

Volume IX

Number 1



Fall 2021

Northern Plains Ethics Journal
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*Published by Northern Plains Ethics Institute
North Dakota State University
Fargo, North Dakota*

https://www.ndsu.edu/institutes/northernplainsethics/the_northern_plains_ethics_journal/

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Scholar Section



Shifting Paradigms: Beyond Modern Science to Complexity and Ethics

Robert Artigiani

Ph.D., Professor Emeritus

Abstract: *Early twentieth century science produced striking discoveries and provocative theories. But whether a “second scientific revolution” occurred is debatable. This essay argues a “paradigm shift” comparable to the Copernican is occurring, but only since World War II. The argument rests on defining Kuhn’s “paradigms” as maps of the world along with rules for making maps. Familiar candidates for “revolutionary science,” like Einstein’s Relativity Theories and the Copenhagen Interpretation of Quantum Theory, fail to satisfy both aspects of this definition. This conclusion has more than academic significance, for in the absence of a genuine scientific revolution reconciling “The Two Cultures” is impossible. Fortunately, Post-War Complexity science does satisfy Kuhn’s definition, for it maps nature as a process in which new kinds of reality emerge that are understood using simulations. This essay explores how a science mapping reality as changing qualitatively over time could supply models for regrounding the humanities in natural processes. An ethical stance for guiding actions is also sketched.*

Keywords: Complexity, Consciousness, Ethics, Evolution, History, Information, Meaning, Prigogine, Selves, Social Systems, Two-Cultures Controversy

Modern Science and Its Paradigm

The goal of Modern science – the science of Galileo and Descartes, Newton, and Laplace – was to describe an independently existing material world. This material world lies outside but all around us, and instrumental observations were expected to collect facts about it truthfully and completely. Observations of bodies and motions could then be analyzed into their fundamental parts and the mathematical laws governing their actions formulated. Once complete knowledge of nature was collected, Francis Bacon promised, scientists would be able to predict and control the future, thus assuring progress. This goal was pursued with considerable success from the seventeenth to the twentieth centuries. Then Modern science reached what J.W.N. Sullivan called its “limits,” for the Copenhagen Interpretation of Quantum Theory (CIQT) discovered that observation changed subatomic nature. If observation changed external reality, then its method stood between science and its descriptive goal. A revolution was apparently in the making.

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CIQT seemed to be a second scientific “revolution,” for it reached surprising and sometimes worrisome conclusions. Most famously, Heisenberg’s Uncertainty Principle conceded that both the position and momentum of subatomic particles could not be exactly known at the same time. As a result, a complete scientific description of nature was beyond reach. Bohr’s Complementarity Principle went on to assert that contradictory and mutually exclusive descriptions of subatomic reality could both be correct. If elements could be both waves and particles – and Schrödinger’s cat dead *and* alive – there could be more than one scientific picture of nature, each as “true” as the other. Finally, Born’s analyses of wave functions demonstrated that descriptions could never be more than statements of statistical probabilities. Thus, whatever nature science did describe would lack logical necessity.

But CIQT did more to undermine than revolutionize Modern science. This conclusion follows from T.S. Kuhn’s familiar definition of scientific revolutions as “paradigm shifts.” According to Kuhn, paradigms combine ontological assertions about reality and epistemological rules for describing it. In other words, paradigms are maps of nature along with the rules for making maps. Since scientific maps are validated by methods the maps themselves legitimize, paradigms are self-referential. Nevertheless, shared by “people called scientists,” paradigms guide and validate scientific work. Consequently, paradigms are hard to “shift,” for revolutions have to replace both the maps of nature *and* the methods scientists use. That is why Kuhn equated scientific revolutions with dramatic events like “religious conversions.” CIQT fails to meet that standard, for Bohr, Heisenberg, and Born always insisted their Modern methods prevented them from producing a new map of nature. Disconcerting though it was, CIQT was not revolutionary.

The methodological commitments that limited the claims of CIQT were developed by Bacon, Galileo, Descartes, and Newton. They lived during the tumultuous period of religious violence that followed the collapse of Medieval European society. In their time beliefs in faith-based interpretations of Biblical passages, Church traditions, or Scholastic philosophies were matters of life and death. Beliefs that people were willing to kill and die for were virtually impossible to change. But if minds could not be changed the violence would never end.

As Leonardo and Machiavelli had earlier, Galileo and Descartes proposed that “Truth” was about natural objects rather than beliefs. Natural objects were physical presences, not matters of opinion. “Primary” and “objective,” they existed regardless of what anyone thought or felt about them. Aiming to discover “facts” about independent objects, Galileo went on to invent new rules for determining truth. Using physical instruments to accurately map purely material reality, his experimental method replaced beliefs and logic with data. The method, in turn, was justified by claiming instruments limited to counting, weighing, and

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measuring things were undistorted by “secondary” and “subjective” beliefs. Instruments and observations, Bacon said, put nature “to the test” – i.e., torture – and wrung indisputable truths from it. Descartes added that mathematical treatments of quantified facts were logically irresistible because, as Galileo had said, mathematics is nature’s own language.

Since only dead and mindless objects were real, observations of what *is* took priority over what was believed or thought to be. Of course, people who saw the true as the real and the real as the observable might still disagree. But, said Leibniz, rather than pitting passionate beliefs against each other the new, scientific way of knowing and thinking relied on appeals to objective facts and impersonal logic. Sidestepping polarizing uncertainties disputes could henceforth be resolved simply by saying “let us calculate.” Purged of metaphysics, this “scientific” paradigm appealed because it delivered “clear” knowledge made “certain” by Newton’s “crucial experiments.” (See Figure 1 “Comparing Primary and Secondary Characteristics” on page 4).

The Modern scientific paradigm was formalized by Viennese physicist Ernst Mach in the late nineteenth-century. Calling on scientists to fulfill Bacon’s promise by producing a complete and accurate map of reality, Mach aspired to produce a “mimetic” reproduction of nature in thought. The scientific way, he claimed, was not to speculate but to know and say only what observation showed nature to be. Mach’s message was simple and direct: scientists can only say what they know and only know what they see. Wittgenstein reasserted this position by remarking, cryptically, “Whereof we cannot speak, thereof one must be silent.” Once CIQT discovered that observation changes nature, Mach’s “positivism” limited scientists to reporting the effects of their instrumental experiments.

Its inability to say what the world is, Karl Popper concluded, made CIQT an “end of the road hypothesis.” Worse yet, since different instruments produced Complementary results, Machean commitments limited scientists to endlessly discussing how the way they looked changed nature. Positivism had the unexpected result of turning scientists from ontologists into epistemologists. Unable to map what they observed, proponents of CIQT were left wandering amidst paradox and ambiguity. Sadly, Born conceded, science had become “actual philosophy.”

| Primary | Vs | Secondary |
|-----------------------------|-----------|--------------------------------------|
| Physical | | Mental |
| Things | | Ideas |
| Real | | Illusory |
| Objective | | Subjective |
| Immutable | | Fluctuating |
| Mathematical | | Sensible |
| Quantitative | | Qualitative |
| Realm of Knowledge | | Realm of opinion |
| Exist in the external world | | Exist in the human mind |
| Inhere in Bodies | | How physical realities are perceived |
| Endure regardless of state | | Vary with changed states |
| Mathematically expressible | | Mere names |
| Independently existing | | Depend on senses and concepts |
| Number | | Judgments |
| Figure | | Taste |
| Magnitude | | Odor |
| Position | | Color |
| Motion | | Pleasure & pain |

Figure 1: Galileo and Descartes on Primary and Secondary Characteristics¹

There were, of course, scientists like Einstein who resisted CIQT, remained committed to describing nature, and clung to the Modern map of material bodies whose motions were determined by laws. To be sure, Einstein's Special Relativity led to some shocking conclusions. It deprived scientists of a single "God's eye-view," made measurements elastic, and emptied the universe of its ether. But measurements only varied relative to each other; within different reference frames Einstein's nature remained logical and dependably Newtonian. Moreover, Einstein showed information could be exchanged between reference frames without any loss. And, besides,

¹For Galileo, the difference was illustrated by the distinction between a physical, tangible feather and the purely subjective sensation of a tickle. For Descartes, the difference was exemplified by the distinction between the enduring "mass" of a shapeless wad of cooled beeswax and a golden, fragrant, sweet tasting honeycomb.

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nobody ever observed the ether scientists had long-talked blithely about. Finally, General Relativity's Cartesian explanation of gravity as curvatures in space-time removed the "spooky action-at-a-distance" that long haunted Newtonianism.

In other words, Einstein did not aspire to revolutionize science. Instead, he aimed, as Mach had demanded, to refine and complete the Modern map. To preserve that map in the face of CIQT's findings, however, methodological restrictions had to be relaxed. As Einstein put it, scientific laws explaining nature could no longer be considered mimetic reproductions written on brains by instrumental observations. Instead, they were "free creations of the human mind." Neither CIQT nor Relativity shifted the scientific paradigm, therefore. Instead, CIQT and Relativity merely divided science between those whose methods prevented them from mapping nature and those whose maps lacked methodological validity. As Popper charged, by 1930 discoveries had created a "schism" – not a "revolution" – in physics.

The Two Cultures

Failure to revolutionize science mattered because, as Schrödinger put it, Modern science described a nature from which "the human personality is quite cut out." With this intellectual surgery the "Modern" scientific map reduced nature to physical, preferably atomized matter. Proclaiming most of what made life meaningful for humans subjective and illusory, Modern science exchanged a spiritual absolutism for a mechanistic one. Limited to dispassionately describing an independently existing material world, Modern science could not even account for the scientists who espoused it. This led to a profound paradox, said Søren Kierkegaard, for though Modern science aspired to explain all reality, when "everything is explained by an X [the scientist] which is unexplained, nothing is explained at all." Had the Modern scientific goal of describing external reality been reached, in other words, the victory would have been hollow: the brave new world science described could have no people in it.

Absent a revolution, distinctions between matter and mind, fact and concept meant the gap between material nature and human beings was unlikely to be bridged. Content to describe and explain the trajectories of moving bodies, Modern Science was incapable of understanding qualitative changes. Modern science, that is, could not explain transformations like the transition from dead matter to living organisms. Thus, Nobel Prize winner Jacques Monod's Modern scientific analysis made the emergence of complex phenomena like organisms so highly improbable that life was a statistical miracle. To be sure, the apparent randomness of quantum particles opened a

door to life by showing that there was enough uncertainty in our scientific descriptions of nature to permit life to appear – “life did not have to be but it has a right to be,” said Monod. That *is* a relief.

But Monod’s conclusion is tantamount to a declaration of scientific bankruptcy: it demonstrates that an explanation cannot be given. Moreover, a science reduced to material particles and deterministic force laws mapped a barren nature devoid of meaning and value. In this universe, whose silent, infinite spaces frightened Pascal, Monod concluded, people were “strangers.” For these reasons, humanists since Dilthey have thought their disciplines must resist appeals to “science.” Historians – like poets and philosophers – were left with a subjective worldview that, as C.P. Snow pointed out, left humanists ill-equipped to address contemporary problems.

According to J.S. Bell, most scientists ignored all such problems, asserting they were philosophical bagatelles that could be solved by any decent physicist willing to tear 50 or 60 minutes from serious research. Nevertheless, a few scientists realized the issues were much more fundamental and difficult, and resolving them requires a full-blown revision of the scientific paradigm. It now seems that although, as Kuhn put it, individual scientists may change opinions in “the blinking of an eye,” shifting scientific paradigms takes 60 or 70 years. Among the first to appreciate how revolutionary the emerging science is and to explore its implications for our cultural tradition was Nobel Laureate Ilya Prigogine (1917-2003).

Time and the Modern Paradigm

Prigogine’s “reconceptualization” arose from his sense that Modern science was unrealistic. This seems startling until you realize that time was largely ignored by Modern science, even though it is fundamental to nature. In Modern science, time was not, as we experience it, the way nature records changes. That is because the Modern scientific paradigm focused on moving bodies whose motions followed deterministic laws. Because laws controlling events moving forward in time would be just as deterministic moving backward in time, Modern science mapped the universe as reversible. Equations describing a reversible, deterministic universe have no temporal direction. For Modern science, therefore, time was a bookkeeping device, good only for keeping track of results.

To the extent that Modern science mapped nature, it effectively relegated time to the rank of Secondary Characteristics that exist only in our minds. Einstein, therefore, spoke what was for Modern science a fundamental truth when he assured Besso’s family, perhaps jokingly, that they need not fret over his death because time was “only an illusion.” In any case, Laplace had

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already shown that given deterministic laws the present and future merely unpack implications buried in the past. Thus, were Modern science to obtain the clear and certain knowledge it pursued, every single step in any sequence would not only be completely explained; the results of any and every sequence would have been fully determined in advance. In such a world people would be as unfree as they are unlikely.

Unsatisfied with a map that left much of our world mysterious, mechanical, or illusory, Prigogine aimed for a science that made more of it comprehensible. Doing so might map nature as “a suitable dwelling-place for free men,” to borrow physicist James Jeans’ lovely phrase. Opening the door to a “convergence” of science and the humanities, Prigogine’s reconceptualization might also clear a path to that “theory of meaning” Gunther Stent said was “all it would take for a culture-inclusive supersociobiology of the future to connect that symbolic order” with a general theory of evolution. If so, we would have a science with the potential to put people back in nature and meaning into human lives. But before we can ask what the human world looks like from the Complexity perspective, we need a sense of how Prigogine’s changed treatment might transform the Modern paradigm.

As a chemist, Prigogine saw physics-based descriptions as idealizations based on carefully contrived, artificial circumstances from which all variables and uncertainties had been removed. In such circumstances our experience of time just measured the extent to which laboratory results fell short of the complete and reversible descriptions the Modern scientific paradigm required. That is, for Modern science the illusion of time resulted from inadequate data and imprecise formulations. Opting for experience over metaphysics, life over paradigm, Prigogine sought to reintegrate his scientific colleagues into nature by building on the concept that “time is fundamental.” Aspiring to restore scientific realism, he argued time was how ever more complex realities like scientists emerged.

The time humans experience, of course, is irreversible: the dead do not return to life any more than cold coffee re-warms itself. To account for irreversibility, Prigogine embraced chance, further rocking scientific foundations by violating the basic tenet that all actions were mechanical and all mechanisms deterministic. But while eliminating determinism might help restore scientific realism, reality would no longer be predictable, controllable, or even fully explainable! For that the mathematician René Thom called Prigogine “a traitor to science.” But Prigogine realized that absent determinism, events need not follow the same paths in different temporal directions. Besides, the reversible, idealized clockwork mechanisms of

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Modern science made nature sterile. An alternative paradigm based on irreversible time, by contrast, makes room for the evolution of new forms of reality. In it symmetry-breaking changes make qualitative properties like life, consciousness, free will, and morality real parts of an evolving nature rather than mere “epiphenomena.”

Evolution occurs when time records qualitative changes in nature. For nature to change qualitatively, however, entities must interact rather than merely collide. Collisions explained the motions of billiard balls, which could all be treated as single mass points. Since Boyle, Modern science assumed atoms were mass points that would behave like billiard balls – or moons and apples. But when J.J. Thompson probed atoms they turned out to be multi-particle entities. Atoms with parts can do more than bounce off each other. They can interact, forming entities with new characteristics when they exchange bits with one another. Which particular bits get exchanged is partly random, for exchanges occur on the quantum level where probabilities apply. Moreover, the attributes resulting from interacting entities also incorporate contingent environmental inputs. Thus, events in nature turn out to be less than deterministic; they are at least partly random.

Nineteenth century science encountered randomness and the link between it and irreversible time in Thermodynamics. Its Second Law holds that “the entropy of the universe always tends to a maximum.” Entropy measures the decline in available energy, which is equivalent to the increasing disorder that gives nature a direction in time. First described by Sadi Carnot, the Second Law says that energy used creating the steam to operate an engine can never be put back into the lumps of coal previously in its fire box. When the coal is burned its energy dissipates, settling into equilibrium with the surrounding atmosphere where it is thereafter inaccessible. Moreover, even if it were possible to track down every last atom of carbon and put it back in its original place, energy would be dissipated catching up with all of those atoms and the surrounding environment would be more disordered than previously. The increased entropy produced by work marks off every present from its past, thereby making time real.

Prigogine was able to show that irreversibility is not limited to thermodynamic processes, the problem children of Modern science. It is also true of Newtonian systems, Modern science’s golden boys. That is because to reverse the effects of interactions would take perfect knowledge of the entire universe. In an interacting universe every bit of every element goes careering off to interact with other bits and parts in an endless chain. Not even nature has such complete and perfect knowledge of itself that it could return the whole universe to a prior condition – especially instantaneously. So, it would take

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time to acquire the total knowledge quantum physics had already shown was beyond the scientific grasp.

Moreover, while total knowledge was being pursued, new events would occur, rendering incomplete what knowledge was initially attained and thus making it impossible to reverse time. The tendency for entropy to increase even if we try reversing time makes distinctions between yesterday, today, and tomorrow unavoidable, real, and permanent – even from a “classical” perspective. This is why Sir Arthur Eddington proclaimed the Second Law the most fundamental in nature. He dubbed the Second Law “the arrow of time,” and Jacob Bronowski emphasized that the arrow was “barbed.”

Despite its apparent significance, the discovery of the Second Law was not greeted with enthusiasm. In fact, the Second Law was thought to represent a technical failure, for it was said to indicate that, on the particle level, scientists had not observed how things work well enough to follow the trajectories of all those dissipating atoms and track them down. Thus, scientists like Ludwig Boltzmann could only treat “ensembles” of atoms and necessarily resorted to statistical descriptions, which suggested to Modernists that irreversibility was just a function of incomplete scientific knowledge. Nevertheless, for straying from the path of strict determinism into the realm of probabilities Modernists like Mach savagely hounded Boltzmann.

Prigogine, by contrast, embraced Boltzmann, and then had to resolve the most basic paradox inherited from the nineteenth century: the apparent contradiction between Darwin’s biology and Boltzmann’s thermodynamics. Darwin and Boltzmann both saw the world as changing over time, rather than just moving. Yet Darwin saw life evolving while Boltzmann saw the universe dying. Prigogine’s theory of “dissipative structures” resolves the conflict by demonstrating that interactions creating local order – e.g., living systems – can produce entropy at higher rates. Consequently, the increase of complexity within systems conforms to Darwin’s evolution, while the energy dissipated producing and maintaining local order satisfies Boltzmann by increasing entropy cosmically. Thus, biological evolution and the Second Law are interdependent rather than contradictory, for through time nature changes irreversibly – and, sometimes, qualitatively.

