

Target First: On “Bidirectionality and Metaphor”

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Abstract This article proposes an essential pragmatic adjustment to the model of bidirectionality in verbal metaphor comprehension that has been developed from Max Black’s interaction theory of metaphor, most recently in the 2017 special issue of *Poetics Today* titled “Bidirectionality and Metaphor” (38.1). My *target first* proposal stipulates that, in the creation and comprehension of metaphoric expressions in natural discourse contexts, bidirectional processing always initiates with an abstraction from the target domain that is effectively projected on the source domain, promoting structural predicates in the source domain that may then be relevantly projected back on the targeted abstraction (or, more broadly, intention-in-context). I present this proposal from three angles. The first is theoretical and shows that, though Black himself intimated the basic logic of a target first approach to metaphor, cognitive theory since Black has instead followed his more explicit lead, positing a *source first* approach that assumes rather than explains the metaphor. The second angle is historical and involves the recovery from Romantic-era philosophical poetics of a fully articulated target first model of bidirectionality. The third angle is practical and argues the potential significance of the target first model for psycholinguistic experimental design as well as clinical and educational interventions for individuals with metaphor-processing disorders.

Keywords interaction theory, Dugald Stewart, William Wordsworth, autism spectrum disorder, conceptual metaphor

There is accordingly a sense of “metaphor” that belongs to “pragmatics,” rather than to “semantics”—and this sense may be the one most deserving of attention.
—Max Black

1. Theory

I would like to frame this article as a focused response to the February 2017 special issue of *Poetics Today* on bidirectionality in metaphor, coedited by Chanita Goodblatt and Joseph Glicksohn.¹ The great virtue of this special issue is its heterogeneity, thanks especially to the interdisciplinary cast of contributors (from anthropology, linguistics, psychology, computer science, and literary studies) and the consequent variety of approaches taken to metaphor’s bidirectionality (which is treated under the heads of conceptual reversibility, distance and density in semantic space, multimodal processing in the arts, visual versus verbal presentation, grammatical constraint, neurological parallels to synesthesia, and literary reading and interpretation). The special issue’s greatest shortcoming, however, is this very same heterogeneity, particularly as it plays out in competing definitions and conceptualizations of “bidirectionality” itself. Depending on which article you are reading, bidirectionality may mean one of four things:

1. the interaction of target and source in the comprehension of a particular metaphoric expression (e.g., Goodblatt and Glicksohn 2017a);
2. the reversibility of target and source in the comprehension of a particular, multiply extended poetic metaphor (e.g., Goodblatt and Glicksohn 2017b; Freeman 2017);
3. the general reversibility of the mappings or projections that are supposed to underlie conceptual, visual, and verbal metaphors (e.g., Danesi 2017; Katz and Al-Azary 2017; Indurkha and Ojha 2017; Porat and Shen 2017; Anaki and Henik 2017);
4. the interaction of cognitive modalities and conceptual domains (e.g., Freeman 2017; Anaki and Henik 2017).

These definitions range from processing considerations in particular circumstances (1, 2) to the general organization and affordances of conceptual space (3, 4). They are therefore answering very different questions on the

1. I am grateful to the organizers of Stony Brook University’s “Cognitive Science in the Arts and Humanities Speaker Series” and especially David Rodriguez for the opportunity to give this paper a preliminary formulation. Readers new to metaphor theory and visual learners may wish to view my Stony Brook talk at www.stonybrook.edu/commcms/coghumanities/past/Fall%202016.html for an introduction to the arguments that follow.

general topic of bidirectionality, if not broaching four wholly distinct topics of inquiry.

Thus the research question behind the first definition is whether, when, and to what degree there may be two-way interpretative traffic between the target and source of a particular metaphoric expression. This is the central question raised by the “interaction” theory of metaphor, developed in the mid-twentieth century by I. A. Richards and Max Black. As summarized by Goodblatt and Glicksohn in their introduction to the special issue (2017a: 3), interaction theory holds that there are at least three stages in the process of comprehending even a *single* metaphoric expression, for example, “Man is a wolf” or, paradigmatically, “A (target) is a B (source)”: “in the first [stage], A is seen through the lens of B; in the second, B is seen through the lens of an already transformed A; in the third, a transformed A is now seen through the lens of a transformed B, as well as a transformed B being seen through the lens of a transformed A. Clearly, then, A and B are shifting percepts or concepts within a dynamic, interactive process.” Presumably, these three stages unfold on the scale of milliseconds, as an individual processes the particular metaphor and arrives at a satisfactory (or contextually relevant) interpretation.

Under the second definition, the time scale and corresponding scope of interpretation have been greatly extended in order to address a different research question about the comprehension of a particular metaphoric concept as it extends through different expressions. In the experiments reported by Goodblatt and Glicksohn in the final article of the special issue (2017b), undergraduates read a whole John Donne poem and gave think-aloud protocols in response to particular phrases involving extensions of the poem’s governing conceptual metaphor (e.g., COURTSHIP IS FISHING in “The Bait” or A FLEA-BITE IS SEXUAL INTERCOURSE in “The Flea”). Rather than investigating the process for interpreting a *single* instance of the given metaphor (e.g., “th’enamoured fish”),² Goodblatt and Glicksohn were interested in how subjects responded over the course of the whole poem to *four* instances or developments of that metaphor, and in particular whether their interpretations (a) remained unidirectional across all instances, (b) reversed direction in certain instances and thus revealed bidirectionality, or (c) resulted in an emergent conceptualization that blended elements of target and source in a new, integrated figure. Here, in other words, bidirectionality was measured *between* metaphoric expressions rather than *within* them, as the following report of two subjects’ evolving responses to “The Bait” makes clear: “Reader S3.S1 initially adopts the ‘Courtship is fishing’ interpretation, then switches

2. A process which, because it is extremely swift and in most cases largely unconscious, is unlikely to be captured by think-aloud protocols.

to the ‘Fishing is courtship’ interpretation, and . . . ends with a bidirectional reading, but not with a blend. Reader S₁.S₂ also initially adopts the ‘Courtship is fishing’ interpretation, then continues with a bidirectional reading, but not with a blend, and . . . returns to the ‘Courtship is fishing’ reading” (2017b: 177).

Insofar as this second definition of bidirectionality involves the notion of the conceptual reversibility of a given metaphor, it runs parallel to the third definition, only in this case one is no longer inquiring about the interpretation of particular metaphoric expressions but about the systemic reversibility of the neurocognitive mappings underlying metaphor as such. The research question is now a more general, theoretical one: under what conditions do metaphoric mappings (whether in the brain or in the “semantic space” of conceptual structure) run as easily in one direction as the other? To answer this question, one investigates not how an individual processes a single metaphoric expression or a sequence of conceptually related ones but rather how groups of individuals process canonical metaphoric expressions (e.g., “a bump in the relationship”) as opposed to reversed ones (e.g., “a relationship in the bump”), or visual metaphors as opposed to verbal ones, or synesthetic inducers as opposed to synesthetic concurrents. Findings here are *between* subjects rather than *within* subjects, meaning that we are learning less about the individual processing of individual metaphors than about the brain-mind’s general tendencies and flexibilities with respect to different mapping possibilities, for example, between concrete and abstract concepts, between visual as opposed to verbal constituents, or between perceptual and conceptual modalities.

In the last case we broach the fourth definition, where we are concerned with bidirectionality not just between semantic or conceptual domains but between these domains and, on the one hand, our perceptual modalities (e.g., color perception or olfaction) and, on the other, vast interpersonal ideological formations that constitute our given “worlds.”³ Under this definition, we appear to be taking both “metaphor” and “bidirectionality” in the largest senses possible, not as mere linguistic or even conceptual phenomena but as the pervasive underlying structure of all mental activity. Clearly, the distance between the first definition, which is concerned with a tightly focused pragmatic question of language use, and the fourth definition, which is concerned with an extremely broad suprasemantic question of cognitive organization, is enormous. This distance, though it can be conceptually bridged by the intervening steps of the second and third definitions, nevertheless indicates something of a muddle surrounding the evidently polyvalent notion of

3. What Margaret Freeman (2017: 85) terms “the social, cultural, spiritual, and natural worlds.”

“bidirectionality.” For the sake of theoretical clarity and discursive coherence going forward, these four varieties of bidirectionality (and possibly others) should be carefully distinguished and each denominated by a unique term or phrase: bidirectionality in the construction/interpretation of individual metaphoric expressions; bidirectionality in the construction/interpretation of multiply extended metaphoric expressions; bidirectionality in the conceptual framework that makes metaphoric expressions possible; and bidirectionality in the multimodal organization of human consciousness and (therefore) art.

As my epigraph from Black implies, my concern in the balance of this article is with the first, most pragmatic variety of bidirectionality, which, while it may or may not be “the one most deserving of attention,” is certainly the most restricted in purview and so perhaps the most tractable to theory and experiment. Furthermore, following the basic principle of cognitive grammar, findings at this specifically linguistic level of organization should have more or less direct implications for our understanding of the potentially bidirectional structure of more encompassing levels of conceptual and multimodal organization. In this respect, the bidirectionality that underpins Black’s interaction theory has important ramifications for the cognitive theories of metaphor that have since been developed (e.g., conceptual metaphor theory, conceptual integration or blending theory, class-inclusion theory, structure-mapping theory), a point on which the contributors to the special issue unanimously agree. But there are further reasons for pressing this point, indeed more primary ones than the contributors or even Black himself have sufficiently considered, having to do with the fact that verbal metaphors in the wild are always produced and interpreted in specific discursive contexts. These pragmatic contexts are not *incidental* to the metaphoric constructions that arise within them but *integral* to them, affecting everything from the initial selection of the source domain to the duration and degree of bidirectionality of the conceptual processing that ensues. My title, “Target First,” is meant to emphasize the *primacy* of these pragmatic relations in the creation and construal of actual linguistic metaphors. Replacing these nonoptional, highly determinative relations where they belong, at the very foundation of our models of (verbal) metaphor, promises not just to clarify our theoretical understanding of bidirectionality but, more importantly, to improve our clinical and educational interventions for individuals with metaphor-processing disorders.

I say “replacing” these pragmatic relations at the foundation, for as the sequel will show, metaphor theory before the latest cognitive turn knew better than to do without them. Black himself acknowledged their force, though he unfortunately did not capture it as a structural feature in his seminal argu-

ment for the bidirectionality of metaphoric expressions.⁴ He might have done so: his terminological cut between the sentential *frame* and the metaphoric *focus* or vehicle is particularly happy, for the expressive frame is indeed a primary context for the interpretation of a given metaphor, and as such exerts a potent influence on its potential bidirectionality.⁵ Though Black's principal notion of the frame was simply the grammatical context in which the metaphoric focus occurred—for example, “Man is a _____” is the frame in which the metaphoric focus “wolf” may appear—his further comments suggest that, in a live pragmatic context, much else would contribute to the expressive framing of the metaphor, including the speaker's more or less evident intention(s) in constructing it: “But we must recognize that the established rules of language leave wide latitude for individual variation, initiative, and creation. There are indefinitely many contexts (including nearly all the interesting ones) where the meaning of a metaphorical expression must be reconstructed from the speaker's intentions (and other clues) because the broad rules of standard usage are too general to supply the information needed” (1954–55: 277). Black admits that, “in default of an authentic context of use, any analysis is liable to be thin, obvious and unprofitable” (ibid.: 281n9), but then he proceeds to give just such an analysis of “Man is a wolf,” quite independently of any authentic or even imagined “context of use.”⁶

Along with the context, what drops out of the analytic picture is the *motivation* for the metaphoric expression itself and, more particularly, for the metaphoric *focus* (or vehicle, or source) within that expression. In Black's analysis, as in virtually every analysis since, the focus/vehicle/source of the metaphor is simply taken for granted, so that the metaphoric process is assumed to begin (and in some cases also to end) with a mapping or projection *from* the source domain (what Black called the “subsidiary subject”) *to* the target domain (or “principal subject”). One widely shared reason for this lapse is that metaphor theory tends to place itself in the hearer's rather than the speaker's point of view, and thus to concentrate on the construal of a *given*

4. Black's case is also helpfully summarized by Goodblatt and Glicksohn in the opening paragraphs of their introduction to the special issue (2017a).

5. See Indurkha and Ojha 2017; Porat and Shen 2017.

6. The same holds for Katz and Al-Azari's article in the special issue, which points out the artificiality of the typical theoretical and experimental situation but then itself proceeds pretty much along these artificial lines: “In each of the traditions described above, the emphasis has been on metaphor (whether metaphor expression or as conceptual metaphor) as somehow existing outside the communicated and pragmatic ecologies in which they are produced and understood. We propose here, and hope to convince you, firstly, that semantic memory processes are important, but that one must first consider a more nuanced view of semantic memory, and secondly, that metaphor comprehension and whether a metaphor is bidirectional depend on how pragmatic properties of communication interact with properties of information stored in semantic memory” (2017: 39; see 54 as well).

metaphor rather than the process of its creation in the contextual moment of utterance. In a *given* metaphor, the focus/vehicle/source is just there, so the process of interpretation commences with information from that suddenly imported domain. Thus Black, explaining the construal of the metaphoric expression “Man is a wolf”:

A suitable hearer will be led by the wolf-system of implications to construct a corresponding system of implications about the principal subject. But these implications will *not* be those comprised in the commonplaces *normally* implied by literal uses of “man.” The new implications must be determined by the pattern of implications associated with literal uses of the word “wolf.” Any human traits that can without undue strain be talked about in “wolf-language” will be rendered prominent, and any that cannot will be pushed into the background. The wolf-metaphor suppresses some details, emphasizes others—in short, *organizes* our view of man. (1954–55: 288)

From the hearer’s perspective, according to Black, the first step in metaphor processing is that the source domain acts as a “filter” or “screen” through which the principal subject or target domain of the metaphor is newly perceived (*ibid.*: 286, 288). Black clarifies the point with a striking analogy:

Suppose I look at the night sky through a piece of heavily smoked glass on which certain lines have been left clear. Then I shall see only the stars that can be made to lie on the lines previously prepared upon the screen, and the stars I do see will be seen as organized by the screen’s structure. We can think of a metaphor as such a screen, and the system of “associated commonplaces” of the focal word as the network of lines upon the screen. We can say that the principal subject is “seen through” the metaphorical expression—or, if we prefer, that the principal subject is “projected upon” the field of the subsidiary subject. (In the latter analogy, the implication-system of the focal expression must be taken to determine the “law of projection”). (*ibid.*: 288)

Once again, the initial, determinative influence is exerted by the given (“previously prepared”) metaphoric focus or “screen,” which limits and organizes our view of the principal subject (“the stars”) by the superimposition of its own “structure” or “implication-system.”

But where did the metaphoric focus itself come from, and how and by what exactly was it “previously prepared”? Black himself ultimately recognizes, but does not otherwise redress, the “simplification” he indulged in omitting to raise and answer these crucial questions:

It was a simplification, again, to speak as if the implication-system of the metaphorical expression [i.e., the “focus”] remains unaltered by the metaphorical statement [i.e., “the frame”]. The nature of the intended application helps to determine the character of the system to be applied (as though the stars could

partly determine the character of the observation-screen by which we looked at them). If to call a man a wolf is to put him in a special light, we must not forget that the metaphor makes the wolf seem more human than he otherwise would. (ibid.: 290–91)

Black has come round again to the problem of intention-in-context, and he at last admits what I mean henceforth to insist on: that “the nature of the intended application,” which is to say the contextual *frame* or, properly speaking, the *target* of the metaphoric expression,⁷ “determine[s] the character of the [metaphoric] system to be applied.” Thus, before the wolf-metaphor can organize our view of man, it itself must be organized by that view. Here is, indeed, the *first* phase of bidirectionality, both for the speaker who creates the metaphor and for the hearer who construes it in context: the online structure of the *target* domain (i.e., the topic at hand in the ongoing discourse) determines the character and implications of the *source* domain. Prior to the wolf-metaphor acting as a filter on the frame concept of man, picking out wolf-like features and suppressing non-wolf-like features, a more preliminary operation occurs in the reverse direction, whereby the frame concept of man acts as filter on the wolf-metaphor. To put the idea in Black’s terms, only now reversed to describe this preliminary operation: “Any wolf traits that can without undue strain be talked about in ‘human-language’ will be rendered prominent, and any that cannot will be pushed into the background. The human-frame suppresses some details, emphasises others—in short, *organizes* our view of the wolf-metaphor.”⁸ It is for this reason that, in creating or construing the expression “Man is a wolf,” neither speaker nor hearer is likely (without compelling contextual support, that is) to profile or map the wolf’s quadrupedal stature, the wet-blackness and leathery stippling of its rhinarium, its ability to produce fertile hybrids with closely related species, and so forth, for none of these characteristics is shared by man or commonly predicated of him. The conceptual structure of the target domain “previously prepares”—or predetermines (for the speaker) and predicts (for the hearer)—the conceptual structure of the source domain. The predictive predetermination of the source by the target encompasses both the selection of metaphoric

7. The “target” of a metaphor, in other words, is not simply one of two semantic domains interacting in a metaphoric expression, but rather the intended meaning at which the whole metaphoric expression aims, or which it *targets*. The metaphor comes from the domain of archery: given the size and distance of the target, one chooses the appropriate type of bow and arrow (i.e., source for hitting that target) accordingly.

8. Thus, in their introductory summary of Black’s interaction theory, Goodblatt and Glicksohn get the order of operations exactly backward: “In our understanding, . . . it is true that, in the first stage of comprehending ‘A is a B,’ A becomes much more similar to B than it previously was. But now B is ‘projected upon’ the field of A, which has already undergone transformation in the first stage” (2017a: 3).

“focus” and the nature and range of the “implication-system” it may project on the principal topic or target.⁹

It is indeed “more illuminating,” as Black suspected, “to say that the metaphor *creates* the similarity than to say that it formulates some similarity antecedently existing” (ibid.: 284–85), especially when we recognize that it is the target domain that initiates and limits the resulting similarity-complex. This theoretical refinement goes straight to the heart of the central issue that Brian Bowdle and Dedre Gentner have identified with the class-inclusion model of metaphor developed by Sam Glucksberg, Matthew McGlone, and Deanna Manfredi (1997) and which they have attempted to address with their competing structure-mapping model. Like Black’s, both models are interested in bidirectionality in metaphor processing, but Glucksberg et al.’s model takes what Black would call a “substitution” or categorization view of the matter, while Bowdle and Gentner’s model advances a “comparison” view. According to the first view, the metaphoric focus or source (or as Bowdle and Gentner call it, the “base”) provides one or more ad hoc conceptual categories of which the target is then understood to be a specific member. For example, in the expression *A child is a snowflake*, the metaphoric base “snowflake” may be understood as an exemplar of the category “things that are unique,” which then allows the target domain, “a child,” to be understood as another specific member of that general category. But for Bowdle and Gentner, this purported explanation prompts an important question: how does the hearer know which ad hoc category to abstract from the metaphoric focus/source/base?

Many base concepts can suggest a potentially unlimited number of ad hoc categories. For example, the categories that might reasonably be evoked by the concept *snowflake* would include not only *things that are unique* and *things that are ephemeral* but also *things that are delicate*, *things that are white*, *things that are wintry*, *things that fall gently from the sky*, and *things that accumulate to change the landscape*. During comprehension, the hearer would have to generate and maintain all of these metaphoric categories (as well as the initial base concept) while the target concept is scanned for dimensions of applicability. Once the relevant category has been selected, all competing categories would then have to be suppressed. (Bowdle and Gentner 2005: 195)

In place of this cognitively expensive and wasteful scenario,¹⁰ Bowdle and Gentner recommend their structure-mapping approach, which begins not with categorical abstractions from the metaphoric base or source domain

9. For a development of this idea in the joint terms of dynamic systems and conceptual blending theories, see Bruhn 2018a.

10. Bowdle and Gentner are underrepresenting the bidirectional forms of constraint proposed in Glucksberg et al.’s model; see Glucksberg et al. 1997: 59.

but with a process of “alignment” between similar features or “predicates” of the base and target domains that progressively zeroes in on the most optimal mappings or projections between them. This process, they claim, will account for the different meanings suggested by the two expressions *A child is a snowflake* and *A youth is a snowflake*, which, though they share very similar frames (or targets) and have identical focuses (or sources), nevertheless are not quite two instances of the same metaphor. Somehow the subtle semantic difference between the two target concepts induces subtle differences in the “implication-system” brought to bear by the metaphor “snowflake.” For Bowdle and Gentner, for example, the most immediate implication of *A child is a snowflake* is that “each child is unique,” whereas the most immediate implication of *A youth is a snowflake* is that “youth is ephemeral” (ibid.: 195). According to the structure-mapping model, “these metaphors suggest different meanings not because the targets make different selections from among multiple metaphoric categories abstracted from the base,” as proposed by Glucksberg et al., “but rather because the metaphors invite alignments among different systems of predicates. Specifically, the concept *child* includes the knowledge that all children are special, whereas the concept *youth* includes the knowledge that youth is a temporary state. These two targets will therefore tend to align with distinct aspects of the base concept *snowflake*, resulting in a different interpretation” (ibid.: 197). Though they do not quite say so,¹¹ this is effectively to admit that the structure of the different target concepts is what guides the alignment process from the outset, for otherwise the structure-mapping proposal runs squarely into the same problem it was meant to resolve: the needless activation and proliferation of irrelevant information (“structure,” “predicates”) from the source domain. Thus, given two different contexts for the two utterances, we realize that the structure-mapping or alignment process may be very brief indeed, because it is so clearly targeted. In a context in which the topic at hand is the specialness of children, that targeted meaning will ensure that “uniqueness” will be among the very first predicates of the metaphoric “snowflake” that will come to mind. Conversely, in a discursive context in which the brevity of youth is instead being

11. Indeed, Bowdle and Gentner seem simply to miss this important implication and thus, like most cognitive theorists, to get the initial order of operations backward: “Novel metaphors are therefore interpreted as comparisons, in which the target concept is structurally aligned with the literal base concept” (Bowdle and Gentner 2005: 199). On the contrary, in the vast majority of pragmatically situated cases of metaphor processing, the base concept is always structurally aligned with the target concept. There are, of course, exceptions to the rule: for example, the kinds of complicated, novel extensions of metaphors that we find in poems by Donne and Blake, which may lead readers to be uncertain (usually only temporarily) as to which domain is the targeted one and which the metaphoric source (see Freeman 2017; Goodblatt and Glicksohn 2017b).

profiled, the predicate “ephemerality” will now rise to the top as a candidate implication of the “same” metaphor. Because of the predetermining force of the target domain, in neither case will a hearer be likely to squander precious processing time, never mind conscious deliberation, attempting to align other predicates of snowflakes — such as their coldness, their whiteness, their winteriness, their vertical descent, and so forth — with their nonexistent correlates in the target domain. As Black suggested, “The nature of the intended application [i.e., the targeted meaning] helps to determine the character of the [metaphoric] system to be applied.” In short, *target first*, and *source created and construed accordingly*.

Cognitive accounts since Black have had this backward and have proudly said so. For instance, in their introduction to the last *Poetics Today* special issue on metaphor, “Metaphor and Beyond” (1999), the guest editors underline the key explanatory difference between the “newer cognitive approach” and what might be called the venerable literary one, extending back through Richards to the poetics of Samuel Taylor Coleridge (Richards’s great precursor in psychological criticism) and other Romantics:

Whereas Richards takes the tenor [i.e., the target] of a metaphor (“the knight”) as constitutive, and then subordinates the metaphoric expression lion as the vehicle that is meant to “transport” the idea of, say, courage or ferocity (the ground for the implicit comparison), the newer cognitive approach *starts out with the salient element (lion) as the source of the comparison/metaphor* and then attempts to demonstrate how this source is mapped onto the target domain. (Fludernik et al. 1999: 387, emphasis added)

A decade on, Raymond Gibbs gives a more concise definition of metaphor in terms of the same source-first mistake: “Most simply, metaphorical thought involves a mapping from a source domain into a target domain” (2009: 23). This mistaken view of the process of metaphor comprehension remains endemic to the field, perpetuating itself even in discussions where metaphor is not the principal issue under consideration. Thus, in a recently published chapter concerning “Forms of Absorption That Facilitate the Aesthetic and Explanatory Effects of Literary Reading,” the authors simply recycle the received cognitive wisdom about metaphor on their way to a larger point:

The explication of a metaphor that yields emergent meaning begins by “mapping” salient features of the vehicle onto a topic for which those features were not previously salient (e.g., for “My lawyer is a shark,” mapping the shark’s *assertive aggression* onto the lawyer). . . . That first phase (vehicle-to-topic mapping) establishes constraints within which, in turn, salient properties of the topic are mapped onto a vehicle for which those features were not previously salient (e.g., mapping

the lawyer's skill onto the shark, enabling combinatory disclosure of the lawyer's *skillfully assertive aggression*). (Kuiken and Douglas 2017: 223)

Again, the problem here is that the source cannot come for free in a model of metaphor; on the contrary, it is the presence and initial structure of the source that any viable model of metaphor must take in hand to explain.¹²

2. History

Fortunately, such models are available, though not in the current cognitive literature, nor indeed very clearly in Richards, though he is credited above with a target first approach to metaphor. The origins of this intimation for him, as for Black following him, trace to the metaphor theory of the Romantic period, which not only anticipates much of our contemporary cognitive theory but, more importantly, steers clear of its fundamental source first mistake with regard to bidirectional processing. The “cognitive historical”¹³ recovery of this theory is long overdue and indeed of the utmost urgency, given recent developments in the clinical and educational treatment of metaphor-processing disorders (e.g., in Alzheimer's disease and autism spectrum disorder). We therefore have every incentive—historical, theoretical, and practical—to get the bidirectionality of metaphor processing right.

One reason that a sounder theory of metaphor has been lost to history is that many theorists read only the most contemporary literature on the subject (presumably on the model of the natural sciences), but another reason is that much of the older literature treats the subject under other heads than “metaphor.” For instance, in the first volume of *Elements of the Philosophy of the Human Mind* (1792), Dugald Stewart, the last major figure of the Scottish Enlightenment,¹⁴ characterizes metaphor as a variety of associative “allusion” from one topic or conceptual domain to another. Though his terminology differs, Stewart's analysis of the “power of association according to relations of resemblance and analogy” (1792: 305) nevertheless looks forward to much which has been hypothesized anew in contemporary cognitive theories, for example, the notion of “directionality constraints” that dictate mappings from concrete sources to abstract targets:

12. For further examples of this source first mistake in conceptual blending theory, see Bruhn 2018a.

13. The best introduction to cognitive historicism is Alan Richardson's “Introduction: Cognitive Historicism,” in Richardson 2010. See also Adler and Gross 2002.

14. Broadie 2013. For an up-to-date introduction to Stewart's works and legacy, see Haakonsen and Wood 2012.

An allusion [i.e., metaphor] pleases, by illustrating a subject comparatively obscure. Hence, I apprehend, it will be found, that allusions from the intellectual world to the material, are more pleasing, than from the material world to the intellectual. [William] Mason, in his Ode to Memory, compares the influence of that faculty over our ideas, to the authority of a general over his troops:

— “thou [personified Memory], whose sway
 “The throng’d ideal hosts obey;
 “Who bidst their ranks now vanish, now appear,
 “Flame in the van, or darken in the rear.”

Would the allusion have been equally pleasing, from a general marshalling his soldiers, to Memory and the succession of ideas? (Ibid.: 306)

In the quatrain from Mason’s “Ode to Memory,” the target of the metaphoric expression is “the influence of that faculty over our ideas,” an intellectual “subject” that is “comparatively obscure” or abstract, which is therefore “illustrated” by a metaphoric source “from the material world,” namely, “the authority of a general over his troops.” This conceptual arrangement, whereby a comparatively concrete source is used to embody and clarify an abstract idea, is “more pleasing,” according to Stewart, than the reverse arrangement, whereby a comparatively abstract source, for example, “Memory and the succession of ideas,” would be used to illustrate a comparatively concrete target, such as “a general marshalling his soldiers.” The relative degree of “pleasing-ness” of these alternative arrangements probably has to do with interpretative “fluency” or ease of comprehension: as contemporary research has shown, we do indeed tend to process in the one direction (concrete source projecting to abstract target) more easily, quickly, and pointedly than in the other (abstract source projecting to concrete target).¹⁵

More important than Stewart’s awareness of directionality constraints, however, is his recognition of the order of operations involved in the creation and comprehension of a metaphor. Consider the path-schema coded in his use of prepositions, which may sound to our ears backward, but only because we have been schooled to believe that the initial projection in a metaphor is *from* the source *to* the target. Stewart clearly holds the reverse to be true: metaphoric “allusions *from* the intellectual world [as target] *to* the material [as source], are more pleasing, than *from* the material world [as target] *to* the intellectual [as source].” Though Stewart’s phrasing is not ours, his point is

15. See Shen 1995: 268–69; 2007: 173; for further discussion of directionality constraints in (poetic) metaphor processing, see Bruhn 2011. Stewart also seems to be aware of the directionality constraint that dictates mapping from a salient source to a nonsalient target: see the list of examples that follows his discussion of Mason’s “Ode to Memory” (1792: 306–7).

clear: to make his metaphor, Mason had first to project structure *from* his targeted or intended meaning concerning the power of memory *to* an appropriate source to convey that intended meaning. It was only by virtue of that initial projection or *targeting* that Mason discovered the concrete image of “a general marshalling his soldiers” as an apt vehicle to represent his intended meaning. And for this same reason, virtually no one comprehending this metaphor, especially in the context of a natural reading of the full ode, misinterprets it as suggesting, for example, that mental faculties and ideas are gendered masculine, or that memory attacks or is attacked by “armies” of opposing faculties. Both the choice of vehicle and its restriction to only select features and interpretative implications have everything to do with the evident nature of the targeted meaning in this particular discursive context.

But how exactly does the targeted meaning or intention-in-context initiate this process that results in the selection and delimitation of an apt metaphoric source? To answer this question, we may turn to a poet whose theoretical insights on metaphor and much else were directly influenced by Stewart: William Wordsworth.¹⁶ Wordsworth’s fullest discussion of metaphor appears in the “Preface” to the first edition of his collected *Poems* (1815), where he treats the subject, as Stewart had, as part of a general inquiry into the cognitive “powers requisite to the production of poetry” (1950 [1936]: 752). Where Stewart accounts for metaphor as an associative capacity of “the Poetical Fancy” (1792: 302), however, Wordsworth analyzes it as a *set* of distinct “processes” or “powers” of “Imagination” (1950 [1936]: 754). These are, specifically, “the conferring, the abstracting, and the modifying powers of Imagination” (*ibid.*: 754), and while this parallel list may suggest an order of operations commencing with “conferring,” the surrounding discussion makes clear that “abstracting” is always the opening move in metaphor, in order to enable the subsequent processes of “conferring” and “modifying.”

To illustrate these several processes in metaphoric thought, Wordsworth recruits examples from his own and others’ poetry; in the following two from his own poems, I have rendered the literal *target* in *italics* and the principal¹⁷ metaphoric **source** in **boldface**.

16. For the “much else,” see Bruhn 2018b.

17. I say “principal” by way of acknowledging that there are conventional conceptual metaphors at play in these verses, for example, the personifying metaphor of “voice” for a bird’s ability to produce “song” or, more subtly, the spatial metaphor underlying “among” or the fictive motion metaphor animating “come at.” Wordsworth in his comments on these verses is not reflecting on the metaphoricity of these *lexicalized* metaphors; instead, he is focused on the *novel* metaphors that are present, which likely require greater processing effort and bidirectionality (insofar as their meaning must be freshly inferred rather than routinely retrieved).

[*The stock-dove's*] voice was **buried** among trees,
Yet to be come at by the breeze . . . ["O! Nightingale, thou surely art," 13–14]

O, *Cuckoo!* shall I call thee *Bird*,
Or but a **wandering** *Voice*? ["To the Cuckoo," 3–4]

Each of these examples, Wordsworth writes, involves “images” or conceptual domains that are “independent of each other”: in other words, the concept of *burial* is semantically distant from the concept of the stock-dove’s song, just as the idea of *wandering* is not conventionally associated with the semantic domain of birdsong. So the question is, how did these semantically distant and unconventional ideas or images find their way into these expressions? Wordsworth’s answer is wonderfully precise but also challengingly abstract; I therefore use the same typographic coding (*italics* = *target*, **boldface** = **source**) to facilitate comprehension. In these expressions, the “images” (or ideas) of the stock-dove’s and the cuckoo’s “voices” (or songs) are “immediately endowed by the mind with **properties that do not inhere in them**, upon an incitement from *properties and qualities the existence of which is inherent and obvious*” (ibid.: 754). The key phrase here is “upon an incitement from,” which indicates that it is the *targeted meaning* that guides the selection and provides the initial structural requirements (or “predicates”) of the **metaphoric source**. In other words, “properties and qualities” that are “inherent and obvious” in the target lead to the discovery of an “independent” source with “properties that do not [conventionally] inhere” in the target but with which the target may nevertheless be relevantly “endowed.” Thus, intending to express certain inherent properties or qualities of the stock-dove—its “love of *seclusion*” and its “characterising . . . note,” “not partaking of the shrill and piercing, and therefore more easily deadened by the intervening shade” (ibid.)—the poet is incited by these targeted ideas to the discovery of an appropriate metaphor to convey them. Though the source domain of burial is indeed “independent” or distant from the target domain of birds, its inherent properties of “seclusion,” darkness or “shade,” and mutedness or sonic “deadness,” in this case perfectly fit the bill. These properties may therefore be *conferred* on the target, which is conceptually *modified* by this metaphoric endowment (hence Wordsworth chooses the lexicalized metaphor “deadened” rather than the more literal “muted” to characterize the stock-dove’s note). Notice, too, that other inherent properties of the domain of burial that *would not* fit the targeted domain *are not* mapped or projected: thus, no critic of the poem has ever concluded that the stock-dove’s voice is rotting or stinking, even though it is “buried among the trees” and “to be come at by the breeze.” The concept of burial, in other words, enters the expressive picture already structured (“previously prepared”) by the targeted

concepts of the stock-dove's shadowy seclusion and low-pitched song. Similarly in the second example, "Shall I call thee *Bird*, / Or but a **wandering Voice?**," it is the *targeted* meaning that enables the metaphoric **disembodiment** and **ubiquitous displacement** of the cuckoo's song. As Wordsworth explains it, "This concise interrogation characterises the **seeming ubiquity of the voice of the cuckoo**, and **dispossesses the creature almost of a corporeal existence**; the Imagination being tempted to this exertion of her power by a consciousness in the memory that *the cuckoo is almost perpetually heard* throughout the season of spring, *but seldom becomes an object of sight*" (ibid.; emphases added). Again, the key words are "the Imagination *being tempted* to this exertion of her power," which insists that the *targeted* meaning of "perpetually heard but seldom seen" is what prompted the selection of "wandering" as a metaphoric **source** and limited its feature- or inference-profile to just the idea of "incorporeal ubiquity," ruling out from the start other possible but, in the context, highly unlikely implications of "wandering," for example, "homelessness" or "purposelessness."

What is critical in both cases is that the metaphoric process commences with an *abstraction* from the target domain, according to which only certain features of that domain are profiled for metaphoric instantiation. Thus, in the lines on the stock-dove, it is not anything and everything about the stock-dove that the speaker intends to speak of, but only its particular characteristics of loving seclusion and therefore having a muted song. Likewise, the lines on the cuckoo aim to characterize not the whole bird but only the "seeming ubiquity" of its invisible "voice." From the whole target domain, certain characteristic parts or features have been promoted for attention, while other parts or features have been, as Wordsworth has it, "abstract[ed] from" the domain.¹⁸ It is this profiling-by-abstraction that enables the target "to re-act upon the mind which hath performed the process, like a new existence" (ibid.: 754), and as such, to be the stimulus of a metaphoric projection *from* the target domain *to* an "independent" but nonetheless relevantly predetermined source domain. This initial projection from the intended target to a relevant source sets up the reverse projection, the one from source to target with which most metaphor theories begin, and which, in Wordsworth's terms, "confer[s] additional properties upon [the] object" actually

18. Wordsworth's use of "abstracted" here is somewhat difficult to parse, given that "to abstract from" can mean either to *remove from consideration* (cf. *OED*, "abstract, *v.*," senses 1, 2, and 4) or to *separate out for independent consideration* (cf. senses 3 and 5). Of course, these two general senses are closely related: if we wish to abstract *shape* from an embodied object, we must both promote that feature to attention and ignore all the other features of the object (e.g., its color, weight, uses). But in the context of his discussion of metaphor in the "Preface," Wordsworth seems to be emphasizing the negative meaning of conceptual downplaying or, to use his word, "stripping" (1950 [1936]: 754) of domain-specific attributes or structure.

under consideration (*ibid.*). This target first bidirectional process was outlined in still clearer terms by Wordsworth's close friend, Henry Crabb Robinson, who provides the following helpful "compression of Wordsworth's rather obscure account of poetic abstraction":¹⁹

The poet first conceives the essential nature of his object and strips it of all its casualties and accidental individual dress, and in this he is a philosopher; but to exhibit his abstraction nakedly would be the work of a mere philosopher; therefore he reclothes his idea in an individual dress which expresses the essential quality, and has also the spirit and life of a sensual object, and this transmutes the philosophic into a poetic exhibition. (quoted in Wordsworth 1990: 24)

To translate Robinson into the parlance of today's cognitive theory: to make a metaphor, the poetic mind first abstracts from the target domain "the essential nature of [the intentional] object" and then uses this abstraction to select an appropriate metaphoric source that "expresses this essential quality" in more concrete or "sensual" terms which can then be projected back on the target.

Though Wordsworth's theory and Robinson's summary emphasize the process by which metaphors are *created*, Wordsworth's analysis clearly implies that a parallel process must govern their *construal*. While the communicative channel between speaker and hearer is asymmetrical in many respects, still, in all contexts, the communicative process is one of interpersonal conceptual alignment, as can be judged by how routinely we can predict *exactly* what a speaker is about to say. Our linguistic conventions and discursive routines enable such alignment, and metaphor no more than any other part of language proves an exception to the basic rules of communicative cooperation.²⁰ In particular, just as a speaker in framing an utterance is all the while calculating how it will affect the hearer's response,²¹ so a hearer receiving that utterance is all the while predicting how it will bear on the speaker's topical or targeted intention-in-context. It is the perceived intention behind the metaphoric expression that, according to Wordsworth, guides the bidirectional mapping process of interpretation: "When the Imagination frames a comparison, if it does not strike on the first presentation, a sense of the truth of the likeness, from the moment that it is perceived, grows—and continues to grow—upon the mind; the resemblance depending less upon outline of form

19. In this, too, Wordsworth was anticipated by Stewart, who observed that imagination, "the power which gives birth to the productions of the poet and the painter . . . is not a simple faculty of the mind. It presupposes abstraction, to separate from each other qualities and circumstances which have been perceived in conjunction" (1792: 134).

20. As succinctly argued in Sperber and Wilson 2008.

21. Cf. Bakhtin's (1986: 95–96) principle of "addressivity."

and feature, than upon expression and effect; less upon casual and outstanding, than upon inherent and internal, properties: moreover, the images invariably modify one another" (1950 [1936]: 755). Again, to translate this passage in terms of contemporary theory: in the comprehension of metaphor, if it is not instantly interpretable "on the first presentation" to hearer, "the truth of the likeness" or "resemblance" will ultimately come into focus not because of the "casual and outstanding" "form[s] or feature[s]" of the comparatively concrete source domain but rather in light of the total "expression" and its targeted "effect" with respect to certain "inherent and internal" properties of the topic actually under consideration. The targeted and the source concepts or "images" "invariably modify one another" in a bidirectional way: the abstracted target first modifies the selected source by screening out most of its conceptual structure and raw predicative potentiality; attributes of this target-reduced source (e.g., a man-like wolf) may then be predicated of the target (e.g., a wolf-like man).

Consider how this target first process unfolds in a more extended example from Wordsworth's 1815 "Preface," again drawn from his own work. To further illustrate the abstracting, conferring, and modifying "powers of the Imagination, immediately and mediately acting" (1950 [1936]: 754), Wordsworth cites the double simile with which the speaker of "Resolution and Independence" attempts to capture the uncanny presence and motionlessness of an old leech-gatherer he has suddenly encountered beside a lonely mountain lake:

As a huge stone is sometimes seen to lie
 Couched on the bald top of an eminence,
 Wonder to all who do the same espy
 By what means it could thither come, and whence,
 So that it seems a thing endued with sense,
 Like a sea-beast crawled forth, which on a shelf
 Of rock or sand reposes, there to sun himself.

Such seemed this Man; not all alive or dead
 Nor all asleep, in his extreme old age.

The extract comprises the ninth stanza and the first two lines of the tenth stanza of the poem; in the final two lines of the eighth stanza the leech-gatherer himself has only just been introduced: "I saw a Man before me unawares: / The oldest man he seemed that ever wore grey hairs." The old man is thus clearly the poem's literal topic at this point, and the comparative particle at the outset of stanza 9 indicates that the ensuing simile must have some characterizing aspects of *him* in focus. Indeed, Wordsworth makes the targeted intention of the metaphoric expression perfectly clear: it should be processed

so as to interpret the speaker's "wonder . . . / By what means [the old man] could thither come." The speaker's astonishment at the old man's unmoving but mysterious presence in so unlikely a spot is his abstract targeted intention-in-context; this is why the source domain of the comparison he has opened, "a huge stone," "seems" in this context so unlike itself but so much like the target it represents, that is, "a thing endued with sense" or, as Black might say, a man-like stone. In a wonderful involution, this man-like stone now becomes the target of new simile, which is intended in the first place to illustrate the sensitive character of the stone and then to project through that now doubly modified source domain to the old-man domain which is the encompassing target of the whole ("Such seemed this Man"). Wordsworth begins his analysis of this complicated figure with the involuted simile of stone as sea beast and builds out from there to the encompassing target at which both metaphors are aimed: "The stone is endowed with something of the power of life to approximate it to the sea-beast; and the sea-beast stripped of some of its vital qualities to assimilate it to the stone; which intermediate image is thus treated for the purpose of bringing the original image, that of a stone, to a nearer resemblance to the figure and condition of the aged Man; who is divested of so much of the indications of life and motion as to bring him to the point where the two objects coalesce in just comparison" (ibid.: 754).²² The whole "purpose" of the double construction, whether from the perspective of its production or of its reception, is to bring "the two [metaphoric] objects" into a "just comparison" to the target or, more specifically, "a nearer resemblance to the figure and condition of the aged Man." This abstracted idea of the old man's contextually unlikely "figure and condition" was introduced at the end of the eighth stanza and thus governs the double simile from the moment it begins to unfold, ensuring that all its bidirectional shuttling remains focused on conceptual predicates that are relevant to him in the first and last places, neither "all alive or dead / Nor all asleep, in his extreme old age."²³

22. Though Wordsworth suggests at the outset of this extract that "the stone is endowed with something of the power of life to approximate it to the sea-beast," notice that in the sequence of the verses, the targeted meaning he is after, "a thing endued with sense," *precedes* the introduction of the simile that is intended to illustrate it. In other words, the reader, like the poet, *comes* to the simile already knowing (though in a comparatively abstract term) what it is aiming to express.

23. What is missing from the following provocative account of Wordsworth's double simile is its true and governing points of origin and destiny in the old man's "figure and condition": "The images of the old man, the huge stone, and the sea beast coalesce and gesture toward an ontological category that transcends each separate image and that is not explicable but also not nonsensical, a category of that which is 'not all alive or dead.' The enfolding of this three-fold figuratively modified image into an inexplicable ontological category transforms the promise of 'more' that might be sensed within each of those images into an insufficient gesture toward an inexplicable category" (Kuiken 2008: 63–64). I am skeptical, for we know the poem is

This cognitive-historical description of metaphoric bidirectionality corrects the current account in two important ways. First, recall that in summarizing the bidirectionality of Black's interaction theory, Goodblatt and Glicksohn, following Black and virtually everyone since, start from the given source: "In the first stage of comprehending 'A is a B,' A becomes much more similar to B than it previously was. But now B is 'projected upon' the field of A, which has already undergone transformation in the first stage" (2017a: 3). However, according to Wordsworth, the first stage of either creating or comprehending "A is a B" is one in which some B, thanks to a powerful abstraction from A, becomes much more similar to A than it previously was (e.g., a stone endued with sense), so that it can be successfully projected onto the field of A (an extremely old, gray, motionless but nonetheless living man). The transformation of A in the first stage is not a comparative process that makes it similar to a *given* B; rather, it is an abstracting process that reduces the semantic scope of A to only those features targeted by the intention-in-context. It is through this reduced-scope A that B is first sighted and to which it therefore necessarily conforms; conformity to A is precisely what makes B a relevant metaphor of A. Second, this cognitive-historical approach straightens out the theoretical tangle into which "class-inclusion" and "structure-mapping" theories have wound themselves up. Glucksberg et al. are right to emphasize categorical abstraction as the first step in metaphor processing but wrong to locate it in the source: the *first* abstraction in the process of creating or construing a live metaphor is from the *target*. This targeted abstraction constitutes an ad hoc conceptual category of which any viable metaphoric source will prove itself to be a member. Bowdle and Gentner's structure mapping takes over from here, but significantly with a source that has been, in Black's terms, "previously prepared" by the targeted abstraction, so that only target-like predicates of that source are likely to present themselves as interpretative possibilities. This provides for the rapid alignment of source to target and pinpoints, often instantly, the relevant projections, which are throughout guided by (the hearer's perception of) the speaker's targeted intention-in-context.

about the leech gatherer at this point, and we know both grammatically and rhetorically ("As . . . Such") that the two metaphoric sources of stanza 9 are subordinate to the true target of stanza 10. The images do modify one another but probably not *cumulatively* as Kuiken suggests, but *abstractingly* or, if you like, *reductively*. The specific metaphoric transfer or "endowment" to the target domain comes at considerable conceptual cost to the source domain(s).

3. Practice

Experimental evidence for the target first account can be found in studies of contextual priming effects in metaphor processing, studies which have nevertheless not quite drawn the strong conclusion that I am drawing here. For example, McGlone and Manfredi (2001) presented subjects with metaphoric expressions in the form “A is a B” that were primed for in one of six ways: by the presentation of either the “topic” or target concept or the “vehicle” or source target alone, by the presentation of a sentence ascribing a “metaphor-relevant property” (i.e., a property shared by both topic and vehicle) to either the topic or the vehicle, or by the presentation of a sentence ascribing a “metaphor-irrelevant property” to either the topic or the vehicle (ibid.: 1209). The results showed that, “overall, primes that presented topic information produced more facilitation on average . . . than those that presented vehicle information”; furthermore, while five of the six priming strategies or variables “reliably facilitated comprehension. . . those ascribing ground-irrelevant properties to the vehicle . . . appeared to actually impede comprehension” (ibid.: 1213). Similar results were obtained by Asuka Terai and Robert Goldstone (2012) in a related priming study on “emergent features” in metaphor interpretation. In this experiment, the conditions were no priming, priming with “nonemergent” or conventional features belonging only to the topic or target domain, priming with nonemergent features belonging only to the vehicle or source domain, and priming with nonemergent features common to both domains. Subjects were presented with one of the four priming conditions, then shown a metaphoric expression in the form “A is a B,” which was followed by a targeted “emergent feature” (i.e., one not typically associated with either topic or vehicle domain but likely to emerge in comprehension of a metaphor involving both domains), which subjects had to judge as either related to the preceding metaphor or not. All priming conditions improved subjects’ response times, but notably “the proportions of correct responses with a vehicle prime were significantly lower than that [*sic*] with a common prime or with no prime”; furthermore, in comparison to the no prime condition, common primes more than topic-only primes “made participants recognize emergent features quickly and easily” (Terai and Goldstone 2012: 2403). Thus common primes provided the most facilitation; topic-only primes by comparison neither facilitated nor compromised response times or correctness, while vehicle-only primes actually compromised correctness.

Two general conclusions may be drawn from these studies: attention to irrelevant features or properties of the source domain impedes metaphor comprehension, while attention to features or properties shared by the target

and source domains improves metaphor comprehension. These are perhaps unsurprising findings, but when one bears in the mind the preliminary role of target-based abstraction in the discovery of shared attributes, their critical importance comes to light. In the production and comprehension of metaphor, the feature or property common to both domains nevertheless belongs to the *target in the first place*, and it is isolated and mapped to a relevant source through a process of focused abstraction rather than one of ad hoc comparison. Bowdle and Gentner's structure-mapping model, insofar as it commences with ad hoc comparison, is thus misrepresenting what happens in metaphor processing in actual discursive contexts. And this matters because their model has been used to formulate clinical and educational interventions for populations who suffer from metaphor-processing disorders, whether because of neurocognitive differences or degeneration.

