

Supplementary Document:

Comments on our Categorization Decisions on Language Examples

One purpose of this document is to suggest by illustration our systematic reasons for categorizing the study's particular adjective-noun pairs as we did, in one of the four categories: *literal*, *conventional metaphorical*, *high-conforming novel metaphorical* and *low-conforming novel metaphorical*. Another, related, purpose is to give a flavour of some ways in which future studies might benefit from doing more to evade certain complications in making the categorization decisions. We do not believe that the sorts of complications mentioned are peculiar to our study. Thus, hopefully, this document has wider usefulness than just setting the stage for improvements effected in future successors to the present study.

It would be too lengthy to address any large proportion of the 96 pairs (formed from the 24 nouns, with, for each noun, four different adjectives, giving one pair for that noun in each of the four different categories). Thus, we only address a few of the more interesting cases, as a supplement to comments on a few pairs in the main paper. As part of this selectivity, amongst the metaphorical pairs we mostly do not comment on the conventional ones, preferring to focus on cases whether there is some novelty.

We divide the discussion into two sections, the first on metaphorical pairs and the second on literal pairs. Mention of dictionaries alludes to one or more of *The Chambers Dictionary* (2003), the *Oxford English Dictionary* (online full version, accessed between 2020 and 2022; *OEDo* henceforth) and *Webster's Third New International Dictionary* (unabridged, 1961). Mentions of corpus frequencies allude to the corpus searches in the in the 45-billion-token English Web Corpus (enTenTen) that were performed using SketchEngine, as stated in the main paper.

Metaphorical Pairs

We included "*muted week*" as a high-conforming novel pair. Literally muting something that produces sound makes the sound quieter than it would otherwise have been. So the

hearer can, on the source side, easily infer (relative) quietness from mutedness, when otherwise there would have been significantly more sound. We now rely on a familiar metaphoric bridge between source-side quietness and target-side calmness of activity, as evidenced by the conventional metaphorical use of “*quiet*” to mean relatively calm in terms of activity.¹ Thus, the hearer can easily comprehend that *the activity of the week has been made to be calmer than it would otherwise have been*. The comprehension route has exploited distinctive features of mutedness to obtain distinctive metaphorical meaning. Recall that the definition of high-conforming (in section 2.2.5 of the main text) requires it to be the case that *distinctive* target-side meaning can be obtained by exploiting some *major distinctive* features of the adjective’s source-side meaning—easily, without the consideration of special contexts, and using only familiar bridges and easy, generally-applicable inferential and other connections on the source side.

In the above analysis, we are implicitly resting on the idea that causations on the source side of any metaphor suggest corresponding causations on the target side, and moreover modal qualifications on the source side, such as in saying counterfactually that something *would* otherwise have been the case, suggest corresponding qualifications on the target side. These source-to-target transfers are examples of the use of “*generic*” bridges, which are a special class of familiar bridge. The independence from any specific source or target subject matter is the reason for calling them “generic”. Further examples of generic bridges are used below. They are based on the “view-neutral mapping adjuncts” proposed by Barnden (2015, 2016 and earlier work cited therein), although they also have strong connection to principles used in the work of other metaphor researchers. Notably, Structure Mapping Theory (Bowdle

¹ This bridge is arguably motivated by a pragmatic correlation between calmness and quietness, with less calm activity being noisier. One might therefore make a metonymic jump from acoustic quietness to a broader calmness that includes acoustic quietness. This would give a metonymic rather than metaphorical analysis of the pair. However, we do not regard this as a more likely way of interpreting the pair than the metaphorical way we offer, because there is no particular reason to think the amount of noise involved in the week is the issue. Note that a “quiet week” would usually be one where there is lack of activity of a certain sort, even if there is also considerable noise for other reasons.

& Gentner 2005, Gentner 1983) involves, under the heading of “systematicity”, the idea that “higher-order” relations such as causation, but also many others, tend to transfer from source to target; and the Extended Invariance Principle of Ruiz de Mendoza Ibáñez (1998, 2020) has a similar purpose to that of our generic bridges. A version of the idea also appeared in early work on analogy in AI (Carbonell 1982).