The Complexity Paradigm

Complexity shifts the focus of the scientific paradigm from material particles and motions to organized systems and changes. It also rejects the Modern determination to reduce explanations to a privileged reference frame – namely physics. Moreover, Complexity substitutes organic sloppiness and exuberance for mathematical elegance and mechanical simplicity as tests of truth.

Abandoning fixed ideas in favor of Heraclitan flux, Complexity maps an evolving nature in which new levels of reality emerge, each of which deserves its own kind of explanation.

Perhaps the best example of nature as a transformative process is a 19th century discovery by Henri Bénard, who used it as a teaching tool. Bénard's demonstration involves a viscous fluid in a pan warmed from the bottom. Heat, of course, is energy, and the difference between the temperature at the bottom of the pan and that at the top is an energy gradient. The sides of the pan constitute boundary conditions. Professor Bénard's goal was simply to illustrate the difference between the types of energy transfer called conduction and convection. When the pan is first warmed the molecules of fluid are energized by the heat and start moving about. They bump into each other and with every bump some of the energy in a moving molecule is transferred to another. This stage exemplifies conduction and is complicated.

But the flow of heat does more than bounce and jiggle molecules of fluid. The heat warms the molecules and as they warm, they expand. In Earth's gravitational field the expansion means that cooler, denser molecules near the surface fall downward. Simultaneously, the warmer, larger molecules are squeezed upward. But as the molecules rise, they cool, while the falling molecules warm. Eventually the motions of the molecules reverse, and those which had been rising start to fall while those that had been falling start to rise. When the gradient and boundary conditions are just right, something genuinely wondrous happens and the complicated motion of the molecules bumping into each other transforms into an organized pattern. In this organized pattern strings of molecules begin rotating in the same direction. Even more wondrously, the strings gather together in groups of six to form cells shaped like the hexagonal tiles which once graced the floors of downtown American saloons. (See Figure 2 for an illustration and a diagram of Bénard Cells on page 11).

Prigogine adopted Bénard Cells as metaphors for the new science of "Complexity." Bénards, in other words, are the contemporary equivalents of clocks for Modern science. Where the clock was the metaphor for how forces channeled through gears and levers produced predictable effects, Bénards exemplify how energy flows operating on material elements can transform the behavior of those elements. In this case, when the molecules organize, they no longer mostly exchange energy by conduction. Now they mostly exchange energy by convection. Conduction depends on collisions; convection results from organization. The shift from conduction to convection is a qualitative change – a symmetry break.

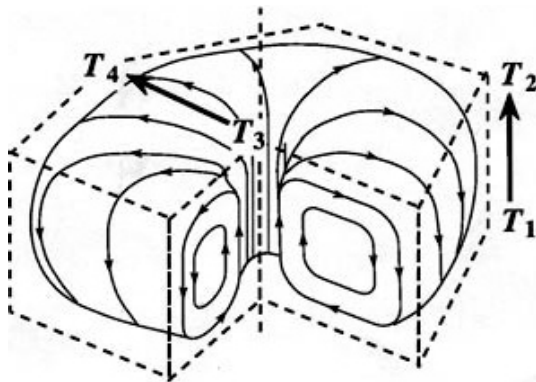
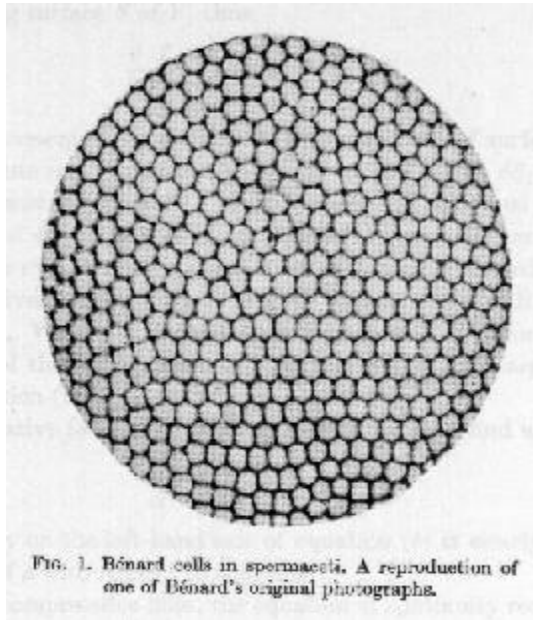


Figure 2: Illustration and Diagram of Bénard Cells^{2,3}
“Can Life Explain Quantum Mechanics?”

² Illustration from

https://www.google.com/search?q=benard+cells&rlz=1C2OPRB_enUS530&biw=993&bih=615&tbm=isch&tbo=u&source=univ&sa=X&ved=0ahUKewiUr6Wa99bKAhVMOj4KHcYIBY8QsAQIJg&dpr=1#imgrc=uPDilginlUTGxM%3A

³ Diagram from <http://www.entropylaw.com/thermoevolution9.html>

Being “emergent” systems, Complexity can account for Bénards only *after* they exist. Until they emerge no one whose knowledge was restricted to the movements of separate molecules could predict the qualitative change that occurs. Yet, despite their high degree of organization, no one creates BCs. To be sure, Professor Bénard put fluid in pans and pans on flames. But he did not determine in which columns each molecule would be, where each cell would be, nor whether the columns would be rotating clockwise or counterclockwise.

In fact, and this is what makes BCs truly wondrous, Professor Bénard did not organize the cells at all. They *self*-organized, spontaneously. But once in existence, cell molecules act “as if they know what one another are doing” – their behaviors are “correlated.” And acting cooperatively, the molecules of Bénard Cells dissipate energy at higher rates than when molecules exchanged energy by randomly colliding. In other words, Bénard Cells illustrate the natural emergence of “order out of chaos.” And it turns out that Bénards are not just laboratory rats. Rather than being artificial phenomena generated by human intentionality Bénards occur regularly in nature – in the atmosphere and oceans most obviously.

Can Life Explain Quantum Mechanics?

At a 1968 seminar arranged by David Bohm, Howard Pattee wondered if the scientifically perplexing presence of life made sense of the paradoxes revealed by CIQT. That is, he asked if a universe in which life had evolved would include the otherwise confusing results encountered by subatomic physics. Pattee was wondering if the epistemology of CIQT offered a clue to the ontology of nature.

Linking change to measurement and irreversibility, Prigogine’s work answers that question in the affirmative. In itself, there was nothing new about linking irreversibility to quantum measurements. But since measurement was what scientists did when their observations collapsed wave functions, irreversibility seemed an aspect of scientific activity rather than nature. This position – like Schrödinger’s wave equation – demonstrates that the Modern paradigm lingered into the world of quantum physics. For CIQT irreversibility merely exemplified how observation disturbed nature and made mapping it impossible.

For Prigogine, by contrast, scientists were part of the nature being described – making science a “dialogue” rather than the “argument” with nature Heisenberg described. This recognition provided a clue to reconceptualizing science (ostensibly, the map of nature). If scientists are part of nature, what happens in laboratories (the rules for doing science) may exemplify what happens in nature. Maybe nature evolves irreversibly when

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entities energized by gradients interact – i.e., when nature changes by observing itself.

This possibility is less anthropomorphic than it sounds. After all, if scientists are part of the nature they describe, then what they do and what they see happening in laboratories must illustrate *something* about reality, no matter where it is or how it is mapped. The something natural about an experiment, then, need not be what is observed. Rather it is simply that an observation is the act of exposing something to a structured energy flow within carefully controlled conditions. Carefully controlled conditions are not present in nature, of course, but there certainly are energy flows. Any gradient, therefore, amounts to an instrument. There are also boundary conditions in nature, and there is stuff for gradients to bounce and jiggle. So, it is not preposterous to say energy flows within boundary conditions can lead to interactions and the kinds of changes CIQT disconcertingly reported. This is the really promising idea that makes the experimental changes quantum physics treated as *obstacles* to *describing* what nature *is* into *opportunities* for *understanding* how nature *works*.

Seeing change as lost information, quantum theorists interpreted the effects of observation negatively. Replacing description with understanding, being with becoming, Prigogine interpreted quantum effects positively. Showing how interaction creates information, he no longer lamented the inability to precisely track where masses *move*. Instead, he aimed to grasp how, over time, nature *changes*. Succinctly put, Prigogine – like Whitehead and others before him – mapped the world as a process. In this process energy flows drive nature far from thermodynamic equilibrium, where interactions create information and qualitatively new realities, like life in Prigogine’s paradigm, emerge “as naturally as a falling stone.”

Objectivity and Reality

Granting that gradients cause interactions and interactions cause changes, the question becomes how does nature record the transformative results of interactions? For Positivists and their Copenhagen disciples, scientific information was recorded by pointer readings. Since pointers record quantities, it was thought they were neutral. Thus, the relationship between the observed and the observer was assumed to be “objective” – i.e., unaffected by secondary qualities like emotions, beliefs, or theories.

With the recognition of Complementarity, however, CIQT discovered observations were not neutral. In the subatomic realm measurements were made when perturbations caused by macroscopic pieces of apparatus collapsed wave functions. Different instruments produce different results because they

collapse wave functions in different ways. That is because the ways wave functions collapse depend partly on the structure of the apparatus used to make observations. Once quantum theorists recognized that different instruments yielded Complementary results, they had to concede observations had transformative results. Pointer-readings therefore record not just what scientists see but how they look. In fact, what quantum theorists realized they saw upon observing nature was their own minds looking back at them.

Moreover, as Copenhagen epistemologists quickly conceded, different pieces of laboratory apparatus were built by scientists with different presuppositions. Some scientists found particles because they built instruments that looked for particles. Other scientists found waves because they used instruments that looked for waves. Rather than being neutral, pieces of apparatus incarnated the minds of scientists making observations. For Bohr and Heisenberg this was tragic, since instruments were recording descriptions of the scientists' expectations rather than an independently existing nature. Unexpectedly, for CIQT reality being what scientists know became "consciousness."

Given the transformative effects of observation, Bohr could no longer follow Galileo and Bacon and equate "objectivity" with elements of external nature that were independent of all observers. Bohr could not say the objective was the natural because he could never know what the natural was. But he could still say that laboratory observations were objective, for they were publicly reported results all observers could dependably reproduce. That is, laboratory results might not be natural, but they were *real* – at least within the community of people called scientists. Demonstrating his debt to Kant, Bohr emphasized the distinction between naturally existing and experimentally produced realities, calling results embedded in apparatus "phenomena." Like all facts, phenomena were, in N.R. Hanson's term, "theory-laden." But Bohr still insisted that experimentally produced phenomena being publicly observable consequences of reproducible interactions, were also objective. Phenomena were created realities.

Rather than limiting quantum theory to laments about what science could not do, Prigogine's "positive interpretation" built around Bohr's redefinition of "objective." Prigogine treated Bohr's understanding of phenomena embedded in observations as illustrating how gradients and structures – like the instrumental consequences of scientific theories – cause changes and create new kinds of reality. These quantum physics effects suggest how nature itself creates ever more complex realities through interactions resulting from energy flows and records qualitative changes in self-organized systems.

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All that is necessary for preserving what nature creates through thermodynamic processes – and it is the same fundamental issue at stake in the origin of life – is for a set of interactions to take place that creates the conditions for its own replication. That is, there has to be some action producing a result that triggers another action whose result is the source of the first action. And in a self-replicating sequence the information created by interacting agents is stored in the series of structured interactions. This makes CIQT's otherwise troubling discoveries functionally useful, for every phenomenon in the replicating cycle amounts to an instrument shaped by interactions it helps shape. (See Figure 3 for a “Contrast between CIQT and Complexity Science” on page 16).

This sort of self-stimulating, self-maintaining process – mythologized as the immortal snake swallowing its tale – is called a “hypercycle.” It was traced in the 1960s by Nobel Laureate Manfred Eigen. Hypercycles can, of course, involve many steps taking place over long periods of time, and those steps usually depend on environmental inputs. Although hard to observe, much of this activity can be modeled using computer simulations. The thrust of the idea is that when an autocatalytic – or “self-excitatory” – cycle forms, it preserves the transformative effects of interactions, because every iteration creates a situation that would not exist in the absence of the hypercycle. Thus, hypercycles, like Bénards, are “emergent.” There is information present in such self-organized systems that did not exist before its parts interacted and their behaviors mutually transformed. Each hypercycle, therefore, is a fresh start, the source of its own existence. And each must be understood in terms of its own created information.

Prigogine's later work suggests this image is more than a theory, for if we think of natural structures in terms of N-Body or Large Poincaré Systems (LPSs) we have examples of self-sustaining systems. In LPSs many components “resonate,” mutually adjusting their behavior like cuckoo clocks on the walls of Swiss shops. There is no mystical reason for this happening. Pendulum clocks on a wall, like members of any LPS, are being bounced and jiggled in an energy gradient and they are a bounded set communicating via the wall. As the pendula swing and the weights fall, they shake the wall, and every shake affects how other clocks shake the wall – and, thus, each other. So, the clocks interact, and every interaction creates other interactions. If the flow is regular and the boundaries defined, resonating interactions can synchronize and become mutually sustaining. A hypercycle can form in which what each member does depends on how all members of the LPS are changing each other. Thus, sequences of repeated interactions are creating information

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about the LPS *as a whole* whose existence the simultaneous singing of the cuckoos announces.

QUANTUM THEORY AND COMPLEXITY

| | Quantum Theory | Complexity |
|---------------------------------------|--|--|
| Asks | What Nature Is | How Nature Works |
| Focuses on | Sub-Atomic Realm | Thermodynamics/Chemistry/Biology |
| Agents are Interactions Effect | Scientific Instruments Observations Negative Looking Changes World <i>Information is Lost</i> Observation is Obstacle No Map is Possible | Natural Gradients Fluctuations Positive Real World Constantly Changes <i>Information is Created</i> Interaction is Opportunity Patterned Processes Map Nature |
| Result | Record made Embedded Phenomena | Self-Organization Evolution as Stored Information |
| Consequence | Reaches Limits Modern Paradigm End of the Road Restricts Science to Epistemology "Final Theory" Shows Society had Outgrown Modern Map | Embraces Process Paradigm Accounts for Emergence and Evolution Restores Ontology to Science Expanding frontiers Implies New Ways to Map a Dynamic World are Emerging |
| Method | Instrumental Observations Paradoxical Dualities | Computer Simulations Levels of Realities |

Figure 3: Quantum Theory and Complexity

Shifting Paradigms

Stored in the series of interactions creating an LPS, that information records how components correlate their behaviors. When sustained behaviors correlate, the LPS is no longer just a mathematically convenient “ensemble” that substitutes statistical regularities for ignorance of individual particles. The LPS is actually a system, a unified whole greater than the sum of its parts that regularizes component behaviors top down. The components now “act as if they know what one another are doing” because the mutual effects of their interactions give shape to the LPS, which sets the conditions for what its members do. And because how components behave depends on the information their interactions create, self-organized systems constitute new levels of reality that are as unexplainable in terms of their separate component parts as they are independent of external creators.

Transforming ensemble theory from a maneuver for solving technical problems into a map of natural reality, Prigogine argued that within an LPS we can derive knowledge of the parts from the coherent behavior of the whole. But, as Prigogine saw, for the whole to endure, the interactions between the parts that create information must be *persistent*. The whole depends on the changes in the parts, and the parts are changed by interaction. Persistent interaction (observation) is possible because LPSs are, like all dissipative structures, open systems in which energy flows drive parts far from equilibrium, where they are active. Boundary conditions, of course, prevent particle actions from simply diffusing over a vast extent until they are lost. Energized particles bounce and jiggle against boundaries, each action thus helping to create the conditions persistently causing them to act.

But actions within LPSs are not clock-like. They vary statistically, and variations threaten the stability of LPSs. LPSs respond to threats by adjusting part-to-whole behaviors in accordance with the Second Law. Adjustments made to continue dissipating energy ripple through hypercycles, producing “fluctuations” that amount to LPSs (re)creating information by observing themselves. Energy, boundaries, and fluctuations produce persistent interactions, which preserve the systems on which the interactions depend. That is how information created when elements interact is stored within systems when they self-organize. Self-organized systems are “phenomena” embedded in their own interactions. (See Figure 4 “Contrasting ‘Modern’ and ‘Complexity’ Science” for a set of simplifying contrasts on page 19).

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Using Prigogine's paradigm, natural and social scientists should be able to develop models for how ever more complex entities evolve in nature, including life and, hopefully, culture. A science tracking qualitative differences between atoms in isolation and in organic cells might help us understand the effects living in social systems have on biological people. Then, although social systems, in Benedict Anderson's phrase, might be "imagined communities," they are not merely "secondary" characteristics in the minds of their members. Social systems are as "objectively" real as Bohr's "phenomena," although symbols like "Germany" "map" them in the imaginations of their members. To follow all this, a theory of how societies self-organize and change their members' human attributes need not borrow *content* or mathematical analyses from Complexity science. It is the *concepts* we are interested in: the evolution of our humanity deserves to be discussed in terms of its particular realities rather than being reduced to those of physics, chemistry, and biology.

In what follows the Complexity paradigm is used to locate the sources and model the evolution of species-specific human attributes like consciousness and morality. Its conclusion – surprising by "Modern" scientific standards – is that the attributes making us human are historically rooted in social experience rather than biological nature. This foray leads to some unsettling implications – the alienating consequences of self-awareness appear inevitable, for instance. Other results seem mildly revelatory and optimistic – cultural and political values like individuality and freedom are shown to have structural bases as well as ideological defenses. Of course, Complexity-based insights could be completely mistaken. But the possibility that a new scientific paradigm could enrich our understanding of the historical process making us human is well-worth exploring, for it is as beautiful as it is exciting.

Shifting Paradigms

"MODERN" SCIENCE

1600-1928

Metaphor: Clock

Science of Being (Things)

Goal: *Know* what nature is

Isolate "fundamental" parts

Nature is the external reality
observed by Scientists

Basic Science: Physics

Newtonian

Presupposition: Matter is real

Focus: Gravitation & Force Laws

Totalizing

Immutable &

All-Embracing Laws

"Nature everywhere

conformable to herself" (Newton)

Method: Observation/experimentation

Reductive

There is a privileged level
of reality

Simple

Deterministic

Mechanisms

Predictable

Analytical

Atemporal

Reversible

Laplacian Illusion

Certainties

Future "unpacks" present

Movement

Trajectories

Order

"Human personality is quite cut
out" (Schrödinger)

"COMPLEXITY" SCIENCE

After 1945

Metaphor: Bénard Cell

Science of Becoming (Relations)

Goal: *Understand* how nature works

Model emergent systems

Nature is the reality in which
scientists observe

Basic Science: Biology

Aristotelian

Presupposition: Reality evolves

Focus: Energy & Information

Diversifying

Relative Rules apply to

Self-Organized Realities

"Nature is too rich to describe in a
single language" (Prigogine)

Method: Simulation/modeling

Holistic

Hierarchical levels of reality
spontaneously emerge

Complex

Stochastic

Processes

Surprising

Synthetic

Historical

Irreversible

Phase Changes

Probabilities

Future "emerges" unpredictably

Change

Symmetry-breaks & Bifurcations

Organization

"Explain the scientists who explain
nature" (Prigogine)

Figure 4: Contrasting Modern and Complexity Science

Complexity and History

Prigogine's emphasis on time shows he fully appreciated the debt his potential paradigm-shift owes to history. Beyond that, he sensed the importance of rooting human identity, self-understanding, and valuation in nature. Inspired by him and others, my goal will be to borrow concepts like self-organization and emergence to make sense of history. Their use enables us to show how interactions and innovations create new levels of reality – e.g., social systems – as naturally as Bénard Cells.

Complexity science further suggests that when people gather together into social systems, symmetry with biology is broken. This new realm created by transformative interactions would then account for the emergent attributes defining our humanity – e.g., consciousness and individuality. Complexity science might even explain why new rules – e.g., rationality and morality – emerge to operate social systems. This essay will finally attempt to show that Complexity science can account for the growth of human attributes as *Society* evolves. The results provide a perspective from which to re-evaluate the significance of historical changes.

Academic historians typically resist arguments for dramatic historical changes and grand generalizations. Eager to demonstrate the benefits of fine-toothed archival researches, academic historians prefer gradualist interpretations demonstrating their sophisticated sense that, while every person and event is unique, the more things change the more they remain the same. Consciously or not, they adhere to the idea that there is a “human nature” which is the same in all times and places. This leaves readers with the sense that history demonstrates the futility of human action and the meaninglessness of lives. Complexity suggests otherwise: real changes – some for the better – can and occasionally have occurred in history as they have in nature.

Karl Jaspers called the first such period, which provides the backdrop for this discussion, the “Axial Age.” Misdating it from ca. 800 to ca. 400 BCE, Jaspers said the Axial Age was the era when conscious, rational, and moral human beings first emerged. (See Figure 5 “The Axial Age in a Nutshell” for a primer on the concept on page 21). Jaspers associated the emergence of these attributes with significant social changes. Offering a natural pattern for understanding how social changes and human attributes co-evolved, the Complexity paradigm lets us demonstrate how qualitative changes – costly though they have been – amount to significant advances. It even hints at ways to make change easier.

Shifting Paradigms

Jaspers' Axial Age (ca. 800 – 400 BCE)

The period involves a shift

From

Calm
Awareness of nature
People were part of nature
Reacted to external experiences
 Experienced events
Imitated Gods,
 Acted spontaneously
Satisfied individual needs
 Sought immediate gratification
 Lived in moments
Ritual
Myth
Ecstasy

To

Anxiety & Uncertainty
Awareness of self
People are distinct from nature
Choose acts after internal debates
 Grasp causes of events
Consider situations,
 Reflect on actions
Meet global responsibilities
 Aim for long-term satisfactions
 Seek for meaning
Morality
Logic
Rationality

Characterized by birth of

Self-consciousness, Spirituality, Transcendence
 Inner Life, Morality;
Injunctions to abandon greed, egotism, violence & meanness;
Discovery of internal resources to rise above self and world;
 Responsibility and Guilt; and
 Belief in after life.

Articulated by sages including

Zoroaster, Confucius, Buddha, Socrates
To which we might add Jesus and Paul

All of which shifts are related to emergence of civilized social systems,
i.e., our most “human characteristics” emerge in the context of altered
social relations

Figure 5: The Axial Age in a Nutshell⁴

⁴ **Jasper's definition:** The Axial Age was the period when, simultaneously in China, India, and the Middle East, “man becomes conscious of Being as a whole, of himself and his limitations. He experiences the terror of the world and his own powerlessness. He asks radical questions. Face to face with the void he strives for

Historians can be forgiven for usually missing the potentialities of Complexity science because they face a problem which is similar in kind to one faced by CIQT. CIQT realized whatever was naturally real at the sub-atomic level could be radically different from natural reality at the human level. But because our words are formed in terms of everyday experiences, differences between microcosmic and macrocosmic realities made describing sub-atomic reality using natural language virtually impossible. Since, as Bohr put it, “we are suspended in language,” both Max Planck and Max Born repeatedly emphasized applying everyday terms such as waves or particles to sub-atomic nature have to be misleading.

Historians are no less human than quantum physicists, and the terms historians familiarly use are as entangled in everyday individual experiences as the terms of physicists. So, it is as hard for historians using normal words and ideas to conceptualize, describe, and understand the emergent social realities of which they are parts as it is for physicists to conceptualize, describe, and understand the sub-atomic realities of which scientists are built. Amateur historians finessed such problems of scale by assuming societies are individual human beings writ large. Therefore, societies as wholes could be expected to pass through the same life stages, act on the same impulses, and be described in the same terms as individuals. But societies are not alive, they cannot feel, and if they perceive or think it is in very different terms from those applicable to individual people. Moreover, since systems face problems on a larger scale than individuals, actions at “the next higher level” can no more be equated to individual thoughts and lifestyles than organisms can be explained in terms of dead matter.

The problems of explaining events at the next higher level leads many historians to deny there is a next higher level. They focus exclusively on the humanly-scaled individuals who populated the past and whose personal motivations and dramatic adventures could be seen as propelling history. This focus has proven marvelously entertaining. But it leaves history a succession of exquisitely described individual episodes with no overall meaning. Marc Antony betrayed Rome and lost an empire because he was enthralled by Cleopatra’s nose. Historians can describe events like that. But, at best, all historians then know is that Marc Antony and Cleopatra behaved a certain way. Later instances of intergender follies – Abelard and Eloise, Henry and Anne, Napoleon and Josephine, Edward and Wallis, or Bill and Monica – must be studied entirely on their own merits, with the unique attributes of the individuals involved emphasized.

Shifting Paradigms

Such tales can be tragic or comic. But studied in isolation all are devoid of any significance beyond themselves. History as a litany of heartbreaks punctuated by passing triumphs – of serendipitous events driven by the passions or calculations of unique individuals – is ultimately meaningless, no matter how fascinating. The ancients tended to see it that way. For them, history was mostly tales of human foibles and triumphs – a forum for honoring the dead and amazing the present. At best, for a Thucydides or Ibn Khaldun, history was a recurring cycle whose examples taught later peoples what dreadful things to expect next.

Finally, some historians, exasperated by the complications they face, simply insist that all events can be explained in terms of some single cause, which they privilege above all others. Such reductionism – whether it involves ideologies, technologies, economies, or genes – is as misrepresentative of human affairs as was the Modern propensity to reduce all reality to what could be counted, weighed, and measured. Reductionism, of necessity, either ignores the intangibles that make human life meaningful or the material aspects that make our lives possible. Such missteps suggest history is too important to leave to historians.

Some historians have jumped the tracks and recognized social systems as the next higher level. They have accepted the observational data of anthropologists and psychologists indicating groups of people at different times and places have experienced the world differently. Some historians have even conceded the observed differences in human perceptions, conceptions, valuations, and actions are rooted in social structures. But when they set out to discuss these collective entities with apparent causal powers, historians with a focus on systems have frightened academics. Images of societies dominating individuals and transforming them into bestial aggressors or mindless robots convince professional historians it is dangerous to declare social systems real. But absent societies able to store new kinds of information, history remains “bunk” – a cacophony of essentially meaningless events.

Despite the pessimism of the ancients and the habits and fears of academics, efforts to find history meaningful have been made since at least the eschatological speculations of Joachim of Fiore. Enlightenment

liberation and redemption... He experiences absoluteness in the depths of selfhood and in the lucidity of transcendence.” The Axial Age is the period when “Man, as we know him today, came into being,” when “What was later called reason and personality was revealed for the first time.”

historians gave this tradition a worldly twist. Enthralled by Newton, they “found” laws of history that necessitated progress. After two World Wars fought with advanced technological weapons, it is hard for more recent historians to see progress. Increased knowledge of how people have been mistreated within and by societies makes it harder still. Besides, progress defined in terms of a science unable to explain life or include value would hardly be useful to humanists.

Consequently, philosophers like Karl Löwith concluded that the only thing which could give the human comedy meaning was the Christian *eschaton*. Brooding in the shadows of B-17s flying over Europe, Löwith said only the saving of souls makes history meaningful. But importing meaning from transcendental sources into history violates its epistemology: History explains things by their experiences. If history is to have meaning humanists must find it in the temporal narrative itself. Complexity science has the potential to provide a model for organizing data in which the emergence and evolution of social systems makes *meaning*, like life, “as natural as a falling stone.” If so, history’s products – transformed human beings who are conscious, intentional, moral, rational, and free – can be recognized as what history means and the meaning(s) of history fairly judged.

A “Theory of Meaning”

Gunther Stent was right when he said we need a theory of meaning to incorporate human evolution into a supersociobiology. Fortunately, developing a theory of meaning should not be too difficult, for the Complexity paradigm makes its foundations obvious. Most Sociobiologists are not likely to be happy with the results, however, since Complexity’s reconceptualization does not require reducing the humanities to biochemistry. Their disapproval need not stop us, for building a new theory of meaning on the Complexity paradigm transcends biology as such.

We can start building a theory of meaning by deciding that, although varying situationally, “meaning” in general is something like translation. Translation is the representation of one thing by another – the sound “dog” by the sound “*chien*.” Meaning is also the representation of a furry, tail-wagging, face-licking, four-footed domestic animal by a sound. But meaning is not exclusively linguistic. It is any sort of translation: sickness is what a germ or virus means when translated into the state of an organism, for example.

In a more human sense, meaning references the translation of individual local acts inspired by personal intentions into effects with

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consequences at the next higher level. Victory or defeat in a game, for instance, gives acts by players meaning. Meaning is not in sounds, molecules, actions, or even people, therefore, but in the contexts translating them. An isolated germ means nothing. Similarly, the same act performed outside a game context or sound uttered in another linguistic community would have either no meaning or a different meaning. Thus, meaning in its social context is the translation of individual acts into system-level effects. Our attempts to determine the values of system effects and to discern the rules on which value judgments are based make up moral philosophy.

Treating human systems as dissipative structures, historians could easily find meaning *in* social contexts, the games all people play. But here the historians' biological circumstances become an obstacle. Since humans are not equipped to directly perceive relationships, historians have a hard time "seeing" social systems. Besides, systems operate on long, slow time scales, while historians operate with short, fast life spans. Since antiquity, concepts like "Fate" were used to explain results caused by imperceptible system processes translating individual human acts into unintended results at the next higher level. Hegel termed such surprising consequences "ironies of history." In any case, for contemporary historians, examples like Fascism and Communism make historians fearful of the controlling potential of systems. Moreover, the restrictions inhibiting growth in traditional societies seem to demonstrate that what historical change there is depends on individuals rather than systems.

These fears, at least, can be easily allayed. To begin with, Complexity science avoids the danger of over-privileging systems by respecting the importance of individuals. Complexity appreciates the fact that although social systems contribute to individual identities, without distinct biological individuals there would be nothing to identify. For Complexity identities are the "phenomenal" results of interacting entities involved in the process of observing each other, and all sides of the process matter. Moreover, despite being small relative to societies, individuals matter because dynamical systems are laced with nonlinear relationships. Nonlinear relationships involve feedbacks which can amplify their own effects, sometimes driving societies to new levels of Complexity where phenomena change qualitatively.

In contexts that can amplify consequences, individual actions can dramatically affect whole systems. This disproportionate relationship between individual causes and system consequences is often called "the butterfly effect." Butterfly effects tend to occur when complex systems are destabilized and teeter at bifurcation points. At bifurcations systems

tweaked by individual or small group actions can leap to higher levels of complexity – or collapse back toward equilibrium. Lycurgus played a huge role in shaping Sparta one way, Solon an equally prominent role in shaping Athens another. But individuals cannot control everything. Thus, via Alexander, Greece stumbled into the then dominant form of civilization rather than evolving into “something new and entirely different.” For Complexity, social systems can survive or perish, adapt or wither because of what individuals are and do, while recognizing that what individual accomplishments *mean* depends on their system contexts.

The acknowledged threats self-organized systems pose aside, the emergent realities Complexity describes offer potential benefits to the humanities. If societies can be treated as dissipative structures – as LPSs of a special kind – then history need not be a sequence of “one damn thing after another” in which much is repeated and little accomplished. Rather than being meaningless history would be a process through which interacting humans acquire new attributes when societies of increasing complexity self-organize and Society evolves.

If much of what individuals are and do depends on the new kinds of realities natural processes generate, then the results of the historical process become meaningful. Their meanings would be the new information about people created by transformative interactions and stored in the sequence of social systems as it builds on itself. The meanings of history would be “existential,” for they would be internally generated and independent of outside sources. But they would also be valuable – and real.

Should historians acknowledge this possibility, they could overcome their sense-limits and their trained suspicions and recognize systems exist simply by observing that interacting people have changed over time through membership in LPSs – i.e., social systems. The Axial Age recorded such changes in epics like *Gilgamesh*, myths like Eden, dramas like *Antigone*, and proto-ethics like Confucianism. Moreover, were historians to respect systems as the contexts in which actions become meaningful, they would better understand why people acted as they did and why results were often ironic. Nor must historians fear determinism, for randomness and adaptability protect the creative role of individual choices and actions. History as a process – like the creative nature Complexity maps – is contingent, open-ended, and ongoing.

Social Meanings

No doubt, the on-going process of history has been as blind as biological evolution. Yet if cosmic entropy must always tend to a maximum, history,

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too, has a direction in time. The direction, of course, is only toward social systems whose increased complexity dissipates energy at greater rates. Generating entropy at ever greater rates is itself meaningless. But because the increased rates at which entropy is produced are irreversible, systems once organized will act to preserve themselves. Acting to preserve themselves, systems, like organisms, have *purpose*. Their purpose may not be morally meaningful – dissipating energy is not moral, after all. But acting purposefully to preserve themselves, social systems serve as contexts within which the actions of their members *become* morally meaningful.

Thus, surprising though it may seem, history needs no overriding goal to generate meaning. Nor need meaning at the level of individual organisms be “moral” – the hand that framed the lamb also framed the fearful tiger. But what is meaningless in itself can become meaningful, for self-preservation at the *system* level is enough to give meaning to what happens in systems. Separate individuals and their actions may be as meaningless as social systems. But in societies actions become meaningful when they translate into fluctuations that help or hinder system purposes.

Moreover, in societies member actions are not just meaningful in the biological sense of being individually pleasurable or painful, healthy, or unhealthy. In social contexts actions are meaningful because they affect how well or badly systems preserve themselves and how well or badly their human members live. Because system states favor or harm groups of humans, the actions members of social systems choose and take have meanings of a new kind, meanings which, after the Axial Age, we learned to call “moral.”

Once invented, morals were selected because social systems operating with them proved better able to preserve themselves. Systems preserve themselves by correlating component behaviors. Correlating behaviors is crucial when systems become complex, for complex systems are “far from equilibrium.” Far-from-equilibrium systems are easily distinguished from their environments because they are organized in improbable arrangements. Like molecules before being drawn into Bénard Cells, on their own all members of complex systems most likely would be doing something radically other than constantly jogging in the same direction in a single column.

Members of far from equilibrium systems constantly adjusting to preserve themselves persistently interact, which interactions continuously restore created information. Information is stored in the actions of members, who use it to more skillfully locate, process, and distribute resources. The Second Law is thus obeyed as complexity increases, for

rates of external entropy production rise as work is done and more resources are consumed internally. Meanwhile, refining and perpetuating skills leads to specializing behaviors, which specialized behaviors make members of complex systems mutually dependent. Mutually dependent, they interact even more often, and more persistent interactions tend to individuate components – to identify them in ever more distinct, improbable, and precarious ways. Specialized behaviors also accomplish systemic purposes by influencing what other members of social systems do.

Just as some quantum mechanical instruments produce wave-like results when observing subatomic nature and others produce particle-like results, the identities of members of social systems vary with the structure of their systems. Some social systems encourage people to be warriors, others soldiers. Yet other societies favor scientists or philosophers, novelists, athletes, or movie-stars over prophets. Whatever identity their cultural membership provides, the position each component occupies in an interactive system reflects as it affects what all the other components do. And the actions each member performs, therefore, help keep other members behaving in ways that allow systems to preserve themselves, while discouraging disruptive behaviors, as well. Once systems exist, says Alicia Juarrero, whole-to-part or top-down “constraints” see to it that the interactions on which each component depends are repeated. In societies these constraints include, among other examples, technologies and traditions, religions and laws, schools and police, economic rewards and physical punishments.

In thermodynamic systems like Bénard Cells the information about component behavior is communicated physically. In living systems information is stored and communicated chemically. Physical, chemical, and biological information was probably enough to correlate behavior in elementary systems like flocks and herds, families, and bands. But in complex systems like civilized societies components are conscious agents. Conscious agents know what they are doing and can choose whether to act cooperatively or competitively, authentically or deceptively, and morally or immorally.

Like Adam and Eve, when members of complex systems have to choose between behaviors, they become self-conscious and anxious. To tame anxieties, agents seek to reduce uncertainty. Since the pioneering work of Claude Shannon, scientists have called the measure of reduced uncertainty “information.” As a measure, information is like poetry, which Auden said, “makes nothing happen.” But, like temperature, information does measure something that *is* happening. The happenings about which

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members of societies have to reduce uncertainties are actions affecting the states of the systems to which they belong. To communicate information about which choices disrupt or correlate behaviors in complex social systems, a language able to script human behaviors as it mapped the structured relations self-organized human interactions produce was required.

Values, Ethics, and Morals

The language *describing* social systems and *prescribing* the behaviors constituting them is made up of Values, Ethics, and Morals (VEMs). Although typically lumped together, Values, Ethics, and Morals differ significantly. Most importantly, morals map the various end-states systems can reach. In these states people work together performing what Michael Tomasello calls “shared cooperative actions.” Working together to achieve common goals constitutes Christine Korsgaard’s “primal scene of morality,” where social systems form that benefit most if not all members. To dependably achieve shared goals social systems must be stable and people willing to accommodate and sacrifice for each other.

When Morals map social realities, members of social systems know what to choose and do in order for stability to be maintained and shared goals achieved. Values increase the likelihood of people choosing such cooperative behaviors by proclaiming actions translated into stable states “good” and actions leading to unstable states “evil.” By declaring stabilizing actions “good,” values capture system purposes and encourage the repetition of actions that maintain them. Conversely, by declaring destabilizing actions “evil” values discourage their repetition. Finally, Ethics are the rules humans follow to evaluate morals, achieve stable social states, and avoid fragmented ones.

Although there are genetically based traits favoring cooperation that facilitated the self-organization of social systems, they have about as much to do with *moral* maps as gravity does with Bénard Cells. Gravity helps make BCs possible but does not explain them. Analogously, biology no doubt made gathering together for primates possible. But the information that maps what emerges when gatherings become systems is not inherent in or limited to the biology that made them possible. Hence, moral information breaks symmetry with biology. Rather than being stored in organic tissue, information showing individuals how to live in, maintain, and replicate social worlds is stored externally.

Created through interactions, social information was originally stored in media like games, dances, artefacts, and rituals, with myths

possibly being the first attempts to map meanings symbolically. During the Axial Age VEMs gradually superseded these early methods and constituted what Merlin Donald calls “external symbolic storage systems.” Their emergence marks the symmetry break when human survival became more dependent on achieving shared cooperative goals than on biologically determined individual capacities.

The emergence of VEMs graphically demonstrates that “nature is too rich to describe in a single language.” Prigogine meant by this sentence, perhaps the most beautiful in the history of science, that although chemistry builds on physics as biology builds on chemistry, there are aspects of chemistry physics cannot explain and aspects of biology chemistry cannot explain. So, it seems reasonable to extrapolate and propose that, over time, humans interacting on biological bases acquired attributes biology cannot explain. These are the attributes that define us. They cannot be counted, weighed, and measured. Nor can we locate them in particular organs, individual cells, or localized regions of organs. Still, the origins and functions of our human attributes need not be supernatural to be trans-biological. Consciousness and morality might be better understood as products of patterned natural processes – of interactions caused by gradients creating the information that is stored in systems.

Complexity shows how VEMs might emerge in social environments in which working together makes agents take the collective effects of their actions into account. Physics, chemistry, and biology are not ignored, let alone violated, by this approach. There would be no social systems without people, and people remain biological organisms even as members of social systems. Nevertheless, feedbacks from the translation of agent actions into system-level effects allow members of social systems to transcend biology and reduce uncertainty about more than the private pleasures and pains actions cause. VEMs allow individual members of social systems to share in each other’s experiences. Sharing experiences makes the “resonances” correlating individual behaviors possible.

Symbolizing the system-level consequences of individual actions, VEMs tell agents what actions *mean*. Actions in themselves are describable in quantitative, Modern scientific terms. But the social meanings of actions are qualitative. The social meanings of actions are good or evil rather than heavy or light, few or many, hot or cold. Recording reduced uncertainty about how actions affect the lives of others and the stability of systems, VEMs reference actions whose meanings are, in Lila Gatlin’s term, “context-dependent.” Like periscopes, VEMs let people rise above themselves, glimpse the system wholes to which they belong, and explore

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the ways their actions are translated. When people can anticipate the meanings of actions, they can act cooperatively. Mapping meanings, VEMs shape the perceptions and guide the individual actions preserving social stability whole-to-part.

Storing information for replicating societies as biological generations succeed each other, VEMs formalize and replicate patterned behaviors creating “social roles.” Social roles are analogous to nodes in hypercycles. They are loci of behaviors relating individuals to what other members of societies have done, which behaviors create conditions favoring their own repetition. Regularized interactions that correlate behaviors, social roles – not the individuals who perform them but the roles themselves – are examples of the emergent intangible “stuff” constituting social systems. VEMs, being scripts for performing social roles, are blueprints for guiding behaviors that continually replicate and maintain social systems.

Sociological analogues of the biological DNA in every cell of an organism, VEMs are carried in the minds of individuals whose behaviors replicate and maintain societies. VEMs store information about what behaviors replicate or disrupt the interactions constituting societal hypercycles the way DNA records reduced uncertainty about what organisms fit in which niches. When moral maps match social environments, behavioral scripts are functional, systems are stable, and people whose beliefs, behaviors, and circumstances align are confident. When any of the three levels involved – VEMs, Social Roles, or Environments – changes, matches break down, behaviors become dysfunctional, societies are destabilized, members get anxious, and moral paradigms can shift. (See Figure 6 for a diagram modeling how social systems work on page 32).

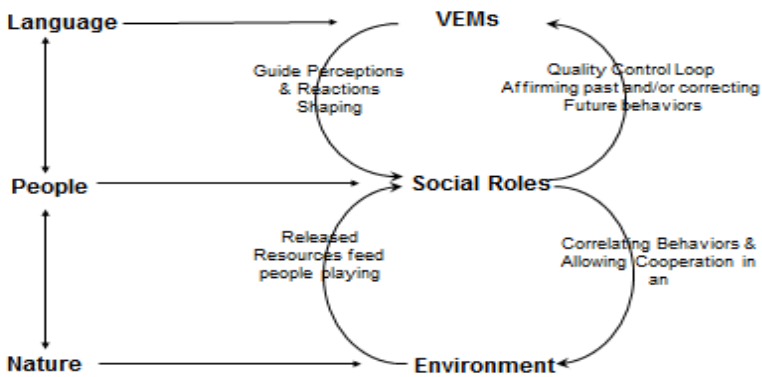


Figure 6. Diagram illustrating how social systems operate as interacting people coevolve with language and nature.⁵

⁵ This model does not describe social systems. Instead it is a tool for understanding how social systems work. Appreciating the importance of material factors like economics and respecting the influence of spiritual realities like Values, Ethics, and Morals, the model focuses on interacting humans working together to accomplish shared goals. Working together allows people to survive by releasing enough environmental resources to support expanded populations. But it also requires behaviors to be correlated.

To correlate behaviors, VEMs supply members of societies with “cognitive maps” symbolizing their environments and scripts for choosing and acting – for playing “Social Roles.” For social systems to endure correlations must persist, and to persist resources must be dependably accessed and the products of cooperative labors distributed acceptably. VEMs achieve both goals by guiding successive generations to act so that all can perform their specialized duties. VEMs can also lead people to believe their shares of the results are fair or necessary and/or that present injustices will be compensated in an afterlife.

The model indicates ideas, behaviors, and environments co-evolve, with each acting as the selective environment for the others. Systems are stable when all three levels “align.” When all levels align, roles are functional, results meet expectations, and people are content. But over time ideas can develop, behaviors vary, and environments change. When any one of the levels changes significantly, a mismatch occurs. Mismatches cause societies to be destabilized and their anxious members to be frightened.

Systems and Transformed Behavior

Koichiro Matsuno once playfully asked what groups of molecules say when they get complex enough to replicate. His answer was “life.” When social systems get complex I think what they say is VEMs – or, if you prefer, “do good” and “resist evil.” Societies talking about themselves, VEMs symbolize system wholes. Symbolized societal wholes are necessarily idealized versions of reality, communities imagined. But while idealized such representations are functional, for by modeling societal wholes VEMs make it possible for members of systems to adjust their actions so their hypercycles are preserved. In other words, moralities are Kuhnian paradigms: they are maps of societal hypercycles along with the rules for reproducing those hypercycles shared by the people living in them.

Hypercycles in social terms thus amount to orchestrated sets of interactions individuals can be enticed by play, forced by soldiers, trained by rituals, bribed by rewards, or persuaded by moralities to repeat. In self-sustaining processes, organized energy and matter flows structure interactions that generate social systems selecting for particular behaviors. The behaviors which social systems as environments select for are the actions replicating social roles. To produce these actions dependably people must adjust to what each other are doing. Adjusting to what one another do, members of societies are like teammates shouting and jumping together before games. Like groups of whirling dervishes whose very heartbeats regularize around a collectively established norm, team members resonate, and resonating people correlate their behaviors. VEMs help agents resonate by reminding them of how they and others have felt about and reacted to past agent actions.

Of course, members of social systems cannot all jump up and down together. But there are analogs. Hoplite members of Greek phalanxes racing together into battle, for instance, found themselves acting with so singular a purpose that they spontaneously shouted in unison. The hoplites had obviously produced the shout. But, like the songs some bird species use attracting breeding partners that Hillis discussed, the shout also perpetuated the phalanx. The system proclaiming itself, the battle cry seemed to make

Frightened and anxious members usually struggle to restore previous states. At least twice, during the Axial Age and the Protestant Reformation, however, destabilizations occurred when societies were exposed to new resource flows. Amidst chaos and conflicts, new societal forms emerged which altered experiences, transforming human behaviors, beliefs, and attributes. Adapting to comparably changed environments, we may currently be experiencing a “Third Axial Age.” VEMs based on Complexity science might make navigating it easier.

hoplites control their fears and discipline their rage while charging shoulder-to-shoulder headlong into danger. Anything that powerful had to be real, a thing-in-itself. The Greeks, therefore, not only named it; hoplites made their battle cry a God – *Alala*.

By reminding agents of how others have felt about and reacted to past actions, VEMs – like teams jumping and phalanxes shouting – make system-sustaining states desirable. Desirable goals are shared, and when goals are shared individuals *intend* to shape themselves into social roles – teammates aspire to run fast, soldiers to fight fiercely, historians to understand past peoples, etc. Resonances being enabled, intentional actions then read behavior-shaping effects similar to those CIQT discovered in theory-laden scientific instruments into societal interactions: observing each other, *morally*-laden agents are mutually inclined to act so systems are replicated.

Since how others feel is the condition in which they choose, VEMs encourage agents to act in ways that stabilize systems because those behaviors support others. This is another way of saying morality need not be reduced to biology, for other people's actions create emergent conditions in which interacting agents behave cooperatively. Aligning their mutual responses to one another, members of social systems produce what Jürgen Habermas called “intersubjectivity.” Embedded in societies and sharing VEMs, people think in one another's brains and adjust their actions to each other's perceptions, desires, and expectations. Forming hypercycles, these actions collectively generate the societies that preserve and define them all. Consequently, the survival of all not only depends on each; the identities of each depend on all.

Anthropologist Tim Ingold says intersubjectivity constitutes a new level of reality, a trans-biological reality of the kind Complexity would expect human interactions to produce and Jaspers described. An Axial Age example could help us get a sense of how a resonating intersubjective reality with top-down, whole to part constraints works to transform people. The most obvious is probably the hoplite phalanx itself. Its emergence records a transition from raids by warriors to wars between soldiers. In raids, archaic warriors like Achilles fought. Biology can explain fighting, for it is a physical activity carried out for personal gains – for women, cattle, horses, glory, and, says the *Iliad*, tripods. When no rewards were won, warriors simply stopped fighting, as Achilles did after Agamemnon took “Briseis of the fair cheeks” from him. In raids, physical prowess mattered, and individuals who displayed virtuosic skill were treated as “God-like” – i.e., as superior beings untroubled by the fates of others.

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By contrast, upon joining a phalanx men became hoplites, and every hoplite chose to charge, shout, and battle because every other hoplite was charging, shouting, and battling. That is, by correlating their behaviors interacting members of a phalanx created an environment making the role of soldier desirable. Thereafter, warring soldiers fought for collective purposes, for benefits others would enjoy. And soldiers fought on regardless of how they felt. Finally, the Spartan poet Tyrtaeus tells us, in phalanxes hoplite soldiers were not honored for “God-like” virtuosity but for virtuous dependability, for disciplining themselves, cheering each other on and resonating intersubjectively. And rewards were collective: in Pericles’ speech honoring the Athenian dead no individuals were mentioned! And Pericles made clear that the meaning of the hoplites’ lives was the City that produced them and for which they died.

VEMs are the shared symbols mapping this new level of reality. Equipping all with maps of shared social contexts, VEMs encourage members of societies to interpret and respond to each other’s words and deeds so system-stabilizing behaviors are favored. But merely sharing the symbols by which uncertainty is reduced would not sustain any level of reality. The emergent level of social reality is not so ethereal that thoughts literally move it. Instead, like life in the artful phrase of Henri Atlan, social reality lies somewhere “between crystals and smoke.” Social reality is organized and has effects. But, like life, social systems have porous boundaries that are “fuzzy” and flexible. And social systems vary considerably in how rigorously they are regulated and how tightly they are bonded. In the animal world, for instance, hives seem closer to crystals than smoke while flocks seem closer to smoke than crystals.

In human systems, tribes can be tightly bonded, early civilizations less so, and Modern systems so loosely bonded they appear chaotic. The “strange attractors” mathematical chaos made famous nicely simulate Modern systems. Regardless, it is clear that in any human society VEMs are rarely tight enough to prevent people from violating rules or even gaming systems. In fact, VEMs are what make gaming systems possible. By manipulating VEMs free-riding frauds can serve themselves while projecting images implying they are more cooperative than they actually are. But despite their smoky quality, it seems clear that organized social systems exemplify the sort of trans-biological reality historians have failed to recognize or feared.

Mapping the effects of actions on systems VEMs record a symmetry-break where new rules came into play and components acquired new attributes. Emergent VEMs thus record the qualitative change from

biochemically processed physiological events to social processes. Affected by what others are doing, people transformed by interactions in hypercycles are no longer limited to spontaneous expressions of their genetic heritages. In morally mapped social systems VEM rules often inhibit or even violate biological drives and urges. Thus, Complexity can qualify Hume's dictum: reason is no longer *always* the slave of passion. Playing Complementary roles, reason (morality) and passion (biology) regularly conflict. In social systems, however, reason "ought" and sometimes can prevail.

A Gaia Analogy

To the extent that VEMs help hold societies together by inhibiting people from following biological impulses, morality can be seen as playing a role in societies analogous to the role of life in the atmosphere. According to Lovelock's "Gaia Hypothesis," life emerged because the earth's atmosphere contained a highly unstable mix of chemicals. That mix, because combustible, would normally be expected to maximize its entropy by blowing itself up. But the atmosphere also brought together a range of complex chemical molecules in the gradient produced by the sun's energy. In that gradient, transformative interactions occurred, and these molecules interacted to form organic systems complex enough to maintain, replicate, and reproduce themselves. To continue doing that the unstable atmospheric mix had to be preserved.

In this precarious situation Lovelock argues life, the emergent reality of the whole atmosphere, is the "governor" of the atmosphere's interactions. By shifting forms and varying proportions to preserve itself, life orchestrates atmospheric chemicals so that the percentages of each chemical suitable for maintaining life remain in the atmosphere despite the ease with which they use each other up. Sustainable for only as long as the atmosphere remains far from equilibrium – i.e., maintains the highly improbable chemical mix – life's function regulates actions and processes keeping the atmosphere from collapsing to equilibrium. In other words, life regulates chemical processes so that the conditions making life possible endure. Life – the Goddess Gaia – is our planet's battle cry.

People in societies are in positions analogous to chemicals in the atmosphere: strong entropic tendencies in both cases work to collapse atmospheric and social systems back to equilibrium. Besides, we are born the biological equivalents and, as Burke realized, the moral equals of cavemen. Hence, Freud said, the first job of morality is to issue the "thou shall nots" enjoining people to resist destabilizing temptations by following

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biological urges. And the process of transforming biological entities into “human” beings must be repeated every generation.

But VEMs also have positive roles. Here their job is to guide choices so the interactions out of which societies initially emerged are repeated. VEMs keep complex societies functioning, because in them people choose and act reflectively, using non-biological “operating programs” to perform “shared cooperative actions.” And to understand the people living in social systems humanists must look at whole systems – not just individuals, let alone their genes and instincts. Focusing on systems also explains why VEMs eventually shift from listing what people can and cannot do to modeling character traits. As Susanne Langer put it, “... the power of symbols enables us not only to limit each other’s actions but to command them; not only to *restrain* but to *constrain*.” Moral constraints make behaviors more predictable, and predictability makes correlating behaviors easier and the survival of social systems more likely. (CF. Figure 7 for an illustration of how transformative interactions can generate social systems with whole-to-part effects using Chris Langton’s original diagram on page 38).

Societies and Selves

With the emergence of VEM-operated social systems, people found themselves living in two worlds. One was the natural biological reality of tissues and sensations. The other was the emergent realm of replicating human interactions. Symbols referencing differences between tangible and intangible realities – between bodies and souls – recorded the Axial Age’s awareness of this new situation. In Modern terms, the imperfect fit between biophysical and cultural realities is symbolized in dualisms between brains and minds. Both perspectives indicate awareness emerges as a consequence of estrangement, of living in a social realm distinct from physical nature for which biology had not prepared humankind. Complexity science might reduce the resulting stress by showing how mind and morality grow out of natural processes.

Langton Diagram Applied to Complex Social Systems (Please begin reading at bottom of diagram)

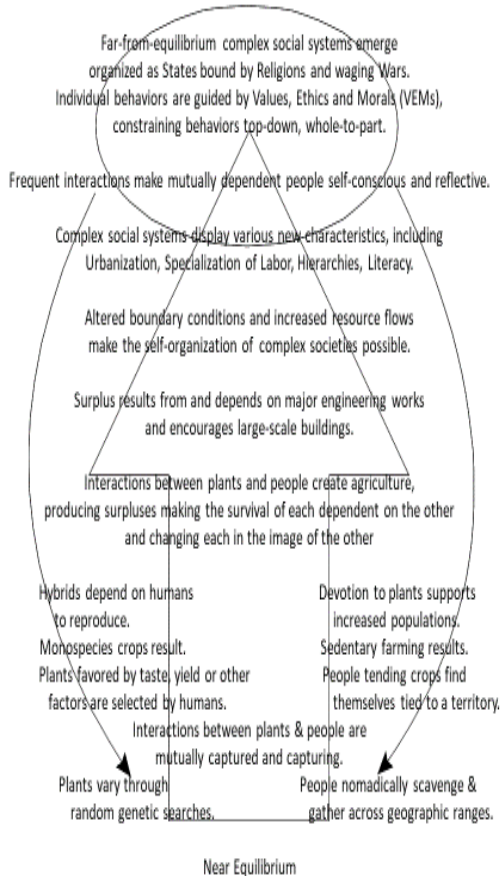


Figure 7: Diagram inspired by Chris Langton illustrating how social systems self-organize Bottom-Up and then maintain and replicate themselves Top-Down.⁶

⁶The idea is that interactions between people and their environments are transformative. They can produce elementary bands, which in turn can produce interactions between people that produce whole-to-part constraints stabilizing complex social systems. Consequently, there is something present in societies that is not present in their separate members. That is why the attributes people

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Regardless, the socio-cultural level of reality emerged in places where population growth desiccated environments and basic biological attributes were no longer sufficient for survival. Initially, when groups living close to nature grew too large for their locality, they divided, with fragments wandering off in search of easier pickings. Over time, however, this strategy proved ineffective, for neighboring spaces were often already occupied and similarly overtaxed. This forced some groups into damp and inhospitable river valleys, where individuals faced problems they could not solve for themselves. All of them, however, had the goal of surviving in common. Having to “persistently” work together clearing underbrush and draining swamps, damming flows, and dredging canals, the “primal scene of morality” was made permanent.

In the few instances where groups survived malaria and other diseases long enough, previously learned gardening techniques developed into agriculture. Agriculture transformed the niche in which societies operated, releasing such flows of resources that interacting survivors rode a heightened gradient into previously unimaginable prosperity. Increased energy flows within the confines of river valley boundary conditions also meant more people interacted more persistently in more ways than ever before. Interaction being a form of observation created information. It follows that members of groups that did survive and prosper by persistently working together could, in fact, find themselves endowed with new attributes.

New attributes proved handy once survival depended on organized group activities rather than individual biological endowments. Hereafter, says psychologist Nicholas Humphrey, biological survival depended on *fitting into* the social systems whose organized, collective efforts cleared land, irrigated fields, planted seeds, harvested crops, distributed resources, built large structures, and protected permanent settlements. Fitting in required people to think about what they did and to ask whether actions would destabilize or overly disrupt societal survival systems. These thoughts, carried out linguistically, were often experienced so intensely that people literally “heard” them, as Julian Jaynes famously pointed out.

It was almost inevitable that members of increasingly complex social systems would eventually ask who was talking and acting.

acquire as members of social systems cannot be reduced to biology and complex systems can seem to be, as the U.S. Constitution was said to be, “machines that run of themselves.”

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Appropriately enough, since it was information about the environment that was being processed, the first answers seem to have been the external world. Egyptians, for instance, heard an alter-ego – *ka* – debating and critiquing their actions. A goddess grabbed Achilles' wrist to stop the slaughter of Agamemnon; beautiful girls and men made Sappho's knees buckle; and a *daemon* – like a phalanx comrade – told Socrates what to do and say. Experiencing consequences and trying to identify these external spirits and forces eventually made people realize they were aware of themselves and to locate motivation internally. Only then could they become truly conscious and intentional.

Urged by voices and divinities, human intentionality gradually approximated cooperation. The temporal priority of experience over awareness indicates people did not create social systems because of in-born human goodness or rationality. If either had been the case, biology would explain their moral behaviors. But since social systems *self-organize*, the actions creating and preserving societal survival systems no more need to be biologically based, let alone intentionally determined, than inherent physical propensities or individual aspirations inspire molecules to join Bénard Cells. In a process punctuated by symmetry breaks, behaviors guided by inbred moral traits do not cause social systems. Instead VEMs emerge with social systems.

For readers with darker outlooks who emphasize the constant labors, injustices, and hierarchies characteristic of civilizations, the same argument applies. We need not attribute the rise of unjust, unequal, and exploitative societies to the intentional pursuit of selfish ends by conspiratorial elites. Conscious individuals, their selfish intentions, and their gaming strategies are more likely to have emerged *with* civilized systems than to have inspired them. Replacing biological determinism with the Complexity paradigm suggests that hypercycles create the conditions in which components achieve identifying characteristics. Entities need not possess the attributes – whether selfish or altruistic – created as hypercycles self-organize before the hypercycles self-organize.

Regardless of cause, acting collectively can transform environments. That is, social systems – like organisms – create their own niches. In altered environments, however, the criteria and scales on which selection operates change. Selection, obviously, still operates on the biological level – individuals do die, after all. But henceforth environmental selection also operates on the emergent societal level, as whole-to-part constraints are imposed on individuals. Systems then observe behaviors and select for those that stabilize and replicate themselves.

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Those Members of societal survival systems that correlate their behaviors – i.e., that “fit in” to social systems – preserve themselves. They fit in by following linguistic guides symbolizing societal feedbacks. However, the speech telling agents they have done “good” or “bad” is not one side of the brain talking to another, as Jaynes imagined. It is the way people experience social wholes constraining their parts. To describe that voice – which was becoming silent by the late fifth century CE – St. Jerome coined the word “conscience.” The psychologist Roland Fischer defined the concept as “thinking with others about the self.”

Once VEMs moralize pathways to membership, the chances that people will choose and act to correlate behaviors increase. But to correlate behaviors, people need to anticipate. Anticipation requires projecting the possible outcomes of actions, which in turn, requires us to model ourselves in our worlds. It is these models, constructed by VEM blueprints and varying from case to case and time to time, that we now think of as *selves*. Selves seem inherent parts of our biological heritage. But, like VEMs, selves are more likely emergent attributes created by persistent interactions in social systems. Our physiology hints at this conclusion, for all our senses are turned outward at the world rather than inward at ourselves. Looking inward – being aware of themselves – was so new and disturbing to Adam and Eve that they hid themselves behind leaves.

Selves and Meaning

Even if it is not absurd to treat self-consciousness as an artifact of social experiences, it is hard to admit that our most precious and intimate possession did not rise up from inside individuals. This difficulty partly results from Modern science persuading us to analyze reality into its elementary parts. Such reductionism led Modern scientists to search for selves embodied in glands, genes, neurons, or neuronal arrangements.

But there does not seem to be any reason in biological nature for selves that reflect anxiously on who people are and what they do. Self-consciously dithering Woody Allens would have little selective advantage in a nature red in tooth and claw. On the other hand, as illustrations of how to choose actions on the bases of their consequences, self-consciously dithering Woody Allens are clearly useful artifacts of complex social systems. Following Lévi-Strauss’s lead, only in emergent environments where new tools for dealing with new problems are needed, would neurotic celebrities be “good to think.”

From this perspective, the self straddles the gap between biological nature and culture. It is *socially* selected because when self-images align

beliefs, behaviors, and environments people successfully fit-in. Life is then almost friction-free, people are less self-conscious and feel “saved.” Saved is a feeling people desire to preserve, thus improving the odds that behaviors stabilizing societal hypercycles will be regularized. However, while selves are emergent, they are not epiphenomenal: they are not illusory aspects of our physiology. But selves are not real in the same sense that dead matter was real for Modern scientists. Selves do not exist regardless of whether people think and care about them. From the systems perspective, selves are real *because* people are thinking and caring about them. That is, selves are as real as the embedded results of quantum experiments. “Phenomena” in Bohr’s sense, selves emerge when human beings sense themselves being observed by societies.

Selves are “smokier” than objects that can be counted, weighed, and measured and cannot be reduced to them. Created through experience when energized humans interact within bounded social structures, selves are consequences of interactions. Formed by internalizing feedback reporting on how others reacted to previous actions, selves modeling how safely to satisfy or direct biological impulses record changes produced because others we “observe” are “observing” us. Selves are constructed to win acceptance from others and avoid the pain associated with collective disapproval. This functional utility reinforces the idea that the “self” emerged and was eventually reified in environments where translations of actions into social consequences revealed their own existence to individuals. A model of how an individual affects the states in which others live, *the self is what the individual means*.

The Perils of Self-Awareness

As an emergent construct resulting from persistent interactions in complex social systems, self-awareness brought stresses that were often interpreted negatively. Myths describing expulsions from Edenic states and philosophies from the Axial Age reveal how anxious individuals newly aware of themselves were once the consequences of their actions became socially clear. Anxieties reinforced the need for mental models that tested behavioral options, especially as the persistent social interactions arising from fitting in required frequent moral choices. Once present, the self evolved, growing from a linguistic but vague “sense of self” into the Egyptian *ka* before passing through the Socratic *daemon* and the Roman legal *persona* to the Christian soul and finally Marcel Mauss’s “category of the person.”

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Socially constructed selves are wondrous phenomena. But, as categories, they are often isolated. Isolated but dependent on their societies, selves search for reinforcement by becoming meaningful. Meaning reduces the uncertainty people have about fitting in. Fitting in gives people identities because it makes them *objective phenomena* – i.e., making others aware of individuals makes selves real on the social level. People are eager to acquire identities as members of societal survival systems because persistent interactions have redefined them as “meaning-seekers,” to use Karen Armstrong’s term. People discover who they are on the social level through actions that make a difference. When actions make a difference – Bateson’s definition of information – agents receive feedback out of which identities are constructed.

When resonances are exact enough, collectively endorsed identities can take such full control of individuals that their biology is sacrificed to their personae. Roman aristocrats became Christian saints and gave their fortunes to beggars and their bodies to lions and pyres. Middle Eastern youths become suicide bombers in the name of their socially sanctioned martyr identities. And anxiety-ending identities based on immoral actions can be embraced just as effectively as roles can be reinforced by rewards for good actions. Outlaws, like heroes, live on in collective structures and memories. Mircea Eliade implied as much when he proclaimed that nothing is real until it is mythic. That is, the real is what interactions create and VEMs declare meaningful at the social level. To explain social realities in biological terms is to miss their point.

Maps of Meaning

The transition from operating biologically to operating morally is one of the changes that made us truly human. Operating morally was also among the attributes A. R. Wallace thought natural selection could not explain. Only God, he thought, could account for human attributes that were “more than nature needs” to insure species survival. Wallace was right – if we look at morality through the prism of the Modern scientific paradigm. Complexity, however, can account for these attributes historically by extending the patterned processes used to understand how nature creates new phenomena to the evolution of what happened *after* our biology had evolved.

The Bénard Cell metaphor suggests how biological humans could become moral selves. BCs demonstrate how order arises from chaos naturally when information is created by interactions and stored in self-organized systems. The transitions from conduction to convection and

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chaos to order exemplify processes through which biological humans could become self-conscious persons when the social consequences of their actions taught people to reflect on their purposes.

In the 1950s John von Neumann worked out a similar scheme to explain how chemical molecules first created living organisms. Chemical molecules, of course, are simpler than living organisms, and von Neumann wondered how molecules could construct organisms more complex than themselves. He argued it was possible because chemical molecules could use information stored externally in their environments to construct more complex organisms. In effect, von Neumann showed a wonder-producing process need not be miraculous. Self-conscious humans, indisputably at least semi-cultural artifacts, may be the most immediately available example of similarly constructive wonders.

To understand how humans in societies changed we need only add Prigogine's notion that interaction creates information to von Neumann's scheme. Then we can see the transition from biological to cultural humans occurring when interactions equipped biologically modern *sapiens* to draw information from environments that had become social. New kinds of environments stored new kinds of information which, when mixed with biology, created new kinds of people.

There are, no doubt, many different moments when such "axial" transitions occurred in different parts of the world. The process continues to this day, as, for example, traditional systems become "modern" and modern societies become even more complex. If these speculations make sense the humanist potential of the new scientific paradigm will be apparent. No longer obliged to accept biological accounts of how "proto-moral" capacities *developed*, humanists could argue our moral qualities *evolved* through a historical process "punctuated" by symmetry-breaking qualitative changes. In principle, these speculations are not much different from Aristotle's claim that the city does not exist just to ensure our survival but "to make us better."

We can begin by imagining a state prior to the self-organization of complex social systems. In that state people mostly needed information about how the world affected themselves. Information about the physical and biological world could be processed sensually and stored genetically. But over time, following blind processes of variation and selection, webs of mutually defining social interactions became tightly coupled, enduring, and inclusive. The systems that emerged did more than save individual lives. Emergent social systems allowed populations to grow so much that survival depended on them, the organized social systems. Once survival

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depended on social systems people could not act blindly. Before acting they had to “see” how their action would affect other members of societies, many of whom were beyond the range of human senses. To do this they needed to acquire and exchange information about relationships.

Information about relationships is social, for it reduces uncertainty about how individual acts are translated into social effects. Mapping the ways other people have reacted and likely will react to system-level consequences, social information is about what actions *mean*. As symbols communicating social information, VEMs are maps of meaning. Emergent consequences of the self-organization of social systems, VEMs are the language rich enough to communicate what we know with and through others about social reality. VEMs make maintaining and replicating Habermas’ intersubjective reality possible.

Doubtlessly, as Geertz suggested, biological developments enabling cooperation and language facilitated intersubjective cooperation. Mirror neurons and incremental biological changes favoring, say, grooming or food sharing, could provide a basis for intra-band cooperation. Over suitably long periods of time, intra-band cooperation led to the societal contexts in which actions eventually became morally meaningful. VEMs map these meaningful social relationships. But it is not easy to see how maps of meaning could take priority over biological urges. According to Hume and common sense, biological sensations motivate physical organisms to act.

But on their own sensations using the language of pleasure and pain can only tell organisms about the benefits and dangers of actions in their individual bio-physical worlds. Sensations could not guide socially meaningful actions, because they cannot map intangible moral meanings. Besides, in societies people are regularly called upon to do rather than avoid painful things and to resist rather than embrace pleasurable things. So, it must have taken a long time for shouted orders reinforced by occasional blows – something like conduction – to be superseded by morally guided individuals – something like convection.

Emotions as Emergent Phenomena

Nobel Laureate François Jacob argued that nature does not evolve by constantly inventing whole new organisms. Instead, in altered contexts organic phenomena can be changed through a process he called “*bricolage*,” the same term Lévi-Strauss used to describe how cultures evolve. Both meant by bricolage that existing forms can adapt to meet new needs through trial-and-error processes using whatever is handy. In

speculating about how humans became moral, we can propose that morals evolved by similar “tinkering” with the attributes the biological workbench made available to social systems. Because sensations communicate information, they were handiest.

But sensations communicate so little information about so small a part of the world that they seem incapable of producing large-scale, complex structures. Somewhat surprisingly, however, experiments with drones and observations of birds or fish demonstrate small parts of the world need only limited information to create large-scale structures like clouds, flocks, and schools. Molecules, drones, birds, and fish need not be very smart for clouds, formations, flocks, and schools to organize. Nor did people have to be conscious and moral to form rudimentary societies.

But once life-sustaining societies of structure and durability had formed, big-brained creatures like us faced new challenges. In more interesting systems than clouds, flocks and schools, people needed to reduce uncertainty about a world beyond the range of their senses. Bricolage shows how biologically-evolved sensations carried into new societal contexts could be co-opted and transformed into something new – “emotions.” From this perspective, emotions are not biological givens but emergent attributes resulting from contextualizing sensations in webs of consequential, regularized, and persistent interactions. Building with and on the senses, bricolage created attributes able to communicate information about the moral meanings of individual actions. Meanings transcend the limited range of our senses and are not merely matters of genes, tissues, or chemistry.

Sensations-in-contexts are transformed the way words are when first written down. When words are written down, said anthropologist Ernest Gellner, they become “concepts.” Unlike utterances, concepts endure in time; are independent of speakers; transcend occasional circumstances; apply broadly; and are accessible by many. As transformed speech, concepts exist objectively and become building blocks for thinking about politics, philosophy, and science. Similarly, as emotions, sensations-in-contexts become the building blocks with which people in societies glimpse systems wholes and think about actions. Reducing uncertainty about the meanings of actions, emotions are “good to think.” Allowing members of societies to anticipate how they and others will feel if one act rather than another is performed, emotions let agents choose between options by imagining how different actions affect both system states and personal identities.

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Building the information fields in which human lives become meaningful, identities are acquired, and agency is realized, emotions fuse the cognitive with the sensual. Translated by VEMs, sensations experienced as emotions associate choices and actions so closely that they become indistinguishable. Like Yeats's dancers and their dance, reason and passion work together. To paraphrase Umberto Eco, who said "meaning is the experience of living with a language," emotions are our experience of living in societies. Constrained by emotions people think and move through smoky social spaces like planets moving along ripples in space-time.

Nevertheless, distinguishing between sensations and emotions may seem strained. But consider, as an example, the difference between sex and love. Sex is sensation, which is experienced individually and can be explained biochemically. Love, in which each partner out of desire for the other adjusts to the desires of the other, arises with an intersubjective hypercycle – a "romantic couple."

Love, then, is the emotion emerging when sexual sensations are contextualized in meaningful relationships. Even if it is based on sexual sensations, love cannot be reduced to sex – to biochemistry. Moreover, as an emotion, love gives romantic couples the whole-to-part authority to overrule biology. Most obviously, romantic couples can and do restrain when and with whom their members have sex. As an emotion love can even decouple from sex. Some relationships are "platonic," and love of wisdom, country, god, profession, and Complexity science are examples of such decouplings.

Clearly, biological sensations need not disappear in emergent social realities, any more than the tissues forming floatation bladders did when amphibians with lungs evolved. Through bricolage, in dry contexts the function and form of bladders changed. Similarly, in social contexts sensations changed from being *messages* about what the external world *is*, to being *media* for learning what individual acts in social contexts *mean*. Communicating messages about societies, emotions are not just strong sensations. Contextualized sensations, emotions tell members of social systems what sensations others are experiencing, which, in shared states, are usually very much like their own. Before newspapers, radio, television, or Twitter, emotions made it possible for everyone in a society to share experiences. Emotions let people *feel* the wrongness of, say, usury, and *feel* the righteousness of collective victories in wars, even when they are individually untouched by debts or battles. The arts, of course, play crucial roles in communicating moral norms by displaying, structuring, rehearsing, and exciting emotions.

Moral Pleasure

As messages communicating information about system states to all members of societies, emotions incorporate knowledge of system goals and purposes. Living in the same environments and sharing knowledge of system goals and purposes, individuals communicating emotionally share virtually the same sensations. Feeling the pains and pleasures experienced by “distant strangers,” members of social systems are encouraged to attribute the same meanings to experiences and react to them in similar ways. During stable periods, members of social systems feel kindred if not always one in spirit. They do not just act *as if* they know what one another are doing – like molecules in Bénards or drones in formations. Members of VEM-mapped societies can anticipate how their choices are likely to affect others, “sympathize” with them, and knowingly adjust their choices for the common good.

Encouraging people to act in ways that reduce shared suffering and stabilize benefits for others, emotions as sensations-in-contexts symbolized by VEMs can make individuals *want* to rise above biological drives and fulfill their identities by dutifully performing social roles favoring the preservation of systems. This may be what Aristotle had in mind when he said people always want to choose the Good. People, he thought, would rationally choose to behave in ways their fellows respected and honored. And it was these behaviors, he concluded, that distinguish humans from other life-forms.

Biologists regularly recognize people often act in ways that benefit others rather than satisfy themselves, which behaviors they term “altruistic.” Altruism is a genuinely moral attribute. But biologists treat it as just another naturally selected trait. They do that by treating altruistic behaviors as reproductive strategies that can be explained mathematically. Focusing on atomized genes, mathematical analyses show individuals can get themselves killed because close relatives will be around to pass on their shared genes. In this manner, Richard Dawkins reduces us to “robots” invented by selfish genes to preserve themselves. Even if robots could be “moral,” since the agents in this case are genes and their behavior is selfish, they are hardly altruistic. So, it is wiser to treat altruistic behaviors as socio-cultural rather than biological.

It is only in societies, where the well-being of all depends on systems, that agents’ chosen actions matter to distant strangers as well as genetic relatives. Thus, we need not concede that altruism is built-in biologically, for in social environments system-level feedbacks depend on how agent actions cause other humans to feel. When environments become

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social, the emotions distant strangers experience have *transformative* feedback effects on the agents whose actions provoked the feedbacks.

Once emotions are shared with others, agents learn that how well or badly they treat others affects how well or badly they feel themselves. Providing foreknowledge of consequences and reactions, emotions incline agents to act in ways that bring pleasure and avoid pain to their fellows, for that is how agents avoid pains and gain pleasures themselves. Mapping emotional reactions, VEMs excite intersubjective resonances that increase the propensity for agents to act in ways that stabilize societal hypercycles – or join together in punishing disrupters. But behaviors do not have to be purely “altruistic” to be moral; behaviors leading to benefits agents share can also be moral.

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Guiding choices so that considerations of how others feel become part of agent decision-making processes, VEMs map actions from the perspective of systems rather than organisms. Sharing VEMs authorizes collectively withholding or delivering punishments and rewards to individuals. Punishments and rewards are the sticks and carrots discouraging acts destabilizing social hypercycles and improving chances of collective survival. Once concerns for the collective consequences of actions transcend the immediate concerns of individuals, the demands of nature are subordinated to the needs of societies and people come to act for moral rather than biological reasons.

Sharing concerns for collective consequences, members of social systems feel the authority of their systems behind them and, when they act together, generally feel validated. In fact, the surge of cooperative support can be so gratifying that the Greeks described it as being possessed by gods – *entheos*. Enthused by emotions, people come to feel pleasure when their actions accomplish the goals VEMs symbolize, as Locke realized. Members of systems working together and recreating the “primal moral scene,” like Tom Lehrer’s *Old Dope Peddler* purged of irony, are “doing well by doing good.”

Since systems like societies can form without their human members being morally motivated, it seems likely that cooperative behaviors were practiced long before people became conscious of them, named those behaviors “altruism,” and made them intentional. Goethe implied as much when he said, “First there was the deed.” Fortunately, bricolage and the new theory of meaning show us how something could be *added in translation* of biologically motivated actions into system-level effects. But it took generations to formalize the transformation making moral pleasures causal. The final step may not have occurred until Paul and Constantine, Augustine and Gregory, living in an altered Roman context, found new meanings in Jesus’s Hebrew message.

Morality as Social Metabolism

Once systems self-organized their main problem became self-maintenance. Early societies solved the problem by replicating ancestral behaviors through mimicry. Mimicking ancestral behaviors, social systems habituate people to replicate societal roles and relationships. Field studies by anthropologists like Hyman and Geertz, Turner and Gellner, Vernant and Rappaport show dances and rituals perform similar functions. Eventually, religions, whose beliefs Durkheim showed are social systems mapping the phenomena and behaviors structuring themselves, took the place of dances and rituals. Like Yahweh seeing his creations “good,” proclaiming behaviors that replicate social systems holy, religions affirm those systems.

The philosopher Hans Jonas caught the cultural significance of “self-affirmation” when he equated it to biological metabolism. Living systems metabolize resources to replicate their component parts – cells, organs, etc. The replication process is encoded by DNA, which biochemical molecule is part of the organisms that are rebuilding themselves. Self-affirmation is paralleled socially by encouraging descendants to follow VEM maps, act as their ancestors had, and “metabolize” resources into the roles and relationships that perpetuate their systems.

When VEMs prescribe the behaviors necessary to replicate social systems they also tell people that positively valued stable states *ought* to be replicated. Simultaneously mapping system purposes and triggering human emotions, VEMS communicate urgency and intentionality. Morals communicate urgency because the behaviors they script save lives – and nearly everyone is anxious to have their life saved. Ethics communicate intentionality because they specify the procedures by which social systems replicate themselves. Throwing cloaks of self-affirming legitimacy and even necessity over the purposeful behaviors characteristic of social

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systems constitutes what Sacvan Berkovich called “morally saturated space.”

Social environments are morally saturated because the lives of all members of social systems depend on the actions of all the others – and ideally each acts to make sure s/he and all others “fit in” by behaving appropriately. To facilitate fitting in as societies grew more complex, replicating procedures were refined into symbolic beliefs. To guide actions, however, symbols need a compelling authority, which they gained by moralizing the whole-to-part constraints that correlate the behaviors tying people together. Ties were moralized by symbolizing the reality that is beyond people as a divine order – a Cosmos. A Cosmos, therefore, is ordered by reading social experience into nature, making social space seem the same as Cosmic orders.

The Greeks, for instance, invented “science” by reading their newly invented judicial system into nature and “discovering” that “laws” regulated events. Moderns similarly mapped nature in the image of clocks and other new self-regulating machines. When symbols referencing the Cosmos are then used to guide the actions and relations of people in societies, their behaviors are affirmed by transcendent authority. Symbols modelling interactions that produced social roles and relationships then excite people to replicate the identities correlating behaviors. Mme. Frankfort attributed this remarkable ability uniquely to myth, for by living their myths people replicated their societies.

Mimicking ancestors and following VEM maps, societies, like other hypercycles, survive by producing and protecting the sorts of members that originally defined them. Survival thus validates or “affirms” VEM maps, confirming that social systems are as self-referencing as paradigmatic sciences. And as Henry Margenau reminded us, scientific paradigms have not had to be correct to make inventions and discoveries of real and practical significance. Flawed VEM systems have similarly led not just to species survival but, over time, even to better lives for at least some people. The VEMs that slowly and painfully developed through this process seem better, as well.

Nature’s Journey from Is to Ought

The early 20th century British ethicist G.E. Moore, thought morality was so unique nothing “natural” could compare to, let alone account for, it. The Complexity perspective agrees that there is nothing in physical nature “like” morality. But Complexity adds to Moore’s insight by pointing out novel attributes can be and periodically are created naturally. That is

because novelty is an aspect of systems and systems are wholes greater than the sums of their parts. Consequently, components of systems have attributes – as components – they do not possess individually and that the analytically-oriented Modern scientific paradigm cannot explain. People interacting in societies can – and normally do – have similarly novel attributes, as well.

If Complexity can show how natural processes create realities as different in kind from one another as life is from the rest of nature, then VEMS as symbolic representations of what actions mean need not be treated as ghostly, unnatural forms floating beyond time in vast, frightening spaces. Nor need VEMS be reduced to the biological level of reality. VEMS are no more inherently biological than maps are territories. Maps are not territories, as Count Korzybski reminded us. But there are land masses for maps to represent. For Complexity it is just as reasonable to argue there are realities – in this case social “meanings” – for VEMs to map. We do, however, need to avoid conflating symbols with the system constraints and relationships they reference.

The moral meanings VEMs map are created by human interactions and stored in social systems. Until the interactions occur moral information could not exist, for it measures reduced uncertainty about emergent relationships produced when conscious individuals perform “shared cooperative actions.” But once self-organized, social systems are as real as the stone Dr. Johnson kicked refuting Bishop Berkeley’s idealism – and as different in kind from organisms as organisms are from stones. Moreover, although VEMs cannot be kicked they play a functional role replicating and preserving social systems comparable to the role DNA plays in organisms and life plays in the earth’s atmosphere. But how VEMs exercise their authority is not obvious.

To understand how VEMs exercise authority we need to remember that Complexity maps nature as a process. In a process the relationships constituting societal hypercycles self-organize spontaneously as VEMs map them. Modifying the Existentialist mantra that “existence precedes essence,” we can say that, although the two coevolve, *behavior precedes awareness*. Therefore, VEMs could no more cause the initial relationships they map than biological instincts could. Those relationships – the social hypercycles – self-organized amidst as much confusion as the transition from conduction to convection forming Bénard Cells.

Once symbols represent relationships, however, they are like Aristotle’s “formal” cause, one of several factors that combined explain what people living in societies do. But VEMs can constrain people to

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pursue “shared cooperative actions” only when they intend to maintain stable states that solve problems individuals cannot solve for themselves. Conscious cooperation, therefore, represents a symmetry-break: intending to cooperate is an attribute created when the world of societal hypercycles emerges.

In trying to figure out how VEMs guide the way separate individuals behave it is best to start with the obvious: VEMs are symbolic representations that can be massively distributed. The same VEMs can be present in many brains at once, since, through words, similar neurological states can be simultaneously manifested in as many brains as there are people. Symbolizing the meaningful interactions organizing our brains through experience, VEMs are like the “jigs” craftsmen use to guide cuts and flows so matter is shaped and structured.

Examples of Cassirer’s “symbolic forms,” VEMs illustrate what David Eagleman considers our brains reprogramming themselves in response to altered environmental circumstances. As such, VEMs bridge the gap between biology and society by constraining members of social systems to experience and respond to sensations in the same patterned ways – i.e., to choose behaviors on the basis of shared emotions. In social systems, large groups of people perceive realities and interpret experiences in similar emotional ways because their linguistically shared VEMs operate like software programs. VEMs filtering perceptions and shaping interpretations affect people the way altered software affects computers.

Just as altered programs allow computers to perform new tasks, VEMs lead people in complex systems to react to experiences morally rather than sensually. Experiences that are good or evil rather than pleasurable or painful encourage people to choose and act because they understand that actions affect states and states affect other people’s actions. Anticipating how actions affect each other’s choices, agents are encouraged to correlate their behaviors by adjusting to each other’s needs and wants, thereby replicating the behaviors constituting societal hypercycles.

More overtly theory-laden than scientific instruments, VEMs harness agent intentions to system purposes by triggering emotions. Communicating the meanings of sensations, emotions help people transcend individual pleasures and pains by exciting enthusiasm for pursuing common goals and making necessary sacrifices. Love, e.g., emerged when “romance” became the symbolic form – or concept or neuronal jig – processing biophysical sensations. Perceiving and acting under the influence of shared VEMs, individuals are collectively rewarded with material resources and morally meaningful identities. Individuals will

typically desire moral identities because they record successful efforts to fit in, thereby reducing anxieties by making individuals feel meaningful. As noted earlier, however, moral identities can be determinative regardless of whether they are positive or negative. Moreover, by attributing negative identities to outsiders, collective commitments to societal hypercycles can be reinforced. The pleasure of joining with others in persecuting alien minorities reinforces identities and adds to the benefits of behaving in ways that stabilize societal hypercycles. Gouldner and Petersen called this “conflictual validation.”

Passed from generation to generation, emotions, meanings, and reactions become so nearly simultaneous that they seem natural. Because emotions coopted sensations through bricolage morals are regularly conflated with sensations. Conflating sensations and emotions led Utilitarians to equate good with pleasure and evil with pain. Similarly, conflating sensations and emotions gave rise to the misapprehension that people have a “moral sense.” Proposing a moral “sense” implies that biology somehow equips individuals with contrivances like moral compasses. But VEMs, as maps of the altered system states making actions meaningful, are attributes of public not private spheres. Examples of a something that can be present in systems but not locatable in their separate parts, VEMs record the rules members of societies follow making choices. Conflating sensations with morals mistakes the medium for the message.

Bricolage suggests instead that morals are as different from reptilian sensations as lungs are from flotation bladders. Incorporating bricolage, Complexity can use our biological legacy to build emotions out of sensations. But Complexity does not limit evolution to biology; it claims instead that morals mark a symmetry-break with the biochemical information that nature previously stored. The patterned process by which emotions were created remains analogous to others in nature. Moreover, the resulting socio-cultural realm VEMs map is as “objectively” real – again, in Bohr’s sense – as, say, collectively differentiated colors or musical sounds.

In other words, we need not violate Hume’s taboo and “derive” an “ought” from an “is,” for there is no need for us to *derive* what nature has already *evolved*. Following basic evolutionary processes, moral oughts emerged when social systems self-organized, contextualized actions, and made the facts of experience – what “is” – meaningful in new, moral terms – what “ought not” and what “ought to” be. Once nature created oughts that were as real as its ises, all people had to do was name them – i.e., invent a language to map them. That makes oughts as different from physical,

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chemical, and biological stuff as Moore said they were. But it leaves moral oughts products of the same sorts of natural processes as colors and melodies. Modern science, of course, deemed colors and musical sounds “secondary” and subjective interpretations of “primary” and physically real wave lengths and frequencies. In that mechanical world Hume and Moore would have been right: good and evil would have been as unnatural as the color yellow was subjective.

Relativism

Complexity recognizes that our experiences of colors and sounds are subjective and our words for them are maps. But Complexity asserts Galileo’s treatment of colors and musical sounds as really *only* wave lengths and frequencies is as unrealistic as denying the existence of time: it ignores the fact that both colors and harmonies are experienced in the contexts of brains, which are, after all, natural. Brains translate wave lengths and frequencies into colors and sounds. In brain contexts, colors and sounds are what wave lengths and frequencies *mean*.

Translations of wave lengths and frequencies may be “qualities” experienced subjectively in individual brains. But brains are parts of the real world, which means products like colors and sounds are no longer merely secondary experiences existing only in consciousness. Instead, colors and sounds appear as results of Prigogine’s “new dialogue” with nature. That dialogue takes place within a single multilayered universe. Seen from inside nature, colors and sounds are parts of the world of which we also are parts. Therefore, it does not seem absurd to extend the image of brains naturally experiencing wavelengths as colors and sounds to people in societies experiencing behaviors as good and evil. As maps of the actual experiences of people in social systems, values, ethics, and morals are to behaviors as words like “yellow” are to particular wavelengths of light or terms like “middle C” are to vibrations of particular piano strings.

VEMs, like colors and sounds are experienced individually. But our perceptions of colors and sounds are collectively influenced. Luria, for instance, discovered that how many colors people distinguish and where distinctions between colors are drawn depend on when and where people live, just as whether sounds are noises or music does. Although impossible without wavelengths and frequencies, colors and harmonies are cultural constructs that are not reducible to wave-lengths and frequencies. Moral qualities like virtuousness and guilt are similarly cultural constructs built with but not reducible to sensations and biological facts.

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Morality, like color and music, is coupled to culturally stored symbolic forms that map particular patterns of persistent and correlated human interactions. In fact, colors, music, and morality are as inseparable from their social contexts as scientific results are from instruments and as context dependent as organisms are on niches. That is, VEMs are as *relative* to social systems as Luria showed color spectrums to be, Einstein showed measures of space and time are to physical reference frames, Elton showed genotypes are to ecological niches, and Mandelbrot showed lengths are to rulers. And because, like nature, human systems are “too rich to describe in a single language,” there are nearly as many moralities as there are human societies.

Understanding morality as both the product of and the means for preserving social systems reinforces the claim that moralities are relative. Such circular arguments make societies and behaviors no less self-referential than the maps and methods of scientific paradigms. But if morals map meaning and meaning is how individual actions are translated by game-like systems, then Complexity science may be showing us how to escape from the chicken and egg problems that have plagued Western ideas of causality. Rather than endlessly worrying about whether chickens or eggs come first, we can now simply say that complex systems and VEMs – like hierarchies of exploiters and exploited – emerge together at symmetry breaks. That is, as people become aware of habitual roles and relations, they are formalized in VEM maps, making socially affirming behaviors relative to the specific systems on which people depend for survival.

Yet historians, philosophers, and social scientists are reluctant to recognize the relativity of morals. That may be because the term “moral relativism” has been badly misused. Properly understood relativism does not deny morals exist – that’s nihilism. By contrast, relativism insists morals are as objectively real as the value of Searle’s \$5 bill. Relativism even affirms the near ubiquity of behavioral codes, conceding they exist wherever there are people. But that does not mean that one ideal moral code applies to all peoples in all places at all times. Rather, relativism holds morals are ubiquitous because natural selection favors self-organized social systems governed by collectively shared rules. VEMs only appear to be universal because they are abstractions that, over time, decouple from concrete cases and change their meanings. Until something like a global system of systems emerges, however, the vision of a universal morality remains “only an illusion.”

Relativism is also wrongly equated with the belief that every person has their own set of morals which are as valid as everyone else’s. In contrast

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to such subjectivism, relativism argues that morals are applied by individuals but that when individuals choose and act, they use rules reflecting specific social conditions. These rules map the moral meaning of actions and may be couched in universal terms. But their meanings are context dependent and their function is to maintain and replicate specific social systems by guiding and correlating the behaviors of their individual members. Individual choices may always be influenced by private passions – i.e., be subjective choices hidden behind moral platitudes. But moral maps are about the public consequences of individual acts, as well as agent intentions. Choices are moral when private passions are shaped, curbed, and/or redirected by local VEMs mapping public goods.

Seeing social forms, morals, and individual intentions as interdependent should not be surprising, since all members of systems have vested interests in preserving the systems that preserve them. Because individual survival depends on these systems, individuals have a duty to – as well as an interest in – preserving them. Some interests may be reducible to pleasures and pains. Duties, being rules for preserving systems by replicating relationships between individuals, are not. Rules for preserving systems vary in time and place, says relativism, but those rules map diverse social realities that are objective in Bohr’s sense.

Finally, relativism is wrongly condemned because its critics argue that if morals can vary in time and space their authority is fatally diluted. But variation need not reduce the authority of VEM codes, for in any stable society at any given time a VEM program that expressly prohibits some actions while obligating others will apply. Such programs have observable operational effects – and not just because people believe them to be universal and absolute. Individuals embracing Gods and social roles Romans feared would weaken their society, for instance, were fed to lions. In their last moments the functional consequences of relative Roman VEMs must have been as objectively and indisputably clear to their victims as reference frames are to measures of distance and duration. When in Rome, biological survival did not depend on absolutist claims any more than on pleasuring individuals or their doing what they personally believed was “right.” When in Rome survival depended on doing “as the Romans.”

Relativism, Moral Judgments, and Evolution

Like the maps that legitimize scientific methods, moralities are expressions of systems affirming themselves according to their own standards. And relativists treat the results of different moral systems as equally authoritative if not equally valuable. This makes judgments about

phenomena like human sacrifice no less context dependent than the length of Britain's coastline is on rulers. The length of Britain's coastline, Mandelbrot showed, varies with the rulers used to measure it – the smaller the ruler the longer the coastline. Similarly, moral judgments about Aztec sacrifices depend on whether they are made using 15th or 21st century VEMs. Where moral absolutists condemn all behaviors that fall short of their standards, relativists understand the virtues and evils our contemporaries see were not necessarily visible to past peoples.

Understanding need not preclude judgment, let alone beget forgiveness, however. Relativism merely insists that condemnations cannot depend on criteria past peoples did not have. Happily, relativists can still condemn past peoples for violating present standards; they just must admit they are doing so. By condemning past behaviors, relativists are saying they are no longer willing to behave the way past people did, which has no effect on how what past peoples did or were was valued. But there is a standard by which judgments relative to historic conditions can be made – the social hypercycles of intersubjectivity. Societal hypercycles are as objectively real as the results of CIQT experiments and as tested environmentally as organisms. And the simple tests are did past peoples live up to their own standards and did their societal hypercycle endure?

Relativists respect the functionality of whatever forms of behavioral orchestration allow people to solve problems collectively. However, they need not proclaim the moral codes orchestrating behaviors equal. Relativists can easily fault Roman VEMs because they inhibited adaptation, for instance. Admittedly, persecutions of and by Christians did initially unite pagan and then Christian Romans. But persecutions were mostly distractions, “circuses” that did not persistently make lives mutually meaningful by binding people together solving common problems. Thus, Romans like Augustine shifted their attention to other-worldly matters, gradually allowing their society to deteriorate behind increasingly crystallized policies.

Although relativists typically admire VEMs allowing systems to adapt, traditional VEMs usually inhibited adaptation by sanctifying roles. Sanctifying roles privileged the stability of social systems over the wellbeing of their members. Privileging stability was an effective way for early civilizations to reduce uncertainty in the systems on which human survival then depended. Our discomfort to the contrary notwithstanding, these systems matched the societal niches of the past. They solved the problems caused by overtaxed ranges by organizing people, specializing social roles, and intensifying labor. But once societies had solved problems

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individuals could not solve for themselves, early civilized societies “locked-in” to proven orders by sanctifying them.

Until the modern era natural selection favored societies with such beliefs, because morally sanctifying choices and actions was the most effective way available to dependably replicate correlated behavior. Replicating behavior regularized resource flows, and regularized resource flows stabilized the societies that saved large numbers of people. As long as environments were stable, societies replicated proven and practiced behaviors, affirming their structures and beliefs generation after generation. But societies coercing members and privileging stability are regularly being displaced by Modern systems that liberate individuals and benefit from adaptability.

The evolution of social complexity suggests a basis for evaluating different codes. Admittedly, evolution seems an unwelcoming base for judging morality since evolution implies mindless competition. But by reconciling Darwin with Boltzmann we can see that, other things being equal, nature will select for variant structures that dissipate energy more effectively. This, sadly, does lead to the heat death of the universe, which, as Henry Adams fretted, negates all meanings and moral ruminations. Prigogine’s dissipative structures theory, however, indicates that on the way to whatever finally results, marvelous meaning-producing systems of many kinds are likely to and have in fact self-organized – including social systems. Understood in terms of varied self-organizing realities, the emergence of societies valuing conscious, free, and moral individuals “really” matters, at least to us, and provides a criterion for comparing moralities.

Evolution, of course, does depend on competition between varied systems, and societies, like members of biological species, vary. Although initial differences may be slight, in our nonlinear world they can amplify exponentially over time until variations are significant. And, although they follow universal patterns of self-organization and thermodynamics typical of a historicized nature, human societies have evolved different ways to preserve themselves. Roles, morals, and relationships have differed from society to society because of such variables as resources, climate, language, technology, personality, and history.

Varying in roles, relationships, resources, and moral maps, social systems amount to a “population.” Judged by their own internal “rulers” all variations are equally satisfactory, for all meet current, local needs – just as measures of space and time are solidly Newtonian in Einstein’s reference frames. But social systems need not function equally well. Differences in

their performance then demonstrate the relative merits of the VEMs which guide societal maintenance and replication.

Although blind and amoral in itself, evolution, therefore, provides a way for relativists to contrast moralities. Other things being equal, VEMs that make individual lives more meaningful by expanding opportunities and responsibilities make societies more complex and more competitive. Therefore, the emergence of complex social systems accounts for the evolutionary advantages of valuing individual identities and enhancing individual rights. That is, increasing social complexity demonstrates the *relative* merit of different moral codes.

Moreover, as the introduction of history helped science expand its range to include life, evolution can help humanists reflect on the meaning of life historically. Historically the complexity of social systems has increased. Increasing social complexity thus not only demonstrates the relative merit of successive VEMs. The succession of increasingly complex societies mapped by increasingly humane VEMs also suggests that, to paraphrase Vögelin (and affirm what he righteously denied) *the history of meaning is the meaning of history*.

Modernity, Selves, and Progress

People living in different places and at different times have not only had different VEMs, they have had observably different self-images, as well. Past people, for instance, often thought of themselves as playthings of Gods or other esoteric forces. People living in Modern Western societies, however, tend to think they can and do control their own fates. Moreover, Moderns think their choices and actions are self-justifying – as Polonius claimed.

But Polonius was Shakespeare's fool, and the popularity of a belief is no proof of its accuracy. Misconceptions, no less than correct conceptions, can perpetuate when shared. Since maps are not territories, brains entangled in replicating hypercycles develop through similar experiences, learn to filter and react to experience in similar ways, and typically reinforce each other's conclusions. When prescribed behaviors are functional, experience appears to verify shared opinions, and people believe they ought to do what they customarily do.

Such self-referencing indicates that the kind of members social systems need is relative to their selecting environments, which societal actions help shape. When selecting environments change, the kinds of behaviors fitting people into social systems change too. When behaviors are considered sacred or natural, however, change looks like sacrilege and

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degeneration. But if morality, consciousness, freedom, and rationality are emergent attributes, clearly many changes have been for the better.

However, societies have only recently explored VEMs favoring change over stability. Their emergence does not demonstrate Western superiority. Rather the emergence of new type social systems resulted from Europe's failure to successfully build a civilization on the antique model of Egypt or Sumer, Macedonia or Rome. Like these societies, Medieval Europe rested on agricultural technologies with limited opportunities for growth. All of them rigidly stratified classes and favored VEMs that anesthetized the exploited masses as they legitimated elite indulgences.

By the Peace of Westphalia in 1648, however, Europe was populated by social systems as different from the original models as the first civilizations were from bands and tribes. Europe's social systems did not evolve because of any inherent superiority. On the contrary, they evolved because Europe's version of traditional civilization was unable to decide whether priests were also emperors or emperors were also priests. Divided between feuding popes and emperors, it collapsed after being struck by waves of devastating plague. When Medieval civilization collapsed, a transition equal to a second Axial Age occurred. Rent by wars legitimized by religions, Europe splintered into nationally scaled states interacting fiercely and persistently with one another. Their niches were too small and threats too near for "expansive" traditional systems with rigid class distinctions and stability favoring VEMs to survive.

The situation was made even more perilous when European explorers, looking for new spaces to dominate in the traditional manner, exposed their societies to unexpected perturbations. Results of Magellan's circumnavigation, which Adam Smith argued established a global environment, perturbations from distant lands released huge resource flows. But perturbations originating in such distant places and having unfamiliar causes could not be predicted. To effectively compete in the global environment emerging nation-states had to mobilize their members to quickly identify opportunities and respond to threats. Motivation without liberation would have been counterproductive. But granting members license to direct themselves had previously led to chaos and collapse.

Europeans, meanwhile, were discovering that for individuals to be freed they had to become self-regulating, which the exercise of political and economic power amidst intense inter-system competition gradually taught them. In these conditions individuated, energized, self-aware, and self-controlling human members, defined by "private property" and defended by "civil liberties" proved valuable. Michael Mann calls social systems that

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selected for these attributes “intensive,” for they increased productivity dramatically. Such systems were favored by the dynamic, global environment as well as the Second Law. And the unparalleled economic growth that resulted has affirmed Modern VEMs and selves ever since. (See Figure 8 for an unfashionable comparison of traditional and modern social systems.)

Contrasting Social Systems

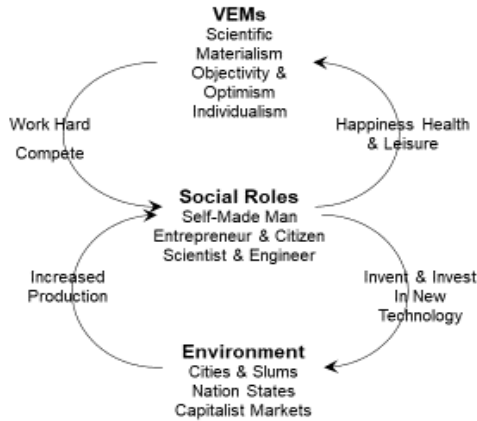
| <u>Traditional</u> | <u>Modern</u> |
|---|--|
| Typical until ca. 1550 Power = $f(\text{Land} + \text{People})$ Expansive – conquer and enslave aliens | Emerge after 1700 Power = $f(\text{Energy} + \text{Organization})$ Intensive – motivate domestic workers |
| Reflect local traditions Organic Relationships matter Family – Patron/Client Loyalty Coercion/Shame Solidarity | Adapt to global markets Atomistic Achievements matter Business – Investor/Customer Honesty Discipline/Reward Adaptability |
| Regional & caste identities Tribal bonds Custom dominates Concrete & unique Position/Privilege | National identities Legal rules Calculation dictates Abstract & universal Mobility/Rights |
| Value order – cultivate stability Look to the past – preservation Roles = $f(\text{birth})$ Blood | Value opportunity – exploit fluidity Look to the future – improvement Roles = $f(\text{money})$ Enterprise |
| Community comes first Religions dominate Goal = Dignity = $f(\text{how well roles are played})$ Spiritualistic Fatalism – Endure nature’s assaults Cult of the <i>beau geste</i> , Sacrifice esteemed as noble | Individuals come first Markets dominate Goal = Wealth = $f(\text{how competitive player is})$ Materialistic Optimism – Control environments Cult of the rational Success explained by character |

Figure 8: Characteristics Distinguishing Traditional and Modern Societies.

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Thus, we can see why social systems fostering consciousness, morality, individuality, freedom, and democracy had selective advantages. But the process of historical succession and our hopeful interpretation of its meaning need not be as self-serving as the Whiggish idea of progress. We need not decouple and universalize contingent VEMs, proclaim Western civilization the “end of history,” nor focus on the material affluence with which Americans equate progress. We can admit that recent history is tragic, the present far from happy, and the future perilous. But we can also affirm that humanistic moral codes and consciously choosing, purposefully acting, free individuals are valuable results of evolved social complexity. If we truly value consciousness and freedom, individuals and morality, then instead of saving souls, the creation of selves and VEMs make history meaningful.

Although the historical cost of creating selves and VEMs was very high, we should recognize that the evolution of Society – the “species” or genotype – has been beneficial in many ways. Complexity suggests improvement can be made less painful by showing how individual societies – the phenotypes – can evolve rather than having to be killed off through brutal competition. To achieve this goal, which would further separate history from biology, we need ethical rules as different from the “Modern” ones as they were from traditional VEMs and as VEMs are from games, dances, and rituals. In other words, we need another Axial Age. (See Figure 9 for a schematic view of Modern Social Systems on page 64).



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Figure 9: Modern Social Systems

Adaptation and its Human Implications

New ethical rules would amount to a shift in the Modern moral paradigm. But changing moral paradigms is even more difficult than shifting scientific ones, since it alters many people's identities and the meanings of their lives. In our time shifting paradigms most immediately challenges highly individuated concepts of the self, because we Moderns take selves to be species-specific characteristics. But Adam's and Eve's life-altering urge to hide guilt makes it clear that the individualism idealized in Modern morality was not a natural attribute. Treating self-aware individuals as shameful shows Axial Age Hebrews looked back nostalgically to a time when their ancestors perceived themselves in homogenous tribal terms.

The relatively late emergence of individuality indicates it is a consequence of increasing social complexity, which follows from the fact that the Second Law favors systems better able to exploit resource flows. To be exploited, resources must be accessed and processed. Systems having

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freer and more diverse parts can access greater varieties of resources, while those with more equitable organizations can root interactions in trust and orchestrate them to process resource flows more effectively. Complexity suggests that it took time for conscious and free individuals to emerge and for VEMs legitimizing them to be formulated and embraced.

At the start of this historical process there was little individuation necessary, for almost any loosely organized structure would have accessed more resources and processed them better than aggregates of wandering scavenger-hunters. Thus, members of minimally organized groups would have better chances of surviving long enough to reproduce, as Stiner's and Kuhn's research show. But they would not need to be individuated or conscious. Awareness of groups – marked by various forms of body art – was all near-to-equilibrium bands needed. Once more complex societies self-organized, however, nature could select between different socially scaled organizational patterns and internal processes. Competition between systems moved evolution beyond biology. Measuring the relative fitness of societies, competition now gave value to component diversity and smoother, more humane correlations, for resources would be located and processed best by systems that maintained the largest possible number of effective ways for distinct components to behave and the fairest ways for them to interact.

Distinct components are individuated and differentiated. Individuated components are systemically valuable because they can read environments in fine detail. Differentiated components are valuable because they increase the perspectives from which environments can be observed. Reading environments in greater detail and increasing the number of perspectives from which environments are viewed facilitates adaptation by social systems. Adaptive systems enjoy selective advantage because they can locate surprising possibilities and meet unexpected threats. Adapting to new possibilities and responding to new threats through individuation and diversification allows systems to stabilize in dynamic environments.

Surviving in dynamic environments requires shifting social states, which Mary Douglas said is “how societies think.” Accessing shifting stable states, social systems become more complex and move further from equilibrium. The further from equilibrium systems are, the more precarious they are and the more adaptive they must become. But if human attributes and identities are functions of social systems and social systems evolve, then adaptations by Modern societies will inevitably alter their

environments. If so, the behaviors and identities that made evolution possible may, over time, create conditions in which pioneering behaviors and identities become disadvantageous.

Jonas Salk understood the relationships between environments and behaviors when he argued that by the later twentieth century social evolution had created conditions in which the key to success was no longer self-serving, aggressive, and competitive individuals. It was not the most “rugged” who would be selected in the altered environment, said Salk, but the “wisest.” And it was clear to him that the wisest would be those who had learned to cooperate and conserve. Salk did not disparage our predecessors, for without rugged individualists, Modern systems would not have enjoyed the benefits of growth. But now that an unprecedentedly powerful and dynamic society has been created, Kenneth Boulding added, the atomistic cowboy needs to be replaced by the spaceman as our template identity.

Thus, although individualized “Modern” selves are obviously valuable and need to be protected, their exultation subverts all concepts of common goods. Exalting Modern selves and their economic opportunities, therefore, may now make it more likely societies will breakdown than breakthrough, to borrow Ervin Laszlo’s characterization. Because the science of Galileo, Descartes, Newton, and Laplace led to mechanically brutal systems like Communism and market fundamentalism, it will not enable a shift away from the Modern moral paradigm. By helping people realize that current concepts of the self are temporal and relative, however, Complexity might smooth a transition to a more gracious behavioral model – e.g., *capitalism* with a human face!

Complexity and Moral Paradigms

A science in accord with actual experience, Complexity provides a way to understand ourselves as products of history. It could also provide a basis for ethics that resists the Modern tendency to excessively prioritize individualism and intentionality. Complexity ethics preserves *individuality*, but, unlike *individualism*, it respects community – “the primal moral scene” – as well. Treating conscious individuals in social contexts, a Complexity ethics would also resist making ethics strictly consequentialist. It could combine intentionality, deontology and utility, reason and passion, the subjective immediacy of moral choices and the formal authority of moral codes.

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Ongoing philosophical debates favoring one or another ethical school are akin to the CIQT arguments over waves and particles. From the Complexity perspective, none of the academic solutions are adequate on their own. That is because moralities map far-from-equilibrium systems, which, like works of art, are the only complete descriptions of themselves possible. Complexity implies a morality can no more be based on one set of categories or principles than *Hamlet* can be reduced to a CliffsNotes summary. To know *Hamlet*, you have to “live” performances of it, each of which will have slightly different meanings. Complexity demonstrates why several perspectives are needed to formulate an ethics, which focusing on systems combining matter and energy, sensations and emotions, individuals and communities, brains and minds underscores.

Viewing ethics from several perspectives may even make it possible to solve some of the textbook conundrums that philosophers face. These often degenerate into paradoxes making moral dilemmas seem insoluble or solutions arbitrary and subjective. What might actually be happening is that problems are posed on one level – e.g., formal rules – but then judged from another – e.g., personal feelings. Each perspective leads to an answer as definitive as a CIQT measurement. But the two answers conflict – they are Complementary. Complexity suggests we treat each as correct on its level but realize that when dealing with nonintegrable wholes multiple perspectives are each as valid as they are incomplete. Conscious agents are left to balance claims and take responsibility for figuring out how to value consequences. Following Complexity’s lead, uncertain yet workable compromises may be morally acceptable. Assimilating Complementarity may make a revolution in ethics comparable to the one on whose edge science presently teeters possible.

In any case, a Complexity-based ethics is attractive because, although a new scientific paradigm provides a naturalistic explanation for the emergence of consciousness and VEMs, a Complexity-based ethics would not be materialistic. It would be realistic because it accounts for ethics naturally, which naturalism serves to restrain subjectivity by offering a test for moral judgments. Yet because it deals with the emergent intersubjective level of reality a Complexity-based ethics would avoid Modern scientific reductionism. Moreover, following the example of mutating organisms it would recognize that nature makes no absolute commitments, either to organisms or species. Like nature, Complexity in ethics respects the significance of correlating behaviors. But it commands no absolute allegiance to any moralized mode of behavior. A Complexity

ethics would be as tolerant of variation – as “error-friendly” – as nature itself.

Nature is error-friendly by necessity: blindly experimenting is the only way it has to deal with the dynamics inherent in the Second Law. Obligated always to tend to be maximizing cosmic entropy, which self-organization and evolution accomplish, nature constantly probes for ways to dissipate more energy. Every time a way is found to increase entropy cosmically by increasing complexity locally, environmental changes result. Nature, therefore, is constantly creating the circumstances for its further transformation. And there is no stopping the process, for time is fundamental and dissipative systems alter their environments as they consume energy and dump entropy. Altered environments may then select for even more complex systems. When selected, more complex systems continue the transformative process by accelerating the speed with which niches change.

Neither physical nor biological nature realizes what is going on. But since time is irreversible, nature does not change by returning to ground zero and starting over again and again. Nature uses bricolage to create combinations of systems, favoring those that dissipate energy at higher rates. Constructing systems that reflect the thermodynamic necessities of correlating behaviors, nature continues evolving by allowing systems, such as organisms, to blunder through possibility spaces, varying around means. When a varied form that is better fitted to an altered environment is found, the characteristics defining a system change. Thus, although survival requires being committed to societies, for societies to adapt their members cannot be uncompromising “true believers.” A Complexity-based ethics makes error-friendliness normative by denying that any moral perspective, even Shelley’s poet’s, can account for all aspects of a society’s organization or its members’ actions.

Complexity makes tolerance more than ideological by relating it to evolution, the most familiar example of an error-friendly process. Although, according to Darwin, most significant variations are doomed to inglorious deaths, biological nature does not care, for it is not moral and has no emotions. It produces and sacrifices variants unsuited to existing conditions because conditions eventually change. In changed conditions, only some otherwise ill-adapted variant could survive. Alternatively, any species that achieved and reproduced perfectly adapted forms would be doomed, for it has only one way to survive. When its environment changed altered selective criteria would destroy the perfect species. But when

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species are composed of populations that include significant variations, one of the variants might prove fitter. So rather than devoting itself to avoiding extinctions, nature works by preparing reservoirs of diversity – “standing reserves,” to misuse Heidegger’s term.

Disdaining the worship of poetic, religious, scientific, or moral monuments that social systems regularly erect to affirm themselves, Complexity ethics forfeit efforts to fully and finally describe what the morally proper states of societies are. Similarly, Complexity foreswears attempts to make morals as logically necessary, universally applicable, and permanently relevant as geometric proofs or divine commands. Jesus’ injunction to the contrary notwithstanding, Complexity would realistically accept that people cannot be perfect and will not conform to divine standards of behavior. Realizing that today’s otherwise useless deviants might be tomorrow’s saviors, Complexity treats VEMs as probability statements typical of thermodynamics and the CIQT. At most, Complexity’s norms approximate “rules of thumb.”

Both traditional and Modern moralities, by contrast, demand loyalty to behaviors even when they cease to be functional, often leading societies to linger in twilight zones of relentless impoverishment. Complexity, however, would support efforts to improve on nature’s bloody method by enabling societies to adapt peacefully through toleration of behavioral diversity. Consciously imitating organisms searching for selective advantage by mutating, Complexity ethics would go beyond favoring adaptive societies to embrace what Stuart Kauffman calls “evolvability.” It would encourage variations in how roles are played because they can probe environments searching for new ways to dissipate energy by increasing complexity. Harboring options for dealing with unexpected situations is how adaptive systems benefit from – and why Complexity ethics would positively value – diversity.

Desanctifying Morals and Valuing Change

Humanists of all sorts have been troubled by the stresses resulting from making moral decisions since the Axial Age. The only way many of them found to escape stress was to seek tranquility by restoring a lost Golden Age. Given that time is irreversible, their efforts failed, of course. Others were more successful, but largely by learning techniques for decoupling themselves from the rush of worrisome social events. Effectively, they saved themselves at the expense of their societies. It is a measure of how different Modern social systems are from their earlier ancestors that figures

like Buddha and Epicurus were able to successfully withdraw. As gangsters like Michael Corleone, hillbillies like J.D. Vance, and “ordinary” Germans invading Poland learned, Modern social attractors bend behavioral space so powerfully that resisting them is nearly impossible.

To Moderns the moral decisions members of the first civilized systems had to make seem trivial, since they were mostly choosing between meeting specific social obligations and satisfying basic urges. However, the inner conflicts caused by resisting temptations – as when Aeneas embraced duty instead of Dido – were genuinely painful. The shame experienced adapting to the difference between acting spontaneously in accord with sensations and consciously choosing between moral goods and evils was so great Judeo-Christians believed themselves permanently stained.

Still, in the beginning, the only known survival strategy was to replicate institutionalized behaviors. Thus, traditional moralities legitimized emergent arrangements that were often as rigid as they were egregiously unfair. And, like Mach’s version of the Modern scientific paradigm, moralities traditionally embraced absolutes that painted members of social systems into corners. So, the stresses persisted. Escape was only possible through either spiritual withdrawal or violence threatening survival systems, which made change as morally suspect as it was practically difficult. Although Schumpeter frequently endorsed the destruction that he thought creativity required, a behavioral code enabling people to fit into societal hypercycles and even occasionally change them less violently would be more humane.

The Complexity paradigm may allow us to reduce stress, celebrate rather than lament freely choosing, and even help us change more peacefully. Understanding evolutionary change as part of natural processes, Complexity appreciates that freedom and its associated consciousness are stressful because they mark a symmetry break with our previously evolved biology. For Complexity the difference between what nature wants and society expects is always present. Yet it is no longer always a mark of our personal failures or some reversible event. At least some of the stresses we feel are not in ourselves but in the structure of our conditions. Thus, treating consciously choosing from the Complexity perspective teaches us that some stress is unavoidable because there are situations that require either sacrificing our biology or taking responsibility for infractions. Romans fated to “work and worry” realized as much.

Stressful or not, choosing between instincts and duties raises freedom above the instinctual level – spontaneously doing whatever you

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want, whenever you want. And by showing how social experiences build the character necessary to choose responsibly, history can celebrate the symmetry-breaking transformation making freedom *morally* significant. Complexity also provides support for conscious and free humans by showing that reflecting and choosing has selective advantages. It is how individuals get to enjoy moral pleasure and it facilitates system transitions to more complex states. Increasing social complexity should raise rates of external entropy production, and, therefore, enjoy the blessings of the Second Law!

But, following Kuhn, for a new moral paradigm to emerge both the map and method – the moral ends and the ethical means – have to change. Complexity changes the moral map by describing social systems as processes rather than things – as self-organized hypercycles that form irreducible wholes. Modelling societies as processes, Complexity sees hypercycles the way nature sees organisms – as purely functional. No longer “morally saturated,” they are as valuable as their utility is relative, and they need only be affirmed for as long as they work. Maps of dynamic environments that select for adaptability, Complexity-based VEMs would reflect the need for social systems to shift forms. Since the forms social systems take depend on the ways their members behave, in dynamic environments the constraints on human behavior must be relaxed so the forms can shift. To shift societal forms effectively individuals must be free to probe social space using varied behaviors.

Providing VEMs that match rather than defy nature, life in systems mapped by Complexity could prove less anxious. Behavior-altering choices and actions could still be mistaken, distasteful, or even criminal. But they would not be sinful. Consequently, conformity and obedience could no longer be the morally sanctioned methods of maintaining societies. In fact, behavioral variation being selectively rewarded, Complexity not only explains why social realities have changed from moralized states to adaptive processes. It tells us the ways social systems operate have changed, and that inherited rules for maintaining societies no longer match realities.

Thus, although societies are nearer to “smoke” than objects and genes, members of traditional social systems still resist change. They do so because changes alter the contexts giving lives meaning and threaten people with “social death.” Moreover, habitual interdependencies were hard to learn, and people are understandably slow to experiment with unproven replacements. Such obstacles to change are structural, and they exist despite

how they are mapped. But how relationships are mapped does affect how effectively societies deal with changes. And committing to the absolute, universal, and timeless beliefs underlying traditional VEMs makes solving new problems hard. Complexity offers a way to understand the problems of living meaningfully in structures whose shifting sands make adaptive reform necessary. Whether understanding problems improves the chances of surviving them, of course, is uncertain.

Understanding resistance to change begins by conceding we cannot reverse time and return to Edenic states. Since both our biological survival and our moral identities depend on self-organized hypercycles, infusing our systems with emotional commitments is understandable. But emergent systems reflect whatever contingent circumstances were “present at the Creation.” Hypercycles are *ad hoc* solutions to specific environmental problems reached using who and what is handy. Historical accidents, to paraphrase Boulding, hypercycles “are the way they are because they got that way.” The only reason any hypercycle was selected is that its arrangement happened to satisfy existing conditions. In other words, its existence is the only justification for a hypercycle: it’s there because it’s there because....

Origins, Guilt, and Renewal

Remembering that complex systems self-organize naturally and that their emergence depends on sequences of events involving discrete sets of randomly interacting elements should rob societies of whatever “divinity ... hedge[d]” them traditionally. Secularizing moral systems should help us face moral responsibilities more directly and understand why reforms are wise. It does not, however, remove problems of guilt and duties to reform.

Inspired by the Bénard Cell metaphor we can see that before a hypercycle self-organized its future components were scattered contingently amidst a world of other colliding elements. From among such mixes, given existing gradients and changing boundary conditions, any number of hypercycles might have emerged. At any particular time, several probably did. The ones that survived were made up of arbitrary combinations of elements acting in ways that happened to be self-sustaining. Once in existence, however, a hypercycle – like a BC – would be favored because it increased the rate of universal entropy production. Henceforth whatever is not part of the hypercycle becomes a resource to be consumed, the external environment into which entropic waste is dumped, or a potentially destabilizing threat.

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The result resembles Balzac's thesis in *Père Goriot*: Behind every great success lies a great crime. In the social case, the great crime seems to be that when a hypercycle benefitting its members successfully emerges from equilibrium with its environment, a number of other, roughly similar elements are excluded. And that "crime" is traditionally hidden behind a veil of system affirming VEMs. The maneuver is "affirmed" because those included in the successful hypercycle see themselves and their world from its perspective. They see the world inside their system as sacred and everything outside it as profane, in Durkheim's terms.

Nevertheless, René Girard suggests, members of human social systems tend to be haunted by a sense of guilt. Complexity suggests guilt is at least partly over the sacrifice of those who were left out by the initial ordering. To cover it, those privileged by membership in social systems embrace a history that blames its victims. Like the membrane covering a living system, one side of which loves water and the other side of which repels it, histories recounted by the included says the excluded deserved to be out of the hypercycle because they, like Beatnik poet Kenneth Patchen shooed from the hors d'oeuvres, "wasn't good enough."

Acting to maintain the social hypercycle the included are declared morally meaningful and, therefore, the excluded meaningless noise. Girard argues that generations of covering up guilt corrupt societies. Corrupted systems have high rates of *internal* entropy, and over time they choke themselves. Rome's may be the most obvious example; and America's is among the most perplexing. But all far-from-equilibrium systems are structured by an arbitrary event that looks like an "Original Sin."

Peter Allen suggests the nature of system origins offers a more hopeful view, based ironically on arbitrariness. He illustrates the way systems emerge using Origami, the Japanese art of making various animals and objects by folding a paper sheet in different ways. A flat sheet of paper can be folded anywhere in any direction, so the first fold is as arbitrary as the first note of Beethoven's Fifth symphony. But each sequential fold produces a dichotomy. On the one hand, each fold forecloses possible options. At the same time, each fold may bring the paper closer to a finished and improbable shape. Once completed, moreover, the finished object looks "necessary" – the seemingly Fated outcome of a succession of preordained folds. And there is something present in the final shape that was not inherent in the original sheet of paper. As Allen notes, the resulting shape has capacities and characteristics that a physical analysis of the paper cannot explain.

Following Allen's lead, we can interpret the self-organization and evolution of social systems as being a similarly arbitrary yet decisive and progressive process. As arbitrary in origin as Origami figures, social systems can become as different as Sparta's tyranny from quasi-democracies like Athens because of the contingent characteristics of their founders and different initial conditions. Yet societies are self-organizing, self-affirming, self-referential, and self-maintaining. Because every occurrence creating or maintaining societies is both the cause and the effect of the hypercycle to which it belongs, the final shapes social systems take can be so artful they seem to have been intended from the start. Thus, social forms and relations are frozen by moralizing ancestral accomplishments, thereby victimizing the excluded.

But Complexity shows that far-from-equilibrium systems have no predetermined shape. Moreover, Complexity reminds us that when hypercycles self-organize they create new levels of reality and break symmetry with their pasts. Consequently, from the Complexity perspective, there may not be any "Original Sin" at the bases of social systems. The simple reason is their Founders could not have *sinned* against those who were initially excluded because there were no VEMs to violate until there were social systems with roles and relationships to be morally mapped. Before social systems emerged, there were neither crimes nor categories of guilt and innocence. As Genesis described it, in the initial biological state of nature before societal self-organization occurred there were no grounds for blaming anyone for what happened. Innocent because there was nothing to feel guilty about, people lived – calmly – in a no-fault zone.

But because the events in which societal hypercycles emerge are contingent and their results arbitrary, exclusions accompanying societal self-organization eventually appear unjust. That is at least in part because societies are member-transforming processes. Membership in societies introduces ways of thinking, choosing, and acting that are no more inherent in biology than Origami figures are in sheets of paper. Initially, these changes only affect the way members treat each other. But over time system dynamics bring the excluded and included into closer proximity. Consequently, the excluded tend to be transformed in the direction of the system. Meanwhile, the abstract nature of VEM symbols will allow them to drift outward until they encompass the previously excluded as well as the originally included. If that happens, the former will declare a "right" to be included and at least some among the latter will support them.

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In far from equilibrium systems that must constantly adapt by reducing uncertainty about their environments, demands for change should become functional rather than moralistic. If they do, negative valuations of the initially excluded can change. Purged of stigmata, the initially excluded can be welcomed because they carry information about the world outside societal boundaries. Information about environmental realities is essential for adaptation and scapegoating to cover primal guilt makes it harder to access new information. Simply put, blaming the excluded makes system survival difficult. Sadly, however, perpetuating exclusionary policies also persistently regenerates feelings of guilt among the included. Breaking cycles of guilt and scapegoating, therefore, is usually as difficult as it is necessary, even for Modern systems.

When guilt is faced, as it was in post-War Germany and post-Apartheid South Africa, however, situations can be saved. And if the contingent nature of societies is recognized the initial exclusions (sacrifices) can be admitted and existing social forms changed more easily. Complexity recommends that the excluded admit there was no moral fault in the original arrangement and therefore although the present has moral obligations to those it assimilates, it owes no debt to them.

Removing the fear that punishment for the fathers' sins will be visited upon the sons should make reform easier for, as Machiavelli noted, people forget murders of their fathers faster than the loss of property. Of course, if the excluded garner property as they are assimilated forgiveness for past evils is likely. Regardless, when guilt is faced and origins understood, members realize the excluded – like folds not chosen and roads not taken – were initially almost indistinguishable from and are as potentially valuable as those included. VEMs that favored exploring alternative possibilities by loosening binds and diversifying membership, therefore, could make adaptation less contentious.

Steps toward an Ethics of Complexity

But Complexity science could make transitions less contentious only if we understand why, when, and how they occur. Transitions occur because Social Roles become dysfunctional when environmental matches with VEMs and behaviors break down. In transitions societies are unstable and individuals realize that, although they are floundering, their choices and actions are still systemically meaningful.

When frequent transitions make more and more individual choices and actions morally significant, self-conscious individuals can be

overwhelmed by responsibilities. Anxiously oscillating between paralysis, hunkering down, and lashing out, people wonder why they should bother playing by rules devoid of absolute authority. Others hide from their fears by embracing ideologies promising to solve all their problems for them. (See Figure 10 for schematic example of system mismatch and destabilization.)



Figure 10 System Destabilization Resulting from a Mismatch Between VEMs, Behaviors and Situations

However, systems in which, as Yeats framed it, “the best lack all conviction” need not, Lincoln’s example shows, “perish from this earth” – or become totalitarian monoliths. They may actually *evolve*: in transitions when systems are destabilized, they may only need to be “nudged” in the direction of increased complexity. In transitions where instabilities can make pens mightier than swords, politics sometimes moves mountains.

By mapping the initial conditions of social systems traditional VEMs no doubt make transitions difficult, for they sanctify the Founders’ positions. Their heirs then assume these positions with their associated powers and luxuries as matters of privilege. Facing conflicting appeals from old norms and new realities, undeserved pleasures make heirs cling guiltily

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to privileges. To reinforce their claims and cling to their status, the heirs regularly imagine pasts in which their ancestors flourished for *morally* indisputable reasons. Equating current interests with what once was and timeless necessity, the heirs make change sin and fight reforms. If that position prevails societies cannot adapt and usually crystallize and decline.

Complexity offers an alternative. It equates VEMs with CIQT descriptions. Like them, VEMs can only provide imperfect and incomplete maps of real but contingent roles and relationships. Therefore, societies are not morally obligated to preserve whatever injustices emerged after their creation. Being relative, Complexity VEMs only affirm positions and behaviors whose initial functionality happened to be selected. Embracing contingency and relativity, stark distinctions between included and excluded – those who fitted in and those who didn't – cease to be inevitable, essential, or immutable. Instead, they become mere functional utilities. Absent crimes that need concealing, guilt would no longer drive societies to scapegoat.

So, although we should always appreciate whatever arrangements helped people rise above the level of biology, we can never say that any particular societal form is “as good as it gets.” Moreover, although Founders seem gloriously heroic, Complexity shows they were as much creatures of self-organizing processes as initiators and directors of those processes. And, being system-level translations of actions, the Founders' accomplishments inevitably differ from their actual intentions. Seen as system artifacts, Founder legacies lose their sacred quality and become malleable. And experience tells members of social systems that the Founders' environments change, making established forms less fit over time.

By exposing the limits of knowledge, