks (e.g., Sawmill Creek, and the creek beneath the falls). The bridge canal instances (Table 4, row 35) refer to bridges over, above, or across specific real world canals (e.g., their first pontoon bridge over the canal, a bridge across the canal, and Three cars on the bridge fell into the canal). The bridge river instances, finally, refer to non-metaphorical bridges over, on, across, or even into a specific real world river (e.g., the Hudson River, The Moscow River, and a black river).

Both the tunnel and the highway instances (Table 4, rows 25 and 27) describe quite specific traffic situations that involve both a bridge and either one of the artifacts that these two terms refer to. There is the raised roadway connecting the bridge to the tunnel and the bridge which connected the highway to the toll road that by-passed the city of Chicago. With the exception of the metaphorical river in sentence 15, the combination of bridges and artifacts and waterways such as these are clearly not preferred source domain experiences. This might partly be because waterways typically occupy the location of the abstract concepts that are bridged in metaphorical ways (i.e., gaps, chasms, divides, and differences). Bridge 04 collocations with no metaphorical instances are less closely connected with function than metaphorical bridge 04 collocations.

**Discussion**

Both metaphorical and non-metaphorical bridge collocations evoke the function of real world bridges. However, metaphorical bridge collocations are much more prone to do so. This fact is in line with the hypothesis that metaphorical bridge collocations are more strongly influenced by cognitive salience than non-metaphorical ones, but at odds with predictions based on dictionary data.

As is suggested by the frequency differences between bridge 04 collocations and metaphorical bridge 40 collocations, metaphorical bridge instances more often evoke the connecting function, than motion across the bridge. Nearly all bridge collocations that are primarily metaphorical, and quite a
few of those that are occasionally used in metaphorical ways evoke the connecting function. The hypothesis of this article did not distinguish between the two types of function. The difference, however, might suggest that the function of artifacts per se is more important in metaphorical thought and language, than are the activities that are possible thanks to this function. Interestingly, the focus on the connecting function observed here is not in line with the focus on motion across the bridge in Forceville’s and Strack’s data (Forceville, 2006; Strack, 2004, 2006). Yet it makes sense given that their data deal with protagonists who travel. Considering the topic of their data, we should expect the bridges in them to be approached from one of their ends, and hence afford crossing them. Corpus data, by way of contrast, does not necessarily reflect this vantage point, but might also reflect viewing the bridge from the side.

The instances that define abstract concepts and relationships include collocates that are intimately connected with the function of bridges. They refer to bridged concepts, to relationships between entities, to an abstract concept that bridges, or to motion across the bridge. Their metaphorical uses are all explicable in terms of the hypothesis that the function of real world bridges is particularly salient in metaphorical language. The meanings of metaphorical *bridge* instances that focus on function are accounted for in the dictionary (Webster, 2006), but only instances of the noun *bridge* that refer to “a time [—] of connection or transition” were expected to be metaphorical based on dictionary data.

The metaphorical patterns, however, turned out to be more nuanced than expected. Only those that define abstract concept, or relationships, are part of contexts that evoke the connecting function, or motion across the bridge. Metaphorical *bridge* instances that have new physical referents focus on these new referents instead of bridges. The metaphoricity of instances that belong in the latter category were possible to predict based on dictionary data.

Strictly non-metaphorical *bridge* collocations are qualitatively different from metaphorical *bridge* instances. They focus neither on function, nor on other salient aspects of bridge experiences, but refer to more specific or more complex experiences (i.e., ones that involve other artifacts or waterways located near the metaphorical bridge, or specific bridges, specific types, or specific parts of bridges). Their tendency to be less closely connected with function than metaphorical *bridge* instances was predicted, but not what types of experiences they would be connected with. The instances are coherent with the senses of *bridge* (Webster, 2006). These, however, can neither help us explain, nor predict why these specific *bridge* collocations are non-metaphorical.

More generally, the results show that speakers’ metaphorical uses of words are explicable in terms of cognitive salience. A tentative suggestion is that they go back to more specific mappings that involve metaphorically conceptualizing, or simulating the imaginative bridge scenarios that speakers refer to in the *bridge* instances (cf. Gibbs, 2006), and that speakers’ experiences of the specific concepts that they refer by means of the lexical items that they use play an important part in these conceptualizations. According to Gibson, there is a crucial difference between imagining and perceiving. Imaginary scrutiny of objects does not help us discover qualities that we have not previously perceived.

