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Romanticism and the Cognitive Science of Imagination

1. Introduction: The Theoretical Return(s) of Romanticism

ROMANTICISTS READING IN CONTEMPORARY COGNITIVE SCIENCE WILL frequently experience a strong and gratifying sense of déjà-vu. For a reigning topic of the day is imagination, the evolving theory of which looms large in virtually all the disciplines, from the most physical of sciences to the most metaphysical of humanities, that contribute to the ever-burgeoning interdiscipline of cognitive science. The philosopher Mark Johnson has thus asserted, with no exaggeration whatsoever, that

> an adequate account of meaning and rationality (as well as of understanding and communication) awaits a comprehensive theory of imagination. Such a theory would complement and influence our present theories of conceptualization, propositional control, and speech acts. In its broadest sense, it would give an account of structure in human [cognitive] experience.[1]

A promising first approximation of a comprehensive theory of imagination has been proposed by Gilles Fauconnier and Mark Turner, who fully agree with Johnson: "The next step in the study of the mind," they roundly proclaim, "is the scientific study of the nature and mechanisms of the imagination."[2] To that end, they have developed a theory of conceptual blending, which subsumes Johnson's work (developed with George Lakoff) on image schemas and metaphoric projection in a broader and more powerful framework that gives a preliminary and unified, if not yet adequate, account of many signature aspects of human cognition, from inference-making, planning and predicting, language use, and ethical deliberation, to artistic and technological creativity, cultural and ritual symbolism, and (nei-

1. Mark Johnson, *The Body in the Mind: The Bodily Basis of Meaning, Imagination, and Reason* (Chicago: U of Chicago P, 1987) 171.

2. Gilles Fauconnier and Mark Turner, *The Way We Think: Conceptual Blending and the Mind's Hidden Complexities* (New York: Basic Books, 2002) 8.

ther last nor least) scientific hypothesizing and scholarly interpretation. The theory of conceptual blending is ambitious and likely of considerable importance, at least in the short term (and in the sciences this is no small service), but it is also, like much else in the field, more than faintly redolent of some of the finer intellectual fruits of romanticism. It broaches anew many issues about human consciousness that exercised romantic theorists and artists, and often arrives at comparable, though in important ways non-identical, conclusions.

One could say that, when it comes to the imagination, cognitive science picks up where thinkers like Immanuel Kant and Samuel Taylor Coleridge left off (the two romantic-era figures, by the way, especially the first, to whom current analysts of imagination most commonly advert). But that would be too strong a claim. More accurate to assert that cognitive science picks up from where the romantics started, on the groundwork laid out by eighteenth-century empirical psychology, in order to (re)define the object of study and (re)formulate a theory about it in, as far as is possible, wholly scientific terms.[3] However, this is as yet more the ambition than the achievement, the returns so far being chiefly speculative or, more scientifically, hypothetical, and still awaiting experimental verification.[4] Moreover, the new "scientific" definitions and hypotheses are often not immediately distinguishable from the old "natural-philosophical" ones, even terminologically. In the book from which I've already quoted, *The Body in the Mind,* Johnson defines imagination in terms of three basic and presumptively correlated cognitive capacities: namely, our abilities to "form unified images" of objects, to "order sense impressions" in terms of spatio-temporal and other relations, and "to reorder [such] representations . . . to generate novel structures" (xxxvi). This triad of imaginative functions differs from Kant's analysis of imaginative schemata, transcendental categories, and disinterested aesthetic play, or Coleridge's theory of primary and secondary imagination and memorial fancy, only in that it lacks the fine-grained *differentiations* of these functions introduced by the earlier writers.

In fact, Johnson's definition sounds more like a parsimonious version of the enlightened analysis set forth by one W. Taylor in *British Synonyms Discriminated:*

> A man, [said Taylor,] has imagination in proportion as he can distinctly copy in idea the impressions of sense: it is the faculty which *images* within the mind the phenomena of sensation. A man has fancy in

3. Thus, Fauconnier and Turner speak of the "*rehabilitation* of imagination as a fundamental [and fundamentally] *scientific* topic" (15; my emphasis).

4. Or even, as the mental imagery debate testifies, agreement as to what would constitute empirical verification.

> proportion as he can call up, connect, or associate, at pleasure, those internal images—[here Taylor points out that the Greek word for 'phantasy' means "to cause to appear"]—so as to complete ideal representations of absent objects.[5]

Because Taylor's definitions conveniently distill the accumulated wisdom of eighteenth-century empirical psychology,[6] William Wordsworth, in the "Preface" to his collected poems of 1815, cites them, but only to show their error and supplant them with his own countering definitions and discriminations. Wordsworth remarks that Taylor is "enthralled" and misled by etymology,[7] and that he has so far distinguished only two modes of memory, the faithful and the fanciful, and none of the essential operations of imagination. "Imagination," Wordsworth insists in the "Preface," "has no reference to images that are merely a faithful copy, existing in the mind, of absent external objects; but is a word of higher import, denoting operations of the mind upon those objects, and processes of creation or of composition, governed by certain fixed laws" (753).[8]

Wordsworth expresses here what is for romantic theory no less than contemporary cognitive theory a crucial distinction between, on the one hand, the sense-based images represented in consciousness and, on the other, the operations or processes that work upon such representations, and are "governed by certain fixed laws" (or "architecturally constrained," in contemporary parlance). Put more simply, the distinction drives a wedge between the *what* and the *how* of mental representation in order to suggest that the question of "*what* gets imagined" is not necessarily the same question as "*how* something gets imagined," nor, depending on one's purposes, even as interesting a question. But this distinction is either out of view or explicitly collapsed in a good deal of cognitive literature, too often without any principled argument for doing without it.[9] In *Seeing and Visualizing: It's Not What You Think*, Zenon Pylyshyn thus takes considerable pains to spell

5. Qtd. in William Wordsworth, *The Poetical Works of Wordsworth*, ed. Thomas Hutchinson, rev. Ernest de Selincourt (London: Oxford UP, 1936 [1960]) 753.

6. For an overview of the early empirical and idealist views of the imagination, including those of Hobbes, Locke, Leibniz, Hume, and Berkeley, see Eva Brann, *The World of Imagination: Sum and Substance* (Latham, MD: Rowman and Littlefield, 1991) 78–89.

7. Brann 18–21 discusses the etymologies of imagination and fancy in some detail.

8. Wordsworth makes the same point more concisely in the 1850 *Prelude*, where he describes imagination as a faculty falsely "so-called / Through sad incompetence of human speech" (*The Prelude: 1799, 1805, 1850*, ed. Jonathan Wordsworth, M. H. Abrams, and Stephen Gill [New York: Norton, 1979] 6.592–93). The incompetence is registered in the word's misleading etymology. Quotations of Wordsworth's prose and verse will henceforth be from *Poetical Works*.

9. For example, at the very outset of his influential study of mental imagery, *Image and Mind* (Cambridge: Harvard UP, 1980), the cognitive psychologist Stephen Kosslyn summons

out yet again (even in the very title of his book), the theoretical, methodological, and experimental consequence of the what/how or, as he terms it, content/form distinction (290 ff., especially 296), which, he insists, must be kept steadily in view.

Let me step back for a moment in order to forestall an unhelpful inference and come directly to the point. My argument in all of this isn't the strong (not to mention silly) one that cognitive science is blindly and needlessly recreating the romantic wheel. I'm not making any judgments about or commitments to either romantic faculty psychology or contemporary cognitive models, at least not yet. And indeed, on the topic at hand, the romantic binary distinction between fancy (as a mode of memory) and imagination (as a different and higher cognitive power), I readily confess my preference for the gradient parameters typically proposed in cognitive theories.[10] Using gradient or scalar measures eliminates the need for a rigid distinction of kind between fancy and imagination, as it were between separately functioning faculties (in current parlance, "encapsulated modules"), such as Coleridge apparently outlines in the famous conclusion to chapter 13 of *Biographia Literaria*.

My purpose in juxtaposing romantic and contemporary commentaries on the imagination is rather to suggest that what might at first look like a case of uncanny prescience is in fact an illustration of a remarkable consistency or, better, repeatability in the findings of carefully conducted introspection. It is a commonplace of cognitive literature that the testimony of

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the distinction only to dismiss it: "The focus here is not on the nature of the image itself, but on the nature of the imagery representation *system*. . . . In studying imagery, one can investigate the data-structures, the images themselves, only in the context of having people do something with them. Thus, by its very nature, we can never isolate an image in the pure, but can study it only in relation to the processes that operate on it" (4–5). But in his running critique of Kosslyn's and others' work on mental imagery as a distinct representation system, Zenon Pylyshyn insists that distinctive, architecturally constrained processes are exactly what the experimental data fail to demonstrate; in his view, Kosslyn's evidence is precisely about data-structures or representational contents, and can be accounted for more parsimoniously in terms of a single symbolic code underlying all conceptual representation, whether imagistic or propositional. His most recent and, as it happens, extensive treatment of this argument appears in the three chapters on mental imagery in *Seeing and Visualizing: It's Not What You Think* (Cambridge, MA: MIT P, 2003). Brann 257–64 likewise doubts Kosslyn's success in winnowing representing functions from representational contents.

10. For example, in Fauconnier's and Turner's conceptual blending theory and Langacker's cognitive grammar, both language and imagery (understood as cognitive functions) are analyzed in terms of degrees of perceptual/conventional entrenchment and innovation ("extension"). "Entrenchment" and "extension" are cognitive-theoretical rough equivalents to the romantic constructs of "familiarization" and "de-familiarization" or "estrangement." Ronald W. Langacker, *Foundations of Cognitive Grammar, Vol. 1: Theoretical Prerequisites* (Stanford: Stanford UP, 1987).

introspection is, if not inadmissible, nonetheless undependable and insufficient. Yet because empirical standards, methods, and data are still sadly wanting in many areas of inquiry, especially those pertaining to imagination, introspection remains, for the time being, the most fruitful line of experimental approach. Fauconnier and Turner understand this intractable problem as a paradox of evolution:

> Nearly all important thinking takes place outside of consciousness and is not available on introspection; . . . the imagination is always at work in ways that consciousness does not apprehend; consciousness can glimpse only a few vestiges of what the mind is doing. . . . Evolution seems to have built us to be constrained from looking directly into the nature of our own cognition, which puts cognitive science in the difficult position of trying to use mental abilities to reveal what those very abilities are built to hide. (33–34)

The authors nevertheless manage, for the next 350 pages, to make the best of this bad situation—quite usefully, I hasten to add, but also with considerable reliance on introspective evidence and probability.[11] But then, what else can they, or any scientists of the mind, do? We have no choice but to consult our phenomenological experience of consciousness, if only to identify those features and functions we may ultimately wish to describe in other terms, whether neurobiological, neurocomputational, or, for that matter, metaphysical. And such experience, it turns out, will submit to careful observation and thoughtful analysis, as it indeed has over the centuries, and even to consistent description, as it has in the past two centuries (at least at their bookends). Despite yawning differences in historical mo-

11. As is evident in their analogical characterization of their methodology: "Just as Darwin found the Galapagos Archipelago a useful real-world laboratory, precisely because it was isolated and strange, so we often go to something that looks exotic but is no less fully a part of the human world, in order to investigate the principles and parameters of blending. And just as the evolutionary biologist or the chemist can contrive an experiment *within nature,* so we can do the same, by asking human beings to do something, understand something, solve something, and so on, and watching what they actually do under those circumstances" (110). Importantly, though cognitive experiments like these depend on guided introspective acts of consciousness, the experimental design usually tries to minimize any reliance on the subjects' self-reports of their introspections. As Brann puts it, "it is of the scientific essence that [the] object [of inquiry] must occur as availably public rather than as inaccessibly private. Thus it cannot be a constitutionally inward event but must have extension along some dimension. It must be understood as a phenomenon measurable in space and time. It must, further, present itself as an instance of a rule or a kind (rather than as a unique incident), capable of figuring in a general theory. Accordingly, in cognitive psychology, ways are found to externalize the mind, to force it to become a public phenomenon with measurable dimensions . . ." (232). Chief among these is chronometry, the measuring, typically, of reaction times in the performance of carefully delimited cognitive tasks.

ment, intellectual orientation, and methodological approach,[12] disciplined acts of introspection,[13] virtually the sole resource for cognitive inquiry in the romantic period and still, for all its irreducible subjectivity, the main one in contemporary research, have yielded on certain fundamental topics of inquiry astonishingly similar, and so perhaps mutually illuminating (in current parlance, "converging"), sets of results. No Coleridgean will be surprised to hear that blending is a prime operation of the imagination: to the function of consciousness "that blends and (as it were) *fuses*" representations and concepts, Coleridge famously and "exclusively appropriated the name of imagination."[14] If he got that much right, the question naturally arises as to whether his many other definitional and speculative gambits concerning the imagination might not likewise have hit a still relevant mark. To put the same point more broadly and exactly: romantic theory may stand in relation to the cognitive science of imagination as a storehouse of more or less clearly formulated issues and distinctions, some of which might be reframed as theoretically powerful and empirically testable hypotheses. Similarly, to the extent that it sponsors and enacts such theory, literary practice—for my purposes (because Coleridge's and Words-

12. Brann, I think, makes the crowning point about this historical similarity-despite-difference: "The realization is that we live in an intellectual tradition. I mean not only that discernibly identical subjects, and their enduring complex of problems, keep turning up, albeit in forms adapted to what looks in hindsight like a developing intellectual continuum. I also mean that every specific view ever held about such a perennial subject can be revived at any time, either by a deliberate recovery or through an accidental reduplication. It seems to be this fact, that few theories are permanently laid to rest, that there is no accepted progress of paradigms, that distinguishes philosophy from science . . ." (33).

13. "Disciplined introspection" is an essential characteristic in Wordsworth's definition of a poet: "he has," among other qualities, "a disposition to be affected more than other men by absent things as if they were present; an ability of conjuring up in himself passions, which are indeed far from being the same as those produced by real events, yet (especially in those parts of the general sympathy which are pleasing and delightful) do more nearly resemble the passions produced by real events, than anything which, from the motions of their own minds merely, other men are accustomed to feel in themselves:—whence, and from practice, he has acquired a greater readiness and power in expressing what he thinks and feels, and especially those thoughts and feelings which, by his own choice, or from the structure of his own mind, arise in him without immediate external excitement" (*Preface to Lyrical Ballads* 737). I will forego the temptation of extensive commentary, but notice at least the implicit functional universalism of Wordsworth's idea of "the general sympathy" (see Alan Richardson, *British Romanticism and the Science of Mind* [Cambridge: Cambridge UP, 2001] 90) and, in the final clause, an early effort to distinguish between the contents (intentional representations) and structures (architectural constraints or limitations upon such representations) of mind. Today's cognitive psychology eschews the selective muse and seeks disciplined introspection in the form of experimental design and control.

14. Samuel Taylor Coleridge, *Biographia Literaria,* ed. John Shawcross, 2 vols. (London: Oxford UP, 1907 [1958]) 2.12.

worth's), romantic and pre-romantic poetry—potentially houses a corresponding wealth of prototypical examples and revealing limit cases, the evidence of which might serve to clarify, further specify, and even experimentally verify evolving theories of imagination.[15]

2. The Example of Literature: Blending, Deviance, and Imagery

Fauconnier and Turner, Johnson and Lakoff, and many other cognitive theorists insist for good theoretical reasons that the literary mind (not to mention or slight the scientific, philosophical, marketing, and other disciplinary minds) is nothing more or less than the everyday human mind. Certain imaginative functions may be unusually heightened and/or objectified in cognition stimulated by literary discourse, but these functions are not different or separate ones, designed only for literary applications, but rather the same functions always at work in consciousness. Normally behind the scenes or "offstage," such capacities are occasionally brought "onstage" by a momentarily higher or more self-reflecting state of activity, such as we tell ourselves and our students is attainable through literature. Though not different in kind, certain imaginative events are, cognitive theory allows, different in degree—degree of entrenchment, palpability, intentionality, and self-awareness, to name just a few of the relevant gradients[16]—and it is this fact that argues for the special value of the literary object. Precisely to the extent that it provokes a non-routine or otherwise

15. My remaining comments will serve to exemplify this thesis about the cognitive promise of romantic theory and practice, not so much to "prove" it as simply to adumbrate its possibility. What I cannot focus on, but what should become nonetheless evident, is the reciprocal thesis that cognitive-scientific theory and method likewise serve to sharpen, extend, and test literary-critical insight (whether venerable or novel). The intellectual economy of the cognitive scientific enterprise is, as I said earlier, a truly interdisciplinary one. I thus concur wholeheartedly with Alan Richardson and Francis Steen, "Reframing the Adjustment: A Response to Adler and Gross," *Poetics Today* 24.2 (2003): 151–59, who "suggest there is ample opportunity for a constructive and mutually illuminating engagement" between "literary studies and empirical investigations" and that literary critics "are presented with a striking opportunity to learn from and contribute to an emerging understanding of the human mind that is inherently sympathetic to our concerns" (155). This suggestion is a central thesis of Mark Turner's groundbreaking *Reading Minds* (Princeton: Princeton UP, 1991), which issues a prophetic call for English studies (literary criticism) to reconstitute itself as a discipline of "cognitive rhetoric" that studies "acts of language, including literature, as acts of a human brain in a human body in a human environment which that brain must make intelligible if it is to survive" (vii–viii).

16. On entrenchment, see Ronald Langacker; on palpability parameters, see Leonard Talmy, "Fictive Motion in Language and 'Ception,'" in *Language and Space*, ed. Paul Bloom et al. (Cambridge, MA: MIT P, 1996) 211–76; on intentionality, see John Searle, *Mind, Language, and Society: Philosophy in the Real World* (New York: Basic Books, 1998); on self-awareness, see Antonio Damasio, *The Feeling of What Happens: Body and Emotion in the Making of Consciousness* (New York: Harcourt Brace, 1999).

deviant exercise of a particular cognitive function or set of functions, the literary object could help to illuminate the operational ranges and equilibria, and perhaps even constitutive mechanisms and modal interfaces, of human imagination.[17]

In his earlier book *The Literary Mind*, Turner himself states the general principle underlying scientific interest in abnormal or atypical phenomena: "In the hard sciences," he explains, "unusual events are not dismissed as peripheral. On the contrary, unusual events command the most attention, on the principle that they are the most likely to reveal general processes. The usual case can [then] be accounted for as the result of general processes working in minimal particular conditions."[18] Certainly this principle guided romantic theorists such as Wordsworth and Coleridge, who offer for the analysis and illustration of imaginative functions the most cognitively stimulating and conceptually demanding poetic examples at their disposal. According to Coleridge, poetry's "grandest," or most exemplary, effect results from and reproduces "an effort of the mind, when it would describe what it cannot satisfy itself with the description of, to reconcile opposites and qualify contradictions, leaving a middle state more strictly appropriate to the imagination than any other, when it is, as it were, hovering between images."[19] This "middle state" reveals the imagination's most "strictly appropriate" or characteristic operations, operations that are normally conducted as an unproblematic and therefore preconscious routine supporting everyday perception and conception. It is much as if an unreflecting and therefore invisible surface were suddenly to spring into visibility because of a disturbing influence, a stone, say, tossed upon a deep, still pool of perfectly transparent water.[20] Like the rock, the poetic exemplar disturbs and thus briefly discloses the normally transparent compositional activity of the imagination. Such disclosure constitutes "the grandest effort of poetry," where—and here's Coleridge again—"the imagination is called forth, not to produce a distinct form, but a strong working of the mind, still offering what is still repelled, and again creating what is again rejected" (2.103). In this deviant, indefinite, effortful activity, Coleridge claims, one experiences a "sublime feeling" or intuition "of the unimagin-

17. See Ray Jackendoff, "The Architecture of the Linguistic-Spatial Interface," in *Language and Space* 1–30, for a concise statement and illustration of modal interface theory.

