

## CHAPTER 4

Intentionality and Constraint  
in Conceptual Blending

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Nothing is more admirable, than the readiness, with which the imagination suggests its ideas, and presents them at the very instant, in which they become necessary or useful. [...] One would think the whole intellectual world of ideas was at once subjected to our view, and that we did nothing but pick out such as were the most proper for our purpose. There may not, however, be any present, beside those very ideas, that are thus collected by a kind of magical faculty in the soul, which [...] is however inexplicable by the utmost efforts of human understanding.

David Hume (2000, 21)

## 4.1. INTRODUCTION

Writing about the “inexplicable” mysteries of mental representation nearly 300 years ago, David Hume put his finger on a problem that still bedevils cognitive science: How does the mind select and present to itself just the right concepts and images for the purposes of ongoing thought and communication? Does the mind rapidly potentiate a “whole intellectual world of ideas” and then deliberately “pick out” from this omniscient survey the particular ideas that are “the most proper for [the] purpose?” Or does the mind work more “magically” to potentiate *only* those particular ideas, and *only* in contexts in which “they become necessary or useful,” such that the “whole intellectual world” of irrelevant other ideas never enters the mental

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processing picture? In brief, when we think, talk, or write, do our minds search straw by straw for the needle in the conceptual haystack, or do we somehow ignore all things straw in order to light directly upon the metal of intended meaning?

Overstated and counterpointed by Hume for rhetorical effect, these competing notions of conceptual processing continue to be debated in contemporary cognitive science. The cofounders of conceptual blending theory (CBT), for instance, raise exactly this question of how the mind populates a blend with specific contents, and they answer with a version of Hume's first alternative, whereby the mind potentiates whole worlds of knowledge to pinpoint the specific domain(s) it actually effectuates in a particular integration network (Fauconnier and Turner, 2002, 71):

When we see the final integration network with all its connections in place, it may look like a *tour de force* showing the mastery of its creator in selecting just the right projections. In looking at the result, we miss much of what went into creating it. There is always extensive unconscious work in meaning construction, and blending is no different. We may make many parallel attempts to find suitable projections, with only the accepted ones appearing in the final network. [. . .] Brains always do a lot of work that gets thrown away.

As Raymond Gibbs and others have variously remarked, this high-cost, low-yield model of conceptual processing doesn't quite address the Humean question of selection. Even in this high-cost scenario, what determines whether a possible projection is, first, "suitable" and, then, "accepted" (i.e., actually "projected" or effectuated)? Gibbs himself favors a version of Hume's alternative, low-cost model of conceptual processing, which finds its closest modern counterpart in relevance theory (RT). This approach assumes that contextual parameters and discourse considerations rule out from the start "many of the rich sets of possible [. . .] meanings" that theoretically *could be* sampled in conceptual processing but "would not under most situations necessarily be [. . .] because more preliminary meanings are optimally relevant" (Tendahl and Gibbs, 2008, 1860). CBT may thus be "overdetermined" with respect to on-line conceptualization, a charge it can answer only by formulating principled (i.e., falsifiable) hypotheses about how input spaces, cross-space mappings, and projections to the blend are selected and specified (Gibbs, 2000, 355).

To help formulate hypotheses that may bring the magic of conceptual selection closer to the threshold of explicability, this chapter rethinks CBT according to the dynamical systems approach to life and mind recently advanced by the biological anthropologist and neuroscientist Terrence

Deacon. Like CBT but taking a much wider purview, Deacon's *Incomplete Nature: How Mind Emerged from Matter* (2012) aims to model the structure and dynamics of *emergence*, wherever it occurs in nature. This comprehensive context of other dynamically emerging phenomena provides a principled perspective with which to assess and refine CBT's own model of "emergent meaning." Furthermore, where CBT offers an essentially descriptive account of conceptual selection and projection, Deacon seeks a genuinely constructive account of these phenomena, explaining not only *that* they are, but *how* and *why* they are *what* they are (2012, 419). Deacon's explanatory gambit turns on the constitutive role of intentionality in all mental phenomena, not just those that answer to the folk psychological concept of "intention" (2012, 494).<sup>1</sup> Taking human intentionality as one complex variety within a larger class of end-directed natural phenomena, Deacon reconceives it in terms of massive selection constraints within conceptual possibility space—exactly what CBT analyses presuppose but do not quite explain.

#### 4.2. A DYNAMICAL SYSTEMS APPROACH TO MENTAL PHENOMENA

The protagonist of Deacon's *Incomplete Nature* is the second law of thermodynamics, which holds that an isolated physical system will degenerate toward thermodynamic equilibrium, or maximum entropy, a state in which all its component parts are symmetrically distributed, such that sampling the system at one location or time as opposed to another makes no difference, statistically speaking. This law implies an inverse corollary: Nonisolated systems temporarily generate thermodynamic disequilibrium, whereby the system's component parts remain asymmetrically distributed, or organized, such that sampling the system at one location or time as opposed to another *does* make a difference. A nonisolated living system, for example, somehow harnesses and thereby resists the entropic tendency of its component parts, maintaining for the life span of the individual and reproducing across that of the species an "otherwise unlikely state" of disequilibrium (Deacon, 2012, 108). How do living systems accomplish this second-law-defying trick?

Deacon's one-word answer is *constraint* (2012, 228–29). In dynamical systems theory, equilibrium represents an entirely unconstrained state of affairs—all possibilities (of location, trajectory, proximity to another component, etc.) are equally probable for any component of the given system. In a state of disequilibrium, by contrast, each component is constrained against occupying most locations within the system's possibility

space—comparatively few possibilities remain open to it. Rather than *selecting for* the organized, “far-from-equilibrium” state(s) of the system, constraint works by *ruling out* the many possible states of disorganized equilibrium the system might otherwise occupy. Constraint is thus precisely “the fact of possible states not being realized” (2012, 204).