For example, Nira Mashal and Anat Kasirer (2011) adopted Bowdle and Gentner's model to create their "thinking-map" intervention for autistic (ASD) and learning disabled (LD) children who experience difficulty in processing verbal metaphors. As their summary of the basic principles of this model shows, Mashal and Kasirer were misguided from the outset by its *source (or "base") first* approach: "Novel metaphors are comprehended via a comparison process (i.e., simple matching) in which semantic features of both concepts (the base term and the target term) are extracted and then are matched with one another" (2011: 2045–46). Taking this view of metaphor processing, Mashal and Kasirer attempted to "enhance metaphoric understanding in ASD and LD children" by training them to "use thinking maps as a strategic tool" (ibid.: 2046–47). A thinking map is a diagram on which a given verbal metaphor can be unpacked and interpreted in a series of steps (see figure 1). The diagram features two large circles, representing the target and source domains; the first step is to write the name of one domain in one circle and of the other domain in the other circle (e.g., for "train of thought," "train" as source would be assigned to one circle and "thought" as target would be assigned to the other, notably in no order of precedence). Each large circle or domain has a set of smaller circles radiating off it, which in a second step are used to list conventional features of that particular domain. The third step is the structure-mapping step, where the children compare the two lists of conventional features in order to identify the one or ones shared by both domains. This identification of the common properties reveals the "ground" of the metaphor, which, so the authors hypothesized, would facilitate an appropriate interpretation of the particular metaphoric expression. The authors wished further to investigate whether the children so trained would generalize the thinking map strategy to metaphors they had not previously encountered.

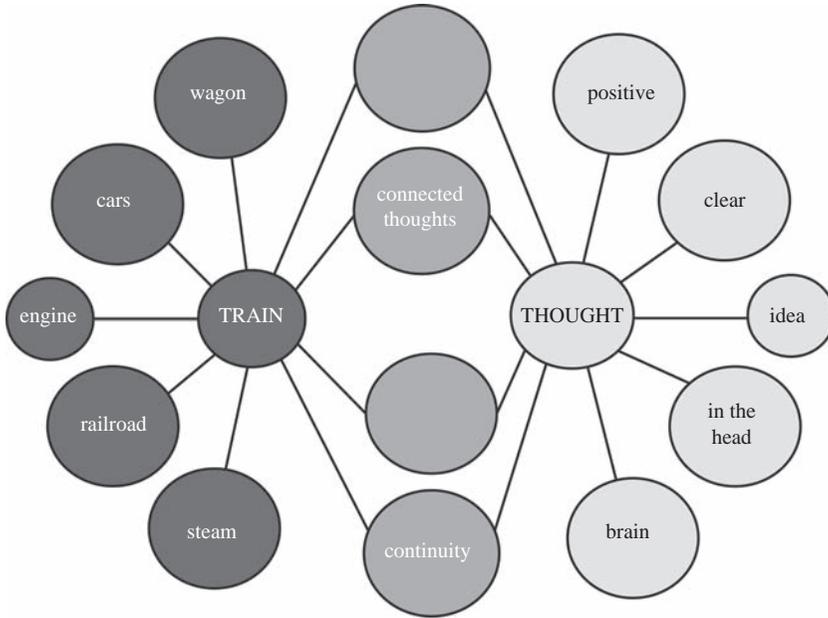


Figure 1 A “thinking map” to improve understanding of the metaphor “train of thought” (from Mashal and Kasirer 2011: 2047)

Their results showed that both ASD and LD groups improved in comprehension of the specific metaphors they had been taught during the thinking map intervention, but that the ASD group showed no improvement in comprehending novel metaphors that they had not been taught during the intervention (Mashal and Kasirer 2011: 2051). In seeking to account for this failure to generalize the thinking map strategy to unprecedented metaphoric expressions, Mashal and Kasirer hazard one particular explanation that a target first model would naturally insist on: “an impaired ability to suppress irrelevant features of the vehicle term or the salient literal interpretation may hamper figurative language understanding. ASD and LD children indeed tend to interpret meaningless word pairs, as compared to TD [typically developed] children, suggesting a reduced ability to suppress irrelevant meanings” (ibid.: 2053). Recall that even in the TD population, any priming with metaphor-irrelevant properties of the vehicle tends to impede metaphor comprehension (McGlone and Manfredi 2001). Yet the thinking map strategy asks the children to brainstorm as many properties of the source domain as they can think of, the majority of which will necessarily turn out to be irrelevant to the metaphor at hand (e.g., for “train,” to proliferate such associations as “steam,” “wheels,” “engineer,” “roundhouse,” “coal,” “crossing-gates,” none of which are immediately relevant to the metaphor “train of thought”).

Compounding the problem, the children must do the same with the target domain, once again generating a list of as many predicates as possible, which, when judged over against the corresponding list for the source domain, *may* reveal some common ground but *will certainly* produce many more instances of “meaningless word pairs,” which ASD and LD children are all too ready to interpret. In other words, on both target and source sides of the thinking map, the children are being asked to generate and then inhibit irrelevant features or predicates—just what a TD child, according to the target first hypothesis, almost never does.²⁴

In a follow-up study of ASD and LD children, Mashal and Kasirer (2012) arrive at the same diagnostic conclusion, but now propose a very different kind of intervention: “A possible explanation for the reduced metaphoric competence in the LD and ASD groups is the inability to suppress meaningless interpretations or to evaluate reasonably the interpretation of two unrelated concepts. . . . These results may suggest that a special attention should be given to *the process of suppression of irrelevant interpretations* in children in the special education” (281, emphasis added). Clearly, a thinking map approach inculcates not the suppression but the generation of irrelevant interpretations. How is it that TD children manage successfully to suppress irrelevant interpretations of the two conceptual domains involved in metaphoric expressions? *By an abstracting process from the target domain that more or less immediately reduces the search space in the source domain to the most target-like predicates therein.* Significantly, “a cognitive deficit in abstract reasoning has long been viewed as a fundamental impairment in autism and has been documented across the spectrum of the disorder” (Minshew et al. 2002: 327), which may suggest, in light of the target first account, that deficits in abstract reasoning and metaphor processing in ASD are not two distinct problems but two aspects or faces of the same problem. If one cannot abstract from a targeted conceptual domain efficiently, one cannot process a metaphoric source domain efficiently. Nancy Minshew et al. have found “that nonmentally retarded individuals with autism appear to encode concepts at a lower level of abstraction that limits their generalizability and results in inflexibility” (ibid.: 332), and more recently Adam Green and colleagues have extended this finding to account for problems in abstract *analogical* reasoning in particular: “Children with autism spectrum disorders (ASD) often demonstrate a bias toward processing stimuli details without processing more abstract and global meaning . . . and therefore may experience difficulties with seeing abstract similarities in the

24. See Melogno and Pinto 2014 for another example of an ASD intervention program based on the structure-mapping model. As their summary of relevant research to date shows, random feature- or predicate-generation and subsequent matching is, unfortunately, the state of the clinical art at present.

absence of literal or surface-level similarities” (2014: 677). That is, while children with ASD can readily identify the surface-level similarity of color between a red engine and a red apple or the surface-level similarity of shape between an orange and a baseball, they have much more difficulty identifying the abstract analogical similarity that permits a directed series of ideas to be expressed metaphorically as a “train of thought.” Green et al.’s “findings suggest . . . that explicit instruction in abstract analogical reasoning skills could improve the ability of children with ASD to identify abstract similarities in the real world. If strengths in abstract analogical reasoning on a structured explicit task can be demonstrated, then intervention strategies might be developed that explicitly teach analogical reasoning skills as generalization tools” (ibid.: 678).

Indeed, Green et al. have achieved promising early results using a visual analogical reasoning paradigm, in which subjects with and without ASD were shown a pair of images, for example, a bare floor in one frame and a mop in the other, which functions as a *target* analogical relation (i.e., one already profiled in the visual “discourse”), and then presented with a single image, for example, a carpeted floor, for which they have to select the most appropriate analogical match (in this case, a vacuum) from a set of four additional images, thereby formulating the *source* analogical relation. Thus, to succeed at the test, a subject must first *abstract* the analogical relation in the target domain before finding a *comparable* relation in the source domain. Results showed no significant difference in the performance of ASD and TD children, even when the semantic distance between the two domains was increased (e.g., rather than having to find the proximal analogy {floor: mop:: carpet: vacuum}, subjects had to find the conceptually more distant analogy {floor: mop:: teeth: toothbrush}). The study thus provides “new evidence that children with ASD are capable of identifying abstract similarities through analogical reasoning” and further suggests “that analogical reasoning correlates negatively with social deficits” — in other words, the better a child with ASD performs with respect to abstract analogical reasoning, the less severe the child’s profile of social deficits appears to be (ibid.: 682).

Converging evidence for Green et al.’s hypothesis about the role of target-based abstraction in analogical (and thus metaphoric) thinking can be found in related research on populations with other diagnoses and impairments. For example, Carlos Roncero and Roberto de Almeida “investigated the effect of aptness in the comprehension of copular metaphors (e.g., *Lawyers are sharks*) by Alzheimer’s Disease (AD) patients,” where “aptness” was defined as it would be in a target first approach, as “the degree to which the vehicle term captures salient properties of the [principal] topic” (2014: 5). The authors “predicted that apt metaphors would be better understood, regard-

less of familiarity level, but this effect would interact with participants' abstraction ability," and indeed their results showed that "the ability to abstract a relationship between two objects might be considered a strong predictor of patients' abilities to interpret metaphor" (ibid.: 6, 9). These results lead Roncero and de Almeida *almost* to formulate the hypothesis I have been urging throughout this article: "Although this suggestion is made within the limited scope of our investigation with Alzheimer's patients, it points to an important aspect of metaphor—and figurative language—interpretation in general: the ability to infer intended messages from the often anomalous linguistic expression requires a computational mechanism capable of generating properties and relations beyond linguistic denotation. We suggest that this mechanism is intrinsically associated with comprehenders' abstracting capacities" (ibid.: 12). This is so close to right, except they still fail to grasp that these abstracting capacities must go to work *in the first place* on the *target* domain in order to know how to draw an apt inference from the source domain. Unfortunately, they like almost everyone else in the field mischaracterize the process as beginning with the source: "The process of finding which properties of the vehicle can be predicated about the topic, relies on accessing sets of predicates in memory (e.g., [*ruthless*][*shark*]), [*carnivore*][*shark*]) or building them anew ([*sneaky*][*shark*]) and applying them to the topic ([*ruthless*][*lawyer*]), [*sneaky*][*lawyer*]) to yield an interpretation of the metaphor" (ibid.). This random, source-first search process would represent a tremendous waste of processing time and effort in a context in which the speaker's lawyer was standing beside him, sporting a baby-blue sharkskin suit. In this case, the obvious contextual target would inhibit interpretive predicates such as *ruthless*, *carnivore*, or *sneaky* and instead profile the more relevant predicates *blue*, *sleek*, and perhaps *oily* or *unctuous*.

One study that *has* taken the indispensable inhibitory role of the contextual frame into account is that of Desai et al. (2011). Recall that in Black's interaction theory, the *frame* is the minimal sentential context in which the metaphoric focus appears. Though Black does not say so explicitly, it is nevertheless clear that the frame drives the whole metaphor: where "wolf" alone signifies literally, when inserted in the frame "Man is a _____," it instead signifies metaphorically.²⁵ Recognizing that the frame and especially its head noun constitute a primary context for the interpretation of the focus *as* a metaphoric vehicle, Desai et al. controlled for its likely effects on subjects'

25. Paul Ricoeur gets this (and much else) precisely right: "Metaphor, then, has to be described as a deviant predication rather than a deviant denomination. . . . While it is true that the effect of sense is focused on the word [i.e., the focus or vehicle], the production of sense is borne by the whole utterance. It is in this way that the theory of metaphor hinges on a semantics of the sentence" (1978: 145–46).

responses (in this case, patterns of neural activation as recorded by fMRI). Their study focused on the processing of action verb phrases in literal and metaphoric contexts or sentential frames (e.g., *The thief bashed the table* vs. *The council bashed the proposal*), as well as the processing of abstract or nonaction verb phrases in otherwise parallel stimuli (e.g., *The council criticized the proposal*). Since the initial noun phrase would set up expectations for the probable nature or scope of meaning of the ensuing verb phrase, the authors treated it as a prime, presenting it first to ensure its uptake before the presentation of action verb phrase in the literal and metaphoric conditions and the nonaction verb phrase in the abstract condition. This control of priming effects was used to maximize the distinctiveness of the several conditions from the moment of onset (noun phrase) to the presentation of the focal variable (the literal, metaphoric, or abstract verb phrase). Thus, “the initial noun phrases of the sentences were selected to prime an abstract or concrete meaning of the verb,” with a comparatively concrete noun-phrase always preceding the literal condition (e.g., *the thief*) and a comparatively abstract noun-phrase always preceding the metaphoric and abstract conditions (e.g., *the council*). This is important (and should be controlled for in all future metaphor studies) because the semantic character or “property” of the head noun “promotes rapid suppression of incongruous meanings” of the ensuing verb phrase, often within 250–300 milliseconds, that is, well before contextual semantic decoding of the verb phrase can have really begun (Desai et al. 2011: 2383).²⁶

Significantly, even though Desai et al. thus made the literal condition for action verbs as concrete as possible from the start and the metaphor condition for those same verbs as abstract as possible from the start, nevertheless, in both conditions the same secondary sensory-motor systems were recruited, and at the same magnitude of signal, for the processing of the action verb phrase. These findings support at least a weak version of the “neural cog” explanation of conceptual metaphor theory, which holds that the image-schemas underlying abstract thought (and thus conceptual metaphoric models such as LIFE IS A JOURNEY, TIME IS SPACE, or UNDERSTANDING IS GRASPING) are instantiated in the brain’s multimodal or “secondary” sensory-motor cortex (Dodge and Lakoff 2005; Gallese and Lakoff 2005). But Desai et al.’s further finding—that the metaphoric condition but not the literal

26. Thus, in Wolff and Gentner 2011, the shortest deadline for a simple comprehensibility judgment was 500 ms, but at 1600 ms many metaphors that had been judged as comprehensible at 500 ms were judged as incomprehensible, especially “reversed” or highly unconventional metaphors (e.g., *Warehouses are brains*). This suggests that the first deadline may be simply measuring a grammaticality judgment rather than any kind of metaphoric interpretation, which requires, as Wolff and Gentner acknowledge, something on the order of 1100–1300 ms (2011: 1462).

condition showed left middle temporal sulcus activation similar to the abstract condition—“suggests that sensory-motor metaphors are not represented entirely in a sensory-motor format. Although motoric simulations may be used to understand such metaphors, an abstract component is also present” (Desai et al. 2011: 2384). This conclusion would seem to weigh against the strong version of neural cog theory, which holds that “abstraction” itself takes place in the secondary sensory-motor cortex as a “generalization” constituted by downward “inhibition” of more primary sensory areas.²⁷ Of course, much of the ASD and Alzheimer’s research I have summarized above likewise challenges the strong version of neural cog theory, as does, indeed, my target first hypothesis, which holds that abstraction *operates on* image-schemas and so cannot simply *be* them.

4. Conclusion

But these are empirical questions that can be answered only by further investigation. Just as theoretical models can make every difference to experimental design and practical intervention, so the results of experiment and intervention will provide invaluable feedback concerning the relative strengths and weaknesses of the available theoretical models. Virtually all the contributors to the *Poetics Today* special issue on bidirectionality position their work as a challenge to the “unidirectional” model typically proposed in conceptual metaphor theory,²⁸ which often stipulates only a one-way mapping from a comparatively concrete source to a comparatively abstract target. I have hereby seconded the contributors’ common concern, but I have also indicated why and how their source-first bidirectional model may itself be improved by being more pragmatic, which means giving the target-in-context its theoretical due (even if it is only the minimal target-in-context provided by the sentential frame in the stimuli of psycholinguistic experiments). Perhaps the most immediate and immediately valuable way forward would be the design and testing of target-first interventions for individuals with metaphor-processing difficulties, and comparison of the results of such interventions with those achieved by the structure-mapping approaches

27. Thus Gallese and Lakoff: “Because neural structures in secondary areas are inseparable in behavior from the primary structures they are connected to, they characterise generalisations that are inherent in and inseparable from special cases. . . . The ‘learning’ of general cases is not the acquisition of new structures, but rather the inhibition of the connections between the secondary and primary areas. In other words, the generalisations are inherent in the special cases that are learned first. What is learned is the control of inhibitory connections” (2005: 471).

28. See Goodblatt and Glicksohn 2017a: 5–7; Danesi 2017: 16–17; Katz and Al-Azari 2017: 36–37; Freeman 2017: 63–64; Porat and Shen 2017: 126–28; and Anaki and Henik 2017: 150–51.

tried so far. Such an intervention might involve a very simple adjustment to Mashal and Kasirer's thinking map approach, whereby children would be taught to explore the target domain primarily (especially in a discursive or material context that profiles one or two particular features of interest) and then to consider which of the listed target predicates may also apply to the source domain. But here I am out of my depth and must defer to clinical experts, as I must defer to the psycholinguistic experts who may conceive ways of bringing the target-first hypothesis to the empirical proof. I rest my case (which is after all Stewart's and Wordsworth's case) in the hope that both groups will decide that the target first hypothesis merits their long-overdue attention.

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