An imaginary object can undergo an imaginary scrutiny, no doubt, but you are not going to discover a new and surprising feature of the object this way. For it is the very features of the object that your perceptual system has already picked up that constitute your ability to visualize it. The most decisive test for reality is whether you can discover new features and details by the act of scrutiny. Can you obtain new stimulation and extract new information from it? Is the information inexhaustible? Is there more to be seen? The imaginary scrutiny of an imaginary entity cannot pass this test. (Gibson, 2015, p. 245)

This difference provides yet another explanation for the differences between metaphorical and non-metaphorical language (cf. the second section). While non-metaphorical language might include both salient and non-salient features in the world, metaphorical thoughts, and hence metaphorical language, will focus only on those aspects of the source concepts that speakers can imagine. If speakers’ imaginary scrutiny of objects does not bring anything new to the table, then their metaphorical understandings based on these objects should not do so either.
Sullivan (2006) similarly suggests that metaphorical uses of words are connected with the meanings that words evoke. She, however, focuses on how the frames (e.g., location of light and light movement) that are evoked by the non-metaphorical senses of words (e.g., sunny or brilliant) determine which word “is chosen to express a given conceptual metaphor” (Sullivan, 2006, p. 394 [my emphasis]). She suggests that the Invariance Principle (Lakoff, 1993) applies to the frame structure evoked by the words as well as to image schema structure, and that this fact explains why some words are suitable or unsuitable for expressing a given conceptual metaphor. The word sunny evokes the location of light frame, and can thus be used to express the matching happiness is light metaphor. The word brilliant, however, evokes another frame (light movement) and can thus “not acquire metaphoric meanings in the domain of happiness” (Sullivan, 2006, p. 392). Sullivan’s analysis shows that some patterns at the level of metaphorical language are coherent with more schematic conceptual metaphors. However, her claim that words are chosen to express them is at odds with results of the present study. It does not consider the ways in which speakers’ metaphorical uses of words are guided by the specific experiences that their words refer to. Her explanations then, describe how patterns interact within systems (lexical and more schematic ones), but not how these patterns are related to the specific experiences that speakers refer to in metaphorical language. Yet “[k]nowledge of the world must come from somewhere; [it] cannot be explained by supposing that knowledge of the world already exists. All forms of cognitive processing imply cognition so as to account for cognition” (Gibson, 2015, p. 241).

Conclusion

The present study has shown that the metaphorical uses of words are neither predictable from conceptual mappings at the levels of primary (Grady, 1997) or complex metaphors, nor from the conventional dictionary meanings of the terms involved. Crucially, the notion of LEC metaphors is needed to explain when and why individual speakers use words in metaphorical ways. This type of metaphorical mapping constitutes a third level of conceptual metaphor that is coherent with conceptual metaphors at more schematic levels of abstraction, and with dictionary data, but still guided by people’s ongoing experiences of the world.

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References

Church, K. W., & Hanks, P. (1990). Word association norms, mutual information, and lexicography. *Computational Linguistics, 16*(1), 22–29.

Corpus of Contemporary American English. (2016). Retrieved from http://corpus.byu.edu/coca/

Deignan, A. (1999). Linguistic metaphors and collocation in nonliterary corpus data. *Metaphor and Symbol, 14*(1), 19–36. doi:10.1207/s15327868ms1401_3

Deignan, A. (2005). *Metaphor and corpus linguistics* (Vol. 6). Amsterdam: John Benjamins Publishing.

Deignan, A. (2007). “Image” metaphors and connotations in everyday language. *Annual Review of Cognitive Linguistics, 5*(1), 173–192. doi:10.1075/arcl.5.08dei

Forceville, C. (2006). The Source–Path–Goal schema in the autobiographical journey documentary: McElwee, van der Keuken, Cole. *New Review of Film and Television Studies, 4*(3), 241–261. doi:10.1080/17400300600982023

Gibbs, R. W. (2006). Metaphor interpretation as embodied simulation. *Mind & Language, 21*(3), 434–458. doi:10.1111/j.1468-0017.2006.00285.x

Gibbs, R. W., & Santa Cruz, M. J. (2012). Temporal unfolding of conceptual metaphoric experience. *Metaphor and Symbol, 27*(4), 299–311. doi:10.1080/10926488.2012.716299

Gibson, J. J. (2015). *The ecological approach to visual perception: Classic edition*. New York, NY: Hove, East Sussex: Psychology Press.

Grady, J. E. (1997). *Foundations of meaning: Primary metaphors and primary scenes*. Berkeley, CA: University of California, Berkeley. New York: Basic Books.
Appendix

Strack’s (2006) bridge metaphor and metonymy categories:

(1) OVERCOMING A DIFFICULTY IN LIFE IS BUILDING A BRIDGE
(2) OVERCOMING A DIFFICULTY IN LIFE IS CROSSING A BRIDGE

Corollary a—MAKING PROGRESS IS CROSSING BRIDGES (extension Of 2)

(1) DEVELOPING A RELATIONSHIP IS BUILDING A BRIDGE
(2) AVOIDING A RELATIONSHIP IS NOT BUILDING A BRIDGE (extension of 3)
(3) ENDING A RELATIONSHIP IS DESTROYING A BRIDGE
(4) DEVELOPING A RELATIONSHIP IS CROSSING A BRIDGE
(5) AVOIDING A RELATIONSHIP IS NOT BUILDING A BRIDGE
(6) ENDING A RELATIONSHIP IS CROSSING A BRIDGE
(7) AN INTERSECTION OF DISCRETE STATES IS A BRIDGE

Aspect a—bridge as dialectic datast
Aspect b—(ironic) bridge as apposition accentuator

(1) ACTING DECISIVELY IS CROSSING A BRIDGE (extension of 2, 9)
(2) SEEING FROM A TRANSCENDENT VIEWPOINT IS SEEING FROM A BRIDGE
(3) SEEING FROM A TRANSCENDENT VIEWPOINT IS SEEING A BRIDGE (extension of 11)

Aspect a—Bridge as framing artifice to heighten interest and imply significance in the narrative

(1) A PERSON DYING IS A PERSON CROSSING A BRIDGE (extension of 8, 9, 11)
Corollary a—AN ANIMAL DYING IS AN ANIMAL CROSSING A BRIDGE (extension of 13)

(2) ENCOUNTERING A TWIST OF FATE IS A PERSON CROSSING A BRIDGE
Corollary a—NARRATIVE REVERSAL IS ARCING BRIDGE STRUCTURE (extension of 13)

(3) A BRIDGE BUILDER FOR A BRIDGE (metonymy)
(4) CULTURAL SOPHISTICATION IS BRIDGE TECHNOLOGY (extension of 15)
(5) TENSION IN SOCIETY IS STRUCTURAL STRESS IN A BRIDGE (ironic extension of 16)
(6) PREPARATION FOR MILITARY INCURSION IS BUILDING A BRIDGE (metonymy, also extension of 2, 6, 9)
(7) MILITARY INCURSION IS CROSSING A BRIDGE (metonymy, also extension of 2, 6, 9)
(8) A PLACE FOR SACRIFICE IS A BRIDGE

Aspect a—place for human or animal sacrifice in overt religious ritual (2, 6, 8, 10, 12, 13)
Aspect b—place for material votive offering to deity (2, 6, 10, 12)
Aspect c—place for individual to forego self-interest for some greater good (2, 6, 9, 10, 11, 12)
Aspect d—place for death of individual as dramatic representative of larger group (8, 9, 12, 13, 14)

(1) A PERSON HIDDEN FROM SOCIETY IS A PERSON UNDER A BRIDGE (extension of 2, 7, 11, 12)
Corollary a—AN ANIMAL/THING HIDDEN FROM SOCIETY
Corollary b—AN ACTION HIDDEN FROM SOCIETY

(2) A NATURAL SPAN IS A BRIDGE

Corollary a—A RAINBOW IS A BRIDGE
Corollary b—THE MILKY WAY IS A BRIDGE

(3) EXPERIENCING A TEST IN LIFE IS PASSING UNDER A BRIDGE (i.e., during river travel)
Corollary a—MAKING PROGRESS IS PASSING UNDER BRIDGES (extension of 23)
(Strack, 2006, pp. 17–18)