One complication with “*muted week*”, analogous to complications in some other high-conforming pairs in our study, is that “*muted*” arguably has a conventional metaphorical meaning of “reduction of communicative strength” used in common phrases such as “*muted criticism*”. However, we argue that this meaning does not readily provide a meaning for “*muted week*”, without the entertaining of a special context where communication is at issue. Thus, it does not provide a reason for classing the pair as conventional metaphorical in preference to high-conforming novel metaphorical.

A further meaning for “muted” given by dictionaries (e.g., Chambers) is that of a colour being toned down. To exploit this in our example would require the week to be viewed metaphorically as a colour, which to our knowledge would be an unfamiliar bridge. If toned-down implies being made less striking to an observer, then the hearer could use this bridge to comprehend that the week has been made less striking than it would otherwise have been, assuming the hearer can rely also on a generic bridge concerning emotional effect. Thus, there would a low-conforming route to this meaning as well as the above high-conforming route to a different meaning. In such cases, we still classify the example as high-conforming, because the definition of this category asks for a high-conforming route to be available rather than that it be the only route. However, in future studies, it may be interesting to distinguish more finely between pairs based on the range of interpretation routes available, not just on the yes-no presence of a high-conforming route.

The low-conforming pair for the noun “week” was “*liquid week*.” We take the adjective here to imply a distinctive way in which a physical entity can be non-rigid. Now, it is common to talk of units of time as being non-rigid, as in “*flexible working week*” and “*the day was drawn out by a lot of boring tasks*.” We assume that such locutions appeal to a familiar bridge between a period of time and a non-rigid physical entity (whether solid or liquid). But then it is difficult to see, on the basis of familiar mappings, what *distinctive* metaphorical meaning straightforwardly arises from “*liquid week*” as opposed merely to the metaphorical meaning of “flexible week”.

Appeals to the fact that time itself is commonly said metaphorically to “flow” or that a multiplicity of units of time such as days can “fly” past, and hence perhaps also “flow” past, do not seem very relevant here. The mentioned week is an individual unit of time rather than time as such, and there is no indication that there is a multiplicity of times being said to flow (these times would presumably have to be parts of the week). Such an interpretation would be one requiring a special context, in our view. One possibility for a special context, amongst many, would be the situation of a person who has been in a semi-conscious state in hospital during the week and for whom time has flowed during that week in a particularly undifferentiated way, with no boundaries between the days. Such a meaning about the week’s apparent timing would be an apt low-conforming meaning of “*liquid week*.”

We included “*hazy hope*” as a case of high-conforming metaphorical novelty. Mental entities such as ideas are often metaphorically portrayed as physical entities. In particular, the question of whether and how easily one can “see” a mental entity or activity is often appealed to. For instance, one’s mental “view” of something can be “clouded.” If a mental entity is metaphorically viewed as a physical object, then there is a familiar bridge between seeing the physical object and determining the nature of the mental entity. Then, by means of a generic bridge concerning easiness/difficulty and another concerning the degrees to which properties

hold, the degree of easiness/difficulty of seeing the physical object corresponds to the degree of easiness/difficulty of determining the nature of the mental entity. Now, if a physical object looks “hazy” then it could either be that the outlines of the object itself are intrinsically indefinite or that the intervening space is filled with something such as mist. We concentrate here on the second possibility, for a reason given below. If, say, a mountain is hazy because of intervening mist, most or all of it has an indefinite appearance—its outlines and surface texture are more or less comprehensively unclear to the observer to some significant degree. Moreover, this unclarity is not the observer’s fault and is out of his/her control. Thus, with the hope (as physical object) replacing the mountain, we can get a metaphorical meaning for the phrase, namely that the person has only a comprehensively unclear impression of what he or she is hoping, for reasons beyond her control. Notice here that we have assumed that *comprehensiveness* (completeness with which some feature is present across an entity) carries over from source to target by means of a generic bridge, as does the lack of control.²

In this analysis we have easily exploited major distinctive features of haziness, in line with what is required for the high-conforming category. For instance, if we replaced the physical haziness notion on the source-side by a less specific notion, such as of being visually unclear, we would not get the connotation that the mountain (say) is rather *comprehensively* unclear and that it is so for reasons *beyond the observer’s control*; so, the metaphorical meaning would not have these elements of comprehensiveness and lack of control.