Consider a small whirlpool in a stream, spinning just where a large rock, a jammed branch, and a curve in the bank conspire to divert and circulate the rushing water into a persistent vortex. In this scenario, many entangled physical systems are working together to generate and continuously propagate the whirlpool. The emergent whirlpool is not “something added” to nature, a thing in itself, “but rather a reflection of something restricted and hidden”—in this case, all the trajectories that have for the moment been ruled out for the constituent water molecules—“due to constraints propagated from lower-level dynamical processes” unfolding in the stream, rock, branch, and bank (Deacon, 2012, 203). Paradoxically, systems that in isolation would tend to increase in equilibrium by dissipating constraint, when entangled can stabilize their respective disequilibria by propagating constraint. When they do, *forms* emerge. As Deacon puts it, constraint on lower-level *thermodynamic* processes enables, “via ascent in scale,” higher-level *morphodynamic* processes such as the emergent whirlpool and the no-less-emergent—though remarkably more persistent—bank, branch, rock, and stream (ibid.).

Most such morphodynamic forms are chance by-products of other physical interactions: The bank is a result of biological decomposition, the rock of geological sedimentation, and the stream of the hydrologic cycle. Because they are not self-organizing, the bank, rock, and stream may be said to exist but not to live or reproduce. By contrast, the tree from which the branch fell was a living, reproductive system. As one member in a species’ self-conserving lineage, the tree was self-organizing and self-reproducing in a way that the bank, rock, stream, and whirlpool never were. The tree was thus a “teleodynamic” system constrained by an inherent formal end: on-going self-repair for persistent self-reproduction (Deacon, 2012, 230–34, 277–325).

More precisely, the tree as a teleodynamic system emerged from constraints propagated by the entanglement of lower-level teleodynamic systems (e.g., cells within organs), which themselves emerged from constraints propagated by the entanglement of still-lower-level morphodynamic systems (e.g., the arrangements of biomolecules constituting the formal structures of cells), which in turn emerged from constraints propagated by the entanglement of still-lower-level thermodynamic systems (e.g., the elemental constituents constituting each biomolecule). Crucially,

these many levels of entangled systems remained dynamically organized for the life span of the tree precisely to sustain the highest-level emergent phenomenon they cooperated to support—the tree itself and, across larger time spans, its species. So, in addition to bottom-up causality leading from lower-level to higher-level dynamics (thermo → morpho → teleo), there was a corresponding top-down causality in the sense that the highest-order dynamics (the reproductive tree) regulated and stabilized the lower-level dynamics from which it arose (teleo → morpho → thermo). This circular, self-reflexive causality is the essence of teleodynamic systems (Deacon, 2012, 468), and teleodynamism is what distinguishes living or “autopoietic” from nonliving systems.

Self-organizing end-directedness likewise defines mental systems—which makes sense, given that mental systems supervene upon living ones. All such teleodynamic phenomena make up a class that Deacon dubs “ententional,” which scales up, with increasing orders of emergent complexity, from cell metabolism and differentiation to animal sentience to human self-awareness and conceptualization. Ententional phenomena include “functions that have satisfaction conditions, adaptations that have environmental correlates, thoughts that have contents, purposes that have goals, subjective experiences that have a self/other perspective, and values that have a self that benefits or is harmed,” or, “to use the colloquial terminology,” any phenomena that exhibit “teleology, purpose, meaning, intention, interpretation, and sentience” (2012, 27). Here, Deacon’s multileveled theory of dynamic constraint intersects with the concerns and questions of CBT, for a blend, too, is a self-organizing, end-directed dynamical system exhibiting “teleology, purpose, meaning, intention, interpretation, and sentience.”

The emergent meanings of a blending network must accordingly be, like other ententional phenomena, the product of hierarchically generated constraint. Just as the higher-level processes of the brain’s reentrant networks cannot be reduced to the lower-level activities of the individual cells involved but in fact constrain and organize those activities for higher-level purposes (or “ententions,” such as the homeostatic self-regulation of the autonomic nervous system), so the mental phenomena that supervene on the brain’s reentrant networks cannot be reduced to those networks but in fact constrain and organize their activity for higher-level purposes of mental representation (“intentionality”) (Deacon, 2012, 488–89). Deacon speculates that “traces of this hierarchic dynamical dependency” should be reflected not only in the physical brain but also “in the very structure of the experience of perceiving, thinking, or acting. In other words, we should be able to find the signature of these emergent dynamical levels

in the details of brain process and in the very quality of subjective experience” (2012, 489). Subjective experience (including blending) is permeated by intentionality, or aboutness, so its structure should reveal traces of the self-reflexive constraint propagation and preservation from which it, like all ententional phenomena, emerges (2012, 511–12, 517–24).

#### 4.3. END-DETERMINED MEANS IN CONCEPTUAL BLENDING

As a self-organizing, intention-driven system, blending should involve massive top-down constraint propagation that rules out most possible states of the resulting integration network from the word go. Although CBT, as previously noted, often suggests an expensive, indiscriminate sampling of conceptual possibility space (see also Fauconnier and Turner, 2002, 309), at other times CBT appears to anticipate Deacon’s ententional theory of constraint. For example, analyzing “The Image Club” blend in which a prostitute dresses like a schoolgirl in order to fulfill a client’s sexual fantasy, Fauconnier and Turner insist that, “far from just mixing the features in free-for-all fashion from two situations—the classroom and the bordello—blending demands systematic matches between the inputs and selective projections to the blend *according to a number of constraints* [. . .] The matching is not obvious or preconstructed. It is *driven by the intended blend*, not by any obvious analogy between the schoolhouse and the whorehouse” (2002, 29; emphases added). The claim is tantalizing—the intended blend constrains the “matching” (or cross-space mapping) between inputs, rather than the matching between inputs constraining the blend—but it has not been pursued in CBT in a systematic way.

