

THE EMERGENCE OF TRANSCENDENTAL NORMS IN HUMAN SYSTEMS

by *Mark Graves*

Abstract. Terrence Deacon has described three orders of emergence; Arthur Peacocke and others have suggested four levels of human systems and sciences; and Philip Clayton has postulated an additional, transcendent, level. Orders and levels describe distinct aspects of emergence, with orders characterizing topological complexity and levels characterizing theoretical knowledge and causal power. By using Deacon's orders to analyze and relate each of the four "lower" levels one can project that analysis on the transcendent level to gain insight into the teleodynamic emergence of transcendent-level systems. I argue that cross-cultural interactions among human cultural-level systems results in the emergence of the "universal" transcendental norms historically characterized as the Greek Good, Beauty, and Truth. These norms require a dynamic existence that I characterize as the emergence of Spirit, using Josiah Royce's community of interpretation, and that I suggest provides a pragmatic clarification of Clayton's transcendent level. An understanding of those emergent norms clarifies ethical systems, highlights the importance of aesthetics in understanding scientific systems, and suggests the necessity of community in fruitful science-and-religion dialogue on human systems.

Keywords: aesthetics; community of scholars; Terrence Deacon; emergence; emergent systems theory; ethics; human systems; orders of emergence; pragmatism; Josiah Royce; science and religion; systems theory; theology and science; transcendentals; transcendent level; universal norms

Can any religion make claims of universal significance? Absolute claims demonstrate a lack of cultural sensitivity. Relativism can degenerate into an inability to justify basic human rights. I argue that natural science defines a deeper foundation for religious scholarship than the contemporary approach of sensitivity to cultural context as ungrounded scholarship that underestimates the dependence of rationality on human biology.

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One can reconcile postfoundational and contextualized approaches to theology with realist claims of science in at least two ways. In an approach of dialogue between religious and science studies, one could begin a socially constructed investigation of their relationship with careful conversations between scientific disciplines and particular religious traditions. Alternatively, I suggest that a theology and natural science approach could begin with the recognition that although human experience and investigation cannot directly access ontological or metaphysical knowledge, epistemological knowledge based on human experience and investigation constrains the possible realities in which that knowledge could occur. One could reconsider realism within the humanities rather than continue to assume a linguistic foundation. Scientific knowledge, in particular, depends on the consistency, predictability, and intelligibility of nature independent of cultural context, and those characteristics require an ontology and metaphysics that supports them, even if they remain unknowable.

Although some would argue that the dependence of scientific data on socially constructed and culturally based theories precludes a science-first approach, I hold that phenomenological, linguistic, or sociological approaches depend not only on the assumptions required by natural sciences but also on additional assumptions made about humans by psychologists and social scientists.

I begin with a metaphysics capable of supporting relationships and an ontology that can be experienced consistently and coherently.¹ One could say that those assumptions preclude a postfoundational approach to science and religion, but I know of no scholarship dependent on human social constructions that could avoid those assumptions, even if unstated. For example, Orlando Espín suggests an examination of *humanitas* as “the living, dynamic intersection of real-life diverse contextualizations” of persons and communities (2007, 53), and an intersection of community certainly requires relationality and consistency and coherence across observations.

I suggest using systems analysis as a method for examining human relationships that progresses from physical constituents of the body to cultural and perhaps transcendent relationships in which a person participates. I demonstrate here one approach (of presumably many) to situate human social constructions within critical realism and locate humanities, social sciences, and study of religion within a broader scientific framework.² I claim that the epistemological knowledge of science restricts possible ontologies and propose a parallel ontological description of human systems that incorporates the reality suggested by a systems analysis of human endeavors and, in keeping with the principle of Occam’s razor, suggests no more. One can properly locate the systems theory underlying the analysis within a Western intellectual scientific tradition, evaluate its fertility, and investigate whether its predictions prove useful to science-and-religion discourse. Revisions in the theory would necessarily revise a perspective on

unknowable ontology but also further constrain what ontologies could possibly hold in reality.

In the scientific study of human systems, one can characterize most relationships as occurring in physical, biological, psychological, or socially constructed cultural levels. That characterization defines four strongly emergent levels where the systems of each level supervene on lower-level systems and define causal and theoretically distinct relationships within a level. Ludwig von Bertalanffy (1975), Arthur Peacocke (1993), and others have described systems and sciences of each level. The contemporary philosopher of science and religion Philip Clayton (2004) suggests an additional emergent level of spiritual or transcendent activity, which emerges from mental (and cultural) activity, that in this systems model would capture activity at a fifth, transcendent, level. Understanding the relationships between the phenomena studied by natural and social sciences and the transcendent phenomena under the current purview of religion clarifies and strengthens the contemporary study of science and religion. How do the intralevel emergent relationships differ from the interlevel ones? What practical consequences would those differences have?

Terrence Deacon (2003) suggests three orders of emergence that I claim (and believe he would agree) differentiate between the intralevel (first and second order) relationships and interlevel (third order) ones. Deacon's orders characterize the nature of emergence in general and also organize the specific relationships that constitute human systems. I describe that organization of the four lower levels to illustrate the utility of Deacon's orders and then use those orders to describe the norms of transcendent-level systems. I argue for considering an epistemologically and ontologically distinct transcendent level with transcendent phenomena supervening on cultural systems and with causal power.

Although it may be novel to suggest the use of systems theory within systematic theology and the use of systems theory's relationship with science to investigate the relationship between the person and the transcendent, I show how systems theory within a pragmatic philosophical framework frames and clarifies the relationship

- between the individual mind and shared collective interpretations;
- between collective and culturally contextual interpretations and the transcendentals³ historically considered universal and contemporarily considered relative or simplistically pluralistic; and
- between socially constructed epistemologies and critically realistic ontologies.

The first two clarifications arise from the specific systems theory used, and the third clarification results from applying that theory to a theological and scientific investigation of the transcendental of Truth.

In the classical spirit of pragmatism, I hypothesize a general theory to explain the particular phenomenon of human existence, then consider the conceivable practical effects such a theory has on one's understanding of reality. A realist investigation such as this constitutes half of what would be necessary to overcome the division between the two cultures of socially constructed humanities and realist-oriented sciences first noted by C. P. Snow in 1959. Although some within the humanities have attempted to address realist issues and avoid relativistic extremes from a socially constructed base, I argue (against many) that a realist base better corresponds to the uncontroversial historical observation, at least to scientists, that reality and existence predate any human construction by several billion years. Although reality is not directly knowable, human epistemological constructions of the ontologically unknowable must still be situated within reality to become meaningful. The strong realist claims of traditional pragmatism may seem uncomfortable, even quaint, to constructivists; however, pragmatism does not argue for the modern absolute but claims that human investigations can differentiate between conceptions of reality to see which works better. In the European intellectual history of topics now considered aspects of science-and-religion, one finds many cases where human assumptions of the centrality of Earth, solar system, human species, and culture have proven parochial. For constructive postmodern thought to progress, I argue, one also must surrender limited conceptions of subjectivity and contextualization and include the broader communications of Nature into dialogue on human thought.

To examine dialogue between cultures and with Nature I draw upon the American pragmatist and philosopher of religion Josiah Royce. In *The Problem of Christianity* (1913) Royce explores the relationship between individuals and "community," a collection of selves who share some particular cause, memory, expectation, or hope. Within a community a shared "Interpreter" emerges who represents the sharing of individual interpretations of each other's minds that Royce characterizes as Spirit and, I believe, sufficiently enriches contemporary assumptions of social constructions to enable explorations of the transcendent level.

Specifically, the transcendent level captures cross-cultural activities and presumed universal norms such as those referred to in ethical, aesthetic, and philosophical activities as relating to the Greek Good, Beauty, and Truth, respectively. Throughout this essay, I argue:

1. A transcendent level exists because phenomena exist that do not reduce to cultural systems.
2. To the extent that biological, psychological, and cultural systems have causal power, transcendent-level systems also have causal power.
3. The transcendent level includes transcendental aspects of a natural religion, such as goodness, beauty, and truth.

4. For human systems, the transcendent level identifies characteristics of Spirit emerging from communities that situate within Royce's philosophy of religion.

EMERGENT SYSTEMS

Emergent systems describe levels of knowledge studied by the sciences—a model of human existence created by humans in social discourse. From a socially constructed, pragmatic view of science, scientists evaluate the systems and theories of each level to discover ones that better correspond with what Nature communicates about itself. Epistemologically, scientists create theories about the systems at each level and investigate whether those theories between systems correspond to ontological relationships of causation and existence.

In contemporary examinations of emergence, three scholars have proposed frameworks that to other scholars appear to capture some significant aspect of emergence (Clayton and Davies 2006), but the three approaches have not been reconciled. I propose a theory of emergent systems that synthesizes key aspects of theories by Peacocke (1993), Clayton (2004), and Deacon (2003), then demonstrate its relevance to address the stated issues.

Four Scientific Levels of Human Systems. Several researchers have distinguished what simplifies to four levels of inquiry for the scientific study of human systems. In General System Theory, von Bertalanffy organizes scientific disciplines and systems into four levels based on physical, biological, psychological/behavioral, and social scientific disciplines to discover general rules about systems that cross those levels (Bertalanffy 1975, 5–8, 30–32). A. A. Abrahamsen observes that one may differentiate scientific disciplines by their specialization of focus and distinguishes four levels of focus: the physical world, living organisms, the behavior of living organisms, and human culture (Bechtel and Abrahamsen 1991, 256–59). Peacocke organizes his eight levels of part-whole hierarchies of nature into Abrahamsen's four levels of focus (Peacocke 1993, 215 n. 11; for more detail see Peacocke 1986, Fig. 2). Claus Emmeche and his colleagues also propose four similar levels—physical, biological, psychic, and social—although they do not propose a strict hierarchy because the biological depends only on the physical while the psychological and sociological are interwoven (Emmeche, Koppe, and Stjernfelt 1997; 2000, 14–15). For simplicity in this essay I model most human activity as occurring on physical, biological, psychological, and cultural levels where the boundaries occur in biochemical, neurological, and linguistic systems, respectively.

The physical level describes the mechanistic interactions between particles, atoms, and molecules. It includes the disciplines of physics and chemistry, especially mechanics and thermodynamics, and physical chemistry.

The lower aspects of the level involve atoms and their constituents. Many scholars would include subatomic fields of study such as quantum mechanics, string theory, and quantum gravity as the lowest aspects in this level (although, for reasons not discussed here, one might consider those disciplines as constituting the upper discipline of a yet lower subphysical level). Biochemistry acts as a bridge discipline between the disciplines in the physical and biological levels.

The biological level begins with systems studied by biochemistry and includes theories of molecular biology, cell biology, and biology of the entire organism, such as botany and zoology. Neuroscience studies the brain from a biological perspective and is the highest discipline within the biological level in that it depends and builds on the other required biological disciplines. In particular, the discipline of cognitive neuroscience bridges the biological level with the higher psychological level.

Psychological-level theories describes the behavioral and mental aspects of individual living organisms. It appears that the associative networks of the brain hold the key to the adaptive behaviors and mental processes studied at this level. Many have attributed unique properties to humans based on the phenomena studied at this level, such as intelligence, reasoning, and decision making, but close examination by comparative psychologists suggests to some researchers that only gradients of properties shared by many animals distinguish humans. Although with diverse intentions now, early artificial-intelligence researchers sought to create computational systems with intelligent psychological-level behaviors that would model systems of this level and not depend on biological systems. However, comparative psychologists do find one property developed only by humans: creation of arbitrary, abstract symbol systems, specifically languages.

The cultural level requires the interaction of two or more organisms with the ability to generate, communicate, and share arbitrary, abstract symbol systems, namely language (Deacon 1997).⁴ From shared language humans develop a variety of social products in literate societies, including written texts, laws, institutions, governments, rituals, drama, art, poetry, and religions. Disciplines in the cultural level consist of the humanities and the scholarly examination of records of human experience. Groups of other animals may interact socially and develop properties that no individual organism has, such as systems of dominance relationships and group personalities, and these relational and group properties influence human culture, too; however, even in this model, nonhuman animals form social systems but not a cultural level. The higher disciplines in the level include study of poetry, ritual, and theology and appear to use the shared symbols systems of language to refer to (signify) phenomena, experiences, or other constructs that language does not easily describe. This limitation of language-dependent systems raises the question: Do even higher-level emergent systems exist?

Transcendent Level. Clayton in *Mind and Emergence* (2004, chap. 5) suggests an additional emergent level of spiritual or transcendent activity, which emerges from mental (and cultural) activity, that in this systems model would capture activity at a fifth, transcendent, level.⁵ The fifth level describes the ineffable aspects of human systems that transcend what communities of humans can describe with language and cannot reduce to language or culture. These aspects emerge from interactions between societies of people as properties of relationships between cultures. I argue that this level includes the transcendentals of Goodness, Beauty, and Truth and may include systems noticed in ethics, art, philosophy, religion, and interreligious dialogue. Although *culture* can describe the relationships of people within groups, it lacks the systemic power to describe value or purpose for relationships between those groups.

Is an emergent level required? Although many interactions between cultural systems may result in emergent cultural properties, such as war, which also requires at least two autonomous societies, other emergent properties transcend human culture as universals that categorize all human cultural systems and can form components of emergent cross-cultural systems. All neurologically intact humans (and thus human societies) generally ascribe to in-group preservation of life, share certain aesthetic preferences (Palmer and Gardner 2007), and distinguish between a shared interpretation of reality and an individual interpretation that conflicts with it. These universals of human systems do not fit within a cultural level because they do not depend on any particular cultural system. Later, I explore whether they form a level.

Transcendent-level phenomena, if they exist, by definition occur outside the scope of individual (psychological-level) perception and shared (cultural-level) knowledge. Because humans can access transcendent systems only through the cultural systems in which they participate, they often label systems as universal that occur at the transcendent level. A more nuanced account than universalizing cultural systems occurs in the work of contemporary Christian theologian David Tracy, who defines *classics* as texts, events, images, persons, rituals, or symbols that reveal permanent possibilities of meaning or truth. Classics within any religious tradition so disclose compelling aspects of truth about human lives that one cannot deny them a kind of normative status (Tracy 1981, 8). The classic refers to a norm that crosses cultures, or historical periods within a tradition, and thus indicates possibilities for cross-cultural constructions that may result in transcendent-level systems.⁶

Systems theory models “universal” or “classic” norms while avoiding the modernistic fallacies of relativism and absolutism. The individual at the psychological level has awareness of lower-level physical and biological systems and can use cultural systems to describe psychological behaviors, but an individual does not have direct access to the phenomena emerging from

cross-cultural interactions that form transcendent systems. Thus the individual “relativistic” perspective cannot access transcendent moral, aesthetic, or philosophical norms. Conversely, without a systems understanding, philosophers, religious leaders, and others traditionally have viewed cross-cultural emergent phenomena (and often even cultural phenomena) as absolutes or universals.

More subtly, a common scholarly position in the humanities and social sciences considers reality as socially constructed and a realist perspective as untenable (Berger and Luckmann 1967). Although many positions moderate a strong constructivist approach, I take a critical realist stand (Barbour 1997; Losch 2005) and argue against the universality of even a weak constructivist agenda. This realist stand results in a fairly strong claim of constructivism for the cultural level because of the strong emergentist position also taken. To the significant extent that knowledge of the world depends on or is influenced by human communication, that knowledge forms social reality (Searle 1995), which includes this essay’s assertion that systems theory can describe reality. However, the epistemological claims made and tested by scientists and others restrict the conceivable possible reality in which humans exist and exclude physically and socially reductionist realities in which rocks, plants, and humans are indistinguishable piles of minerals or differentiated only by human culture.

The normal function of a system at one level places norms on the function of its constituent lower-level systems, and one cannot completely describe the function of lower-level systems without reference to systems of the higher level. Biological systems of cells and transport mechanisms define norms for the physical activity of molecule and ion flow. Mental activity defines norms for the biological processes embodied in the brain such as action potentials and neurotransmitters. Cultural systems of economics, governments, and religious and social institutions define norms for individual behaviors. Transcendent properties found in most long-lived human cultures and religions define norms by which to evaluate those cultures from either within or without.