Interestingly, while “*hazy hope*” is rare in discourse—it occurred only once in our corpus searches—there are the common phrases “*hazy idea*” (531 hits³) and “*hazy memory*” (1,481 hits)⁴ and our dictionaries provide, for “hazy”, a set of conventional metaphorical meanings:

² The bridge handling comprehensiveness is the only generic bridge that is not clearly matched by a view-neutral mapping adjunct (VNMA) in the work of Barnden cited above, although one can see a relationship to a VNMA concerning set-size in that work. The other generic bridges appealed to in the current document are used in many of Barnden’s analyses.

³ Corpus size (tokens) = 44,968,996,152

⁴ Note that the mean hit rate for conventional metaphors was 1898.08 (SD = 2778.01)

vague, ill-defined, unclear, obscure, indefinite. These meanings are current and non-specialized, and could apply directly to a hope (in the sense of what is hoped, rather than the hoping itself), in, moreover, a way that would fit in the sentence in our study in which “*hazy hope*” was embedded (“*Jane had a hazy hope usually*”). They would therefore have suggested that “*hazy hope*” should be counted as conventional, had it not been for our operational requirement that a conventional pair had to have at least 10 corpus occurrences, while a high-conforming pair could have up to 9 occurrences. That is why we counted “*hazy hope*” as high-conforming novel rather than conventional. We do recognize that the border criterion of 10 occurrences between high-conforming novel and conventional was merely operational in spirit. It was imposed because of uncertainties in judging what the felicitous range of application of a given dictionary meaning for a word is. But, on the other hand, it is notable that across our three dictionaries the only mental-state nouns to which the above metaphorical meanings of “hazy” are applied in examples are as follows: idea(s), creed, recollection, memory.⁵ Indeed, “*hazy hope*” sounds odder to our ears than “*hazy idea*”, even though “*vague hope*”, “*ill-defined hope*”, etc. sound perfectly acceptable, as meaning that what is hoped is vague, ill-defined, etc. We would offer as a provisional explanation of this paradox that the meaning of “hazy” as vague, ill-defined etc. applies felicitously only when the noun in question is taken to identify mental content as opposed to the mental mode of entertaining that content. In “*hazy hope*” the content would be what is hoped, but the visual connotations of “hazy” on the source side of the metaphor combined with the normal conscious vividness of the state of hoping actually push the hearer to attending to the mode of entertaining that content, i.e. the attitude of hoping itself, instead of, or as well as, attending to the content. Even if what is hoped for is not objectively vague, it is subjectively vague, in that the hoping is itself vague—the person cannot get a sharp impression of what she herself

⁵ A related but differently-applicable conventional metaphorical meaning listed in the dictionaries was of a person or mind being hazy about something, in the sense of being mentally confused about it.

is hoping. Thus, there are principled reasons for taking “*hazy hope*” as high-conforming novel as opposed to conventional.

The low-conforming pair in our study for the noun “hope” was “*curved hope*”. Now, when mental entities are cast metaphorically as physical objects, these objects can be of many different shapes. However, to our knowledge, the shape is not commonly brought into play in metaphorical comprehension, except in that gross properties of it, such as the shape being indefinite, may be used. Rather, what is brought into play are such properties of the object as solidity/fluidity, size, weight, strength, endurance, changeability, position, movements, purpose and (when the object is a person or other sentient being) mental states. Furthermore, being curved does not have any strong inferential relationship to the properties just listed. Thus, we claim that it is *not* easy to use the distinctive quality of being curved to derive distinctive meaning for the pair (on the basis of familiar bridges and easy, generally-applicable source-side connections, without assuming a special context). Thus, the pair is low-conforming.

But we can see *some* potential source-side connectivity on which some metaphorical meaning could be derived via familiar bridges. For instance, being curved suggests (without definitely implying) that the object is a solid one, not liquid or gaseous. To the extent that solidity of physical objects has familiar bridge to, say, the stability of constitution of an idea being metaphorically viewed as a physical object, then we may conclude that the hope is stable in some way. However, this does not appeal to any distinctive quality of being curved as opposed to having any other geometrical shape commonly ascribed to solid objects. If an object is straight we can still just as much (or as little) derive the suggestion that it is solid. Thus, little if any distinctive metaphorical meaning arises compared to any other phrase portraying the hope as a solid object. Hence, this comprehension route does not make the pair high-conforming. One possible creative interpretation, that might be natural in special

discourse contexts, is that the hope has been crafted in a particular, careful way, perhaps to be additionally pleasing. Hence, we conclude that the pair has a metaphorical meaning but only in a low-conforming way.

Our study included “*thick belief*” and “*fitted belief*” as high-conforming and low-conforming novel metaphorical pairs, respectively. Beliefs, ideas, etc. are often cast metaphorically in discourse as solid physical objects, so we infer a well-known bridge between beliefs, etc. and such objects. This is evidenced for instance in familiar metaphorical phrases such as “*firm belief*” or in talk of ideas “*whizzing about*” in one’s mind. One can infer from a physical object’s being thick that it is likely to be at least moderately firm, so “*thick belief*” gives us at least moderate durability of the belief. Firmness or durability of a physical object is a matter of its long-lastingness and the difficulty of changing it, and we claim that matters of time course, change and difficulty are subject to generic bridges. But also, one can also infer from the thickness that the physical object contains a relatively high amount of material, and from this derive that the belief has a relatively high amount of content. We appeal here to a generic bridge concerning a general amount property. Thus, distinctive qualities involved in thickness straightforwardly and without special context provide distinctive qualities of the belief, using only familiar bridges and simple inferential connections within the source subject-matter.

By contrast, the distinctiveness of “*fitted*” is not nearly so straightforwardly usable without a special context. A carpet is “fitted” if it covers the whole floor space in a room and thereby fits the shape of the room. Similarly, a piece of clothing is “fitted” if it strongly fits the shape of a whole body or top or bottom half of a body, as opposed to being “loose.” Thus, one might suppose that a “*fitted belief*” is one that somehow been made to strongly “fit” the nature (the “shape”) of (a major portion of) something else, such as a wished-for

state of the world, perhaps. But in our view, one would need a special context for this meaning to arise.

We will now consider more briefly a few of the remaining novel A-N pairs in our study. We included *“furious cloud”* as a high-conforming novel one, related conceptually to the conventional metaphorical phrase *“angry cloud”*. Assuming that the latter phrase’s meaning is motivated by a view of a cloud as a person, a within-source inferential connection between anger and having the propensity to cause negative outcomes, and generic bridges covering such a propensity, the phrase *“furious cloud”* can be similarly treated, only with a higher intensity of anger and hence of the mentioned propensity. The low-conforming pair using “cloud” is *“loyal cloud.”* While one can consider, say, a cloud that seems to follow someone’s movements or the movements of another cloud, this requires a very special context compared to what is needed for *“furious cloud.”*

We categorised *“brass year”* as high-conforming novel metaphorical, with *“locked year”* as low-conforming novel metaphorical, and *“golden year”* as conventional. One high-conforming route to distinctive meaning for *“brass year”* is as follows. Periods of time are familiarly viewed as solid physical objects, including metal objects, witness *“golden year”*. (By a solid object we mean one that is not liquid or gaseous and is relatively rigid, but it can nevertheless be something with a space inside, such as a box made of metal.) Distinctive features of brass are hardness, shininess and a relatively warm, yellowish colour. From the shininess can be inferred a moderate degree of pleasant strikingness of appearance. So, via generic bridges concerning degrees to which properties hold, pleasantness and strikingness (recalling the issue of strikingness in the *“muted week”* example above), a meaning for *“brass year”* could be that it at least appears to be moderately pleasant and striking.

A complication with *“brass year”*, again one shared with many other examples of metaphor, is that there are many possible non-metaphorical meanings. For one thing, it might

mean a year in which brass, in some sense, is particularly salient. The brass could either be the metal itself or something colloquially meant by “brass” such as money or military officers. But, arguably, such alternative meanings require special contexts to be plausible ones, whereas the metaphorical meaning indicated above has much more general application in life. So, there is relatively little chance that the results of our experiment would be compromised by a participant thinking of the non-metaphorical meanings but not a high-conforming metaphorical meaning such as the one above (a year that at least appears to be moderately pleasant and striking).

