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Figure

Mark Bernard Turner
Case Western Reserve University, mbt8@case.edu

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ⓘD Mark B. Turner

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FIGURATIVE LANGUAGE AND THOUGHT

ALBERT N. KATZ
CRISTINA CACCIARI
RAYMOND W. GIBBS, JR.
MARK TURNER

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ALBERT N. KATZ
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CHAPTER 2

Figure

Mark Turner

THE CLASSICAL FOUNDATION

The classical Greek word σχῆμα (*schema*) had a range of commonplace meanings that cluster around a central prototype: a *schema* is a pairing of two patterns at unequal levels. The steps of a dance are a *schema* of the dance. A stately bearing is a *schema* of a dignified character. Human dress is a *schema* of the human body, and a fashion of dress is a *schema* of an aspect of the body. Posture is a *schema* of attitude. The imperative mode of the verb is a *schema* of command. Plato called the concrete circle traced in the sand a *schema* of the single, transcendent, and metaphysically prior ideal circle. Aristotle reversed the direction of abstraction, preferring to see abstract mental forms as epistemological *schemata* of concrete realities they represent.

Schema became a technical term of Greek rhetoric, used prototypically to signify a conventional pairing of a form and a meaning or, more broadly, a form and a conceptual pattern. To know a language, one must know its *schemata*. In practice, *schema* often designated the formal half of a form-meaning pair, the way "daughter" designates one half of the pair it signifies.

Greek names for schemata sound foreign, but the patterns and pairings they signify are familiar elements of thought and language. For example, we often understand a complex event as consisting of steps, and we conventionally express this conceptual pattern in the linguistic pattern found in "sex leads to pregnancy and pregnancy leads to children" or "fear brings paralysis and paralysis brings failure." The pairing is the schema *climax* (Greek for "ladder"). For a second example, we often understand two elements as standing in symmetric relationship, and we conventionally express this conceptual pattern in the linguistic pattern found in "James accuses Paul and Paul accuses James"

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FIGURE 45

or "electricity induces magnetism and magnetism induces electricity." The pairing is the schema *antimetabole* (Greek for "turning about").

Some schemata, like *antimetabole,* have as their conceptual half a highly abstract set of connections between elements, with negligible suggestion of the categories to which these elements might belong. Their abstract conceptual pattern fits many different kinds of specific scenes and even many different abstract meanings. Consider, for example, "electricity induces magnetism and magnetism induces electricity." To be sure, its *words* concern electromagnetism and causation, but its *antimetabole figure* does not: the formal pattern of the figure is a doubled expression that includes A and B in its first half and their transposition in its second, while the paired conceptual pattern of the figure is symmetric relation between A and B. Obviously, this conceptual pattern provides no suggestion of the categories to which A and B belong. We can apply it, at least in principle, to any kind of A and B.

Other schemata have, in contrast, a kind of conceptual pattern that is much more specific, namely, a conceptual frame that is conventional and that models a common and rich human scene. For example, there is a basic human scene in which someone cries out from an access of emotion; the conceptual frame modeling that scene is paired with the form *exclamation* and with specific lexical exclamations, such as "O!" "Alas!" "Damn!" and "God!" This pairing is the schema *ecphonesis.* There is a basic human scene in which emotion paralyzes a speaker; the conceptual frame modeling that scene is paired with a particular linguistic form—an abrupt halt in the middle of a clause and the replacement of its expected conclusion with silence, a gesture of incapacity, an expressive vocal sound, tears, or a verbal derailment such as "Forgive me," "I cannot go on," or "It's just too terrible." This pairing is the schema *aposiopesis.*

Rhetoricians of classical antiquity began the inquiry into the kinds of schemata, the mechanisms of schemata, and the network of relations between schemata. They left us foundational taxonomies, subtle analyses, and Greek names like *antithesis* and *parenthesis,* a few of which have survived into English, although our word for *schema* itself as a technical term in rhetoric comes from the Latin word chosen as its equivalent by Roman translators and adaptors: *figura,* the root of our "figure."[1]

Unfortunately, Greek and Hellenistic rhetorical and linguistic inquiries into schemata or figures have been lost. The earliest surviving document that presents an extensive treatment of figures is the pseudo-Ciceronian *Rhetorica ad Herennium,* dating from the first century B.C., which lacks the seriousness of theoretical inquiry we find in Aristotle on metaphor or Longinus on style. It is a pedagogical manual.

Nonetheless, works of the sort to which the *ad Herennium* belongs show that classical rhetoricians had anticipated some of the most influential discoveries

about the nature of form-meaning pairs. Often, it is only in retrospect that these anticipations are seen for what they were. For example, in work on conceptual integration, Gilles Fauconnier and I observed that there is an optimality principle leading to the tightening of metonymies under certain conditions (Fauconnier and Turner, in press b). By way of illustration, consider the conventional knowledge that *winter* as a period of time is connected through a chain of metonymies to snow, ice, and whiteness: in some parts of the world (although not where I was raised), the period of winter includes intervals during which the ambient temperature falls below freezing, and during these intervals (which may be infrequent), a body of water such as a lake or pond may freeze over, and precipitation may take the form of snow, whose color is white, or sleet, freezing rain, and so on. Personifications of winter routinely shorten this chain of metonymies, so that ice, snow, and whiteness become part of the immediate concrete form of the personification. In retrospect, it appears that the explicit statement of the metonymy-tightening principle has as one of its specific corollaries the rhetorical figure *metalepsis*. In *metalepsis,* a distant effect is transformed into a feature of its cause. For example, a vehicular speed viewed as risky can be thought of as *breakneck speed.* A situation that makes us comfortable can be thought of as a *comfortable situation.* A man who makes noises we judge to be loud can be thought of as a *loud man.* These are examples of *metalepsis.*

As Jeanne Fahnestock has surveyed in her superb study *Figures of Argument,* research over two and a half millennia into the nature of figure has been confused and uneven, but its anchor is the notion of pairing: "The goal of a compendium of figures was ... to define the formal means for achieving certain cognitive or persuasive functions. One or the other arm of this form-function connection could pivot ... but the central link should still hold."

Often it failed to hold, when the rhetorician worked on a single pattern, conceptual or formal, instead of on a pairing. Pairing eventually fell to secondary or even incidental place as a principle of the theory of figure. Some major figures—like analogy, allegory, and parable—were often defined as having to do with abstract conceptual patterns but not so clearly with *linguistic* patterns, since their products can be expressed in many forms. Similarly, figures concerned with conventional frames of rich human scenes—reproving an adversary, turning from the audience to address an individual, or pleading for help—were also given definitions of conceptual pattern unpaired with linguistic form, again because their conceptual patterns can be expressed in many forms.

In the other direction, some well-known figures were defined as linguistic forms only. *Zeugma,* for example, has often been defined as the linguistic form in which a single verb governs two or more clauses or groups of words—as in the prosaic "Henry ran a mile and James two miles" or the Shakespearean "Passion lends them power, time means, to meet."

Yet even in analyses such as these, the implicit pull toward pairing remains

FIGURE 47

strong. *Hyperbole,* expressible in many forms, is typically illustrated with superlative modifiers. *Metaphor,* expressible in many forms, is typically illustrated with bare lexical nouns that prompt for conventional metaphoric meanings (''wolf,'' ''lion,'' ''vixen''). *Metalepsis,* expressible in many forms (''The loud man,'' ''The man is loud,'' ''The loudness of that man is unbearable''), is typically illustrated with an Adjective-Noun form in which the cause is expressed by the noun and the effect (turned into a feature of the cause) is expressed by the adjective, as in ''pallid death.'' *Zeugma,* a purely formal pattern, is typically illustrated with expressions in which the verb applies with remarkably unequal meaning to the governed clauses. In *The Rape of the Lock,* Alexander Pope writes that Queen Anne, ''whom three realms obey, / Dost sometimes counsel take, and sometimes tea,'' and that Belinda's spirit guardians fear she might ''stain her honour, or her new brocade . . . Or lose her heart, or necklace at a ball'' (canto 3, lines 7–8; canto 2, lines 107–9).

Classical rhetoricians often observe that linguistic patterns prototypically have conceptual anchors. Fahnestock cites several, among them the following: ''the author of the *Ad Alexandrum* (attributed to Anaximenes of Lampsakos, 380–320 BCE) distinguishes antithetical thought from antithetical phrasing, marks the possibility of having one without the other, and stresses the need to combine both in the perfect figure'' (Fahnestock, in press). Aristotle sees metaphoric expressions as conceptually anchored: although the *Poetics* contains a potentially misleading sentence describing metaphor as the transfer of an *expression* from one thing to another, the context makes it clear that Aristotle sees the linguistic transfer as motivated by a conceptual relation—either of category (genus to species, species to genus, species to species) or of analogy.[2] In his view, the conceptual transfer induces the linguistic transfer. A few paragraphs later, he defines metaphor as conceptual in explaining that metaphor comes from considering (Θεωρεῖν) likenesses: ''τὸ γὰρ εὖ μεταφέρειν τὸ τὸ ὅμοιον Θεωρεῖν ἐστιν'' (*Poetics,* book 22, chap. 17 [1459a]).

After the Greeks, rhetoric turned principally to applied tasks, chiefly the production of instructional materials, and rhetoricians increasingly ignored the conceptual work of figures. ''Figures'' came, for the most part, to refer to linguistic forms in lists of related linguistic forms. Fahnestock provides an apt illustration of this degeneration in contrasting Aristotle's analysis of *asyndeton* with the *ad Herennium's* treatment of *asyndeton.* She begins with Aristotle:

> At no place in Book III [of the *Rhetoric*] does Aristotle claim that these devices [figures] serve an ornamental or emotional function or that they are in any way epiphenomenal. Instead, Aristotle's somewhat dispersed discussion suggests that certain devices are compelling because they map function onto form or perfectly epitomize certain patterns of thought or argument. A case in point is his account of asyndeton, the elimination of connectives, and its ''opposite.''

Fahnestock is referring to the following passage in Aristotle: "Furthermore asyndeta have a special characteristic; many things seem to be said at the same time; *for the connective makes many things seem one, so that if it is taken away, clearly the opposite results: one thing will be many*" (Aristotle, *Rhetoric,* book 3, chap. 12 [1413b], translation from Kennedy [1991], p. 256, emphasis added).

Aristotle here analyzes *asyndeton* and its opposite (*polysyndeton*) as two form-meaning pairs that stand in oppositional relation: partitioning (of concepts) is paired with a formal series that omits connectives; in opposition, chunking (of concepts) is paired with a formal series that uses the connective. Fahnestock contrasts Aristotle's analysis of these figures as two related form-meaning pairs with the treatment provided by the author of the *ad Herennium,* who "pays no attention to the specific ideational work of the figure," merely listing *asyndeton* as a verbal ornament.

The classical rhetorical view according to which figures are anchored in conceptual patterns has had considerable effect in modern literary and rhetorical criticism. In 1936, I. A. Richards wrote that metaphor "is a borrowing between and intercourse of *thoughts.* . . . *Thought* is metaphoric . . . and the metaphors of language derive therefrom" (Richards 1936, p. 94). In the same year, C. S. Lewis wrote that parable—understanding one story by figural projection from another story—belongs not principally to expression and not exclusively to literature but rather *to mind in general* as a basic cognitive instrument (Lewis, 1936, p. 44). In 1945, Kenneth Burke wrote that metaphor, metonymy, synecdoche, and irony have a fundamental role in the discovery of the truth (Burke, 1945, p. 503). As Fahnestock writes, "[Figures] are endemic to the human mind."

Classical rhetoricians also observe that figure is normal and basic in language. The formal halves of the figures treated in the classical tradition are nearly all grammatical; the exceptions are the intentionally ungrammatical forms that are themselves conventionally paired with meanings, as in our expression, "You pays your money and you takes your chances," an example of the figure *enallage.*[3] "That the figures are part of ordinary usage," Fahnestock observes, "has been acknowledged from Aristotle, who notices in the fourth century BCE that 'all people carry on their conversations with metaphors,' to Du Marsais who affirms in the eighteenth century that 'il n'y a rien de si naturel, de si ordinaire et de si commun que les figures dans le langage des hommes' ." Classical rhetoricians frequently included *question* as a figure, and Hermogenes regarded basic subject-noun predication as a figure.[4] Quintilian observes explicitly that the basic definition of "figure" is any form-meaning pair ("forma sententiae") and "therefore in the first and common sense of the word everything is expressed by figures," ("Quare illo intellectu priore et communi nihil non figuratum est") (Quintilian [1921], book 9, chap. 1, sec. 1–12 [Loeb edition, vol. 3, pp. 352–55]). Such observations come close to asserting that the grammar of a

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language consists of form-meaning pairs.[5] In Latin, figure is often described as *ornamentum,* but as Vickers (1988, p. 314) and Fahnestock have observed, Latin *ornamentum* means apparatus, instruments, furniture, armaments—the standard equipment needed for a particular activity.

Quintilian's first definition of figure—meaning expressed in form—turns grammar into a branch of figure. Because Quintilian had no ambition to model the entire language, he naturally proposed a less ambitious definition, one that requires a figure to be "artful." He fails to provide any motivation for this distinction or any principle according to which "artful" figures are to be distinguished from the body of constructions that constitute a language, and his followers have failed uniformly on this same point. Yet his requirement that figure be "artful" became criterial. Figure came to be viewed as a special form-meaning pair (or even a form by itself) distinguished as especially effective, artful, refined, elegant, memorable, vivid, unusual, or powerful. Fahnestock observes, "There has never been a satisfactory definition of figurative language that rigorously separates it from an unfigured domain of usage. There never can be such a definition. The minority view that Quintilian set aside was right."

ICONICITY

Some pairings of form and meaning seem essentially arbitrary. There is no apparent compelling cognitive motive to pair the form "apple" with the meaning *apple.* In other languages, the word for *apple* is "pomme" or "malum." Saussure called this lack of motivation "the arbitrariness of the sign." It is worth remembering that "the arbitrariness of the sign" is a limited principle: a "sign" is typically motivated in various ways. It is motivated by human respiratory or articulatory mechanisms and by the sound pattern of the language in which it occurs. Further, as Ronald Langacker has observed, although it may be arbitrary that a word such as "blend" means what it does in English and that the morpheme "-er" means what it does in English, once these form-meaning pairs exist in the language, it is not arbitrary that "blender" means what it does in English. Any particular sign is more or less motivated relative to other constructions in the language.

The most compelling goal in pairing is to mirror the meaning in the form. Often, a meaning has a basic *image schema* that can be mirrored in a form. An image schema is a skeletal image that underlies everyday experience.[6] For example, we have an image schema of moving toward an object. We have an image schema of joining one thing to another. We have an image schema of a path that leads from a source to a goal. We have image schemas of hesitation and advance, of movement from a center to a periphery, of entering or leaving, of enclosing or extracting, of rising or falling, of stopping or penetrating. These

image schemas are not exclusively visual. For example, we have an image schema of a rising pitch, of increasing pressure, of a jab to the skin, as well as many image schemas of temporal rhythm. Many of our most important and useful image schemas concern how we structure space and interact with space. Spatial image schemas can be recruited to make sense of abstractions that are not themselves spatial. We can think of time as linear or circular. We can think of solving a problem as "moving toward" a goal along a path. We can think of the reasoning mind as a body "moving in space," which "comes upon" ideas, "looks them over," "picks them up" for examination, "drops" them to look "further afield," and so on. A considerable portion of our reasoning seems to consist of projections of bodily and spatial image schemas onto abstract concepts. We think of events, which have no shape, as having a shape: open-ended or closed, discrete or continuous, cyclic or linear.

Image schemas can also structure expressions. As forms, expression can have image-schematic structure. A sentence, for example, can be thought of as moving linearly to approach a point. A conceptual pattern that has the image-schematic structure of movement along a path to stop smartly at an end can be mirrored in a sentence that follows the same pattern. Here is an example from Clifford Geertz: "[I]f you want to understand what a science is, you should look in the first instance not at its theories or its findings, and certainly not at what its apologists say about it; you should look at what the practitioners of it do" (Geertz, "Thick Description: Toward an Interpretive Theory of Culture," in Geertz, 1973, p. 5).

In the history of rhetoric, it has often been observed, although not in exactly these words, that the image schema of the meaning can be mirrored in the form. Longinus gives the following example: repeated physical striking has an image-schematic structure that can be mirrored by linguistic anaphora, as in: "By his manner, his looks, his voice, when he strikes you with insult, when he strikes you like an enemy, when he strikes you with his knuckles, when he strikes you like a slave" (Longinus [1995], sec. 20, p. 190). Demetrius talks of linguistic forms as "rounded," "disjointed," "hastening towards a definite goal as runners do when they leave the starting-place," "circular," "tense," "periodic," and so on. He observes that thought comes with part-whole structure that can be mirrored in linguistic form (Demetrius [1995], sec. 1.1–2, pp. 295–97). He also observes that we experience syntactic forms image-schematically: "Long journeys are shortened by a succession of inns, while desolate paths, even when the distances are short, give the impression of length. Precisely the same principle will apply also in the case of members [syntactic forms]" (Demetrius [1995], sec. 2.46, p. 331).

The device of matching the form's image schema to the meaning's image schema—known as "iconicity" of form—provides one of the most effective tools of persuasion. Involving members of the audience in the image schema of

FIGURE 51

the iconic *form* automatically involves them in the basic structure of the meaning, thus moving them part way toward accepting the whole. Kenneth Burke offers an example: ''Who controls Berlin, controls Germany; who controls Germany controls Europe; who controls Europe controls the world.'' Burke says of this *climax*, ''By the time you arrive at the second of its three stages, you feel how it is destined to develop—and on the level of purely formal assent you would collaborate to round out its symmetry by spontaneously willing its completion and perfection as an utterance'' (Burke, 1950, pp. 58–59). Cooperation with the image schema of the iconic form disposes us to yield to the meaning. Burke says:

[W]e know that many purely formal patterns can readily awaken an attitude of collaborative expectancy in us. For instance, imagine a passage built about a set of oppositions (''*we* do *this*, but *they* on the other hand do *that*; *we* stay *here*; but *they* go *there*; *we* look *up*, but *they* look *down*,'' etc.) Once you grasp the trend of the form, it invites participation regardless of the subject matter. Formally, you will find yourself swinging along with the succession of antitheses, even though you may not agree with the proposition that is being presented in this form. Or it may even be an opponent's proposition which you resent—yet for the duration of the statement itself you might ''help him out'' to the extent of yielding to the formal development, surrendering to its symmetry as such. Of course, the more violent your original resistance to the proposition, the weaker will be your degree of ''surrender'' by ''collaborating'' with the form. But in cases where a decision is still to be reached, a yielding to the form prepares for assent to the matter identified with it. Thus, you are drawn to the form, not in your capacity as a partisan, but because of some ''universal'' appeal in it. And this attitude of assent may then be transferred to the matter which happens to be associated with the form. (Burke, 1950, p. 58).

SYMMETRY

The kind of symmetry presented by Burke's example is *oppositional, bilateral,* or *heraldic* symmetry. It occurs whenever transposing the opposed elements of something gives us back the ''same'' thing. For example, in Burke's antithesis, at the conceptual level, transposing all the opposed conceptual elements (*we do this* versus *they do that,* for example) still leaves us with an array of opposed meanings; and at the formal level, transposing all the opposed formal elements on each side of ''but'' (''we do this'' versus ''they do that,'' for example) still leaves us with an expression that consists of conjoined opposed forms. In antithesis, meaning is structured by the image schema *balance about a center,* and the form inherits the image schema of the meaning. Elsewhere, I have analyzed ways in which symmetry provides the basis for some other form-meaning pairs.[7]

Antithesis is only one kind of symmetry. When we recognize that something

can be mapped onto itself while preserving essential relations, we perceive that it is symmetric under that mapping. For example, we recognize that rotating a sphere in any direction to any degree about its center leaves us with the identical sphere; the sphere has rotational symmetry.

Formal symmetry in the world is often associated with meaning. For example, an array of forces symmetric about a location is associated with the meaning *equilibrium.* We are disposed to pay attention to the location about which the forces are symmetric since we can maintain equilibrium in the system by preserving formal symmetry about that location. We stand upright to avoid falling over. The *form* (the symmetry of uprightness) is paired with a *meaning* (equilibrium, and hence stability, security, control, and importance); in this case, the pairing is causal. The location about which the form is symmetric is naturally paired with the meaning: *this is the essentially important element.*

Consequently, in classic modes of linguistic and visual representation, the conceptually important element is typically located at the center of formal symmetry. The main altar is not placed in an eccentric spot of the cathedral. Cedric Whitman has analyzed Homer's *Iliad* as constructed according to ''ring composition,'' wherein conceptually important elements occur at centers of formal symmetries.

Additionally, the breaking of formal symmetry in an otherwise formally symmetric background is paired with the conceptual meaning *pay specific attention,* for the following reason. To the extent that some aspect of our world conforms to a background symmetry, we do not have to memorize its details. Given the smallest knowledge about its details, coupled with knowledge of its symmetry, we can complete the pattern without having memorized the details. But we cannot in general tell where that symmetry will break. The breaking of a governing formal symmetry is therefore paired with the meaning *pay specific attention to this important element.* This natural pairing provides a basis for certain principles of figural representation. For example, if, in a Greek vase painting, a central fallen soldier is flanked by a line of identical mourners left and right, all facing him, symmetrically balancing each other, with the exception that the first mourner to the left has fallen to her knees and is reaching out to him, we are disposed to recognize that mourner as the most important element in the relevant cultural frame—*his wife.*

THE XYZ FIGURE

Even though iconicity is the clearest kind of form-meaning pairing, most figures are not essentially iconic. Here, I present a study of the noniconic XYZ figure. My purpose in presenting this case study of one particular figure is to illustrate the conceptual complexity of even very simple figures. This case study will lead

FIGURE 53

us to ambitious theoretical claims about basic conceptual operations. I sketch a model of those operations. I then draw consequences of that model for thinking about "figurative thought and language."

"Money is the root of all evil" and "Brevity is the soul of wit" illustrate the XYZ figure, which was first noted by Aristotle in the following passage: "As old age (D) is to life (C), so is evening (B) to day (A). One will accordingly describe evening (B) as the 'old age of the day' (D + A)—or by the Empedoclean equivalent; and old age (D) as the 'evening' or 'sunset of life' (B + C)" (*Poetics,* 1457B).

Here, Aristotle announces his threefold discovery—the existence of a conventional mapping scheme at the conceptual level, the existence of a formal pattern, and the existence of a conventional pairing between them. This pairing is the "X is the Y of Z" or XYZ figure.[8] An example of the XYZ figure is "Vanity is the quicksand of reason." The conventional mapping scheme of this figure is quite complicated: X (*vanity*) and Z (*reason*) are to be grouped into a single mental space; Y (*quicksand*) is to be placed inside some different mental space; some unspecified cross-domain mapping is to be found in which Y (*quicksand*) is the counterpart of X (*vanity*); an unmentioned W (e.g., *traveler*) is to be found in the Y (*quicksand*) domain such that W (*traveler*) can be the counterpart of Z (*reason*); X and Y are to be integrated (*vanity-quicksand*); W and Z are to be integrated (*reason-traveler*); the X-Z (*vanity-reason*) relation is to be integrated with the Y-W (*quicksand-traveler*) relation. A great deal—the relevant conceptual domains, their internal organization, W and the other unmentioned counterparts, the nature of the relevant relations, and so on—must be constructed without further formal prompting.

"Vanity is the quicksand of reason" evokes a conceptual mapping that is elaborate and open-ended: reason corresponds to traveling animals, vanity to quicksand, mental activity to motion over a surface, mental focus to visual focus, and so on through a great list.

The products of XYZ mappings can be quite diverse:

Adams Morgan is the Greenwich Village of Washington, D.C.
He's the Babe Ruth of Hungarian kayaking.
Sex is the ancilla of art.
Sex is the poor man's opera.
Children are the riches of poor men.
The wages of sin is death.
"The harlot's cry, from street to street, / Will be Old England's
winding sheet." (Blake)

In "Vanity is the quicksand of reason," the two mental spaces connected by the mapping (the *quicksand* space versus the *reason* space) are radically differ-

ent: one involves internal personal psychology while the other involves geographical travel. By contrast, in "Adams Morgan is the Greenwich Village of Washington, D.C.," the two mental spaces connected by the mapping share a fairly specific conceptual frame: *city and its neighborhoods*. In "Paul Erdos is the Euler of our century," the mental spaces connected by the mapping share not only a frame (*mathematician*) but many details not standard for that frame: both Euler and Erdos were exceptionally prolific; both lived a long time; both worked in a number of fields; each was eminent but never quite attained the status of a mathematician like Gauss and Newton; and so on. "Erdos is the Euler of our century" seems quite different from "Vanity is the quicksand of reason," but they involve the identical syntactic form paired with the identical pattern of conceptual mapping.

I catalog in *Reading Minds* the ways in which the basic XYZ figure is part of a network of figures. In particular, other syntactic forms can evoke the same XYZ scheme of conceptual mapping. First, there is a more general construction in which nouns Y and Z are connected by any relational preposition, as in "The bar in America is the road *to* honor."

Second, the form NounPhrase-of-NounPhrase contained in the XYZ figure is itself a prompt to perform the XYZ cognitive mapping; it lacks only the explicit instruction for choosing X. For example, in "quicksand of reason," "quicksand" and "reason" point to elements in different spaces; we are to connect these spaces by a cross-space mapping.

Third, depending on the meaning paired with Y, the XYZ form is related to either the $XY_{adjective}$ Z form or the $XZ_{adjective}$ Y form, as follows. When the Y in an XYZ conceptual pattern is a commonplace transformation of one thing into another, its form may be $XY_{adjective}$ Z, so "Language is the fossil of poetry" may be expressed as "Language is fossil poetry." When the Y-W conceptual relation is a part-whole frame relation, the form may be $XZ_{adjective}$Y, so "Las Vegas is the Monte Carlo of America" may be expressed as "Las Vegas is the American Monte Carlo."

Fourth, the full form of the XYZ figure has a corollary Z-Y compound noun form: "disc jockey," "road hog," "budget ceiling," "mall rat," "land yacht," "jail bait," and so on.

Fifth, compositions of XYZ forms evoke compositions of conceptual mapping schemes. Walter Lippman's "Social movements are at once the symptoms and the instruments of progress" is a composed form that evokes a composition of mappings across three mental spaces—one with social movements and progress, a second with symptoms, and a third with instruments—to achieve an integration in which one element is simultaneously a social movement, a symptom, and an instrument. In this example, the X-Z-space maps to two other spaces. But in "As poetry is the harmony of words, so conversation is the

FIGURE   **55**

harmony of minds," it is the Y-space that maps to two other spaces—one having poetry and words, the other having conversation and minds.

Sixth, XYZ conceptual mappings can be evoked by a variety of syntactic forms for identity, as in "London, that great cesspool into which all the loungers of the Empire are irresistibly drained" (Arthur Conan Doyle). This example, which I analyze in *Reading Minds* (1991), requires multiple mappings.

The XYZ figure provides a glimpse of the complexity involved in form-meaning pairing. Individual XYZ examples may look straightforward, but on analysis they reveal:

- intricate and systematic conceptual patterns;
- formal patterns paired with these conceptual patterns, to give a group of form-meaning pairs; and
- a relational network of these form-meaning pairs.

CONSTRUCTION GRAMMARS

Contemporary models of form-meaning pairs are known as "construction grammars." A construction grammar models both individual form-meaning pairs and the network of relations in which these pairs stand. Construction grammarians are linguists who have chosen to return to the more traditional view that the grammar of a language consists of a network of form-meaning pairs, which they call "constructions." Charles Fillmore and Paul Kay have collaborated on a sophisticated "construction grammar." Ronald Langacker's "cognitive grammar" is a construction grammar. Adele Goldberg, Claudia Brugman, and George Lakoff have individually worked on particular constructions. My early work on the XYZ figure is a study of a construction. Well-known contributors to the emerging field of construction grammar include Gilles Fauconnier, Michael Israel, Daniel Jurafsky, Jean-Pierre Koenig, Suzanne Kemmer, Knud Lambrecht, Laura Michaelis, and Elizabeth Traugott.[9]

Constructions recognized by construction grammarians include traditional clausal patterns, such as the Passive Construction, but also other clausal and phrasal patterns, such as the Resultative Construction ("He hammered it flat," "She kissed him unconscious"), the Ditransitive Construction ("He faxed me a letter"), the Caused-Motion Construction ("John sneezed the napkin off the table"), the Covariational Conditional construction ("The more you think about it, the less you understand it"), the Way Construction ("Peter talked his way into the job"), and so on. In most construction grammar models, morphemes and words are also constructions, as are abstract grammatical categories such as Noun Phrase and Verb Phrase and abstract phrasal and clausal patterns like the

Subject-Predicate construction. Lexical or morphemic constructions include phonological form.

Constructions commonly include pragmatics as part of their meaning. Consider ''And they call it puppy love'' and ''And they say I don't work hard.'' These are instances of a sentential construction that carries a pragmatics: the speaker is calling the hearer's attention to what the speaker sees as absolute evidence that the reported assertion is absurd. (The construction can be used ironically or in free indirect discourse, but in either case, the construction still evokes this pragmatics, with additional complexity.)

The justifications for construction grammar are essentially identical to those for the original classical rhetorical program of analyzing figures. Construction grammarians typically observe that constructions exist in a language that any grammar of the language must cover but that are not treated by grammars in which constructions are regarded as epiphenomenal. Principles-and-Parameters grammars are the best-known grammars that conflict with construction grammar on this point. In Principles-and-Parameters grammars, constructions are regarded as artifactual consequences of the interaction of (conjectured) principles of a (conjectured) Universal Grammar.

Construction grammarians such as those I named above cite the following kinds of expressions as examples of intricate constructions in the language that are not captured in nonconstruction grammars:

> Never will I leave you.
> Long may you prosper!
> Onward, Christian soldiers!
> Am I tired!
> Watch it not rain [now that I've bought an umbrella].
> Idiot that I am, . . .
> Looks like something going on inside.
> Be back in a minute.
> He didn't give them one page, *not a one.*
> Are you going home or *home home?*
> It satisfied *my every wish.*
> He did not like it *at all.*
> Looks like a soup, eats like a meal.
> Not that I care.
> I live near work, but *lazy me,* of course I drive.
> It's time you got married.
> You're no Jack Kennedy.
> She handed him the towel wet.
> He talked his way out of it.
> That's my desk you've got your feet on!
> This book reads easily.

FIGURE 57

Some historians *have* Jefferson doubting himself at this moment.
I *had* my dog die on me.
He is consultant to the president.
He's completely happy, *James is.*
How about Harry?
Down with Harry!
Smoking or non?
Another one like that, John, and Pow! right in the kisser.
The more, the merrier.
Nice play.
My hero!
You idiot!
What a guy!
Thank you.
Bless you.
Hooray for you.
Been there, done that.
It's amazing, the difference!
Why go to the store?

These constructions are widely judged to be grammatical. Other constructions, by contrast, are grammatical for only a few speakers. From time to time such a restricted construction gradually becomes grammatical for a wider community, to the extent that it becomes part of publicly shared linguistic knowledge. For example, I increasingly hear spoken expressions of the form "The feeling is is that they will head north from the capital," which I heard spoken on the BBC World Service News Summary on October 21, 1996. I do not know for a fact that this news summary was read, but it sounded read, and the news summary is always introduced by one BBC announcer as "read by" a second BBC announcer, as it was in this case. More important, the "is is" sequence in this reading had a prosodic pattern associated with the closing of a subject noun phrase followed by the onset of a verb phrase, rather than a prosodic pattern suitable for a duplicative bauble of a single verb. In this construction, "The feeling is" becomes suitable for subject position, perhaps by recruiting partly from the (already grammatical) construction underlying expressions such as "What the feeling is is that they will head north" or "What the current opinion is, among the press corps, is that the candidate will go negative." Whether the reader finds "The feeling is is" to be theoretically illuminating or aesthetically barbarous, many constructions now regarded by educated speakers as fully grammatical began life as disapproved inventions.

For each of the examples on this list of constructions, a form is paired with a skeletal meaning; the meaning of the expression is not provided exclusively by the so-called meanings of the words, or even by a composition of other

constructions; rather, we know the form and know that it prompts us to construct certain kinds of abstract meaning.

Our knowledge of these form-meaning pairs is complex, but we cannot easily or fully articulate what we know intuitively. Obviously, absent an unusual context, we will not be regarded as speaking idiomatic English if we say, "The light bulb crashed its way into being out." But why not? Equally obviously, absent an unusual context, we would not say, "He smoked his way across the Atlantic" to mean that on a transatlantic voyage, he smoked just one cigarette. But why not? Explaining obvious cases such as these is surprisingly difficult, although at first it may seem that there is nothing to explain because they are so obviously "just wrong." Constructions have intricate structure and systematic principles that we know intuitively but not consciously.

Fillmore, Kay, and O'Connor's case study of the "let alone" construction ("I didn't make it to Paris, let alone Berlin") and Kay and Fillmore's case study of the "What's X doing Y?" construction ("What's this bottle of olive oil doing in my wine cellar?") have made it clear that knowing such constructions involves knowing extraordinarily detailed structures. Understanding a simple sentence turns out to be a highly complicated mental event.

Construction grammarians assume responsibility (in principle) for explaining all the constructions in a language, including those that seem peripheral. They also assume responsibility for explaining the network of relations in which these constructions stand. The central assertion of construction grammar is that so-called core components of the language cannot be modeled as the products of interactions among higher-order formal principles. Instead, they, too, need a constructional approach. The machinery needed for modeling the "peripheral" constructions turns out to be indispensable for modeling the "core" constructions.

There is considerable overlap between the classical study of figures and the contemporary study of constructions. The peripheral constructions adduced by construction grammarians as evidence of the indispensability of the constructional approach look like Quintilian's "artful" figures. "Him be a professor?" (the Incredulity Construction) is a noticeable peripheral expression. Among other things, it appears to have a nonfinite form of the verb predicated of a third-person singular pronoun in the objective case. "Such stuff as madmen Tongue and brain not" (*Cymbeline,* act 5, scene 4, line 146) is also a noticeable peripheral expression. It has bare nouns as verbs. The second of these examples made it into the catalog of figures (*anthimeria*) although the first did not, perhaps because it had not yet been invented in classical antiquity when names were bestowed on figures. Construction grammarians and rhetoricians are equally aware of the complexity involved in accounting for such examples and of the ways in which such examples reveal systematic principles and patterns of mean-

FIGURE   59

ing and language that cut across all divisions of discipline, ontogenetic devel-
opment, mode of expression, and intellectual sophistication.

Construction grammarians and rhetoricians are also similar in their emphasis
on clausal, phrasal, and lexical form-meaning pairs. They both slight discourse
constructions. Consider as an example of a discourse construction what I will
call the "however" construction. If an article begins, "P. However, Q,"—for
example, "Many people think Alfred the Great was a great ruler. How-
ever, . . ."—readers have expectations about Q. They do not expect, "However,
others are uninterested in the entire subject" or "However, I don't want to talk
about it." These perfectly unobjectionable English sentences are compatible
with common meanings of "however," but they do not fit the "however"
discourse construction of argument. We cannot specify where the word "how-
ever" will occur in the discourse: it comes after the opening move of the dis-
course (P), which can be half a sentence or several chapters. Note also that the
word "however" is not at all necessary. "Nevertheless" is suitable. So is "I
disagree." In fact, if no lexical element of opposition is used, readers may still
seek and find a location in the text that seems to separate a P from an opposing
Q. They infer that location, but having done so, regard the inference as natural,
if they are even aware of having made an inference.

Some constructions are specific to a genre. These genre-constructions have
received relatively little attention from construction grammarians and rhetori-
cians. Consider complimentary closings that introduce the signature on a letter.
They form a category of constructions distinguished by fine nuances. In certain
ages (such as Jane Austen's) and in certain contemporary social registers (such
as the conservative French haute bourgeoisie, who write, for example, "Je vous
prie d'agréer, Monsieur le Professeur, les expressions de mes salutations très
distinguées" and "Croyez, cher Mark Turner, à mes souvenirs cordiaux et les
meilleurs"), this network of constructions involves distinctions so careful that
those who hope to assimilate to the proprietary linguistic community often
rightly fear that no degree of formal instruction can equip them to use the
constructions spontaneously in a way that will not betray their origin.

The most obvious difference between the study of figure and construction
grammar is disciplinary: construction grammarians have a disciplinary formation
in modern linguists and use the full range of technical instruments evolved in
that science. In construction grammar, the model for any particular construction
in the language will include grammatical distinctions of various kinds (e.g., verb
argument structure, phonological structure) that are examined only incidentally
and impressionistically in the study of figure.

Construction grammar has an important advantage over theory of figure in
its emphasis on the mechanisms by which constructions are assembled or uni-
fied. In the view of construction grammarians, judging an expression to be gram-

matical is the result of finding a set of constructions that unify in the expression. Construction grammars are "unification-based" grammars: they aspire to model the structural properties, mechanisms, and constraints involved in unification. By contrast, studies of figure rarely consider unification.

Crucially, a construction grammar has a commitment to account (in principle) for the totality of facts of the language. It assumes responsibility for full coverage. This is exactly what Quintilian set aside when he proposed to study only those figures that are "artful."

TRADITIONAL QUESTIONS ABOUT FIGURATIVE LANGUAGE AND THOUGHT

The central concept of a theory of figure as I have sketched it is *pairing* between formal and conceptual patterns. The conceptual half can be a conventionally framed rich scene (as in the figure *aposiopesis,* in which cessation of speech is paired with the rich scene of paralysis induced by emotion). It can be an abstract meaning (as in the figure *question,* in which interrogative forms are paired with the abstract meaning of posing an inquiry). And it can be an even more abstract mapping scheme (as in the XYZ figure).

This view of figure as constructional pairing covers the essential ground, but it leaves unanswered a suite of questions that are often embraced as defining the inquiry into "figurative language and thought":

- Is there a fundamental dichotomy between literal and figurative thought? Is there a fundamental dichotomy between literal and figurative language?
- Is figurative thought mirrored in figurative language? Is figurative thought necessarily paired with linguistic form?
- How do figurative thought and language evolve?
- What is the appropriate relation of an abstract theory of figures to a rich theory of individual figurative events?

The Literal Versus Figurative Dichotomy

In previous work (Turner, 1989, 1991, and 1996b), I offered demonstrations that the commonsense dichotomy between "literal" and "figurative" is a psychological illusion. There is no doubt that some products of thought and language seem literal while others seem figurative. We have reactions, and they are motivated, but these motivations do not come from fundamental differences of cognitive operations. "Literal" and "figurative" are labels that serve as efficient shorthand announcements of our integrated reactions to the products of

FIGURE   **61**

thought and language; they do not refer to fundamentally different cognitive operations.

The commonsense dichotomy between "literal" and "figurative" arises from a folk theory concerning thought, reality, and language, or more technically, entities, categories, reference, predication, truth-conditionality, and compositionality. In this folk theory, an entity (this tree outside my window) is a bundle of features (photosynthesis, etc.); a category (tree) is a bundle of criterial features (trunk, limbs, roots, photosynthesis, etc.) shared by its members; common nouns ("tree") refer to categories of objects; verbs ("grow") refer to categories of events; verbs predicate event-features of their subjects ("a tree grows" predicates *grow* of *tree*); adjectives ("big") and adverbs ("slowly") modifying common nouns and verbs assign or remove features (big trees grow slowly); and predication and assignment are compositional in the sense that the meaning and truth-value of any conjunction is just the conjunction of the meanings and truth-values of the components, so that assigning a complex feature is no different from assigning the set of its component features. For example, the subject of "big trees grow slowly" refers to the subcategory of *tree* whose members are additionally *big* (i.e., all objects for which it is true both that "this is big" and "this is a tree"); the verb phrase refers to a subcategory event that has the feature *slowly* along with all the features of the event-category *grow;* and the entire sentence predicates the features of *grow slowly* of the subcategory *big tree*; that is, it adds the features of *grow slowly* to the features of *big tree*. This addition is compositional for both truth-conditions and meaning.

In this folk theory, a connection is true if the state of affairs to which it refers is the case in the world (i.e., it is the case that everything that is both *big* and a *tree* has the complex feature *grows slowly*). It is false if the state of affairs to which it refers is not the case in the real world.

In this view, *The sun is a useful star* predicates of the sun both the feature *useful* and all the features of the category *star*. This predication composes the features of *the sun, useful,* and *star*. The assignment of the complex feature *useful star* is just the composition of the assignments of its component features; all of the component assignments are true (there is a sun with all of its features and it has additionally the feature *useful* and all of the features of *star*), and so their composition is true; the connection is therefore true; the thought is therefore true; and a statement of that thought is therefore true.

"The sun is a planet," in this view, means that it is the case that there is a sun with all its features and that it has all the features of the category *planet*. The thought and expression are therefore viewed as false. (I pass over more sophisticated machinery needed to talk about cases such as "If I were English, I would drink tea instead of coffee.")

In this commonsense folk theory, thought and language operate by truth-

conditional composition of features. This is the realm of "literal" thought and language. It is a consequence of this view that there must be a separate kind of thought and language, called "figurative," that uses alternative cognitive operations. The logic that leads to this consequence works as follows: "The sun is a jewel" is just literally false; its literal meaning is a composition of the features of *the sun* and *jewel,* and that composition is not the case in the world. This composition exhausts all the literal meaning and all the literal truth-value the expression can have. Therefore, if "The sun is a jewel" has any alternative meaning or any alternative truth-value, it can do so only by virtue of some different process, of interpretation or of conceptual connection. Because everyone recognizes that "The sun is a jewel" can mean something aside from "the sun exists and it has all of its own features as well as all the criterial features of the category *jewel,*" and because everyone recognizes that "The sun is a jewel" moreover can have (at least something like) positive truth-value, we must conclude that there is some alternative process, some "figurative" process, by which it acquires this alternative meaning and truth-value. "Figurative" here means exactly "not literal."

Clearly, we have different reactions to "The sun is a star" and "The sun is a jewel." We know that an important difference between them is signified when we call the first "literal" and the second "figurative." No question. What is at issue is whether these different reactions indicate fundamentally different cognitive operations in the different cases. I have proposed that the answer is "No."

In my previous work, I have proposed that conceptual connections between two mental arrays strike us differently depending on how those arrays are already related in our category structures. A connection seems literal or figurative (or somewhere in between) not absolutely but in relation to the category structures used to understand it. "A child is a light bulb" asks us to connect mental arrays that are basic level categories, and thus seem figurative. "Parsley is cumin" or "A mug is a glass" or "A steno chair is a rocking chair" asks us to make the same kinds of connections between mental arrays, but in these cases the two mental arrays share a supercategory at or below the basic level (e.g., chair), so we feel that they are literal (but false). In cases such as "Parsley is cumin," the usual claim does not hold that recognizing literal falsity prompts us to recognize "figure" as a way of repairing the falsity. In all these cases, the feeling that something is literal or figurative depends not on special mechanisms of connection but rather on the relative status of the elements connected.

I have also argued that there is another, related influence on judging a connection to be literal or figurative: the degree to which the conceptual connection or the linguistic expression is generatively entrenched. The greatest degree of generative entrenchment for a conceptual connection occurs when it becomes established as a central part of basic category structure: for example, a woman is a human being. But there are other conceptual connections between elements

FIGURE   **63**

in category structures that, although not sufficiently generatively entrenched to seem to belong to our "literal" categories, are nonetheless available to us—a woman is a vessel, for example. Generative entrenchment of mental connection is a graded scale. We connect *wind* to *intentional agent, life* to *drama,* and an object's stasis on a table with the action of *holding* something *up,* all with varying degrees of generative entrenchment. "Life is metabolism," "Life is a performance," "Life is a play," "Life is a cast of dice," and "Life is an isosceles triangle" all ask us to locate conceptual connections that differ in their degree of generative entrenchment in our conceptual systems. Our reactions to these expressions differ accordingly. "Life is metabolism" sounds (to me) literal and definitional; "Life is a play" sounds (to me) halfway between literal and figurative; "Life is a cast of dice" sounds figurative and commonplace; "Life is an isosceles triangle" sounds wildly figurative. It also sounds unintelligible to me, until I finally find a connection: life is like an isosceles triangle; it always has its irregular side.

Consider "I am making intellectual progress." This expression depends on the conceptual connection between *a thinker* and *a person moving in space,* analyzed by Eve Sweetser (1990). When we think about it, this connection does not seem to us to belong to our "literal" category structures—a thinker is not "literally" a traveler. Yet the connection is so entrenched as to be immediately and automatically available from the conceptual domain of *thinking*: no conceptual work is needed to build the connection; the connection to *moving in space* does not need to be activated for new inferential or semantic work. Moreover, connections of this sort typically bring along entrenched grammar and vocabulary: "intellectual progress" follows a standard grammatical pattern for connections in which the adjective comes from the domain to which we wish to refer (*thinking*) while the noun comes from the other domain (*moving in space*). The lexical filling ("intellectual progress") of this grammatical pattern is also highly entrenched. Accordingly, the connection and the expression can strike us as literal.

"Mental journey" strikes us slightly differently. "Intellectual progress" and "mental journey" depend on the identical conceptual connections expressed in the identical phrasal pattern (adjective from the domain referred to, noun from the other domain), but the vocabulary of "mental journey" is somewhat less entrenched. Accordingly, "mental journey" seems a little less literal. The phrase "ethnic cleansing" uses the same grammatical pattern, but the conceptual connections it evokes are much less entrenched, and the vocabulary is less entrenched. It was judged to be highly figurative when first used, but the effect seems to be wearing off with frequent exposure.

Some connections evoked by "figurative" examples might interfere minimally with our category connections and thus be easily assimilated. For example, "A leopard is a tiger with spots instead of stripes" is of course "literally" false

and moreover calls explicitly for mental blending that may strike us as figurative. But the connections that we do construct for this expression sit nicely inside our category structure for large mammals, partly because they help us to extend that category structure in ways that do not disrupt it. In contrast, connections evoked by some other "figurative" expressions might be deeply disruptive, with the consequence that their assimilation will be resisted by the conceptual apparatus we already have in place. A surprising expression like "time is the whiteness of the wave," which leads us to form weird conceptual connections that challenge our category structures, may not settle readily into our conventional knowledge. It may remain suggestive, never achieving a stable location. It may not be used up—assimilated and naturalized—as we go through it repeatedly: we may be able to return to it again and again and find it fresh, even powerful, because the connections it suggests cannot be established in our category structures (or perhaps even in our conventional conceptual apparatus) with impunity.

In summary, in my 1989 analysis of the literal versus figurative distinction, I proposed that we feel products to be "literal" or "figurative," that these products arise from the identical cognitive and linguistic mechanisms; but that they evoke different reactions depending on (1) the relative status and degree of entrenchment of the relevant mental arrays in the conceptual structures brought to bear on them, and (2) the degree of entrenchment of the language used for evoking those connections.

Recently, Gilles Fauconnier and I have jointly developed a model of conceptual connection that generalizes and extends my earlier view that "literal" versus "figurative" does not refer to a difference in basic cognitive operations. In the next few pages, I sketch the principles of our model. Subsequently, I draw its implications for the literal versus figurative dichotomy.

In Fauconnier and Turner (1994, 1996, in press a, in press b, and in preparation), Turner and Fauconnier (1995 and in press), Fauconnier (1997), and Turner (1996a, 1996b), Gilles Fauconnier and I have presented our "network model of conceptual integration." The model has additionally served as the basis for Coulson (1995, 1997), Freeman (1997), Grush and Mandelblit (in press) Mandelblit (1995, 1997), Oakley (1995), Ramey (1997), Robert (in press), Sun (1994), Veale (1996), and Zbikowski (1996).[10] The following presentation borrows from these publications.

Conceptual integration (represented in fig. 2-1) is a basic cognitive operation that operates on two input mental spaces to yield a third space, the *blend*. For example, in "Vanity is the quicksand of reason," one input space has *quicksand* while the other has *vanity* and *reason*; the blend has traps for *reason*.

In blending, there is a partial cross-space mapping between the input spaces. In the *quicksand* example, the *traveler* in one input is the counterpart of *reason* in the other input.
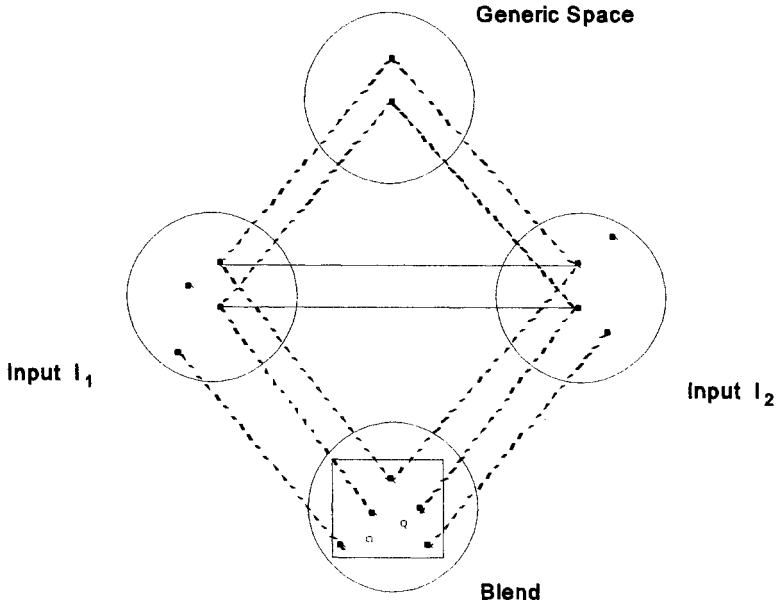
FIGURE   **65**

FIGURE 2.1. Conceptual integration.

Perhaps needless to say, the content of the input spaces depends on the domains and frames from which they are built. In the movie *Lawrence of Arabia*, there is a scene in the dry heart of the burning desert where quicksand swallows a child whole. Most people I know have this "dry quicksand frame" available. Others have only a scientific frame for quicksand, in which it is a combination of sand and water and occurs only where the water table is high, making the scene in *Lawrence of Arabia* impossible. I choose the "dry quicksand" interpretation to work with.

Partial structure is projected to the blend from the input spaces. The *quicksand of reason* blend has, from the *quicksand* input, a dangerous trap, namely quicksand, but the blend does not take from the *quicksand* input the knowledge that travelers typically avoid deserts except in the rare instance when they must cross them. From the *reason* input, the blend takes noble and valuable effort but not (for example) vanity as a spur to honorable achievement.

The blend has emergent structure not provided by the inputs. In the *quicksand of reason* blend, the traveler can be ignorant of the trap even when he is in it.

In addition to the inputs and the blend, conceptual integration involves a *generic space*. The cross-space mapping between the inputs is the content of the generic space. The generic space typically contains an abstract structure viewed as applicable to both inputs. For example, the generic space for "vanity

is the quicksand of reason" has action (not specified as physical or mental) intended to achieve something, and a difficulty for that action.

In Fauconnier and Turner (in press b), we present a taxonomy of types of integration networks that arise often. This taxonomy depends on the notion of an *organizing frame,* a frame that specifies the nature of the relevant activity, events, and participants. Examples of organizing frames are *man walking along a mountain path, boat sailing along an ocean course,* and *gunslingers at high noon.*

The first type of integration network is a *frame network,* in which all spaces— inputs, generic, and blend—share topology given by an organizing frame. Two of our standard examples of frame networks are "Debate with Kant" and "Regatta." In "Debate with Kant" (Fauconnier and Turner, 1996), a modern philosopher running a seminar says something like, "I claim that reason is an autocatalytic somatic complex adaptive system that develops in the individual. Kant disagrees with me on this point. He says it's innate, but I answer that that's begging the question." In one input, Kant is thinking and musing and perhaps writing. In the other input, the modern philosopher is thinking and communicating; the generic space has a philosopher working on a question; the blend has Kant and the modern philosopher; moreover, the blend has them debating. All of these spaces have the organizing frame, *philosopher considering a philosophical problem.* The blend has an extension of this organizing frame: *two philosophers considering a philosophical problem and, moreover, debating it.*

In another frame network, "Regatta" (Fauconnier & Turner, 1994, Turner & Fauconnier, 1995), a freight-laden clipper ship, *Northern Light,* set the record for an ocean voyage from San Francisco to Boston in 1853, and a modern catamaran is in the process of making that run in 1993. *Latitude 38* reports, "As we went to press, Rich Wilson and Bill Biewenga [the crew of the catamaran] were barely maintaining a 4.5 day lead over the ghost of the clipper *Northern Light.*"[11] Here, all four spaces have the organizing frame *boat making an ocean voyage.* The blend has an extension of that frame: *two boats making ocean voyages and, moreover, racing as they make them.*

A simpler type of integration network is a *single-framing* network, in which one input is a familiar abstract frame and the other input is a relatively specific situation. If we wish to say that two people—John and James—stand in a certain kin relation, we say something like "John is the father of James." The frame of kin relation is one input; the other input has John and James. In the blend, John is the father of James, and there is a role *father of James.*

In our model, a structure in which all spaces share the topology of a generic space is called a *shared topology network.* Frame networks like "Regatta" and "Debate with Kant" are of course shared topology networks. But nonframe networks can also be shared topology networks. For example, consider "On the deficit negotiations, Senate majority leader Bob Dole shot Clinton dead before

FIGURE   **67**

the President even cleared leather'' (Turner, 1996b). One input has as its or-
ganizing frame *gunslingers at a high-noon shoot-out.* The other input has a
different organizing frame, *legislative activity.* The network is therefore not a
frame network. But these two inputs and the blend all share the topology of
adversarial opposition, which is also in the generic space. This shared topology
makes the network a shared topology network.

A shared topology network is *one-sided* if the inputs have different organ-
izing frames and only one of those frames is projected to organize the blend.
For example, a cartoon of Bob Dole and Bill Clinton having a shoot-out evokes
a one-sided shared topology network: the frame *gunslingers at a shoot-out* is
projected from one of the inputs to organize the blend. The network is therefore
one-sided.

Any particular simple metaphoric one-sided network—like the shootout be-
tween Dole and Clinton—may have inhering within it a higher-order conven-
tional metaphoric mapping, called by Lakoff and Johnson (1980) a *basic
metaphor.* In the case of the *shoot-out* network, the inhering basic metaphor is
opposition is combat. Such a basic metaphor is highly productive and inheres
in many particular constructions of meaning but is itself abstract. It never con-
stitutes an active, complete, on-line construction of meaning. It always requires
additional conceptual specification and projection.

A shared topology network is *two-sided* if the inputs are organized by dif-
ferent frames and some topology is projected from both input frames to organize
the blend. The metaphor ''Vanity is the quicksand of reason'' is a two-sided
network with frame structure projected from both inputs to organize the blend.
The projections from the organizing frame of the *quicksand* input are obvious:
the blend has a traveler, a path traveled, distance traveled, motion, a potential
trap that arrests motion, and so on.

But frame-level projections come from the *reason* input as well. Consider
first intentional structure: the reasoner can be unaware of his failure even when
his failure is nearly complete. This is projected to the blend, in which the trav-
eler/reason can be unaware of being in quicksand. The traveler/reason can be
deluded, viewing himself as perfectly rational, oblivious to the fact that he has
in fact long been trapped. This intentional structure conflicts with the frame of
the *quicksand* input, in which it is unconventional to be ignorant that one is in
quicksand, unconventional to think that one is traveling normally when one's
torso is sinking.

Next, consider causal structure from the *reason* input: reasoning can lead to
vanity about one's reasoning, which can lead in turn to diminished reason. This
structure projects to help organize the blend: in the blend, quicksand/vanity
exists for the reasoner but not for the person whose mind is merely wandering,
even though they are both travelers. This causal structure conflicts with the
organizing frame of the *quicksand* example, in which traveling is not causally

related to the existence of quicksand, and in which all travelers in the desert face the same dangers. Additionally, in the *reason* input, the more you have achieved through reason, the more justification you have for being vain; in the blend, the more you have achieved through reason, the more vulnerable you are to being caught in quicksand. But this structure conflicts with the *quicksand* input, where novice travelers should be most vulnerable to quicksand.

Now consider the structure of roles in the *reason* input: there is only one reasoning capacity. The blend follows this structure: the traveler is solitary, or, if not solitary, then accompanied by *unequal* companions (character, memory, etc.). This structure of roles conflicts with the *quicksand* input, where there may be several equal travelers.

Now consider modal structure from the *reason* input: the reasoner does not have the choice of foregoing reasoning while remaining intellectually sophisticated. This projects to the blend: the traveler cannot choose to forego traveling in deserts; traveling/reasoning always presents a certain danger; that danger is in the desert exclusively; so the traveler/reasoner must deal with the desert. This structure conflicts with the *quicksand* input, in which the traveler can avoid the danger by declining to travel through deserts (which can be viewed as uninteresting in any event)—there are many wonderful places one can visit as a sophisticated traveler; one can experience a lifetime of interesting travel without entering a desert; and so on.

In summary, although the frame-level projections to the blend from the *quicksand* input are obvious, there are frame-level projections of intentional, causal, modal, and role structure from the *reason* input to help organize the blend, and these projections conflict with the frame of the *quicksand* input. The blend is in these ways two-sided.

What are the implications of the network model for the literal versus figurative distinction? The network model generalizes my earlier claim that the same conceptual and linguistic operations underlie "figurative" and "literal" examples. Different examples will seem literal or figurative for a number of reasons, including type of network. The type of the network depends partly on the relative status of counterparts in the cross-space mapping between the inputs, a status judged according to the category structures and related conceptual structures brought to bear on them.

For example, a single framing network such as "John is the father of James" has two inputs with the following relative status: one is a familiar abstract frame, while the other is a relatively specific situation with no competing frame. The familiar abstract frame is routinely applied to the conceptual domain (individual human beings) upon which the specific situation is built. This type of integration network usually seems highly literal.

By contrast, if two inputs come from apparently widely different specific conceptual domains, the result is a different type of integration network, namely,

FIGURE   **69**

a shared topology network, whether one-sided or two-sided. The structure that applies to both of them (i.e., the generic space) is typically highly abstract relative to both of the inputs. Such a case is commonly thought to be figurative (depending, as we will see, on some other gradients of distinction). In particular, highly two-sided shared topology networks, for example, *Vanity is the quicksand of reason,* are typically judged to be highly figurative.

It turns out that even this taxonomy of types of integration networks is too rigid: distinctions between the types are in fact graded, and judgments of literal versus figurative are accordingly graded. Let us consider some examples of grading, taken from *Death is the Mother of Beauty* (1987) and further analyzed in Fauconnier & Turner (in preparation).

As we have seen, "John is the father of James" seems fully literal; there is no competition between organizing frames of the inputs, and the kinship frame is routinely applied to the conceptual domain of individual human beings. "Zeus is the father of Sarpedon"—where Sarpedon is the mortal son of Zeus by a human woman—may strike us as less literal because the kinship frame meets some resistance from the Sarpedon space and the integration is slightly two-sided: from the Sarpedon input, the blend receives the immortality of Zeus; from the kinship input, the blend receives the ego-father relationship but cannot receive the mortality of the father. Yet the role *mother* in the kinship frame does have a standard counterpart in the Sarpedon space, as do various stages of human progeneration involving the mother, and these counterparts are fused in the blend.

A slightly different case is "Zeus is the father of Athena." In Fauconnier & Turner (in preparation), we write, "The blend does not take the frame-level structure *sexual act with a woman that leads to conception and progeneration of an infant.* It takes something more general: the causal link between the parent and the existence of the offspring (although not the immaturity of the offspring), the emergence of the offspring from a container-like body part of the parent, paternal responsibility and protection, and inheritance of attributes."

Let us consider an extended example of two-sidedness—Milton's portrayal of Satan as father in the second book of *Paradise Lost.* I analyze this passage in Turner (1987). The commonplace notion of Satan is already a blend for which a conceptual domain has been elaborated. Satan is a blend of individual human being—thinking, talking, desiring, intending, and so on—and theological ontology. In the theological space, there are eternal features (e.g., evil) as well as nonhuman powers and limitations. Satan is anthropomorphic, but he has theological features and unhuman conditions. The blended domain for Satan is quite elaborated—Satan has like-minded colleagues in the form of a cohort of devils; Satan and the devils form an intricate hierarchical organization of social groups; and so on. This blended domain is entrenched both conceptually and linguistically. Consequently, although the blend is in some ways two-sided, expressions

such as "The devil made me do it" or "Get thee behind me, Satan"—or even expressions based on further blending, such as the reference to a child as a "little devil"—do not seem especially figurative.

Milton recruits new structure to the inputs. His purpose is to develop a blend with yet further emergent structure. The result is an integration network that is less entrenched both conceptually and linguistically and that is aggressively, explicitly, and idiosyncratically two-sided. It accordingly strikes us as thoroughly figurative.

Milton activates for the theological space evil, disobedience, sin, death, and their relations, as well as the psychology of the prototypical sinner confronted with spiritual death. He activates for the human space progeneration and kinship relations, especially the role *father*. He adds to the human kinship space a preexisting blend, of the birth of Athena from the brow of Zeus. In Milton's blend, Satan conceives of the concept of sin; a fully grown woman, Sin, leaps from his brow. Satan is attracted to sin/Sin: he has sex with her. Although he does not know it at the time, his involvement with sin/Sin has a consequence, namely, death—in the blend, Death is the male offspring of Satan's incestuous involvement with Sin. Death rapes his mother, causing her to give birth to a small litter of allegorical monsters.

After Satan has been sent to Hell and has decided to try to escape, he meets two characters at the gates of Hell who have been stationed there to keep him in. They are Sin and Death. He does not recognize them.

I explain in Turner (1987) how the two input spaces—the human space and the theological space—correspond in some ways but not others. Milton chooses to draw from one or the other as it suits his conceptual purposes. In the new vocabulary of the network model, my earlier discussion of Milton's passage analyzes it as a selective, two-sided projection to a blended space. For example, Milton takes from the space of human beings and kin relations Sin's intercession between Death and Satan—father and son—when they are on the brink of terrible combat. By contrast, he takes exclusively from the theological space many central features. For instance, in the theological space, there is a sinful cast of mind that does not recognize spiritual death and mortality as a result of sin and that is at last appalled when it must recognize these consequences. Hence, in the blend, Sin is surprised to have conceived Death, and she finds her son odious. Next, in the theological space, mortality and spiritual death overshadow the appeal of sin and are stronger than sin; acknowledging death devalues sin; willful, sinful desires are powerless to stop this devaluation. Hence, in the blend, Sin is powerless to stop her horrible rape by Death. In the theological space, the fact of spiritual death brings ceaseless remorse and anguish to the sinful mind, and the torments of hell bring eternal punishment. Hence, in the blend, the rape of Sin by Death produces monstrous offspring whose birth, life, actions, and relationship to their mother are impossible for the domain of human kinship:

FIGURE 71

These yelling Monsters that with ceasless cry
Surround me, as thou saw'st, hourly conceiv'd
And hourly born, with sorrow infinite
To me, for when they list, into the womb
That bred them they return, and howl and gnaw
My Bowels, thir repast; then bursting forth
Afresh with conscious terrors vex me round,
That rest or intermission none I find.

We see here Milton's skill as a blender. When he takes structure from one input, he is adept at seeking out suitable structure to recruit to the other input, so that the two structures can be given counterpart relations and blended. Children are not prototypically disliked, but Milton can recruit the unusual scenario of disliking a child so he can blend it with horror at recognizing the fact of death. Sons do not typically rape their mothers, but Milton can recruit that horrible scenario so he can blend it with death's effect on sin.

Milton's ingenuity as a blender is best shown, I think, in his recruitment of a particularly vivid medical frame to the input of human kinship. This medical frame is traumatic vaginal birth that physically deforms the mother. In the human space, this disfiguration makes the mother subsequently less attractive. Milton places this newly recruited structure into counterpart relation with something crucial in the theological input—the fact that sin becomes less attractive when death appears as its outcome. The blend is particularly grim:

At last this odious offspring whom thou seest
Thine own begotten, breaking violent way
Tore through my entrails, that with fear and pain
Distorted, all my nether shape thus grew
Transform'd.

My original analysis of Milton's portrayal of Satan as father provided an inventory of its elaborate selective projection, emergent structure, two-sidedness, multiple blending, dynamic recruitment to the inputs of additional structure, maintenance of connections to the inputs, and projection of inferences back to the inputs. But it did not use these terms and did not connect Milton's passage systematically to the many examples of blending in other domains of human thought, language, and action. Less narrowly I presented in *Reading Minds* an analysis of XYZ constructions (like ''Vanity is the quicksand of reason'') as involving a basic mapping scheme that invokes open-ended conceptual work that leads to emergent structure. I inventoried examples of cross-space mapping, selective projection, and emergent structure, but my analysis of these cognitive operations was incomplete, and my assertion of a broad scope for XYZ mappings was—surprisingly—too modest by far.

These earlier analyses are subsumed by the newer Fauconnier and Turner network model, which gives a much fuller analysis of the cognitive operations

involved in conceptual projection, a specification of taxonomies of types of integration networks, a set of optimality constraints on creating them, and a program for demonstrating the general scope of conceptual integration. We have now connected my kinship metaphor and XYZ examples to examples that look ostensibly altogether different—the invention of complex numbers, the operation of grammatical constructions, the evolution of syntax, action slips, category extension, counterfactual argument, and so on.

Although Milton's portrayal of Satan as a father is two-sided, it preserves considerable structure associated with *father* and *birth*. Consider first the paternity of Death. The ''father'' has human form and speaks human language, is excited by feminine beauty, and has anthropomorphic sex with an anthropomorphic female in a prototypical human scene. There is a birth through a vaginal canal. The son inherits attributes of both father and mother. Father and adolescent son have a conflict over authority. Now consider the paternity of Sin. The father again has human form and speaks human language. There is an offspring in human form, who emerges from a container-like body part and who develops into a sexual being.

Other examples, taken from *Death is the Mother of Beauty,* show a different projection from the space of *father* and *birth*. ''Satan, liar and father of lies'' does not take anthropomorphic offspring. ''The acorn is the father of the oak'' takes neither anthropomorphic form nor anthropomorphic progeneration for either father or child. ''Thy wish was father to that thought'' (Shakespeare) does not take physical distinction for either father or child. Similar two-sidedness appears in ''Fear, father of cruelty'' (Ezra Pound), ''Pain is the father of complaint'' (Sidney), ''Love's extremity is the father of foul jealousy'' (Spenser), and ''Pale desire, father of Curiosity'' (Blake).

Consider as a final example the XYZ expression, ''The Child is Father of the Man'' (Wordsworth). The two inputs—father-and-child versus child-growing-to-man—come from the same conceptual domain, human life. But the example seems figurative, for the following reasons. First, the cross-space connections are highly resisted because they run counter to usual categories: *immature child* in the first input has as its counterpart *father* in the second input, and *grown man* in the first input has as its counterpart *immature child* in the second input. Second, the blend must integrate frame-level structure from both inputs in a particularly surprising way. The chronological *child* in the blend takes from the input of father-and-child the relative influence (and even causal role) of the father, but it takes from the input of child-to-grown-man the relative *youth* of the child. The chronological *man* in the blend takes from the input of child-to-man the maturity of the man, but it takes from the input of father-and-child the dependency of the child.

The oddness of its counterpart connections and the extensive two-sidedness of its blend help make Wordsworth's line appear figurative. But the syntax and

FIGURE   **73**

mapping scheme of "The Child is Father of the Man" are the same as the syntax and the mapping scheme of "John is the father of Mary." Both evoke a conceptual mapping scheme involving conceptual blending, but "John is the father of Mary" seems absolutely literal.

"Peeled apple" also seems absolutely literal. But as Gagné and Murphy (1996) write:

> Understanding a combined concept involves creating a new concept. For example, a *peeled apple* is no longer just an apple—its features are not entirely identical to those of an apple. A peeled apple is white, not red, and a peeled apple is more likely to be used for baking than is an unmodified apple, and so on. In short, the concept of the head noun is modified in some way by the addition of the modifier. Although one might think that this modification would be a simple process of adding the meaning of the modifier to that of the head noun, this has not turned out to be the case. The interpretation of combined concepts involves an interaction between the two constituents, rather than an additive process. For example, the fact that peeled apples are white is not part of the meaning of *peeled*, but is inferred, based on our interpretation of the entire phrase. Peeled oranges are not white, are not likely to be used in cooking, and so on. Thus, *peeled* cannot be adding the same feature to *apple* and *orange*. (Gagné and Murphy, 1996, p. 80).

From the perspective of the network model, "peeled apple" evokes a single-framing network. One input has a general frame of *peeling* and the other input has *apple*. The two words are prompts for putting together two provisional input spaces. The blend has considerable emergent structure—such as whiteness and association with baking pies—that is not given for the inputs. There is a cross-space mapping connecting, for example, apple to the object being peeled. There is selective projection—we do not project the color of the apple, or peeling with the fingernails, or peeling as a natural process (*do not apply ointment to peeled skin*), and so on. Completion occurs in the blend through recruiting the frame of baking (for example). We show in Turner & Fauconnier (1995) that an example like "peeled apple" is not unusual. Conceptual integration can be seen not only in striking examples such as "land yacht," "jail bait," and "Chunnel," but also in unremarkable examples such as "waterproof," "tamperproof," "foolproof," "child-proof," "talent pool," "gene pool," "water pool," "football pool," "betting pool," "door knob," "radio knob," "house boat," "boat house," and "black bird."

"Fire station," for example, seems entirely literal. But a fire station does not have fire, provide fire, or receive fire; fire is not part of *station* or the category that includes *station*. We have a mental space with *fire* and a mental space with people or equipment stationed at a *station* for a purpose, and we can integrate these mental spaces conceptually into a story in which fire is not a feature of

the station or a counterpart of the station. In this story, the equipment and people at the station go to manage fire. *Fire station,* like *peeled apple,* is a single-framing network: the frame of stationing equipment and agents to manage something is applied to the input *fire.* 'Fire station'' asks us to create this single-framing network. It does so by means of a highly entrenched phrase learned early in childhood. The result is a conventional integration that sits easily in category structures, because we are familiar with categorizing by purpose.

Milton's infernal trinity, *peeled apple,* and *fire station* arise from the same cognitive operation—conceptual integration—but the infernal trinity seems highly figurative while *peeled apple* and *fire station* seem absolutely literal. The counterpart connections in *peeled apple* can be accommodated in our category structures: we already have a way of seeing transformations of objects as categorical subtypes of the object (shriveled apple, rotten apple, etc.). The application of the frame of peeling to the domain of fruits and vegetables is highly frequent and familiar. The phrase "peeled apple" is entrenched both as a pattern ("stewed carrots," "minced onions," etc.) and as a specific item.

Similarly, the counterpart connections in *fire station* can be accommodated in our category structures—the station is set up to deal with *something,* and that *something* has as its counterpart *fire.* In the blend, there is indeed a fire, and the agents and equipment at the station perform the action of dealing with it. This blend may be entirely counterfactual—imagine a fire station as a precautionary element in a chemical plant where no fire ever erupts during the entire existence of the plant—yet the station will be no less fully a "fire station." The single-framing integration network seems entirely literal because we already categorize stations according to what they are designed to manage, because we routinely apply the frame of *station* to the domain of *fire* and to the super-domain of *crisis* or *disaster,* and because the conceptual connections and linguistic forms in "fire station" are entrenched.

By contrast, Milton's infernal trinity is a different type of integration network, highly and aggressively two-sided, explicitly novel in much of its conceptual structure and its linguistic expression. Our judgments of the packages differ, but the basic cognitive operations used to construct them do not.

Let us consider a final suite of connected examples that may help tease apart several aspects of the literal versus figurative distinction. The sentence "President Franklin Delano Roosevelt moved at a quick pace during his first 100 days in office" seems essentially literal to many people. Yet it is grounded in a conceptual blend. One input has Roosevelt's achievements; the other has a person moving along a spatial path toward destinations. In the cross-space mapping, the traveler is the counterpart of FDR. The generic space taken as applying to both inputs has an abstract agent, abstract purposive actions, and an abstract, oriented linear scale whose locations correspond to grades of achievement of

FIGURE   **75**

those purposes. In the blend, the linear scale that is the spatial path of one input is fused with the linear scale for measuring achievement in the other input. In the blend, to be farther along the path is to have accomplished more of the relevant purposes. This is a one-sided shared topology network: the frame of the blend is an elaboration of the organizing frame of only one of the inputs, the *travel* input.

Although this network of FDR-as-runner connects two quite different conceptual domains, it can seem literal, for various reasons. First, the basic network of which this is an instance is highly entrenched. It forms what Lakoff and Johnson (1980) call a "basic metaphor." It is constructed repeatedly in many cases that differ only in the specific details of the target input and blend. Just this input of motion along a path toward destinations and this generic space are projected in just this way to many target inputs whose organizing frame is purposive activity. The result in all these cases is just this blend, not counting specific details. New on-line construction of meaning in this case is limited to specific details such as the identity of the agent (FDR), the particular kind of purposive activity (legislation, government), and the interval of time (100 days).

The generic space for this network (agent with purposes and a linear scale of success) is moreover entrenched in its own right, accessible for projection to any purposive activity. Indeed, that generic structure is now entrenched in the frames of various purposive activities themselves, which carry the vestiges of the conceptual integration networks in which they are embedded. In such cases, we do not need to activate the entire network fully and we do not need to perform on-line invention of new projections at the frame level. This integration network (*purposive agent as traveler on a path*) is moreover our standard cognitive instrument for thinking about purposive activity, and it is used with very high frequency. Finally, the vocabulary "move at a quick pace" has historically been projected to the generic space, the conventional frame of the target, and the conventional frame of the blend, and is entrenched there.

We can alter the example, first by using vocabulary more tightly tied to the source input: "FDR *made the dust fly as he sped along* during his first 100 days." Or we can choose vocabulary that evokes a particular scenario for the source: "FDR moved at *full gallop* through his first 100 days." In these cases, we must make the minor but indispensable inference that someone who speeds along while making dust fly or who moves at full gallop in fact moves a far distance over the path.

Further, we can point explicitly to an additional scenario and highlight the existence of a counterfactual blend, as in "If FDR had been a sprinter, he would have won the Olympic gold for his performance during his first 100 days in office." This now seems thoroughly figurative. The type of integration network is unchanged, as are the basic cognitive operations involved, but we have

changed the degree of entrenchment of the vocabulary, the amount of on-line blending needed, the familiarity of the scenario as applied to this purposive activity, and the degree of explicit acknowledgment of the blend.

We can also imagine a second and nearly identical conventional blend, "President Clinton has moved at a slow pace during his first 100 days in office." We can make a comparison between these two conventional blends: "FDR moved at a quick pace during his first 100 days; President Clinton by comparison has not." This sets up a counterpart mapping between the two specific blends of FDR-as-runner and Clinton-as-runner. The counterpart mapping connects president/runner to president/runner, FDR to Clinton, and so on. These two blends are both specifications of the more abstract conventional blend *purposive agent as traveler on a path.*

These two blends—FDR-as-runner and Clinton-as-runner—can themselves be input spaces to a new, hyper-blended space, as when we say, two months after President Clinton has taken office, "Clinton was supposed to hit the ground running. He implied that he was going to accomplish as much in his first 100 days as FDR accomplished in his. So far, Clinton has failed completely *to keep pace with* FDR." This is a *frame network:* the organizing frame shared by the two (already blended) inputs, their generic space, and their hyper-blended space is the already blended frame *American president as traveler on a path.* In the hyper-blend, which has both FDR and Clinton, this already blended frame is extended. First, it is extended through composition: although the two paths have been projected from the two inputs to a single fused path in the hyper-blend, the two agents from the two inputs are projected to discrete agents on that single path, so that now we have not one president/runner on the path but two. Second, the blend is additionally extended through completion: the frame of a *race* is used to complete the blend. It brings with it the structure of *keeping pace with, being ahead or behind,* and so on, which is emergent structure unavailable from the inputs themselves.

Although the shared frame of *American president as traveler on a path* is fairly conventional, emergent details of the blend are emphasized ("keep pace with"). This hyper-blend can be made to seem increasingly figurative the more on-line work we require, the less entrenched we make the vocabulary, and the more attention we draw to the blend, as in "At this rate, Clinton's term will be over before he gets anywhere near *the finish line.*" Here, we point directly to the frame of *race,* which is in the hyper-blend. To construct this finish-line hyper-blend, we must do considerable on-line work to conceive of a finish line that corresponds to FDR's degree of accomplishment on his hundredth day in office in the relevant input space of *FDR's first year in office.* Finally, we can guarantee that the blend is forced into consciousness and is thought to be figurative by requiring the construction of a provisional conceptual domain, as in "Clinton is in a race with the *ghost* of FDR."

FIGURE 77

In all of these cases, the conceptual networks are formed using the same cognitive operations. The results seem more or less literal or figurative for various reasons, but not because they have been formed through fundamentally different cognitive operations.

The second traditional inquiry into the literal versus figurative distinction was: *Is figurative thought mirrored in figurative language? Is figurative thought necessarily paired with linguistic form?* Under this account, these questions are misdirected. Typically, languages already possess constructions that can be used to evoke any sort of integration network. "Boat house," "jail house," and "door knob" use compound nouns and existing lexical items to evoke conceptual integrations. So do "land yacht," "fossil poetry," and "jail bait," which seem figurative. "He kicked the ball over the fence" uses existing lexical items in the existing Caused-Motion Construction (Fauconnier & Turner, 1996; Goldberg, 1995), to evoke the blending of (1) a set of unintegrated actions and events (he kicked, his kick made contact with the ball, the ball moved, the trajectory of the ball's motion was over the fence) with (2) the already integrated but abstract Caused-Motion story, in which an agent's action causes an object to move in a direction. I found the following "figurative" example in the *New York Times:* "So far, the people of this small textile town in northwestern Carolina have been unable to pray Mrs. Smith's two little boys home again." This "figurative" example equally uses existing lexical items in the Caused-Motion construction to evoke a similar blend. The cognitive and linguistic operations are the same in the two cases. What varies between them is instead the relative category status of the inputs and the familiarity of applying the Caused-Motion frame to the other domain (*body actions* versus *praying*). We rarely if ever use the intransitive verb "pray" in the three-argument Caused-Motion construction, but when we do, the linguistic operations are no different from those used in "He kicked the ball over the fence." In Fauconnier & Turner (1996), we analyze a sequence of similar Caused-Motion examples that fall at various points on the gradient of the literal versus figurative distinction. In "Junior sped the car around the Christmas tree," "sped" evokes the motion of the object; in "Paul trotted the stroller around the park," "trot" evokes the action of the agent; in "Sarge let the tanks into the compound," "let" evokes causal connection; in "Max carted the drums into the warehouse," "cart" evokes a vehicle used; in "Jane muscled the boxes over the fence," "muscle" evokes the part of the body used for the action; in "The spy Houdinied the drums out of the compound," "Houdinied" evokes someone associated with actions of a certain character. There are no new linguistic constructions in any of these examples, although some seem figurative.

Rarely, new grammar or lexical items do arise under pressure from conceptual blending. In Turner and Fauconnier (1995), we report that page one of *The Atlanta Constitution* of February 17, 1994, carried a header reading "Out on a

Limbaugh,'' followed by a summary of the story on the inside pages: "Critics put the squeeze on Florida's citrus industry for its $1 million deal with broadcaster Rush Limbaugh.'' The formal blend of "out on a limb'' with "Limbaugh'' is driven by a conceptual blend of (1) an agent who climbs out on a limb of a tree with (2) the deal between the Florida citrus industry and conservative radio talk show host Rush Limbaugh. It turns out that conceptual counterparts that are conceptually blended (*limb, Limbaugh*) have formal expressions that are formally blended ("limb,'' "Limbaugh''). There is emergent formal structure in the blend. "Out on a limb'' has an indefinite article with a common noun. "Limbaugh'' is a proper surname, not a common noun. Although a proper surname in English can become a common noun for a group of people with that surname ("She's a Kennedy,'' "She's the poorest Kennedy'') or a group of people analogically equivalent to a particular person of that surname ("He's an Einstein''), here "Limbaugh'' is not used as a common noun, referring to namesakes or analogs of Limbaugh. Yet it follows an indefinite article. Following an indefinite article is a property of its counterpart formal element, "limb,'' associated with the other input to the blend. The blend has a new formal element consisting of previously unavailable syntactic structure—indefinite article + proper name.

We often feel that new and deviant language is "figurative''—indeed, "Out on a Limbaugh'' is a prototype of a figurative pun. It seems to ask for laughter. But now consider the following example. At the 1988 Olympics in Korea, a boxing match between an Australian contestant and a Korean contestant ended with strange events, including a skirmish that involved officials and coaches. The Australian coach, interviewed at the airport before boarding a plane to leave in disgust, said, as closely as I can recall, "I was hit by the judge; I was tried to be hit by the umpire.'' We count the second verb phrase as a mistake, but it is not an arbitrary mistake. It follows principles of formal blending under pressure from conceptual blending. The speaker has one input space in which he is the victim or patient of actions. That scene comes with useful syntax, namely the Passive Construction ("I was bit,'' "I was made to cry,'' "I was insulted''). The speaker has this scene and this syntax active and wishes to perpetuate them in the minds of the members of his audience. He also has active the set of unintegrated events in which the umpire is an actor and he, the Australian coach, is the umpire's victim or intended victim. In this scene, the umpire tries to do something, and what he tries to do is hit the coach. Had the coach located the verb "assault'' as language for this scene, he could have continued to use the Passive Construction with perfectly grammatical parallelism: "I was hit by the judge; I was assaulted by the umpire.'' But either he did not locate "assaulted'' or "assaulted'' seemed wrong for some reason, such as inappropriate register or lack of viscerality and vividness. There is other syntax available for this scene, in which the verb phrase is active—"The umpire tried to hit me''—

FIGURE   79

but it does not evoke so clearly the established abstract scene of passivity that the Australian coach wishes to keep active. The coach wants to prompt for that scene by using the Passive Construction, but he cannot use the syntax of "try" and "hit" in the Passive Construction because "try" as an auxiliary verb does not take the passive form. The coach therefore creates a formal blend—*try* as an auxiliary that takes the passive form—in order to express the conceptual blend. He may have received additional help in constructing this formal blend from existing syntax in expressions such as "This tool was designed to be used by the designer," wherein the designer is the agent of both the action of the designing and the action of using, just as the umpire is the agent of both the action of trying and the (unachieved) action of hitting. "Design" passivizes while "try" as an auxiliary verb does not, but the Australian coach leaves behind that part of the syntactic structure as he gives "try" a new, emergent syntax under pressure from conceptual integration: "I was tried to be hit by the umpire."

"Out on a Limbaugh" and "I was tried to be hit by the umpire" use the same operations of conceptual and linguistic blending, but the first seems figurative and the second seems like a mistake. In "Out on a Limbaugh," at the conceptual level, we have a one-sided shared topology network whose generic space is abstract relative to the organizing frames of the inputs. In "I was tried to be hit," we have something close to a single-framing network, in which a frame of passive victimization is applied to physical actions; moreover, the application of this frame to this conceptual domain is archetypal and routine. The emergent syntax of "Out on a Limbaugh" seems to be planned, while the emergent syntax of "I was tried to be hit" seems to have arisen spontaneously. For reasons such as these, the first seems figurative and the second does not, and the first seems witty and the second seems a little embarrassing. But the basic cognitive and linguistic operations are not different.

Our third traditional inquiry into figurative language and thought was: *How do figurative thought and language evolve?* The short answer is, conceptions and forms that seem figurative evolve in the ways that all thought and language evolve; some products in that evolution seem more or less figurative according to their location on the interacting gradients of distinction, but this interpretation will vary among persons and, moreover, does not indicate a fundamental difference of cognitive operation.

A substantive answer to this question would be a theory of the evolution of conceptual structures and linguistic forms. Such a theory would be highly complicated because human thought and language arise through the interaction of several complex adaptive systems, including biota (all living things through all time; a unit is a gene pool and all its ancestor gene pools); a given gene pool (a unit is a gene); all conceptual systems in all individuals over all time; a conceptual system shared by a community and all the conceptual systems that

are ancestors of that conceptual system; a conceptual system within a single individual, and all the conceptual systems that were, in the individual, ancestors of the current conceptual system; human language, all of it, over all historical time; a human language shared by a linguistic community and all the diachronic linguistic structures that are ancestors of that language; and a human language, in an individual, and all the linguistic systems that were, in the individual, ancestors of that current linguistic system.

This list, already paralyzing in its complexity, is actually more complex, for its elements overlap and interact. Modeling thought and language (and therefore thought and language that seem figurative) involves analyzing its interacting complex adaptive systems. The network model is only a modest gesture in this direction. In it, existing conceptual and formal elements and their pairings are inputs to integration, which is selective and which results in emergent structure. Outputs of integration can become inputs to integration. The result is pathwise development of a system in which elements stand in relation to other elements. What can arise in the system at any moment in its evolution depends on what has already arisen that survives. The system is dynamic; it never stands still. Conceptual integration exploits accidents as a fundamental part of its functioning; indeed, basic (''literal'') structure in the system can arise from the exploitation of remarkable accidents. Products of integration that seem at one time figurative may seem at other times literal. Formal blending to create new forms may be guided by pressure from conceptual blending. These operations are not deterministic or algorithmic, but instead are guided by optimality principles and by degree of success in the moment of operation. In my view, the cognitive operations involved in the evolution of the conceptual and formal patterns we see in figurative examples such as ''land yacht'' or ''jail bait'' are identical to those we see in literal examples such as ''fire station'' or ''brown cow.''

Our last traditional inquiry into figurative language and thought was: *What is the appropriate relation of an abstract theory of figures to a rich theory of individual figurative events?*

Actual figures occur only in dynamic, on-line construction of complete meanings. The study of figure typically does not focus on this condition. The central products of the study of figure are typically lists of abstract elements—''figures''—with examples: here is antithesis and here are examples; here is metonymy and here are examples; here is the basic metaphor LIFE IS A JOURNEY and here are examples.

In this style of analysis, the examples are adduced to refine the elements of the theory rather than as objects of case study. To define metonymy and provide an example does not supply an analysis of the specific example, or at least the construction of meaning prompted by that specific example. Historically, the study of figure has taken on the job of proposing abstract elements—figures—and giving examples but has not taken on the job of explaining the dynamism

FIGURE   **81**

and completeness of individual examples. Typically, the study of figure attempts to isolate and exemplify partial structures that get used in the construction of meaning but not to give a theory of that actual use.

Traditional grammar follows the same pattern: here is a partial structure we call "noun" and here are some examples of nouns; here is a partial structure we call "verb" and here are some examples of verbs; here is a partial structure we call the "passive construction" and here are some examples of passive constructions.

Modern grammar specializes in this kind of analysis of partial instruments: here is verb argument structure, with examples; here is ergativity, with examples; here is inflectional morphology, with examples. None of these abstract partial structures could itself be a full meaning; they are all partial instruments whose utility derives from their availability to be recruited in actual linguistic and conceptual events. The dynamism of the actual full meanings is not modeled. Most models of grammar assume that there exists an abstract object of study—called the "language"—that transcends the full and dynamic particular linguistic events in individual brains, just as principles of physics transcend actual physical events.

The impulse to construct a theory that consists of abstract elements is strong and understandable, given the success of the mathematical model of theoretical knowledge. Models of mind and language that follow the mathematical tradition look for elemental structures that serve as partial instruments. Theories of semantic primitives, innate concepts, language bioprograms, and symbolic artificial intelligence (such as conceptual dependency diagrams) follow this tradition.

This tradition is not exclusively formal, and it is not exclusively objectivist, either. The theory of basic metaphor (with which I have been associated) attempts to isolate a quite small number of elemental basic metaphors (maybe 600) that we all know, and to provide examples of each, with the examples meant as evidence for the existence of the abstract elements of the theory.

The central danger for such partial models of conceptual construction is that they might not "scale up" appropriately. The well-known failure of attempts to scale up from partial artificial intelligence models to full models is worth remembering in this respect. An analogy from the neurosciences makes the danger clearer: we have a folk theory that assumes we assign color to a spot in the visual field according to the kind of light reflected from that spot in the visual field, but what happens is much more complicated. (Hubel, 1995; Zeki, 1993). There are three kinds of cones in the retina, each sensitive to one of three wavebands of light called (inaccurately) red, blue, and green. Suppose we have three projectors, each of which shines one of the wavebands of light with an intensity we can set on a dial. Suppose we turn on the projectors, at certain settings, to illuminate a painting that consists of rectangles of color. Suppose, finally, we pick out a red rectangle and measure for each of those wavebands

the intensity of light reflected from the red rectangle. Now we look at a green rectangle and adjust the intensity of light coming from each projector until our measuring device shows that, for each of the wavebands, the identical intensity of light is now being reflected from the second rectangle as was coming from the first when it looked red. *We will still find that the second rectangle looks green and the first rectangle looks red.* The brain is able to compute, for each waveband, a record of differential reflectance of light across the visual field and then to perform a differential computation across the three differential records, to produce an assignment of constant color under remarkably different conditions of illumination. In this way, we are able to "discount the illuminant" as we attempt to find constancy in the environment. The point of this analogy is that a partial model of color vision does not scale up to a successful model of actual color vision, because what is happening in assigning features to any part of the visual field depends upon the overall activity of vision. We need a model of the operation of the whole in order to account for any part of color vision. Partial models of partial instruments of color vision do not scale up to the kind of global model of computation over global records that is needed to account for color constancy.

The observational data we wish to account for in the case of thought and language all consist of on-line, dynamic construction of full meanings and full expressions. Catalogs of partial instruments that may underlie that data are useful to the extent that they actually help us to account for the data, but it cannot be assumed in principle that the data will be accounted for as linear compositions of individual partial resources. In 1956, George Miller complained that scientific journals had become catalogs of parts for machines that scientists never build.[12] Cognitive scientists, linguists, and rhetoricians are vulnerable to the analogous observation. The network model is a modest attempt to take a step in the direction of modeling the on-line, dynamic construction of full meanings that arise through conceptual integration. The operation of conceptual integration can recruit from many domains, and it can develop elaborate mappings and projections. It is not algorithmic or deterministic, but it is guided by optimality principles sensitive to purpose and situation.

From the view of the network model, the contrast of literal versus figurative appears to be unproductive as a theoretical principle for distinguishing cognitive operations. The original view of figure, which Quintilian set aside, in which a figure is any pairing of a formal pattern with a conceptual pattern and in which figures stand in relational networks, is by contrast basic and indispensable.

Language offers sets of prompts for cognitive operations such as conceptual integration. We conduct those cognitive operations on conceptual structures available to us. A theory of figure that embraces this characterization faces great challenges as it attempts to develop a model of cognitive operations, a model of the relational network of form-meaning pairs that prompt us to perform these

FIGURE 83

cognitive operations, a model of gradients of distinction in the products of those cognitive operations, a model of the ways in which form-meaning pairs arise and evolve, and a model of the ways in which these cognitive operations and figures perform in actual, on-line, dynamic creations of meaning and expression.

The study of figure has been sidetracked from these issues since the classical rhetoricians, with the surprising and humbling result that the study of figure, one of the oldest bodies of knowledge in the human sciences, remains in our age still in its infancy.

ACKNOWLEDGMENTS

NOTES

1. "figuras quae σχήματα Graece vocantur," Quintilian, book 9, chap. 1, section 1 [Loeb edition, vol. 3, p. 348]

2. Book 21, chaps. 7–15 [1457b]. The Greek word I have translated as "expression" means "name" or "noun" as opposed to "verb," but it also means "expression," which must be Aristotle's meaning, since his first example is a verb and his second is a modifier.

3. President George Bush preferred when speaking of himself as agent to omit the subject: "Moved to Texas. Invested in oil. Raised a family." Television journalists noted that this form is associated with an ethos of humility, and that other politicans had begun to employ it to the same effect. Pragmatic effects of this sort are often part of a grammatical construction. Analysts of figure are attuned to such constructions and even to constructions that border on ungrammaticality, such as *anthimeria*, which Arthur Quinn illustrates in *Figures of Speech* with many Shakespearean expressions: "The thunder would not peace at my bidding" (*King Lear*), "Lord Angelo dukes it well" (*Measure for Measure*), "The fair, the chaste, and unexpressive she" (*As You Like It*), "The mutable, rank-scented many" (*Troilus and Cressida*) (Quinn, pp. 50–51).

4. "The figure [σχῆμα] that is most characteristic of Purity is the use of a straightforward construction with the [subject-]noun in the nominative case. . . ." (Hermogenes, 1987, p. 10), a translation of "Σχῆμα δὲκαφαρότητος ἡ ὀρφότης" (Hermogenes, 1913, p. 229). "I can prove that the use of [the σχῆμα of] straightforward sentences with the subject[-noun] in the nominative case is most characteristic of Purity" (Hermogenes, 1987, p. 10), a translation of "ἡ οὖν ὀρφότης τὸ σχῆμα. ὅσον ἐφ' ἑαυτῷ. καφαρόν. τεκμήριον δέ" (Hermogenes, 1913, p. 230). Also quoted in Fahnestock (in press).

5. Tzvetan Todorov (1982) observes that "one important consequence of" the definition of figure as a pairing of form and meaning "is that, if it is taken literally, all discourse is figurative" (p. 66). In chap. 3, "The End of Rhetoric," pp. 84–110, Todorov offers an insightful history of the theory of figure.

6. The following disussion of image schemas in expression is based on Francis-Noël Thomas and Mark Turner, *Clear and Simple as the Truth: Writing Classic Prose*, pp. 67–71. "Image schema" is Mark Johnson's term. See Johnson, 1987, p. xiv. For an introduction to research on image schemas, see Mark Turner, *The Literary Mind*, chap. 2, "Human Meaning," and Appendix, "Further Reading on Image Schemas."

7. See "The Body of Our Thought and the Thought of Our Body," chap. 4 of Mark Turner, *Reading Minds: The Study of English in the Age of Cognitive Science.*

8. For the original work on the XYZ construction, see Mark Turner, *Reading Minds*, chap. 9, "The Poetry of Connections, III," and Gilles Fauconnier and Mark Turner, 1994, "Conceptual Projection and Middle Spaces."

9. Charles Fillmore maintains a website dedicated to construction grammar. It includes lecture notes, a bibliography, and a "constructicon." It is available as a link from my website, http://www.wam.umd.edu/~mturn.

10. The website for conceptual integration has the URL address: http://www.wam.umd/edu/~mturn/WWW/blending.html.

11. "Great America II," 1993, 190, p. 100.

12. As quoted in George A. Cowan, "Conference Opening Remarks," in George A. Cowan, David Pines, and David Meltzer (1994), p. 2.

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