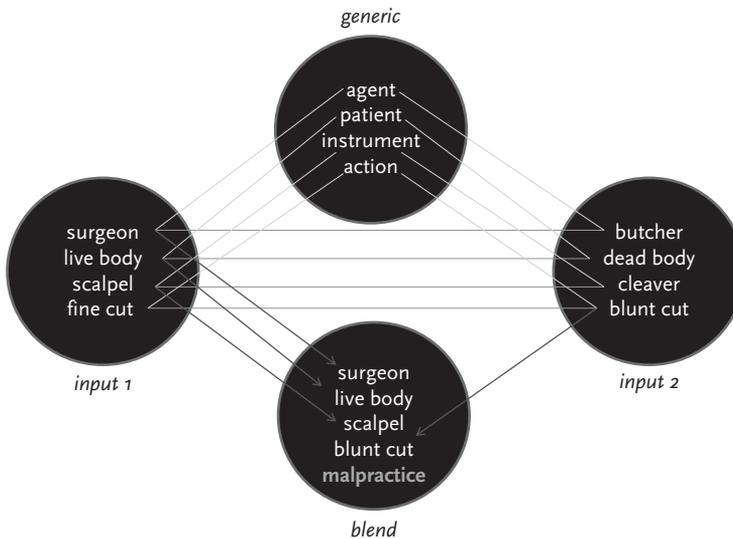
CBT has accordingly been faulted for its post hoc analyses, whereby the analyst begins with the emergent blend and backward-engineers the component input spaces and cross-space mappings and projections that supposedly produced it. However problematic in logic and results, these post hoc analyses may reflect the analyst’s nonetheless correct intuition that the intended (bl)end *must be* determinative in the selection and mapping of inputs to the network. A high-cost search-and-select process that randomly samples any and all semantic domains would present “significant difficulties” for “efficient computation” because it “may produce all possible combinations of elements from all [possible] input spaces, resulting in a combinatorial explosion of possible blends” (Li et al., 2012, 1). For this reason, Boyang Li and colleagues follow Line Brandt and Per Aage Brandt in arguing that “the three main procedures” of CBT—“(1) the selection of the input spaces, (2) the selective projection of elements into the blend,

and (3) the stopping criteria for blend elaboration”—“must algorithmically make use of the *context* and *goals* of the blend being constructed” (ibid.). When incorporated “as integral aspects of the conceptual blending process, contexts and goals provide concrete computational benefits by pruning search spaces” (ibid.).

Consider the frequently discussed blend involved in the statement “This surgeon is a butcher!” Ignoring the fact that negatively freighted senses of “butcher” have been lexicalized in English since the fifteenth century and taking the utterance instead as a novel metaphor that requires cross-space mapping for felicitous interpretation, CBT diagrams the underlying integration network as in Figure 4.1.

As Fauconnier and Turner (2002, 71) observe, “In looking at the result, we miss much of what went into creating it.” So what went into creating this particular network? Specifically, how were these input spaces chosen and populated with just these contents, how were the mappings between them and the generic space determined, and how were the projections to the blend selected?

As Brandt and Brandt argue (2005, 219), such questions can be answered only with reference to an actual semiotic situation, in which a speaker intends to communicate a specific meaning to her auditor. Suppose that the intended meaning is the notion of the surgeon’s incompetent and perhaps unethical procedure, in short, of his *malpractice*. In this situation, the



**Figure 4.1:** Blending: “This surgeon is a butcher!” Lines represent cross-space mappings, arrows represent projections, and the larger, shaded typeface represents emergent meaning

first question is why the speaker should choose the vehicle of “butcher” to express this intended meaning, as “nothing in the experiential domain of butchers warrants a negative evaluation” concerning competence or probity (ibid.). Indeed, if malpractice is the intended meaning, any number of other professional domains might leap more readily to mind, for example, “car dealer,” “politician,” “stockbroker,” and so forth. How has the speaker come to select the domain of butchery, and why does she believe that this will convey her intended meaning? Has she searched randomly among all possible professional domains, or has her intention-in-context somehow severely constrained this choice?

Happily, Brandt and Brandt supply the following real-life situation in which the utterance was both constructed and construed:

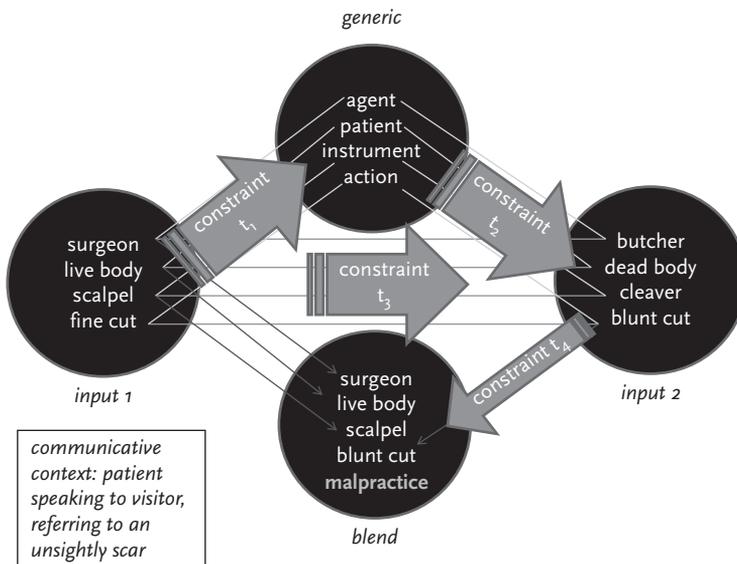
The post-surgery patient was not happy with the scar which had a more dramatic appearance than she had expected. She showed the scar to her visitor and told him she had not been warned it would look like this. Emphasizing her dismay she said “This surgeon is a butcher!” The addressee took this utterance to mean that she felt the surgeon should have been more careful with the stitches, since she would now have to live the rest of her life with a noticeable scar. (2005, 202)