18. *The Literary Mind* (Oxford: Oxford UP, 1996) 114. For similar reasons, the study of dysfunctional and damaged brains can be especially revealing. As Searle has observed, "One of the best ways to study consciousness is to study its breakdowns, to study its pathologies . . ." (75). See also Damasio (17 and *passim*).

19. Samuel Taylor Coleridge, *Shakespearean Criticism*, 2 vols., ed. Thomas Middleton Raysor (London: J. M. Dent, 1960) 2.103.

20. Frederick Burwick's work on *Mimesis and its Romantic Reflections* (University Park: Pennsylvania State UP, 2001) is absolutely relevant here, especially 148 ff.

able" (2.104), that is, of the otherwise unintrospectible operations of imagination itself in the composition and comprehension of perceptual and conceptual imagery.

This same introspective finding, that normally preconscious operations can be precipitated into consciousness as a result of deviant processing demands, likewise stands at the back of Coleridge's famous distinction of primary and secondary forms of imagination. "The primary imagination," he announces (as does any self-respecting cognitivist today), is "the living Power and prime Agent of all human Perception."[21] "The secondary imagination" is its "echo," summoned by and therefore "co-existing with the conscious will, yet still . . . identical with the primary in the *kind* of its agency, and differing only in the *degree*, and in the *mode* of its operation. It dissolves, diffuses, dissipates, in order to recreate; or *where this process is rendered impossible, yet still at all events it struggles to idealize and unify*" (1.202; my emphasis). That last bit is key, for it states the condition under which the regular operations of imagination are most forcibly elicited and substantially disclosed: the condition of deviant or limit-case conceptualization, where on-line processes that usually run unimpeded and unnoticed are unexpectedly frustrated in their operation and so must work to perform what is normally an effortless routine. In such moments, the secondary imagination "struggles to idealize and unify" the images (or, in Fauconnier's and Turner's theory, image schemata) it has "dissolve[d], diffuse[d], and dissipate[d] in order to recreate." Unable to achieve a state of balance (what Coleridge calls a "reconciliation" and cognitive science a "homeostasis") in a functionally completed act of conception, the imagination hovers restlessly between uncertain and conflicting image-options, which appear spontaneously to generate and degenerate, "offering what is still repelled, and again creating what is again rejected." In this limit-case condition, we apprehend, as fully as introspection can, what is *typically* but arguably not *strictly* unimaginable: the agency of imagination itself.

All of this thinking may be readily translated into the terms of blending theory, which likewise proposes that imagination pervades human cognitive activity as its offstage source and the first principle of its phenomenological integrity. In the vast majority of our conscious lives, for example in

21. *Biographia Literaria* 1.202. Of course, no cognitivist qua cognitivist takes the next step with Coleridge, that is, to derive the human imagination from the divine: insofar as the primary imagination creates, itself unseen, our everyday consciousness, it is for Coleridge "a repetition in the finite mind of the eternal act of creation in the infinite I AM" or God. Gerald Edelman and Giulio Tononi, *A Universe of Consciousness: How Matter Becomes Imagination* (New York: Basic Books, 2000), come at least part of the way with Coleridge: "If our view of memory is correct, in higher organisms every act of perception is, to some degree, an act of creation, and every act of memory is, to some degree, an act of imagination" (101).

every moment of sensation and perception, we "live in" well-formed conceptual blends whose inputs cannot be separately experienced. As a perfectly mundane example of this point, Fauconnier and Turner offer the blended concept of a cup of coffee:

> As neuroscience has shown, the many aspects of the cup of coffee—the color of the cup, the shape of the opening, the topology of the handle, the smell of the coffee, the texture of the surface of the cup, the dividing line between the coffee and the cup, the taste of the coffee, the heavy feel of the cup in the hand, the reaching for the cup, and so on and on—are apprehended and processed differently in anatomically different locations, and there is no single site in the brain where these various apprehensions are brought together . . . neuroscience does not know the details of [this] unification. (7)

Like Coleridge's theory of primary imagination, the theory of blending therefore begins at the functional level of percept unification or "binding," which presumably transpires, as current neurophysiological speculation has it,[22] through the co-activation of cross-referenced neural maps, which are themselves modality specific idealizations of stimuli (i.e., "schemata" or "schemas"). While ordinary states of consciousness and deeply entrenched conceptualizations (e.g., phonemes, morphemes, a cup of coffee) allow us no introspective access to the process of blending, but only to its results, "in other activities," Fauconnier and Turner suggest, "conscious apprehension has more leeway to go back and forth, to 'live in the full integration network'" from and in which the blend results (83). In all cases, "the integration network is trying to achieve equilibrium," but "what counts as an equilibrium for the network will depend on its purposes, [and] also on various internal constraints on its dynamics" (44). Disequilibrium, that hovering, middle state of mind that Coleridge prizes, arises as a result of conceptual "clash" between given inputs to the network and within their blend; clash is the expression of internally constrained incompatibilities among image schemata and other topographical and relational elements involved in a (dysfunctional) integration network. As Fauconnier and Turner put it, "inputs often have opposed topology. Projecting these topologies to the blend could create a disintegrated space." In such cases, the network begins making more or less automatic "selections and adjustments" as it programmatically struggles to "avoid a disintegrated blend" (329). "Real failure occurs when the [proper] weighting [of topological components] is not achieved and the massive violation in the blend defeats its purpose" (340–

22. For brief discussion, see Langacker 100, n. 1, Turner (1991) 181, and Turner (1996) 22–23, 111. For extended discussion, Edelman and Tononi, *passim*.

41). This side of failure, but still that side of integrative equilibrium, the network of imaginative functions offers us special insight into its characteristic but well-concealed procedures and limitations.

Unfortunately, though they speculate on the value of the exotic or outlying instance as a revealing measure of the kind,[23] Fauconnier and Turner provide few examples of conceptual clash or failure and none, so far as I can see, that prompts or "primes" for Coleridge's "strong working" of the imaginative mind between and among incompatible blending inputs and operations. Here, then, is a first instance in which, especially given the many parallels its supporting theory bears to one of the best of the new cognitive models, romantic practice suggests itself for service, as a repository of limit-case examples that may have considerable bearing on any number of theoretical constructs and open questions. In conceptual blending theory, for example, the "mapping" that constitutes the integration network is "the principal process to be explained" (Turner [1996] 163). Fauconnier and Turner therefore analyze mapping into a set of working hypotheses concerning its procedural *elements* (such as organizing frames, image schemas, and topographic details), *tendencies* (such as selectivity and the compression of temporal, spatial, causal, and other kinds of structure or implication in the elements), *optimalities* (for example, pattern completion and composition at human scale), and *constraints* (especially the invariance principle).[24] Careful attention to exemplary limit cases along just these parameters may provide converging evidence for certain aspects of the model, even as it reveals theoretical deficiencies or surpluses in others. And who knows?—certain limit cases may even be adaptable to, or suggest design-features for, controlled experiments aiming to generate empirical data.

The poetic exemplar[25] can, for instance, help to reveal fine-grained operational norms and limits for blends involving mental imagery, an object of ongoing cognitive study about which such essential questions as "which aspects are mandatory, why they are mandatory, and what this tells you about the form of representation remain open" (Pylyshyn 330–31). In the

23. See note 11.

24. Turner (1996) gives the clearest statement of the invariance principle: "Conceptual projection, which has as one of its fundamental activities the projection of image-schematic structure from a source input to a target input, shall not result in an image-schematic clash in the target. Invariance is a global constraint to be satisfied in building and projecting target, generic, and source spaces. One corollary of the invariance principle is this: Once the projection is completed, the most abstract generic space, the one that contains just the image-schematic structure taken to apply to both source and target, shall not contain an image-schematic clash" (108–9).

25. As determined by literary critics and theorists, past and present (or, better, past *to* present).

cognitive blending model, the invariance principle, constraining the integration network against image-schematic clash in its required inputs and outcomes, apparently specifies at least one mandatory aspect or element of blending: image-schemata. The model is, however, unclear about just how and where their clash is interdicted or inhibited, or what specific tolerances for clash the conceptual system has. At a minimum, Fauconnier and Turner theorize, an integration network contains at least one "organizing frame" consisting of "long-term schematic knowledge" (e.g., semantic categories such as "table," "mountain," "human") and/or "long-term specific knowledge" (i.e., individual memories of specific tables, mountains, humans) that serves to structure more local topographical elements (40). Conceptual clash results when the network generates "competing frames or incompatible counterpart elements" (120). So far so good, but again, what constitutes competition or incompatibility? And what exactly are the procedural implications once clash, a gradient phenomenon, is detected?[26]

Rephrasing the question in Coleridge's terms, what, if anything, is unimaginable, and why? Much in the ongoing study of mental imagery hangs on this question. Simplifying somewhat, but not thereby distorting the essential issue: if something is in a strict sense unimaginable, that is, incapable of internal, imagistic representation, is that because one lacks the knowledge of *what* to image, of *what* the image should *look like,* or is it rather because the processes involved in imagination are functionally incapable of generating and stabilizing such an image? Pylyshyn is emphatic on the theoretical need for and decisive status of this distinction:

> What needs to be kept in mind is that the content of our mental images, both the explicit information it contains and the dynamics of how that changes, is the joint consequence of (a) what we intend our mental images to show, (b) what we know about how things in the world look and how they tend to unfold in time, and (c) the way our mind (perhaps only the part of it that specializes in mental imagery) constrains us. . . . Discovering the boundary between the two major determiners of image content (in particular, between what we *know* or *intend* and the constraints imposed by the mechanisms on the particular form of representation used—in other words, by the way our brain

26. Such questions may also be asked of Edelman's and Tononi's theory, which stipulates that "we cannot be aware of two mutually incoherent scenes or objects at the same time because our conscious states are not only unified, but are internally coherent in the sense that the occurrence of a certain perceptual state precludes the simultaneous occurrence of another one" (25). "It is," they flatly insist, "simply impossible to conceive of a conscious state that is not unified" (146). Coleridge and Wordsworth, at least to some extent, would demur, as would Fauconnier and Turner.

> is structured) is the central problem in the study of mental imagery. (285–86)

I don't pretend to have made the discovery and solved the problem—not least because what might count as definitive discriminating evidence is far from clear. What I am in the position to assert, however, is that Wordsworth's 1815 "Preface" may be read as a series of thought experiments that clarify the problem and thus may prove pertinent to its solution, hewing between false and viable leads.

Remember that Wordsworth is concerned with exactly Pylyshyn's what/how or content/form problem; he explicitly sets out as his objective the distinction of *imagery as product* from *imagination as process*, the "fixed laws" of which may be intuited, and to some degree introspected, by examination of poetic exemplars. In support of his fundamental distinction of fancy and imagination (which is readily and, I think, usefully reinterpreted as a scalar difference of degree rather than a binary difference of kind), Wordsworth contrasts two compositive images, one, from *Romeo and Juliet*, depicting Queen Mab, the other, from *Paradise Lost*, depicting Satan. Shakespeare fancifully describes Mab as appearing "In shape no bigger than an agot-stone / On the forefinger of an alderman."[27] Milton, on the other hand, imaginatively conjures a momentarily magnificent Satan:

> . . . Satan alarm'd
> Collecting all his might dilated stood,
> Like Teneriff or Atlas unremov'd:
> His stature reacht the Sky . . .[28]

Wordsworth's commentary about what makes the second of these extracts significantly more imaginative corresponds neatly to certain of the cognitive distinctions we've been tracking; quoting it below, I've thus given a side-by-side translation of its key concepts into contemporary terms (especially those of Langacker[29]):

27. William Shakespeare, *The Riverside Shakespeare*, 2nd ed., G. Blakemore Evans and J. J. M. Tobin, eds. (Boston: Houghton Mifflin, 1997) 1.iv.55–56.