The pair “*locked year*” is relatively puzzling compared to “*brass year*.” Certainly, time periods are often viewed as containers. But for a period to have the distinctive quality of being “*locked*” as if it were a room or box would seem to require a special context. Possibilities for such a context include (i) a context that conforms to the year being a past period whose details one cannot remember or (ii) a context that conforms to the year being a future one into which one is now prevented from inserting new planned events or that contains an activity that one is prevented from taking part in. The need for a special context is the reason for classifying the pair as low-conforming.

We included “*shy soup*” as a high-conforming novel pair that contrasts in meaning with the conventional phrase “*hearty soup*” in our study. One possible high-conforming route to meaning is that, in the source subject matter (assumed here to be people and their personalities), shyness implies a lack of heartiness. If heartiness has a bridge to the evident, pleasing thickness of the soup, then a lack of heartiness on the source side could suggest a lack of such thickness. The low-conforming pair for “soup” is “*shouting soup*”. We take the phrase “*hearty soup*” to evidence a familiar bridge between the heartiness of a person—which we here take to be a matter of the person’s strong proactive, positive demeanour to people he or she interacts with—to its strong ability to cause a positive effect on consumers.

“Shy soup” can be comprehended as implying, within the terms of the source subject matter, a *lack* of that strong, proactive, positive demeanor towards people, and this lack therefore can be to be carried over, by the mentioned familiar bridge, to the soup’s lack of the mentioned ability to affect consumers. *“Shouting soup”*, on the other hand, is fairly difficult to comprehend in a way that exploits the distinctiveness of shouting. Literal shouting implies a strong negative effect on people and a communication of anger, threat, fierce command, etc. The negative effect could carry over to the soup having a strong negative effect on consumers, perhaps by being particularly “loudly” coloured or tasting unpleasantly spicy, but this is only a weak use of the distinctiveness of shouting (it is a very special way for something to have a negative effect on something). It is difficult to see how the distinctive feature of shouting that it probably communicates anger etc. would map over to a soup. It is not impossible, but just a more difficult and creative matter than dealing with the shyness of a soup.

Finally, *“tired river”* was classified as high-conforming, because it can mean a river that is moving slowly as a result perhaps of energetic movement at an upstream point or at an earlier time. Assuming the river is being a metaphorically viewed as a person—a familiar view, as evidenced for instance by the conventional pair *“lazy river”* in the study—tiredness of the person strongly suggests slow movement, and this slow movement can carry over to the river by familiar mappings (again as evidenced by *“lazy river”*). Also, people get tired usually because of past strong activity, and this can carry over by familiar bridges to provide the hypothesis that the river is slow-moving because of its past strong activity (which may, for instance, have led it to exhaust its source, or to have sent water into surrounding land). Here we appeal to generic bridges concerning causation and time relations. Note also that, provided the person’s movements are metaphorically connected to the river’s movements, the slowness can be handled by a generic bridge concerning rates at which things happen.

One might ask whether the pair “*tired river*” should instead have been classified as conventional (or even literal), had it not been for the requirement that conventional phrases have at least 10 occurrences in the corpus. (The pair has only three.) This is because there is a sense of “*tired*” as showing deterioration, included for instance in the Chambers dictionary. Things such as Christmas decorations, clothes or food items are often said to be tired or to look tired. But in our view, this state of affairs arises as a natural, normal result of ageing, while getting “tired” though ageing is not readily applicable to rivers without some special context. A river might become weakly flowing or dry, but such change is not a standard result of time passing, as opposed to being a result of changes in the terrain, changes in rainfall at the river’s source, etc.

Literal Pairs

In section 3.1.1 of the main text we say that we classed a pair as literal when we did not analyze it to be in the three metaphorical categories and our chosen dictionaries taken collectively gave current senses for the adjective and noun such that: these senses are not dependent on specialized knowledge; they are not listed as metaphorical figurative, dialect, slang, etc.; the adjective’s sense applies directly to the noun’s sense; and the resulting composed meaning for the pair is directly usable in the context sentences used in the study (as exemplified in Table 2 in the main text). Let us call such adjective and noun senses “compatibly literal” senses, for convenience in the present discussion.

A first, general, point about the literal pairs is that, of course, in a suitable different context a pair could be used metaphorically. For instance, one of the literal pairs is “ugly cloud.” While this can literally mean a meteorological cloud with an unpleasant visual appearance, it could be used metaphorically to refer, say, to some circumstance that is threatening to have bad consequences. Our study provides no guard against a participant

choosing such a meaning, other than by virtue of placing the pair within a context sentence, to get, in the case of “ugly cloud,” the sentence “*Ian spotted the ugly cloud instantly*”. But without more extensive context we cannot claim that this strongly confines the participant to choosing the envisaged literal meaning. For one thing, that whole sentence could be a metaphorical statement about Ian being aware of a political problem.

A special case of this issue is that at least one of the literal pairs in the study is reminiscent of another phrase, one that is a conventional metaphor. The literal pair “*rainy year*” is reminiscent of the phrase “*rainy day*” (not used in our study), which is commonly used metaphorically to mean a time at which one’s life may be distinctly negative in some way (often in the sense that one has financial difficulties). The context sentence for “*rainy year*” is “Jenny predicted a rainy year boldly.” Because of being reminded of “*rainy day*”, a participant might interpret “*rainy year*” as a sort of hyperbolic extension of “*rainy day*,” rather than as a year-long period in which there is a relatively large amount of rain. In future studies it may be beneficial to ensure greater distance from conventional metaphorical phrases.

We now comment on a few other specific literal pairs that have complicating features.

“*Chilly night*”: For “night” and “chilly” we can use the compatibly literal senses of, respectively, a period of time from a sunset to the next dawn, and tending to cause a person to feel cold. However, this rests on the idea that a time period can cause a sensation. It may be necessary for this purpose to take a period of time not just to be a purely temporal matter but also to consist of the external state of the world during the time interval in question. An alternative is provided by a sense in the *OEDo* of a [suitable] interval of time viewed as an experience. In this case “chilly” can be comprehended as having the sense of feeling rather cold (*OEDo*), as one component of that experience. Otherwise, one might claim that a metonymic step is needed from the

night as time period to the world state or to the experience. We have taken the line that even if such a metonymic step is needed, the application of temperature adjectives to time periods is so common and familiar that it is close enough to being a matter of literal meaning for the purposes of our study.

“Sincere belief”: It would be possible and natural to analyze this as a transferred epithet where the sincerity is not of the belief itself but of a person who holds or claims to hold the belief. However, our dictionaries give senses for sincere such as “pure”, “unadulterated” and “unmixed with pretence” that can apply directly and easily to belief(s), and this allows the pair to be classed as literal.

“Rental fee”: The Chambers dictionary and the *OEDo* do not give adjective senses of “rental”, whereas Webster’s does. One of these is the sense of being related to rent. This sense can be applied directly to the common meaning of “fee”. In addition, if a participant took the word “rental” as a noun, which may be the more likely possibility, there is such a direct association between a rental (an act of renting or a car, room, etc. rented) and a fee for setting up the renting that we can take the noun “rental” as being used as an adjective with direct application to “fee” (cf. “membership fee”).

“Instant soup”: The *OEDo* gives as one meaning of the adjective “instant” the property of a food or drink substance being pre-prepared in such a way that little has to be done before consumption. This meaning is marked as special in the dictionary, but this is only because it is special to food and drink. Since “instant soup” explicitly mentions food, a participant does not have to proactively and creatively entertain a special context for the phrase. (Recall that special contexts are one factor involved in the definition of high- and low-conforming pairs.) Another possible complication, in line with various other observations in this document, is that a participant is free to take “instant” as a noun signifying a point in time, and then to view some set of times as metaphorically forming a soup (cf. “pea

soup”). Even though the context sentence is “*Lilly cooked the instant soup calmly*”, supporting a food interpretation, it is just conceivable that someone could metaphorically “cook” a soup of instants. However, we take it that instant forms of food such as instant soups are so familiar in our culture that a participant will go quickly to the little-preparation-needed interpretation and is unlikely even to think of highly creative, low-utility interpretations such as the soup-of-instants one.⁶

References

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⁶ For what it is worth, this creative interpretation did not occur to us until a late stage in the research.

Ruiz de Mendoza Ibáñez, F.J. (2020). Figurative language: relations and constraints. In J.A. Barnden & A. Gargett (Eds), *Producing Figurative expression: Theoretical, Experimental and Practical perspectives*, pp.469–510. Amsterdam/Philadelphia: John Benjamins.