In this context, the speaker intends to offer a judgment on a state of affairs obtaining among herself, the surgeon, the surgery, and the resulting scar, an intention her addressee would easily identify in light of the hospital setting, shared knowledge of the recent surgery, and the speaker’s foregoing communicative acts of showing the scar and saying she hadn’t been warned how it would look. In choosing her metaphoric vehicle, the speaker is evidently guided by the abstract event structure of the shared discourse topic, which features an agent (the surgeon) performing an action (surgical incision) on a patient (the speaker) with an instrument (a scalpel). As Brandt and Brandt imply, these generic-level considerations with respect to the discourse topic (the target or “reference space”) determine the selection and construal of the metaphorical counterpart domain (the source or “presentation space”): “The situation provides the proper context for framing the surgeon as an agent acting upon a patient, *at the expense of all other ways of conceiving of the surgeon*. [. . .] This framing of the surgeon (the target of the metaphor) in turn affects the framing of the butcher (the source). On this view, the relevant aspect(s) of the target determines how the source is construed” (Brandt and Brandt, 2005, 222; emphasis added).

To put their point categorically: Selection for the blend is constrained from the outset by the discourse topic and targeted meaning, that is, by the “aboutness” or intentionality of the utterance. This explains why many

otherwise possible source domains were in this instance almost certainly not sampled, even subconsciously. Because “car dealers,” “politicians,” and “stockbrokers” do not act physically on their correlative patients (i.e., car buyers, constituents, or investors) by cutting them with a sharp instrument, these and countless other professional domains are constrained against from the start. The target-derived generic “frame” (or “space”) of “an agent acting upon a patient” (and, I would add, precisely in the manner of acting directly on it with a sharp instrument) restricts the conceptual possibility space to only such sources as share the target’s generic structure.<sup>2</sup> Furthermore, once a source has been selected from this constrained possibility space, the generic space stipulates the cross-space mappings between the source and target (ensuring that agent maps to agent, patient to patient, and so forth) and regulates the resulting projections to the blend. The dynamic order of this constraint propagation in input selection, cross-space mapping, and selective projection is illustrated in Figure 4.2, where the flow of time is indicated as  $t_1$ ,  $t_2$ ,  $t_3$ , and  $t_4$ .

This dynamic propagation of constraint explains why input spaces and the cross-space mappings between them are partial rather than wholesale with respect to the semantic domains involved. As RT predicts (Sperber and Wilson, 2008), the blend selects and maps only those constituents that are required for the relevant intention and interpretation. This



**Figure 4.2:** Intended meaning as systemic constraint. Order of constraint propagation in a blending network. The flow of time is indicated as  $t_1$ ,  $t_2$ ,  $t_3$ ,  $t_4$

intention-driven reduction of the *possible* mappings on the speaker’s part translates into considerable constraint on *possible* interpretations by her addressee. The first four mappings in Table 4.1 are accordingly predictable in context, whereas the remaining ones are comparatively unlikely.

In a hospital context where the speaker is lamenting an unsightly scar, her ostensive message “This surgeon is a butcher!” would prompt her auditor to follow its explicit metaphoric mapping to the next three contextually strongly implicated ones, at which point she could draw the relevant inference: a blunt, butcher-like cut = poor practice in the domain of surgery; poor practice = *malpractice*. There is no reason to assume the high-cost potentiation of additional possible mappings between these domains, not least because the intended “emergent” meaning of poor surgical practice has already been signaled by the speaker’s gestural and verbal profiling of her “dramatic scar.”

Analyzed as an intentional or teleodynamic phenomenon, the conceptual integration network at play in “This surgeon is a butcher!” reveals a rather different dynamical signature than is commonly modeled or inferred by CBT. Here, the generic space is not optional, as is often asserted, but criterial. In terms of the dynamics of online blend construction, *the generic space derives from the target or reference space and precedes the selection of the source or presentation space*. Setting up and running the blend thus appears to involve the following low-cost order of operations: *intended meaning with respect to discourse topic → generic framing of topical scenario → potentiation and activation (“selection”) of generically analogous scenario(s) with salient mappings to topical scenario in place → running the blend through context-sensitive differential weighting of salient mappings*.

**Table 4.1.** POSSIBLE CROSS-SPACE MAPPINGS  
IN “THIS SURGEON IS A BUTCHER!”

Domain: Surgery		Domain: Butchery
surgeon	→	butcher
live body	→	dead body
scalpel	→	cleaver
fine cut	→	blunt cut
?operating table	→	?chopping block
?nurses	→	?shop assistants
?anesthesia	→	?stun gun
?stitching	→	?packaging
?recovery and release	→	?display and sale
?j, k, l, . . . n	→	?x, y, z, . . . n

This clarified order of operations corrects CBT's unfortunate implication that the generic space somehow follows from input-space selection and cross-space mapping rather than preceding and constraining these processes. In laying out their network model, Fauconnier and Turner introduce "input spaces" and "cross-space mapping" before "generic space," and they define the latter as a "mental space [that] maps onto each of the inputs and contains what the inputs have in common"; thus, "the structure that inputs seem to share is captured in the generic space" (2002, 40–1, 47). These definitions are unclear about the order of operations, but their grammar implies that commonalities between the inputs determine the contents of the generic space, rather than the generic space determining those commonalities. Unfortunately, this uncertainty is legion in the CBT literature and has led to equally widespread uncertainty about the role and even necessity of the generic space in the network model.<sup>3</sup>