28. John Milton, *Complete Poems and Major Prose*, ed. Merritt Y. Hughes (Indianapolis: Odyssey P, 1957) 4.985–88.

29. In Langacker's cognitive grammar, *sanction* refers to the degree of ease or difficulty with which a conventional conceptual unit of any kind (phoneme, morpheme, lexeme, grammatical unit, image-schema, etc.) projects its structure to a target (that is, intended) conceptualization. The more established, obvious, or "natural" the projection from source to target is, the greater the degree of sanction, and the more instantaneous and invisible the productive transaction between them. Conversely, the more innovative, unprecedented, or "unnatural" the projection is, the greater the *elaborative distance*, and the more difficult and demanding the conceptualization. Thus Langacker, summarizing the prototypical condition

Wordsworth	*Cognitive Science*
When the Imagination	
frames a comparison,	constructs an integration network,
if it does not strike on the first presentation,	if it does not involve fully sanctioning conventional units,
a sense	
of the truth of the likeness,	of the partial schematicity projecting across some considerable degree of elaborative distance,
from the moment it is perceived,	
grows—	is computationally weighted in the network—
and continues to grow—	and is repeatedly refreshed and consequently reinforced, offering itself as an increasingly likely node for additional network connections and further relations—
upon	within
the mind; the resemblance	
depending less upon outline of form and feature, than	less upon long-term schematic knowledge
upon expression and effect;	than upon intention and inference;
less upon casual and outstanding,	less upon long-term specific
than upon inherent and internal, properties;	knowledge, than upon the inherent properties of either the represented entities or, more likely, given what precedes and follows, the representational system itself;
moreover, the images invariably	
modify each other. (755)	blend.

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of total sanction involved in linguistic symbols and then turning his attention to more outlying cases and conditions:

> . . . every conventional unit in the grammar is self-sanctioning, being schematic for itself at the minimal possible elaborative distance.
>
> But usage is not always so well behaved with respect to the canons of established convention. Often there is some conflict between the specifications of the sanctioning and target structures, so that the former can be construed as schematic for the latter only with a certain amount of strain. When this is so the relation between the sanctioning and target structures is one of only partial schematicity, and the relation provides only partial sanction. Partial sanction can be equated with deviance or ill-formedness, but it should be emphasized that a considerable amount of nonconventionality is tolerated (and often expected) as a normal feature of language usage. (69)

Wordsworth here boils volumes of cognitive theory down to a single sentence! In so doing, he may be pointing theoretical conjunctions and empirical directions that less sifted discussions have yet to see or formulate. Immediately notable, for example, is his apparent devaluation of the roles of image-schemata in the network, and his apparent promotion in their place of intentionality and inference-making, on the one hand, and systemic constraint, on the other.[30] This suggests that it may be misguided to theorize constraint at the level of image-schemata, as in the invariance principle, or only at that level; more global and forceful constraints may subsist at the levels of *intentional object*[31] and *functional architecture,* and these may intersect with and otherwise condition any constraint at the schematic level.

In the passage I've quoted and translated, Wordsworth makes a subtle distinction between the *cause* of a perceived or conceived resemblance and the *effect* of such cause, which, properly speaking, is nothing more or less than a perception or conception of resemblance. Similarity of structure, or schema, cannot be the cause of the apprehension of resemblance, for that similarity is precisely the content of that apprehension. What is the general cause behind the apprehension of any specific resemblance, Wordsworth is asking, and how is *it* constrained? In a fragment drafted for his *Defence of Poetry,* Percy Shelley only six years later tackles the same important problem in slightly different terms but with an identical result. Shelley is trying to think behind the law of association (effectively a generalization of all and any apprehensions of schematic resemblance) in order, like Wordsworth, to separate the cause of associative cognition from its effect in specific completed acts of association. "Association," Shelley writes, "bears the same relation to imagination as a mode to a source of action: when we look upon shapes in the fire or the clouds and imagine to ourselves the resemblance of familiar objects, we do no more than seize the relation of certain points of visible objects, and fill up, blend together . . ."[32] The verbs here—"seize," "fill up," "blend"—characterize the cause of association, the nouns—"the resemblance of . . . objects," "the relation of certain points of . . . objects"—its effect.

30. The two poles bounding human freedom, in a cognitive account.

31. The phrase is Roman Ingarden's; though demanding and often opaque, his phenomenological analysis of *The Literary Work of Art* (trans. George G. Grabowicz [Evanston, IL: Northwestern UP, 1973]) is still perhaps the best discussion of intentionality and representation in literary production and cognition. Margaret Freeman, "Blending: A Response," *Language and Literature* 15.1 (2006): 107–17, has recently observed that "questions of intentionality and feeling or emotional response are still largely unexplored territory in blending theory" (112), and has advanced a cognitive model—illustrated with poetic exemplars—that articulates and hypothetically answers such questions.

32. Percy Bysshe Shelley, *The Complete Works of Shelley,* ed. Roger Ingpen and Walter E. Peck, 10 vols. (New York: Gordian P, 1965) 7.107.

But the distinction is fine indeed and proves extremely difficult to hold in practice, and we may legitimately ask with Yeats whether the dancer may be told from the dance, the seizing from the seized (and thus, irresistibly and with apologies to Talmy, the ceiving from the ceived). Once again, I suggest, a return to the exemplar can serve to clear confusion and establish coherent parameters. Why is it that the resemblance conceived in Shakespeare's analogy has less cognitive charge than the resemblance conceived in Milton's metaphor? Precisely because it is based on a readily sanctioned projection and cross-referencing of entrenched image-schemata: the conventionally miniature body-schema of a "faerie" and the no-less-conventional but also perceptually reinforced schema of an ostentatious man's ring, both of which minimally consist of a bounded region of very limited extent, and neither of which, properly speaking, blends with or modifies the other. This is because, as Wordsworth has suggested, the intention is simply to specify the size of Queen Mab. As soon as that intention is fulfilled—and this is effectively at the very moment the source schema (the ring) is projected, for that schema is projected not accidentally or arbitrarily but as a consequence and fulfillment of the governing intention, and *thus with its analogy connectors already in place at the relevant addresses of the target schema* (the faerie)[33]—the network can drop the functions associated with the generation and maintenance of the source input and proceed, whole-mindedly, if you will, in its representation of the target, which needn't retain any aspect of the source structure, not even its scale (since its scale is precisely the conventional scale of faeries).[34]

33. The analysis unmasks the unhelpful one-way directional entailment of the "source-target" metaphor, which almost surely has nothing to do with the process being explained. The target of conceptualization is often (always?) the first to be represented, at least at the level of intention. I take this to be Wordsworth's point: "Fancy depends upon the rapidity and profusion with which she scatters her thoughts and images; trusting that their number, and the felicity with which they are linked together, will make amends for their want of individual value; or she prides herself upon the curious subtilty and the successful elaboration with which she can detect their lurking affinities. If she can win you over to her purpose, and impart to you her feelings, she cares not how unstable or transitory may be her influence, knowing that it will not be out of her power to resume it upon an apt occasion" (755). The "feeling" and "purpose" give rise to the "thoughts" and "images" in which they are characterized and executed. This is a common-sensical claim, but no less crucial for that; it is, however, often downplayed or overlooked altogether in accounts of human cognition.