Consider, for example, an evaluation of a society based on a religious or political cultural norm. One can evaluate: How “Christian” was Paul’s treatment of women in the days of the early church? How “democratic” is the United States of America’s current participation in world affairs? How “Islamic” are some fundamentalist Islamic agendas? These questions have no meaning unless one can use cultural norms separate from the communities in which they arise.

If one can approach transcendent-level phenomena only through culture, how can one gain a nonrelativistic, natural appreciation of those norms?

Deacon’s Orders of Emergence. Emergence characterizes the appearance of the whole as greater than the sum of its parts. Deacon suggests

three orders of emergence, which he calls homeodynamic, morphodynamic, and teleodynamic, to characterize how the whole differs informationally and not materially from the parts (Deacon 2003; Goodenough and Deacon 2003; Deacon 2006).

In first-order emergence, or homeodynamics, a dampening of difference occurs from the diffusion of energy with linear convergence toward a statistically symmetric state, which appears as a reduction in entropy. Key to homeodynamics is a dampening of difference. The interaction of water molecules in a liquid synchronizes the orbit of electrons, which dampens the charge differences and results in surface tension. The interaction of iron atoms creates ferromagnetic properties by dampening electron spin differences. At the physical level, the diffusion of energy and difference often result in thermodynamic properties, although homeodynamics occurs at every level.

In second-order emergence, or morphodynamics, a separation occurs between interactions, such as a symmetry breaking or progression over time. Something irreversible happens. If subsequent changes occur that appear to be the converse of prior transitions, the system goes to a new state, not a previous one. What happens next depends on what happened before. The propagation and amplification of form and constraint result in asymmetric emergent constraints that converge toward global attractors. Second-order emergent systems, such as self-organizing or chaotic systems, depend on their history and the propagation of constraints. The formation of a snowflake results from the amplification of initial and boundary conditions over time as the snowflake falls through various temperature, pressure, and humidity conditions. If one of the six identical arms melts slightly, the snowflake shifts the potential shapes it can take rather than returning to a prior shape. In first-order emergence, properties emerge from the interactions; in second-order emergence, those emergent properties propagate constraints. In a snowflake, the previously formed crystals of the snowflake constrain the subsequent crystals. Stable second-order emergent systems often include closed cycles of interactions that provide a basis for response to environmental change, for example, a boundary.

Deacon thus considers the orders in terms of the type of work done. I suggest a correspondence between first- and second-order emergence and a classical understanding of relationships and systems, respectively (Graves 2008). First-order emergence defines properties, and second-order emergence defines systems with boundaries capable of maintaining stability and propagating constraints. Although mapping orders of emergence to systems theory clarifies how to extend systems to incorporate emergence, an unexamined question is how experimental investigations based on those models may illuminate the natural processes of emergence.

In third-order emergence, or teleodynamics, the interactions gain a memory. Not only is the system influenced by initial conditions and not

only does it respond to changes over time; it also retains information or a memory that regulates or controls behavior, and that memory can change and so give rise to different tendencies of the system. Teleodynamics includes selection dynamics in systems where replication of concordance and significance result in transmission of adaptive regulators. Similar to biological evolution, but occurring at every level, a third-order emergent system chooses from possible second-order emergent systems by selecting among the defining constraints of those systems. In biology, genetic instructions regulate the biochemical processes occurring in a cell. Mutation and selection pressure may modify those genes and shift the tendency or purpose of that system (Deacon 2003).

In summary, we can characterize Deacon's three orders of emergence as: dampening of difference leading to relational properties; propagation of form and constraint leading to the breaking of symmetry; or selection dynamics resulting in transmission of adaptive regulators (Deacon 2003).

Emergent Systems Theory. I define emergent systems theory as the five scientific and transcendent levels where each level results from a third-order selection operation among the systems of the prior level. In keeping with the pragmatic and scientific approach described above, I assume (technically, abduce) that the third-order emergence of levels exists, and I consider what conceivable practical effects that assumption has. Relating levels and orders as distinct characteristics of emergence clarifies aspects of both.

Using third-order emergence to define levels clarifies the discussion of strong and weak emergence.⁷ First- and second-order emergence describe aspects of weak emergence and occur within a level, and third-order emergence identifies a new level with the strong emergence of causality. Although biological activity currently utilizes DNA, early biology may have used RNA without the information-replication possibilities of DNA. On the basis of emergent systems theory, and assuming that no prior and extinct molecule of information replication existed, I would say biological activity existed prior to the third-order emergence of DNA, but not a biological level. Without transmission of adaptive regulators (such as DNA transmission to daughter cells or to progeny), third-order emergence, and a new level, does not exist. First- and second-order emergent relationships and systems existed that constrained physical-level systems and other biological activities, but an ontologically distinct level did not yet exist with its own laws, regularities, and causal forces such as occur in genetics.

Similarly, sensation, action, and other psychological activity existed prior to the third-order emergence of a brain with plasticity as part of a central nervous system, but not an ontologically distinct level with adaptive behaviors. Social activity existed in many species of animals prior to the third-order emergence of symbolic language, but not the cultural level that distinguishes humans. Drawing upon Royce's understanding of Spirit and

Clayton's description of transcendence, I would argue that transcendent activity existed among people prior to the emergence of Spirit, but not a transcendent level with its own regularities and causal power. As described below, a culture could value honesty and communication or put political structures in place to promote virtuous behavior, but emergence of a level does not occur until a culture can independently value those structures in another culture, even to the original culture's detriment.

Differentiating levels clarifies the role of constitutive absences in carrying information in third-order emergence. Deacon (2006, 119) draws from Tao Te Ching verse 11, which describes the necessity of emptiness—at a wheel's hub, in the interior of a vessel, and in doors and windows of a room. The usefulness of those objects depends on the specific absences. By examining third-order emergence across four levels, the importance of those absences becomes clearer. Although third-order emergence selects for second-order systems, the constitutive absences of those systems carry the information or memory that emerges. The backbone of DNA contains constitutive absences that can hold any of the (four) nucleotide bases, and that sequence of absences endows the bases with their information content. In a classical (Shannon 1948) sense of information, it is the "decision" about what fills the constitutive absence that defines the information. The absence is constitutive rather than simply empty because cellular processes such as genetic transcription depend on relationships with those constitutive absences. The cellular processes interpret the information carried by these absences.

Similarly, at the synapses in the brain—a biological system where psychological-level activity supervenes—the flexibility in connections among neurons, or synaptic plasticity, results from the constitutive absence between neurons. The absences forming the synaptic cleft organize signaling between distinct neurons and allow for selecting strengthening and depletion of gaps in learning and memory (LeDoux 2002; Kandel 2006). Language also depends on selection of constitutive absence as described in various disciplines: symbols in semiotics, semantic reference in linguistics, intentionality in philosophy.

One avenue of investigation for exploring the transcendent level is to examine constitutive absences in cultural-level systems for the possibility of selection influences. As an initial foray, I suggest that the Greek transcendentals of the Good, the Beautiful, and the True have persisted across many cultures, refer to ineffable (and thus nonlinguistic) norms, and carry information that requires culture and also transcends any particular culture. Earlier foundational worldviews presumed the transcendentals: transcend culture, describe an aspect of the absolute, and have universal meaning; those presumptions indicate the transcendentals' existence as constitutive absence within a cultural system, that is, without complete characterization within a cultural context. The investigation results in a clearer per-

spective on emergent systems and highlights strengths of Deacon's orders, Peacocke's and others' levels, and Clayton's level of transcendence. The investigation also identifies a recursive aspect of third-order emergence from cultural systems to a transcendent level not adequately identified in lower levels.

The remainder of the essay examines transcendent activity dependent on the three orders in each of the three transcendentals, the Good, the Beautiful, and the True, thus resulting in nine points of investigation.

THE GOOD

Society gains the emergent property of an ethical norm from a systems perspective when individuals in a society aspire to an ethical principle, when the relationships within the society support and strengthen these aspirations, when the external environment does not overly hinder or prevent individuals' acting on that principle, and when the principle in some way is "Good." The emergent ethical norm provides a standard for behavior such that others in the society who may not personally ascribe to it have social pressure to conform. The social pressure occurs at the cultural level, as it does not reduce to isolated behaviors of individuals. The cultural norm emerges from and transcends the society.

The three orders of emergence occur in different ethical systems. I use Kantian ethics, virtue ethics, and Royce's philosophy of religion as examples of the three orders. First-order emergence includes Kantian systems that depend on universalization of a maxim of conditions across society. Second-order emergence includes the development of virtuous habits through practice. Third-order emergence includes Royce's "Loyalty to Loyalty," in which one commits oneself to the principle of commitment itself. Loyalty to Loyalty clarifies how a constitutive absence functions in selection of ethical systems. The constitutive absence (in the midst of self-reference, recursion, or topological closure of the relationships defining Loyalty) provides ethical stability to various additional ethical or spiritual norms and results in a third-order emergent norm, namely, regularity of the Good.

Categorical Imperative. In Immanuel Kant's categorical imperative, one acts as if a maxim, or principle, were to become universal. For example, one may cheat on one's taxes, claiming that the government will not be injured by its not having received such a negligible sum. However, if that maxim were to become universal, and everyone cheated, the government would go broke. Because one would not want everyone to cheat on taxes, the maxim cannot be universalized, and the behavior is unethical.

When a universalizing maxim becomes a norm for a society, it becomes a property of that culture. When other social systems interact with the community, the property influences that interaction. If a community acts

on the maxim “not to lie,” one can classify its interactions with other communities depending upon whether they aspire to that maxim or not.

When individuals aspire to a maxim within a society, these aspirations may increase coherence across the collection of individuals and dampen individual differences in a way that gives rise to a first-order emergent property. By universalizing a maxim within the culture that aspires to it, the entire cultural system gains that resultant property and any additional emergent properties that result from an entire system operating in that framework. Telling the truth generally provides a desirable outcome in a society, but a classic critique of its universalization occurs in the context of government-sponsored genocide, such as Nazi extermination of the Jews, where universal truth-telling means the oppressed have nowhere to hide.⁸

John Rawls (1999) takes a Kantian approach to ethics in developing a social contract based on a bargaining game. In Rawls’s theory, individuals do not know their position in the proposed system. His approach addresses some limitations of Kant’s categorical imperative, and the veil of individual ignorance ensures fairness in determining the system. Fair decisions made in positions of ignorance across the collection of individuals dampen individual differences and result in an emergent property of “fairness.”⁹

Dampening individual differences either by ascribing to a maxim or by losing information of social position results in first-order properties of cultural systems. Those properties affect cross-cultural relationships but do not propagate constraints to other cultural systems, so second-order emergence does not occur. One society’s ascribing to honesty or fairness does not necessarily affect the societies with which it interacts. Second-order emergent phenomena require more sophisticated interactions that rely on interdependence between cultural systems that support propagation of constraints.

Virtue Ethics. Virtues arose from ancient Western society to identify the excellence of athletic, soldierly, and mental strength used by heroes in their exploits. For Homer, a virtue enabled an individual to discharge his or her social role. Greek Athenian society further refined virtues as ethical frameworks, and Plato and others viewed virtues and goodness as indissolubly linked with happiness, success, and fulfillment of desire. Plato viewed virtues as politically as well as socially relevant and understood them to be interdependent—the presence of one virtue demands the presence of all virtues. Aristotle became the classic figure in virtue ethics because he refined the virtues into a comprehensive system in the *Nicomachean Ethics*, which had eleven virtues: courage, temperance, generosity, magnificence, magnanimity, right ambition, good temper, friendliness, truthfulness, wit, and justice. Thus, for the ancients, virtues are interrelated characteristics of a person that effect choices between actions (Keenan 1998).

Thomas Aquinas further organized Aristotle’s ethics and synthesized it with Christian teaching, drawing on Plato, Cicero, Ambrose, Gregory, and

Augustine to formulate a theory of four cardinal virtues: prudence, justice, temperance, and courage.¹⁰ These four relate to Aristotle's anthropology, which has four aspects of the soul: intellect, will, a concupiscible appetite, which desires what one wants (food, drink, sex, money, power, status, esteem), and an irascible appetite, which overcomes an obstacle that stands between a person and other desirable goods and relates to anger and fear. Each cardinal virtue perfects some power of the soul: Prudence perfects intellect, justice perfects the will, temperance perfects the concupiscible appetite, and courage perfects the irascible appetite. For Aquinas, virtue enables an individual to move toward the achievement of the specifically human *telos* (end or purpose), whether natural or supernatural.

Aristotle regarded virtue as a state of character that chooses the mean between two extremes. One determines the mean by considering a person of practical wisdom. Vice cultivates an excess or deficit of character. For example, courage chooses the mean between foolhardiness and cowardice. Thus, moral virtue chooses the mean between two vices.

Following Aristotle, Aquinas argued that the other three cardinal virtues cannot exist without prudence, because the virtuous person must choose well. Moral virtue requires that the intention be directed toward a good end, and choosing a good end necessitates using reason or deliberation. Prudence grounds the moral virtues as well as intellectual virtues such as wisdom or understanding. Someone who behaves well in one area of human life acquires a habit, but the habit will lack the essential character of a (moral) virtue unless prudence shapes it. One may have the ability to face danger, but without prudence one could just as easily play the villain as the war hero (Kent 2002).

Virtues define ethical properties and dampen differences between individuals (as first-order properties). In addition, they form a stable system. Although virtues occur in individuals, one can imagine asking in a thought experiment what happens cross-culturally when a society of prudent individuals meets a courageous society and notice a different sort of transformative answer than when asking what happens when a society of fair individuals meets a society of unfair ones.¹¹ However, individuals in a prudent society may recognize the prudence of courage, avoid previously hidden cowardly or foolhardy behaviors as imprudent, and become more courageous, and that would develop a more prudent society. Similarly, some in a courageous society may recognize the necessity of prudence in cultivating courage, and as they become more prudent they make their society more courageous. While a first-order emergent norm may shift during cross-cultural interactions, second-order emergent norms may strengthen the stability of the system it defines. Rather than change the constraint the society places upon individuals, the individual changes propagate through the society, increasing its symmetry-breaking stability.

Stability of a virtue has another important dependence. Virtue requires that one exercise and experience virtues in order to possess them. Aristotle and other ancient Greek ethicists consider virtue a habit. For them, a habit is a durable characteristic of a person that inclines toward certain kinds of actions and emotional responses (Kent 2002, 116). For Alasdair MacIntyre, virtue emerges from “practices,” and virtuous behaviors emerge from certain habits. When one cultivates certain habits in social interactions, those interactions with others demonstrate a pattern, occasionally a virtuous one. MacIntyre means by a practice a coherent activity that intrinsically leads to virtue. More precisely, he defines practice as

any coherent and complex form of socially established cooperative human activity through which goods internal to that form of activity are realized in the course of trying to achieve those standards of excellence which are appropriate to, and partially definitive of, that form of activity, with the result that human powers to achieve excellence, and human conceptions of the ends and goods involved, are systematically extended. (MacIntyre 1984, 187)

The practice of a virtue breaks an otherwise reversible symmetry. Practice of a virtue affects how the person later decides and responds in a way that mere decision does not—and that sustainability or robustness indicates second-order emergence.

Third-order emergence of ethical norms requires additional characteristics. It replicates concordance and difference and results in transmission of adaptive regulators. Shared practices might easily result in the replication of concordance and difference, through cooperation, communication, and teaching within a society, and the selection dynamic occurs in cross-cultural interactions, but what of the transmission of adaptive regulators? What practice results in transmission of an adaptive regulator?

Royce’s Loyalty to Loyalty. Royce suggests in *The Philosophy of Loyalty* (1908) that harmony between cultures can occur only when each culture’s ideals and cause include Loyalty to Loyalty, a commitment to the principle of commitment and dedication that demonstrates support of the loyalty of those in other cultures who may oppose their particular cause. Royce argues convincingly that Loyalty to Loyalty not only provides harmony but also suffices to distinguish the ethical or “true” causes as those that incorporate Loyalty to Loyalty. The cultural characteristic of Loyalty to Loyalty results in the transcendent-level emergent property of cross-cultural harmony within diversity.

One’s loyalty to loyalty supports the loyalty of others even if one fails to support their cause. This promotes harmony and in interdependent systems can strengthen one’s loyalty to one’s own cause. However, one’s loyalty to loyalty cannot support another’s predatory cause. Thus, in loyalty to loyalty, one respects another’s loyalty, avoids unnecessary conflict in the interest of harmony, and resists the other’s cause if it undermines loyalty to

loyalty. Such behavior increases harmony in cross-cultural interactions regardless of the action of others (Royce 1995, 56, 62, 63).

Because virtuous habits require commitment and loyalty, Royce defines all of the virtues in terms of loyalty to loyalty. Although he may underestimate the differences in the virtues, his argument demonstrates that loyalty is a virtue. One can define as a principle of choice in one's practices that one's loyalty becomes a good, not only for oneself but also for all humanity. Because virtuous behavior depends on loyalty, one can increase the potential good for humanity by increasing the loyalty among all. Although each is loyal to specific causes, to increase the good among humanity one should choose one's cause to include loyalty to loyalty to the extent possible (Royce 1995, 57, 61, 66).

Like a categorical imperative, loyalty dampens individual difference and results in first-order emergence. One's commitment to it breaks symmetry in the society and results in second-order emergence. However, any virtue by itself in an individual remains inadequate for third-order emergence, which needs the propagation of an adaptive regulator. An adaptive regulator selects among alternative systems (such as virtues).

I argue that the regulation necessary for third-order emergence occurs in Royce's Spirit of a community of interpretation. For Royce, community results from shared memories, shared hopes, shared lives, and atoning love. In shared memory, each member accepts as part of his or her life and self the same past events that other members accept, such as remembering or commemorating the founding of a nation or the death of a particular person. In shared hopes, an individual accepts as part of his or her life the same expected future events as other members accept. In shared lives, members advance collectively toward proximate goals using their individual gifts. By atonement Royce means that the community is willing to forgive any repentant member and has the creativity to posit an atoning act that makes the world better than if the treason had never occurred (Royce 2001, 248, 180).

Although Royce speaks of atonement within a community, one can practice deeds of creative love across communities. In particular, when conflict occurs between cultural communities where each incorporates loyalty to loyalty, atonement promotes harmony and can change both systems. The shared interpreter of a community selects which virtuous behavior increases loyalty to loyalty with respect to the other (incompletely knowable and thus constitutively absent) culture.

Nonviolent resistance works similarly. The resisters endure what others inflict because of the others' intentions or commitment to their oppressive cause. By strengthening the cross-cultural interaction, any detrimental effects of the others' cause become amplified and illuminate previously hidden consequences that even the others recognize as oppressive. If oppression or other previously hidden consequences violate the other society's ethical

norms, the behavior of the resisters results in a sufficiently stable system to change the regulatory mechanisms of the other culture.

In analogy with biological systems, a significant chemical bond can transform an entire system. A phosphorylated protein, a conformational change to a protein structure (including prions), formation of a protein complex, and binding of a neurotransmitter to a receptor each has a biological consequence that cannot be modeled from a purely physical-level perspective. When an individual in a cultural system makes a decision to act nonviolently, that person can transform the cultural system in the same way that a significant chemical bond can change a biological system.

Human Context. In Royce's philosophy of loyalty, one commits to honoring another person's genuinely loyal commitment. Although a Christian may disagree with the attributions traditionally ascribed to another religion's founder, such as Muhammad or Buddha, the Christian supports the believer's loyalty to those beliefs. Some cross-religion beliefs conflict, such as when to worship; others correspond, such as discipleship; and a few appear shared across all human religions, such as compassion, and are presumed universal (and not culturally relative). However, that universality still requires the context of the human condition and does not exist a priori as an absolute. One shows compassion because people feel pain. If an organism had no sensation, perception, or representation of pain, its social interaction would not likely contain compassion as a response to suffering because others would know neither pain nor suffering. Loyalty depends on individuals' having the ability to represent a cause for which they can relate and make choices. As compassion depends on the ability to feel pain and empathize, loyalty depends on the ability to choose, remember, and act.

Cross-cultural and transcendent norms become universal only with respect to a human context and the emergent levels of human existence. In a cultural context, a person forms and commits to a habitual way of response that leads to a recursive and thus self-transcending principle of commitment. In the context of psychological-level systems, ethics (and culture) depend on the ability of a person to make decisions. One can evaluate decisions of nonhuman animals with respect to norms specific to the human species (or any particular culture), but such evaluation is more tenuous when projected onto plants, which lack decision-making capacity of the psychological level. Compassion as an aspect of ethics depends on awareness of the aversive and self-protective behaviors associated with pain, and, even in a classical Aristotelian sense, ethical systems recognize the general value of nutrition, growth, and reproduction, though they may differ in the application of those values. Although rarely if ever examined, human ethical systems depend on physical-level systems. If humans had no physical boundaries, no continuity of matter, no restrictions due to a person's

mass or energy, humanity would require very different adaptive regulators on their values. One could choose loyalty to compassion, beauty, honor, truth, or loyalty itself. However, loyalty to loyalty transcends particular loyalties, because its self-reference creates a constitutive absence to carry information of the actual cause of the other person. When that cause depends on an inaccessible aspect of another culture, the relationship must transcend the two cultures and occur at the transcendent level. When one espouses loyalty to loyalty, the emergent properties result in third-order emergence of transcendent systems that indicates a new level with causal power capable of transforming cultural systems.

THE BEAUTIFUL

At every level, systems interact in a complex network of relationships that vary over time. The topology of a relationship network has its own emergent properties, such as open, closed, self-organizing, cyclic, chaotic, or stable. Some networks have a form that humans view as beautiful. Historically, neo-Platonists considered beauty to be an intrinsic characteristic of form. Since the Enlightenment, aesthetic theories typically have emphasized the subjective aspects of beauty and considered the experience of beauty as a product of mind and in the eye of the beholder. More recently, scientists studying aesthetics are discovering objective and cross-cultural (though not fully universal) aspects of beauty. Many aspects of beauty depend on human biology—human visual range, structure of the brain's parietal lobe (which organizes spatial relationships), auditory range and perception, and so forth. The more an experience of beauty relies on shared physical, biological, and psychological level systems, the more likely it is to become a cross-cultural human experience rather than a culturally specific one and the more likely relative relationships between experiences of beauty form a norm.

Shared Senses. Some state that beauty is in the eye of the beholder, but many people agree on what is beautiful. Researchers have discovered that digitally averaging the faces of several individuals results in a composite image most observers find more attractive than any of the original faces (Langlois and Roggman 1990).¹² The ancient Greeks discovered norms of proportion and symmetry that claimed universality. Scientists and scholars in neuroaesthetics examine the neurological basis of the experience of beauty and describe the nonrelative aspects of beauty for humans (Zeki 1999; Ramachandran and Hirstein 1999; Chatterjee 2003).

Connections in the brain between perception and reward may orient humans to certain aesthetic biases. Such proclivities dampen differences between individual experiences and may result in first-order emergence of aesthetic norms. Unlike decision making in ethical norms—where one chooses and/or practices a maxim, intention, or cause—aesthetics involves

a relationship between subject and object to which the subject may respond but does not completely control.

Although shared senses are heavily reliant on physical, biological, and psychological systems, the interaction between perception and reward results in emergent properties that do not reduce to psychological systems. Ethical decisions depend on anatomical systems typically found in a human's prefrontal cortex and limbic structures and also on empathetic interactions with others (Murphy and Brown 2007). Poetry utilizes language centers in the brain shared by humans, a particular language shared in a culture, and also shared (or similar) memories and hopes. Creating a work of art universalizes one's aesthetic insights using what the artist recognizes as shared perceptions and experiences.

Similar appreciations of beauty may dampen individual differences and affect decision making and culture, leading to first-order emergence of an aesthetic norm. However, second-order emergence requires propagation of form and constraint to break symmetries, which shared senses do not sufficiently characterize.

Empirical Aesthetics. Contemporary architect Christopher Alexander developed an empirical aesthetics by examining living systems to improve the beauty of building. Alexander derived his aesthetic theory by comparing similar entities and noticing the differences in their "lives." He characterizes their structural differences as fifteen principles that suggest an open-ended norm for beauty. In a way he hopes may eventually be made mathematically precise, more beautiful objects more strongly exhibit the fifteen features: levels of scale, strong centers, boundaries, alternating repetition, positive space, good shape, local symmetries, deep interlock and ambiguity, contrast, gradients, roughness, echoes, the void, simplicity and inner calm, and non-separateness (Alexander 2002). Like virtues, the fifteen principles depend on one another and work together.

Centers play a particularly important role among the fifteen features. They define either the whole entity or its separate parts. Alexander explains wholeness in terms of centers. The components of a system exist chiefly in relation to the whole. Instead of wholeness resulting from a relationship among parts, the whole defines the parts. The parts, or "sub-wholes," he also calls centers. They result from the wholeness and undergo modification by their position within the whole. Rather than consider a flower as consisting of petals, the petals are identified by their role and position in the flower. Antithetical to Cartesian or mechanistic thinking, Alexander's approach evokes the discussion of "fields" in physics rather than "objects" and resonates with similar insights into biological systems (Alexander 2002, 80, 86–88). A center refers to the nexus of relationships that form a whole apart from the boundaries that "a whole" implies (p. 85). For Alexander, the center of an entity exists before the parts (p. 86).

The entity that will become “a part” may exist independently, but becoming a “part” depends on a relationship between its center and the center of what will become “the whole.” Although he does not state it explicitly, logically the center of the whole must exist prior to the “part” relationship.

As systems theorists wrestle with the ancient philosophical conundrum of the one and the many, they typically—if inadvertently—overemphasize the whole or the parts, leading to either holistic or reductionist theories. Although at first glance Alexander appears to take a holistic approach, his emphasis on centers rather than wholes results in a more balanced approach. Alexander intends his principles to replicate in human creations the structure of natural complex systems. His principles break symmetries in organizational structure and create structural relationships of various types. The centers represent the form and constraints that propagate through the structures, and in the sense that first-order emergence leads to novel properties, second-order emergence leads to novel centers. Regardless of the complexity of a painting, adding one well-chosen dab of paint may change numerous relationships in the work, and one cannot reverse those changes. The change propagates through the work via relationships that depend on centers and can create new centers. Those new relationships affect one’s perception of its form and one’s emotional response.

Although centers capture propagation of form and constraints through perceptions of individuals and the cultures they constitute, they do not propagate adaptive regulators. For this societies must have a dynamic norm.

Community of the Beautiful. In *The Community of the Beautiful* (1999) Alejandro Garcia-Rivera draws upon the semiotic aesthetics of Jan Mukarovsky and Royce’s construct of community to suggest “Being As Foregrounding” and to argue for an intrinsically aesthetic conception of being as “lifting up the lowly.” Foregrounding lifts up a piece of the background and gives it value. When artists separate foreground from background they create a difference. Being has a dynamic nature that takes one beyond static norms. An aesthetic norm orients one beyond cultural norms, any static norm, and even the aesthetic norm itself. As in loyalty to loyalty, the recursive structure of an aesthetic norm allows for real transcendence. Lifting up the lowly restructures the relationships of nature. The Community of the Beautiful defines a transcendent, dynamic norm as community rather than individual mental conception.

In semiotic aesthetics, an aesthetic experience consists of artist, work of art, and audience. Garcia-Rivera’s theological aesthetics involves an Ultimate triadic sign of the origins of reality (the Creator as artist), the ends of reality (creation as a work of art), and the “creatures whose experience ‘makes’ and ‘beholds’ reality” (the audience). Interpreting the signs of creation draws one into the Community of the Beautiful. To appreciate and understand nature requires a community (1999, 157–58, 164, 185).

Just as aesthetic experience consists semiotically of artist, work of art, and audience, for Royce interpretation involves a triadic relation of three terms: the interpreter, the object or event being interpreted, and the person to whom the interpretation is addressed. In a community, one's interpretation of art involves the minds of artist and audience but cannot be reduced to either.

Royce's community of interpretation captures the selection of a second-order cultural system—a community—as a memory or information for transcendent-level activities. As DNA maintains information for biological processes, neural networks maintain information for psychological processes, and language maintains information for cultural processes, communities of interpretation maintain information for transcendent processes. The emerging interpretations define transcendent or spiritual properties such as ethical or aesthetic norms.

From the diversity of interpretations in a community something emerges that provides an aesthetic norm and an example of first-order emergence at the transcendent level. In addition, something emerges beyond consensus of interpretation, because the members of a community can change, and a fixed consensus cannot capture that dynamism. Semiotically, a new aesthetic Interpreter emerges that reflects the interpretation of the community and exists separately for any particular collection of individuals. The emergent Interpreter incorporates the aesthetic experiences of the individuals and defines a norm of beauty for the community. When the community occurs within one culture, the norm may be culturally relative, and the Interpreter may lack sufficient relationality (that is, beauty) to exist transcendently (as a DNA molecule in physical isolation has no biological activity). When the diversity of a community includes separate cultures, the likelihood of a universal or classic human norm increases, as does the causal power of the Interpreter. Outside the scope of human systems and this essay, Garcia-Rivera's *Community of the Beautiful* occurs when the members include all of creation.

Interpreter of Human Context. Considering only human systems, the dynamic Interpreter has the role that Royce characterized as Spirit. The interpreter of a community emerges from the mental processes of individuals and occurs as in Royce's community of interpretation when each person interprets a past event with a future hope while interpreting another's mind to a third person. The interpretation provides a relational structure of the individual within community by relating the individual perceptions and the community-provided conceptual framework embedded in language. Although one can perceive physical objects and develop mental models of biological processes, one also can interpret another individual's mind to a third person. Interpretation emerges from shared meaning, which, in a pragmatic understanding of systems, results from the

effects of the constraints placed on the community by the individual members. Any community would have a “spirit” (interpreter), and some spirits would have more interesting emergent properties and relationships than others. This use of spirit resonates with an awareness of the spirit of a family, city, nation, church, or organization. For Christians, communities of interest include the family, local congregation, all Christians, and all humans. In particular, one can talk of the emergent Spirit of the Christian Community (or Beloved Community for Royce and Martin Luther King Jr.) and the emergent Spirit of Humanity.¹³

The spirit of a community emerges from a community, but transcendent-level systems require selection among information-bearing abstractions that emerge from cross-cultural interactions. When a community commits to “loyalty to loyalty,” that undergirds its cross-cultural interactions through creation of constitutive absence and provides the openness in harmonious interactions upon which spiritual selection may occur.

The cause to which one ascribes loyalty and the community to which one belongs affect the emergent transcendent system(s) in which one can participate. The emergence of spirit from cultural-level systems retains information in memory, but because an individual cannot access those systems directly, one must refer to them through emergent cultural-level systems—typically religious ones. DNA, neural networks, symbolic language, and shared interpretations remain one of the many physical, biological, psychological, and cultural systems, respectively, whose significance becomes relevant only through their participation in the next higher-level systems of reproduction, conceptual thought, language, and spiritual communities, respectively again. Their central location in emergent systems depends on numerous supporting and auxiliary systems, each of which also has lower-level constituents. The emergence of a level, however, depends on the creation of information through abstraction and memory. Spiritual systems select among the possible interpretations of various communities. Or, through the cultural lens of Christianity, one could define a “natural” type of revelation as selection by the interpreter-spirits, in which case spirits reveal information to communities of interpretation in transcendent-level processes.¹⁴

An individual’s participation in community results from decisions that that individual makes. From the cultural-level perspective, the dampening of difference in cross-cultural interaction leads to emergence of first-order constraints; the formation of organizations that constrain individual mental activity and behavior characterizes second-order emergence; some of those systems include constitutive absences that bear information (interpretations) used in selection processes by third-order emergent systems. From the transcendent-level perspective, transcendent-level systems select from cultural interpretations constituted by the decisions of individual members of a community.

An individual's interpretation depends on one's beliefs about the world. How does one fix those beliefs?

THE TRUE

In C. S. Peirce's article "The Fixation of Belief" (1877) he describes four methods human beings employ for fixing beliefs: tenacity, authority, a priori, and scientific. Tenacity fixes a belief by holding onto it despite evidence to the contrary, as "an ostrich buries its head." It dampens difference between thoughts of a single individual, but it does not dampen differences between individuals unless they happen to share the same thoughts. The method of authority sets and propagates beliefs and dampens individual differences by defining a belief that reduces diversity of individual beliefs. (An impressive example of this method for Peirce was the doctrine of papal infallibility, defined just prior to the article in 1870.) In the a priori method, which he sometimes called "taste," beliefs become fixed because they seem "agreeable to reason." Those beliefs clearly emerge from interactions in cultural systems, because no one person defines or holds that belief, but they remain relative to that system, and although it may have an aesthetic quality, for Peirce the a priori method does not essentially differ from the method of authority because both are relative to the culture. To escape relativism requires a method wherein the fixing of belief depends on some "external permanency" such that the "ultimate conclusion of every [person] should be the same," and he calls that shared systematic inquiry the scientific method. From a perspective of social interaction, the four methods respectively (1) do not depend on explicit social interaction, (2) do depend on a preexisting social structure, (3) emerge from reasoning of the collective, and (4) also depend on interaction with "reality."

Of possible surprise to scientist readers, I must justify the examination of Truth as a norm. Overemphasis on the significance of cultural and sociological effects on scholarship has led to a relativistic understanding of Truth that reduces to a culture, or what Peirce would call taste. Numerous studies have shown the impact of cultural biases on scientific theories and the dependence of data on theories (Hackett 2008; Biagioli 1999), but in extreme interpretations, strong constructivist positions do not account for the natural processes or "external permanencies" against which scientists evaluate those theories. By considering Good, Beauty, and Truth within the same emergent framework, I claim that all three transcendentals define cross-cultural norms that depend on culture (like genetics depends on molecular interactions) but do not reduce to culture.

Cultural Properties. Richard Dawkins (1976, chap. 11) defined *meme* as a basic unit of cultural information, such as a tune, catch-phrase, fashion, belief, or technological method. He proposed that they vary and mutate similar to genes in biological evolution. Although controversial with

many critics, the concept of meme as something that emerges from social interaction captures a frequently observed pattern in contemporary culture, even if empirical methods for defining memes and their evolution remain problematic. However memes become existent, they describe a dampening of individual differences.

First-order emergent cultural properties propagate through culture by eliminating individual differences. The behavior of groups at an emotionally significant sporting event, an “earworm” or particularly catchy tune, or a very popular fad can dampen individual differences in a social collective much as surface tension of water or ferromagnetism emerges at the physical level. In “A Literary Nightmare” (1876) Mark Twain described a particularly catchy poetic jingle that occupies one’s mind incessantly.

Cultures have emergent properties that affect others in that culture. If a culture has authoritarian power structures, an authority may impose a cultural property that dampens difference. Although that cultural property would not be emergent, the power structure that imposed it might be. Michel Foucault would argue that institutional structures convey the power relationships within society, and one could understand that power as dampening differences in social interaction and discourse. Successful leaders adeptly avoid using predefined categories and methods (habits) just because they are easier or known (Heifetz 1994). When social habits become institutionalized, planning and effort are needed to invoke change (Cumings and Worley 2005). In summary, something has emerged that requires work to overcome.

Authority constrains individual beliefs within a cultural system, and religious authority may shadow transcendent relationships, especially if originally institutionalized culturally from transcendent phenomena. However, authority within a culture cannot propagate form or constraint across cultures or result in the progressive amplification of second-order emergence.

A Priori Reason. Many ideas seemed reasonable at some time in the past—racism, colonialism, sexism, social Darwinism, flat Earth, Euclidean geometry of space—and either interactions with other cultures or “external permanencies” revealed them as untrue. Modern physics and postmodern (or late modern) scholarship both have demonstrated the inadequacy of a nineteenth-century classical understanding of nature and society and the extreme difficulty, if not impossibility, of describing external permanencies or nonlocal social interactions from an objective (nonrelativistic, nonsubjective) cultural perspective.

History demonstrates the power of reason to transform one’s culture and other cultures—for better or worse. The progression of interactions over time breaks an intellectual symmetry that conditions subsequent activity. As Thomas Kuhn (1962) noted, the numerous arguments for flat Earth, an Earth-centered solar system, or the superiority of one’s race or

tribe bias one's perception to preclude the easy accommodation of alternatives. However, similar to the strengthening of virtues in a system, logical, well-reasoned arguments can infiltrate a cultural system and transform the system, for better or worse, with respect to a culture-specific norm of Truth. Examples include the integration of Platonic thought into Christianity, and the integration of Aristotelian thought into Christianity by Aquinas. Even an incomplete understanding of pragmatism as "Try it to see if it works" can bias one toward an experience-based philosophical system.

Although the progression and refinement of ideas through a collection of scientists and scholars may reduce idiosyncrasies and logical inconsistency, it cannot shift an intrinsic cultural bias that affects the relative attractiveness of the idea. Peirce also referred to this method as taste; although it can initiate an inquiry, it does not escape the same relativism as the method of authority. One requires something from outside the cultural system to influence those in the system toward a nonrelativistic, nonsubjective reality.

Community of Scholars. Peirce hypothesized:

There are real things, whose characters are entirely independent of our opinions about them; those realities affect our senses according to regular laws, and, though our sensations are as different as our relations to the objects, yet, by taking advantage of the laws of perception, we can ascertain by reasoning how things really are, and any [one], if [he or she has] sufficient experience and reason enough about it, will be led to the one true conclusion. (1877)

Peirce's semiotic realism avoids many of the difficulties plaguing most modern and postmodern theories. By recognizing the semiotic processes inherent in nature, one can include external permanencies without presuming direct access to them. His semiotic scientific method interprets the constitutive absence inherent in symbols and results in the creation of information that asymptotically approaches reality and thus defines the third-order emergence of the norm of truth. The norm is not relative (unlike a priori method, it requires external permanencies) and not absolute; it depends on the limitations of human perception to experience and communicate the external permanencies. Key to Peirce's claim is his notion of "sufficient experience and reason" by which he means potentially infinite. Although one could argue that he incorrectly assumes the existence of some greatest truth and underestimates the abilities of scientists to avoid getting stuck on smaller, local mountains of truth, he nonetheless defines a process for defining fixed norms of Truth.

Earlier in the essay I temporarily assumed a connection between epistemological theories of each level and unknowable ontological relationships. By dropping that assumption now I have constructed a connection between socially constructed epistemologies of the cultural level and critical realist methods of ontological investigation. Critical realism defines an interpreter

of truth that selects, from among its socially constructed theories, the theories with greatest correspondence to reality.

One could define the fallacy of the modern period as believing that one can obtain culture-independent knowledge of external permanencies, and I argue that a culture-dependent knowledge can avoid relativism and absolutism when it occurs in a community of scholars and scientists (Habermas 2008). Although academic fields exist only as cultural-level systems, many of them study phenomena at the five levels of human systems, including physics and chemistry; biology; psychology; social sciences; and religion, art, ethics, and philosophy. Although cliques, organizations, or communities may form within one academic field as well as across fields, I suggest that interdisciplinary communities whose members study all the levels of human systems will approach the “truth” many believe exists in fruitful science-and-religion discussions.

A nuanced response to the modern view of Beauty as subjective and Truth as objective also avoids the reduction of Beauty to biology, Good to psychology, and Truth to culture. The transcendentals capture cross-cultural norms interpretable within the human context. Although not universal in an absolute sense, they describe a universal aspect of physically embodied decision makers who use symbolic language in the formation of culture. Within the constraints imposed by human context, one has greater access to the ontological nature of reality than through individual and culturally specific investigations. Cross-cultural explorations do not automatically escape cultural boundaries, but when a deep plurality of distinct cultures share their interpretations, a further step occurs toward the ultimately inaccessible human universals. One cannot naturally cross the divide between human epistemology and accurate ontological knowledge, but when the communities include scientists committed to an ethical understanding of Nature’s beauty and theological scholars committed to culturally framing presumed revelation with diverse religious traditions, one may plausibly hope that Nature could occasionally cross the ontological divide to humanity.

A community of interpretation requires diversity in its members who interpret a past event with a future hope while also interpreting each other’s interpretation through the sharing of lives. However, the individual does not melt into or merge completely with the community but must remain distinct for the community to exist as relationships between distinct individuals. Without the differences needed to form diverse interpretations, the community would degenerate into a single perception of the world (Royce 2001, 255, 256, 258). Religious communities vary in their past events, hopes, and interpretations of human existence, the coming into existence of the natural world, and particular historical events with soteriological ramifications of Christian eschaton, Buddhist enlightenment of all beings, or sustainable and enjoyable ecological and political world. For

all communities, interpretation emerges from the sharing of meaning. The emergent Interpreter naturally selects from individual interpretations the interpretations with the greatest harmony, relational beauty, and truth as perceived and conceived by the community's members. At any point in time, scientific, scholarly, social, and other limitations restrict what the Interpreter may select, but it identifies an emergent, dynamic norm that members of the community can interpret to each other.

Because the community includes natural scientists whose technologically enhanced perceptions are heavily influenced by external permanencies and scholars whose conceptions include an awareness of individual and cultural biases in interpretation, their shared interpretations may escape the limitations of a particular culture when they remain loyal to the loyalty of others who remain loyal to their particular causes of finding truth.

CONCLUSION

Orders and levels describe complementary aspects of emergence, with orders capturing the complexity of dampening of differences, propagation of form, and selection of adaptive regulators and with levels organizing emergent causal power. In addition to levels of physical, biological, psychological, and cultural systems, cross-cultural interactions appear to have reached sufficient topological complexity to result in the emergence of a transcendent level with causal power. Three emergent properties of that level include the transcendentals Good, Beauty, and Truth, and when a cultural system has the properties of Royce's community of interpretation, its interactions with other systems have transcendent-level causal power.

Emergent levels not only describe human systems, but by assuming an ontological connection with unknowable semiotic processes of Nature they also capture a perspective on reality that one can evaluate for its conceivable practical effects and fertility. From the preliminary examination of transcendent-level phenomena, a recursive or self-transcendent characteristic of nature becomes apparent. Loyalty to loyalty transcends individual conceptions of loyalty, and an aesthetic norm must transcend itself. This suggests an unexplored recursive characteristic of Nature that may not be apparent at lower levels. In particular, I hypothesize that third-order emergence may have a recursive characteristic not previously identified. Examining emergent human systems for characteristics that transcend human culture, we find characteristics of nature not observable by individual scientific fields. In addition to the abstraction necessary for memory and the constitutive absences that become informative, third-order emergence requires that the emergent system have the ability to refer to itself in its selective activities.

Aspects of recursion occur in third-order emergence of lower levels. The genes carried by DNA encode for proteins essential for the replication of

DNA. I know of no recursion in the synapses of static neural networks, but, because neuroscience is a fairly young discipline, a richer understanding of the processes maintaining dynamic states (see Freeman 2000) could either identify the significance of recursion in bridging biological processes of the brain and decision processes of thought or refine or invalidate this hypothesis. Although most linguists argue that recursion is one significant facility out of a few necessary for symbolic communication, Marc D. Hauser, Noam Chomsky, and W. Tecumseh Fitch (2002) controversially argued for recursion as the only human-specific aspect of language and thus could constitute the linguistic bridge from nonsymbolic communication in (non-human) social systems to the cultural level.

Perhaps the limitless extensibility of recursive processes demands a new level to avoid the potentially infinite number of theories those processes could generate. The identification of recursive functions comes from mathematical examination of computer programs that “call themselves” and thus can create limitless hierarchical patterns of exponentially increasing size. Linguistically, without a formalism to capture recursion one would need, for example, an infinite set of grammar rules to capture nested clauses to arbitrary depth, such as in this sentence to here, and the one to here, and this one now, and now this one, which one can also embed within the context of a larger sentence. Further studies of recursion at the boundaries of levels may reveal the necessity for a plurality of disciplines with distinct theories and raise interesting ontological questions about the limits of human epistemology or how Nature deals with systems capable of generating and communicating infinite possibilities.

In summary, emergent systems theory illuminates post-Enlightenment fallacies that ethics, aesthetics, and religion are completely subjective or that one can find objective, culture-independent truth. It also avoids self-undermining, deconstructionist methods that relativize truth to language or culture while ignoring the scientific advances that facilitate those conversations. Modeling of cross-cultural interactions as emergent systems demonstrates characteristics of an emergent, transcendent level that includes the transcendental norms historically characterized as the Greek Good, Beauty, and Truth. These norms require a dynamic existence similar to Spirit in Royce’s community of interpretation. Although perhaps clearest in clarifying ethical systems and the transformative power of nonviolent resistance, an understanding of those emergent norms also highlights the importance of aesthetics in understanding natural systems and suggests the necessity of community in fruitful science-and-religion dialogue on human systems.

NOTES

A version of the section on The Good appeared as “The Emergence of Ethical Norms in Human Systems” in Proceedings of the 50th Annual Meeting of the International Society for the Systems Sciences, Rohnert Park, California, July 2006. A version of the sections on Emergent Systems and The Good and discussions of Royce appear in Graves 2008.

1. I follow Ian Barbour, Alfred North Whitehead, and others in assuming consistency and coherence, but I work within a pragmatic rather than a process tradition.

2. For other approaches, see Habermas 2008; Van Huyssteen 2006.

3. I differentiate between the *transcendent*, which refers to ontological and metaphysical unknowables of which many religions consider some aspects divine; the *transcendent level*, which refers to a level of human systems emerging from cross-cultural interactions; and the *transcendentals* of Good, Beauty, and Truth. I argue in this essay that transcendentals exist within the transcendent level and leave unexamined the traditional claims that the transcendentals characterize aspects of the transcendent.

4. I use *cultural* to describe social interaction involving this narrow sense of symbolic language, ignoring other, nonsymbolic, communication and tool use in animals. W. Tecumseh Fitch (2004) identifies three aspects of faculty of language in the narrow sense (FLN): ability to imitate, semantic reference (or intentionality in the philosophic sense similar to but not restricted to “aboutness”), and recursion, which allows limitless extensibility of structure (see Hauser, Chomsky, and Fitch 2002).

5. Clayton has a richer and more complicated notion of level than I describe in the prior section, and I use a simpler systems description of levels that avoids possible confusions with Deacon’s orders.

6. Although one can interpret Tracy’s “classics” in a foundational framework, I suggest that they also hold in a postfoundational emergent framework.

7. Strong emergentists claim that cosmic evolution produces new, ontologically distinct levels characterized by their own distinct laws or regularities and causal forces. Weak emergentists claim that although emergent categories may be required to explain causal processes and emergent structures may constrain lower-level structures, they should not be viewed as active causal influences.

8. Kant’s attempt to deduce substantive conclusions from formal premises also has serious flaws as a sufficient statement of morality. Although one would not wish everyone to withdraw all of his or her money from the bank, that does not make closing one’s bank account immoral (Feldman 1998). Regardless of its usefulness for ethical decision making, the categorical imperative illustrates first-order emergence, because a dampening of individual differences occurs.

9. Critics argue against the feasibility of unbiased perspectives (see Wolff 1977). They suggest the insufficiency of “fairness” to create a sustainable just society, and an inability to create sustainability in a property suggests that only first-order emergence has occurred. Sustainability would indicate second-order emergence of a form with some type of boundary that resists annihilation of the system.

10. Aquinas also adds three virtues based on the writings of Paul: faith, hope, and charity.

11. Game theorists investigating the “iterated prisoner’s dilemma” discovered the benefits of tit-for-tat among a mixed group of “cooperative” and “defecting” individuals. Their findings suggest that in regular interactions between fair and unfair decision makers, a new strategy—that is, a first-order emergent property, such as tit-for-tat—would eventually become a norm (Axelrod and Hamilton 1981; Axelrod 2006).

12. Subsequent research has found that the results do not hold when averaging exceptionally attractive faces, and the attractiveness of the average may depend on skin texture.

13. In keeping with Royce’s and traditional convention, I capitalize Spirit when the community of interpretation includes the person of Christ or refers to Royce’s ultimate Interpreter-Spirit and use uncapitalized spirit when referring to a generic community. The systems theory requires no distinction.

14. In a systems approach to natural theology, one understands spirituality without special revelation. In addition to any special “supernatural” revelations, another aspect of spirituality is “natural” in the sense it requires accessing interpretations in natural emergent transcendent-level systems.

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