For example, in an otherwise illuminating discussion of "Extemporaneous Blending," Seana Coulson defines a "canonical integration network" as consisting "of two *input spaces*, each of which represents a cognitive model that contributes to the blend, and an optional *generic space* that represents abstract commonalities in the inputs" (2005, 109; Coulson's emphases). But if the generic space is optional, we can only wonder what, if anything, constrains input selection and cross-space mapping. Later in the same discussion, Coulson comes closer to the intentional truth, except that she again downplays the critical role of the generic space ("abstract similarity-space") in on-line blend construction and interpretation: "the choice of input domain often seems to be guided by the nature of the emergent properties of the blend rather than its proximity to the target in abstract similarity-space" (2005, 119). Given the analysis of the surgeon–butcher blend previously advanced, however, we might rephrase Coulson's passive and oppositional arguments in active and cooperative terms, as follows: *The nature of the emergent properties of the intended blend guides the choice of input domain by constraining it to only those possibilities that are proximal to the target in abstract similarity space.* A blending system, in other words, is organized teleodynamically such that the intentional end constrains and regulates the conceptual means.

#### 4.4. PROTO-BLENDS, ATTRACTOR DYNAMICS, AND DISTRIBUTED INTENTIONALITY

An intention to mean something constrains and regulates the conceptual means by which that intention is realized, even before it is realized. This is perhaps what Coulson means when she suggests that "*the nature of*

the emergent properties of the blend,” rather than the emergent properties themselves, guides the choice of input domain. Clearly, the emergent properties can’t emerge before the specification of the input space(s) from which they emerge, but, as Coulson hints, something of *the nature* of these emergent properties *must* antecede the formulation of the input space(s). This inherent something is the topically predetermined and network pre-determining generic space.

Until the blend is constructed and realized, its intention remains unfulfilled. Setting up and running the blend is the act of fulfilling, which is to say, specifying, its intended or emergent meaning, precisely in terms of the inputs, mappings, and projections thereby selected. Prior to its specification through blending, the intended (bl)end is unspecified, which is to say, only sketchily or schematically projected. William James (quoted in Chafe, 1994, 120) called this as-yet-unrealized form of the intention a “felt fringe of relations,” and he emphasized its constitutive and constraining role in the resulting conceptual selection process:

In all our voluntary thinking there is some topic or subject about which all the members of the thought revolve. Half the time this topic is a problem, a gap we cannot yet fill with a definite picture, word, or phrase, but which [...] influences us in an intensely active and determinate psychic way. Whatever may be the images and phrases that pass before us, we feel their relation to this aching gap. To fill it up is our thought’s destiny. Some bring us nearer to that consummation. Some the gap negates as quite irrelevant. Each swims in a felt fringe of relations of which the aforesaid gap is the term.

James’s reflections suggest that generic space might be better conceived as a prototype version of the blend or “proto-blend,” that is, a schematic anticipation of the sort(s) of relations that should obtain in the elaborated blend and undergird its emergent meaning(s).

The relations sketched (“intuited,” “yearned for”) in the proto-blend thus function as attractors in conceptual possibility space, that is, as “region[s] of values toward which trajectories of dynamical change are biased” (Deacon, 2012, 230). Minds like other ententional systems are special kinds of dynamical system in which attractors are not just spontaneously but self-reflexively generated and stabilized, such that “the resultant attractor dynamics itself play[s] the determinate role in generating the architecture” of the system (2012, 396). What holds for “cognition” and “semiosis” in general must likewise hold for blending in particular: It emerges from and is regulated by “intrinsic constraints that have a capacity to propagate and self-organize” (2012, 498).

Moreover, this intrinsically constrained, self-organizing dynamics operate not just *within* blends but also *across* them, in ongoing interactive conceptualization. The extemporaneous blending at play in a provocative segment of the live radio show “Loveline” provides a wonderfully clear illustration. Responding to a male caller’s tale of experiencing two orgasms during a single episode of oral sex, the show’s hosts offer a “Dueling-Banjos”-like exchange of conceptual blends in which the young man’s alleged double orgasm is multiply refigured as a miracle, a divine communication, a holy grail, purgatory, a Sisyphian punishment, and Moby Dick (Coulson, 2005, 112). Not only are the six metaphoric vehicles drawn from the related discourse domains of religion, mythology, and literature, but “each host produces a blend that recruits aspects of the previous one” (2005, 118). Coulson explains this consistency across the blends with reference to Roger Schank’s theory of “thematic organization packets” (TOPs): “TOPs are memory structures that represent abstract, domain-independent commonalities between sequences of events. If nothing else, the aforementioned scenarios all involve a strongly desired goal pursued by an agent” (2005, 119). Although her definition and application suggest that TOPs are effectively generic spaces that work as proto-blends to structure ongoing thought and discourse, Coulson downplays this implication: “We might speculate that the hosts’ search for appropriate analogues is constrained somewhat by the activation of a particular TOP but that many other factors come into play in the establishment of a match” (2005, 119), for example, whether the speaker intends a positive or negative interpretation of the topical scenario.

Such differences in the emergent meaning of each successive blend are important to register, but they should not lead us to underestimate the remarkable stability of generic structure across the six blending networks. To begin with, each blend is strongly constrained by the hosts’ shared intention of implying that the topical scenario strains credulity; the selected inputs to the unfolding network are accordingly confined throughout to fictitious or supernatural scenarios. Beyond such *positive* evidence of constraint, the consistency of topology across the selected inputs suggests a great deal more *negative* evidence of constraint in the form of the many additional possible mappings to the topical scenario that, nevertheless, none of the blends picks out. Motivated by the hosts’ shared intention to verbally raise an eyebrow concerning the young man’s claim of a once-in-a-lifetime experience, the governing proto-blend abstracts from the topical scenario only those constituents required for the fulfillment of this intention: the roles of human patient and naturally unlikely event, to which is added, by way of securing the “unnatural” or “fictional” inference, the role of a favorably or

unfavorably disposed supernatural agent. As the blend exchange unfolds, the proto-blend acquires only one more generic parameter, interminable duration, which derives not from the topic scenario but from the supplemental supernatural frame. Strikingly, no other roles or relations from the topic scenario are schematized in the proto-blend or analogically mapped in the realized blends, though many appear, in unconstrained retrospect, equally possible: for example, the role of the caller's partner, the setting for the blessed/damned event (bed, couch, car), the before-and-after event structure (love talk, reciprocation, cigarettes), and so forth. Although mappings from these constituents might have made for additional ribaldry—a pierced tongue being *withheld* in the purgatory scenario, for example, or a cry of “shiver me timbers!” punctuating the *Moby Dick* scenario, twice—none was relevant to the governing intention, so none was sampled, even though the show features a professional comedian and is geared to deliver “lowbrow humor” related to “sex, drugs, and relationships” (Coulson, 2005, 112). The speakers' shared meaningful intentions converged on a proto-blend whose topology operated as an integrated set of attractors in conceptual possibility space throughout the sequence, thereby constraining against many dimensions of the topic that the hosts had otherwise powerful professional and contextual reasons to exploit.

The successive blends in the “Loveline” sequence were not arbitrarily selected from “the whole intellectual world of ideas” but rather were highly constrained by the discourse topic and the speakers' shared or distributed intention with respect to it. This distributed intentionality—to comically exaggerate and thereby question the credibility of the caller's sexual scenario—is captured in the proto-blend and literally *communicated* between the interlocutors across the resulting discourse. The schematized constituents of the proto-blend operate dynamically to attract their joint attention to a remarkably narrow region of conceptual possibility space, thereby constraining not only the individual blending networks unfolding within each speaker's mind but also the multiple blending networks shared and developed between them.

In many instances of conceptualization and all instances of conceptualization-for-communication, the entanglement of individual minds constitutes the yet higher-order teleodynamic system of interpersonal interaction or sociality (Gibbs and Cameron, 2008, 68). Viewing “individuals engaged in conversation as dynamical systems” allows us to understand “patterns in metaphor [and blending] performance [. . .] as stabilities emerging from the dynamics and variability of discourse” (ibid.). Gibbs and Cameron (2008, 71; emphasis added) dub such “patterns” or

“stabilities” “systematic metaphors,” but their definition of the kind characterizes the attractor dynamics of the proto-blend equally well:

Systematic metaphors are dynamical phenomena relating to specific discourse events and participants, and evolve with the discourse. [...] [T]hey may also function for discourse participants as emergent stabilities in the trajectory of the coupled system of spoken interaction. Truly emergent phenomena do not just emerge upwards out of the microgenetic moment of use but also operate downwards from the higher level, ‘enslaving’ systems at lower levels in a process of reciprocal causality. *A systematic metaphor is emergent in this sense if it comes to constrain participants in their talking-and-thinking, so that other ways of metapho-rizing the idea drop away in favor of this particular metaphor.*

Like systematic metaphors, proto-blends (which may simply be another name for the same thing) work to stabilize and reproduce the conceptual constraints they embody, extending their own generic longevity through repeated specification, or “reproduction,” in the unfolding discourse.

Gibbs and Cameron catalog a variety of reasons for the emergence of systematic metaphors in discourse—conventional conceptual metaphors that pervade the language system, dialectal and sociolectal conventions, the need to ground reference to the topic, and so forth (2008, 68)—but none of these motivates the emergent dynamic stabilities in the “Loveline” sequence of blends. Coulson construes these stabilities in terms of “the interactional demands of conversation—to make a contribution that is relevant to prior speakers’ comments and includes novel information” (2008, 120), but this hardly explains their exclusivity with respect to possible mappings between the topic and the selected input spaces. Instead, the hosts’ distributed intention *to mean something together* generated the stabilized, self-perpetuating attractor dynamics of their highly creative but also highly constrained discourse.

Communicative intentionality thus has a twofold character or double dimensionality: It aims at individual meanings (*aboutness*) as well as interactional harmony (*togetherness*). Very often, the former, semantic end is mostly or wholly subordinate to the latter, social end; this is certainly the developmental order of operations, as the infant and then child learns communicative behaviors (joint-attention sharing, gesturing, speech, etc.) that facilitate social interaction and goals. An intentional model of semiology-for-sociality likewise makes sense from a dynamic systems point of view, which holds that entangled systems (here, individual meaning-making minds) may generate higher-order dynamic regularities

(social interactions, including communication) that self-stabilize by reflexively constraining the lower-level systems (again, individual minds) from which they emerge. This represents a necessary “degradation” in the “autonomy” or possibility space of the lower-level systems (Deacon, 2012, 473, 517–18), which are, in Gibbs and Cameron’s (2008) colorful metaphor, effectively “enslaved” to serve and perpetuate the higher-level dynamic.

What Deacon’s theory of ententional phenomena contributes to this essentially Gricean picture is a greater emphasis on the *end-directedness* of social cooperation for optimal relevance or, more fundamentally, of optimal relevance for social cooperation. Across the wide spectrum of life and mind, ententional systems deploy “anticipatory sentience” that monitors its own dynamics in order to maintain and conserve them (Deacon, 2012, 505). In the entangled dynamics of social-semiotic interactions, one participant’s “anticipatory sentience” concerns, above all, the other’s likely interpretation of and response to the about-to-be-encoded intended meaning. As Mikhail Bakhtin (1986, 95–6; see Gibbs, 1999, 63ff) put it some time ago in setting out the linguistic principle of “addressivity”:

the utterance of the person to whom I am responding [. . .] is already at hand, but his response (or responsive understanding) is still forthcoming. When constructing my utterance, I try actively to determine this response. Moreover, I try to act in accordance with the response I anticipate, so this anticipated response, in turn, exerts an active influence on my utterance

[. . .] determin[ing] my choice of a genre for my utterance, my choice of compositional devices, and finally, my choice of language vehicles.

Along with constraints propagated by “the nature” of the intended meaning or proto-blend itself (what Bakhtin [1986, 77] calls the speaker’s “speech plan” or “speech will”), the speaker’s thinking-for-speaking is further constrained by his anticipation of the addressee’s “still forthcoming” response. A speaker’s situation-specific *intention to mean something* (individual intentionality) is thus contextualized and conditioned by a more general *intention to mean together* (distributed intentionality). This social dynamic is at work whenever the end-directedness or aboutness of one mind becomes systematically entangled with the end-directedness or aboutness of another, such that both are attracted (confined) to a narrowly delimited and therefore sharable region of conceptual possibility space.

#### 4.5. PROTO-BLENDS IN POETIC ICONICITY

Minds needn't be present to one another to be systematically entangled, as the communicative nature of art makes especially clear. Although the production and reception of art are asymmetrical and (normally) temporally dissociated processes, individual artworks are nevertheless “self-programming” communications in which formal determinations within particular media enable artist's and audience's minds to converge with the twofold intention to mean something and to mean together (Luhmann, 2000, 204). This in no way stipulates that these converging minds mean precisely the same something,<sup>4</sup> only that the artist, too, must honor the principle of addressivity, “observ[ing] his emerging work in anticipation of its observation by others” and “incorporat[ing] [. . .] ways of directing the expectations of others” and of “surpris[ing] them” (2000, 40). Each other-respecting determination of the unfolding work propagates constraint, until the work resolves into a recursive, self-referential system; a parallel process characterizes the reception of the finished work. As Niklas Luhmann describes it in *Art as a Social System*, following the initial determination of “the work's type (whether it is to be a poem, a fugue, or a glass window) and perhaps an idea in the artist's mind[, a]ny further decision tightens the work, orienting itself toward what is already there, [. . .] and restricting the freedom of further decisions. Once the distinctions begin to stabilize and relate to one another recursively, [. . .] the artwork finds stability within itself; it can be recognized and observed repeatedly” (2000, 215–16). Self-reflexive and self-reproducing, the artwork emerges as a teleodynamic system.

As Luhmann (2000) indicates, it does so by observing and recursively instantiating its own meaningful formal decisions. “Text-art,” for example, “organizes itself by means of self-referential references that combine elements of sound, rhythm, and meaning” (2000, 26), thereby creating poetic iconicity. Poetic iconicity has been fruitfully analyzed and modeled in terms of CBT, yet here again confusion about order of operations and in particular the constraining role played by the target-derived proto-blend has hampered the investigation.<sup>5</sup> Thus, in her indispensable *Metaphor and Iconicity*, Masako Hiraga (2005) unfortunately introduces the same faulty expression or perhaps reasoning we noted earlier in Fauconnier and Turner (2002) and in Coulson (2005). Reviewing CBT, for example, Hiraga misleadingly states that “the cross-space mapping between the inputs constitutes the content of the generic space” (2005, 38), when in fact the content of the generic space constitutes (“motivates”) the cross-space mapping. Taking motivated

mapping for granted leads Hiraga to propose that “in theory, there are four mapping possibilities” for creating iconic forms: “from generic space onto form; from input source space to form; from input target space to form; and from blended space to form. However, in practice, the third case is unlikely because the target space in metaphor, by its own nature, is where the mapping finalises rather than initialises” (2005, 52). This is wrong on both counts. In practice, the targeted or intended meaning is *always* where the network initializes, in what I’ve dubbed a “proto-blend” to capture its self-determining teleological force. In theory, therefore, as well as in practice, *all* mapping trajectories from intended meaning to realized form must be traced through the generic structure (or attractors) of the proto-blend (which may of course evolve as the network is specified and elaborated).

For a brief and final case in point, consider the following iconic masterpiece by Richard Wilbur (2004, 310):

“Piazza Di Spagna, Early Morning”

I can’t forget  
How she stood at the top of that long marble stair  
Amazed, and then with a sleepy pirouette  
Went dancing slowly down to the fountain-quieted square;

Nothing upon her face  
But some impersonal loneliness,—not then a girl,  
But as it were a reverie of the place,  
A called-for falling glide and whirl;

As when a leaf, petal, or thin chip  
Is drawn to the falls of a pool and, circling a moment above it,  
Rides on over the lip—  
Perfectly beautiful, perfectly ignorant of it.

Even on first reading, the poem’s metaphoric re-presentation of a girl dancing down the Spanish Stairs in the analogous terms of a natural slip of a thing spinning over a falls is, as Hume might say, magically effective. Iconically reinforcing this effect, the stanzaic sequence appears to mimic the poem’s formally recursive compositional process: The first stanza describes the targeted meaning (the unforgettable image of the girl); from this scenario the second stanza abstracts a proto-blend consisting of mood (“impersonal loneliness”) and event structure (“A called-for falling glide and whirl”); and the third stanza thereby discovers just the right metaphoric source to communicate the targeted meaning to full effect. To

correlate the three-stage conceptual process (“meaning”) with the poem’s three-part structure (“form”), we (the poet to begin with and readers following him) deploy two iconic diagrams according to which SEQUENCE IN TIME IS SEQUENCE IN FORM and QUANTITY OF CONTENT IS QUANTITY OF FORM. These same “grammatical” metaphors structure the conceptual metaphor between the poem’s target and source, such that both scenarios develop from earlier to later and from top to bottom, with a one-to-one mapping between girl and natural object, stair and falls, top and lip. Both the grammatical (“iconic”) and conceptual (“metaphoric”) relations obtain thanks to the same abstract measures—SEQUENCE IN TIME and QUANTITY OF CONTENT—whose situation-relevant parameters are schematized in the target-derived proto-blend.

Conformity with the schematics of the proto-blend is thus an operative constraint on the self-referencing iconic recursions the poem stages, as well as the measure of their success. The more mutually reinforcing meaning–form relations we discover, the more “necessary” or self-determining and aesthetically satisfying the work appears to be (Luhmann, 2000, 120). All such relations take their structural motivation and bearings from the intended meaning as abstractly formulated in the proto-blend. The poem’s many clever figure–ground icons—the deviant feminine rhyme in the third stanza, which thus pointedly stands out against the masculine norm of the previous stanzas; or the “small” front-vowel, “big” back-vowel phonetic contrast that mirrors the physical size contrast between a comparatively tiny “leaf, petal, or thin chip” and the much larger “falls of a pool” to which it “is drawn,” distinctions that conceptually reduplicate the size differential between the figure of the girl and the ground of the Spanish Stairs—are alike motivated by the relational diagrams DIFFERENCE IN MEANING IS DIFFERENCE IN FORM and SIMILARITY IN MEANING IS SIMILARITY IN FORM, where again the criterial “differences” and “similarities” (e.g., in scale, orientation, trajectory, etc.) are schematically predetermined by the proto-blend.

So too with other relational icons, such as the visual staggering of lines to suggest the vertical staggering of stairs and waterfalls; the alliteration of voiceless and liquid consonants in “*sleepy pirouette*” and “*fountain-quieted square*” to evoke the hushed early morning setting and the graceful “glide and whirl” of the figure within it; the metrical lengthening of the second and fourth lines to imitate the “long marble stair” and the time she consumes “dancing slowly down” it; the caesural pauses within the title and lines 2, 6, and 10 to create momentary reversals of rhythm that kinesthetically parallel her momentary “CIRcling” “at the TOP of that LONG MARble STAIR”; the wholly unanticipated dactylic pentameter of the final line, “perfectly

beautiful” in execution, “perfectly ignorant” of the predominantly rising meter it so strikingly contrasts, and thus a perfect relational icon of the target figure, who is likewise gorgeously unaware of her outstanding difference in a familiar scene. Crucially, these poetic icons pick out resemblances among forms of information in visual, auditory, motor, and conceptual modalities that possess no “natural” or self-evident conformities. Without the proto-blend’s “felt fringe of relations” articulated at a sufficient level of domain- and even modality-general abstraction, such “magical” cross-modal meaning–form blends would be literally inconceivable.

#### 4.6. CONCLUSION

This chapter has proposed a systems-theoretic adjustment to CBT with respect to the so-called generic space, which as the primary representation of system-wide constraint should be promoted to a leading role in the blending model’s cast of mental spaces and brought on stage much sooner in any analysis of conceptual integration. The generic space is not the product of conceptual matches across preexisting input spaces but, as a target-derived proto-blend, the cause of such matches, not by selecting for them but by constraining against anything not them. Inputs to the network accordingly potentiate with relevant cross-space affordances in place and little “unmapped” structure, if any. Self-organizing and self-perpetuating, not only within individual blends and minds but also within intentionally distributed blends that emerge between minds in (artistic) communication, proto-blends are doubtless critical for discourse coherence, viewpoint construction, and other aspects of literary and linguistic performance, just as they are for poetic iconicity. As dynamic embodiments of intentionality and constraint in creative conceptualization, proto-blends deserve greater theoretical and experimental attention.

#### NOTES

1. As the *Stanford Encyclopedia of Philosophy* insists, “the meaning of the word ‘intentionality’ should not be confused with the ordinary meaning of the word ‘intention’” (Jacob, 2003/2010). “Intentionality” in the philosophical sense denotes “the power of minds to be about, to represent, or to stand for, things, properties and states of affairs” (ibid.); intentionality is accordingly fundamental to all conscious states, whether of belief, desire, feeling, knowledge, perception, etc. (Siewert, 2002). “Intention” in the ordinary or folk-psychological sense denotes a specific *kind* of conscious state that is purposeful and action oriented

and thereby distinguishable from other states such as belief, desire, feeling, knowledge, perception, etc. (see Malle, Moses, and Baldwin, 2001, 1–24, 45–67; Gibbs, 1999, 21–39).

2. This essentially restates George Lakoff’s “invariance principle,” holding that metaphorical mappings preserve the cognitive topology of the source domain, but in a way that is consistent with the topology of the target domain (see Tendahl and Gibbs, 2008, 1825, for discussion). But this seems to get things backwards. Putting first things first: The topology of the target domain takes precedence throughout the network, (pre)determining the topology of the generic space, which in turn (pre)determines the topology of the source space. This is precisely why source topology tends to be consistent with target topology, and why, more generally, “topology” functions as a “governing principle” in CBT (Fauconnier and Turner, 2002, 325–28).
3. A notable exception is Antović (2011), who offers related arguments from the domain of music conceptualization for “a reinforced role” for the generic space in conceptual blending.
4. Although it often aims at and feigns it, communication never meets the threshold of perfect agreement; and in the art system in particular, where “sameness of the object substitutes for the conformity of opinion,” observers of a given artwork (including the artist) enjoy the extraordinary liberty of meaning “radically” divergent things together (Luhmann, 2000, 74).
5. Margaret Freeman, who underlines “the isomorphic structures of the generic space that enable blending to occur” (2012, 128), may be an exception, but to my knowledge her work does not understand this “enabling” in terms of end-directed systemic constraint.

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