34. See Dan Sperber's and Deirdre Wilson's "relevance" theory of communication and semantic processing, "The Mapping Between the Mental and Public Lexicon," in *Language and Thought: Interdisciplinary Themes*, ed. Peter Carruthers and Jill Boucher (Cambridge: Cambridge UP, 1998) 184–200: "The communicative principle of relevance provides the motivation for the following comprehension procedure, which we claim is automatically applied to the on-line processing of attended verbal inputs. The hearer takes the conceptual structure constructed by linguistic decoding; following a path of least effort, he enriches this

When imagination wishes to display her powers, that is, as Coleridge says in his definition of the secondary imagination, when the poet through a conscious exercise of will intends to represent the otherwise unimaginable operations of imagination, she or he chooses not the sanctioned, the familiar, the conventional, the image-schematic, but rather, subverting that too-easy and, for the purpose, unproductive routine, precisely those sources and targets at the greatest elaborative distance from each other or even (and perhaps ideally) ones whose relations constitute unprecedented extensions of schema and therefore, crucially, of *meaning,* the intentional point of the network. Importantly, such choice doesn't at all subvert the resemblance-seeking function, which appears to wield the most disparate image-schemata with an irresistibly sovereign and exquisitely synthetic touch—the invariance principle notwithstanding. Thus, "having to speak of stature" (that is, with that intention), the imagination

> does not tell you that her gigantic Angel [Satan] was as tall as Pompey's Pillar; much less that he was twelve cubits, or twelve hundred cubits high; or that his dimensions equalled those of Teneriffe or Atlas;—because these, and if they were a million times as high it would be the same, are bounded: The expression is [rather], 'His stature reached the sky!' the illimitable firmament! (755)

Adapting Coleridge's terminology to the point, Milton's imagination, and so ours too following in the conceptual footsteps of his, dissolves, diffuses, and dissipates two radically different image-schemata in order to recreate them into a novel, idealized, and unified one. There can be no talk of clash or disintegration, despite the fact that the image-schema that supports the generic conception "sky" is one of unbounded extension (i.e., a schema containing no bounded regions[35]), while that of an angel, especially Satan, the most human of angels, is at its most essential, precisely the opposite, one of definitely bounded extent. Wait a minute, we want to say: the sky doesn't have the property of "tallness"; the "blue ceiling," all of us know, does not stand at a certain and determinate height! And yet, for all that, we run the blend surprisingly effortlessly and seem to see in imagination, all at once, on a huge scale, and yet, as it were, hoveringly between bistable re-

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at the explicit level and complements it at the implicit level, until the resulting interpretation meets his expectations of relevance; at which point, he stops" (192).

35. The notion of the "image"-schema supporting our concept of "sky" helps one to understand the wisdom of Jackendoff's hesitation over the usual definition: "Image-schemas are not skeletal images, but rather structures in a more abstract and more central form of representation" (10).

versals, an embodied immateriality, a sky endowed with form, and a material disembodiment, a form abstracted to sky.

Depending on the purpose of a given representation, image schemata and other topological/topographical entailments (such as the "blueness" of the sky and Satan's conventionally red pigmentation) appear to offer no constraints at all. Constraint may instead find its systemic locus in the functions that intentionally select, blend, and make inferences from image-schemata.[36] Does this example or any other Wordsworth introduces make any further predictions about where to look for these functions and their constraints? Specifically in terms of the mental imagery debate, should we be searching for a single, underlying propositional-symbolic "language of thought," or should we also be looking to discover a distinct "depictive" representation system working in partnership with a propositional-symbolic one?

As a first blush (remember, these are thought experiments!), consider this: in the image of Satan's stature reaching the sky (a task demand, by the way, marvelously assisted in context by the past participle "dilated"), we're representing what we *know* to be illogical and conceptually impossible—there's no distinguishable point *at which* one has "reached" the sky, and *just before which* (say, a millimeter) one hasn't. Is the case, then, that we are simply projecting what it *would* look like, if there *were* such a point? Is it really just a matter of conceptually stepping from a tall image-schema of any kind, ideally one conceived as extending hugely skyward from its base? Doesn't Milton, in fact, prime and structure the skiey blend with the rejected intermediate schemata of Teneriffe and Atlas, the latter of which, as conventionally personified, expressly represents a "ramping up" of the mountain schema to a human schema, before the final projection of all of this upon the now well-articulated mental image of Satan? Is this, in short, exactly the same process as was analyzed in the lines about Queen Mab, involving, once again, an intention-driven set of resemblance projections that succeed upon completion and needn't, therefore, be maintained?

But this is exactly what Wordsworth claims is *not* happening; he says, indeed, that this is the process Milton's imagination has explicitly eschewed in pursuit of higher representational objectives—"she does *not* tell you that . . . [Satan's] dimensions equalled those of Teneriffe or Atlas." And here I must confess that, though I've read Milton's lines many times over two and a half decades, I can't in any instance recollect imaging human-shaped mountains on my conceptual way to a towering and transparent Satan, and

36. Wordsworth summarizes these functions, not unhelpfully, into "the conferring, the abstracting, and the modifying powers of the Imagination, immediately and mediately acting" (754).

even now, despite my knowledge of that possibility, I still don't seem to do so: mountains seem to have nothing to do with the mental image I generate when processing these lines. To put the same point in terms of the mental imagery debate: my introspection doesn't report a chaining of propositions—e.g., "there is an entity (Satan) at human scale" → "there are entities at mountain scale" → "a human entity at mountain scale would reach the sky"—but rather a visual ballooning to "illimitable" and therefore highly unstable, "terrific" proportions. Here lies the crux of the mental imagery debate, and it is not difficult to conceive how this very passage might be used experimentally to test the "one-code" (propositional semantics only) versus "two-code" (propositional semantics plus a distinct mental imagery system) hypotheses. For example, using fMRI or PET scans, one could test for differences in the processing of an explicitly propositional text (e.g., "Because Satan is supernatural, he can appear as big as a mountain that reaches the sky") and Milton's imaginatively exemplary one. Both texts are brief enough to submit to experimental conditions and cognitive snap-shotting, and the resulting data averaged over a sufficient number of subjects and trials could be revealing indeed, not only for mental imagery theorists, but for metaphor and blending theorists, investigators of intentionality, linguists, and many others. A related, and thus correlatable, experiment could be designed using Milton's portrait of Satan's progeny, Death, which Coleridge singles out in his corresponding analysis of the "grandest [cognitive] effects of poetry" (*Shakespearean Criticism* 2.103) and which likewise involves the blending of logically incompatible image schemata.

So too with a further exemplar Wordsworth analyzes in the 1815 "Preface," a couplet about a stock-dove selected from the collection of verse that follows:[37]

> His voice was buried among the trees,
> Yet to be come at by the breeze.
> (13–14)

Though in his analysis of this self-quotation Wordsworth concentrates initially on the metaphor "buried" in the first line, it is the deictic idiom "come at" in the second that brings him to the clinching and, for us, theoretically and experimentally interesting point. Both the metaphor and idiom, Wordsworth explains, illustrate how the imagination can "immediately endow" images that are "independent of each other . . . with properties that do not inhere in them, upon an incitement from properties

37. Extracted from the ninth of Wordsworth's "Poems of Imagination," known by its first line as "O Nightingale, thou surely art."

and qualities the existence of which is inherent and obvious" (754). Thus, the metaphor in

> 'His voice was buried among the trees' . . . express[es] the love of *seclusion* by which this Bird is marked; and characterising its note as not partaking of the shrill and the piercing, and therefore more easily deadened by the intervening shade; yet a note so peculiar and withal so pleasing, that the breeze, gifted with that love of the sound which the Poet feels, penetrates the shades in which it is entombed, and conveys it to the ear of the listener. (754)

Nothing being more secluded than the grave, the poet's imagination seizes upon that concept in order to express the stock-dove's "inherent" love of seclusion, a perceptual hiddenness which is itself discovered only through the bird's peculiarly muted or "deadened" note. Or to put it the other-and, cognitively speaking, right-way round: having the intention to express the stock-dove's secluded being in terms of its most perceptually available and revealing property, and probably bearing in mind at the same time the space of "intervening shade" that conceals the bird but conducts its "voice," the poet, in an astonishing series or even simultaneity of conceptual projections and compressions, endows a disembodied sound-image with a property it does not have, corporeal form. Corporeal form is, however, a property of the bird that causes the note: characterizing the effect in terms of a property of its cause, which satisfies the intention of expressing the stock-dove's seclusion, also sets up an inference about corporeal origin or location, indeed projects a path from the percept, the sound-waves striking the ear, to its embodied source "buried among the trees." This is now a definite position *at* which the poet (or the breeze as his surrogate) may conceptually *come*.

Notice what all is here entailed. Logically, that is, in terms of abstract knowledge or what the speaker *knows* to be true, the breeze must carry the stock-dove's call *from* the woods *to* the location[38] the speaker occupies outside of them. But the deictic phrase "come at" is motivated by an effect-to-cause compression that describes the reverse trajectory, from the sound at the speaker's ear to the location at which it originates. The transporting breeze thus seems to be coursing, willfully and almost at once, in opposing directions, a literal impossibility that is nevertheless imaginatively accomplished, as Wordsworth carefully says: "the breeze, gifted[39] with that love of the sound which the Poet feels, *penetrates* the shades in which it is entombed, and *conveys* it to the ear of the listener." What the poet's imagina-

38. As may be inferred from the locution "buried *in* the trees."

39. Another immediate endowment of an object with a property not its own.

tion gives, the obliging reader imaginatively re(con)ceives, experiencing in this case not a tactile representation of the everyday concept of a breeze, but rather a quasi-visual revelation (for lack of better terms[40]) of the normally insensible breeze of imagination, which here (quite *non*correspondingly), constructs and traverses a spatial array in a *self-witnessing* defiance of tacit knowledge, including perceptually-registered laws and sensations of motion.

How would a single-code propositional theory account for this phenomenon? And when it does (because it certainly can, in theory), will the solution be more or less parsimonious or otherwise elegant than that of the two-code theory? For example, how is point-of-view generated and manipulated, given that it is calculated and calibrated with respect neither to the speaker's nor the dove's position but rather, as it were, to both at once, enabling it to hover above and move in bi-directional parallel along the trajectory described by those two points? The theory that imagistic representation has its own representational code and calculus is especially appealing here because it would more "naturally" dictate and support the kinds of features—for example, spatial reference frames; topographical locations and relations within such frames; and on-line transformations of such locations and their qualia in the representation of movement—that a cognitive analysis of mental imagery cannot finally do without.

Fortunately and significantly, the very passage that raises these questions suggests fairly straightforward and controllable variables for experiments aimed at their answers. For example, one readily imagines an experiment in which subjects are asked to process a passage featuring a more or less entrenched spatial metaphor and a fully entrenched spatial deictic, the semantics of which are at conceptual cross purposes (as determined by preliminary norming tests). Responses could be measured by fMRI and PET scans, as well as chronometrically in terms of some performance demand, and the design could be systematically varied to probe tolerances and thresholds for image-schematic clash or, what seems more likely from the foregoing analyses, functional constraints that might give substance to the concept "unimaginable."

As analyzed by Wordsworth, Milton's sky-high Satan and Wordsworth's own bidirectional breeze provide not only an introspective means to evaluate the comparative strengths and weaknesses of recent cognitive hypotheses concerning the imagination, but also extraordinarily crisp and perhaps

40. The best-guess theory as to why mental imagery has a "visual," "pictorial," or "depictive" bias is that it recruits visually-mediated knowledge structures (which may even be stored or neurologically mapped as images or spatial representations) and also, perhaps, certain elements of the visual perception architecture itself. See especially Jackendoff (for a brief development of the notion) and Kosslyn (for an exhaustive one).

methodologically revealing illustrations of the kinds of conceptual activity that, in carefully controlled conditions, might be primed for and experimentally objectified for analysis and verification. And these are but two examples of untold many. If romantic theory and the poetic exemplar can serve in the ways I've only begun to outline here, there's no telling how much and how centrally literary studies may contribute to the cognitive-scientific enterprise. The promise is immense.

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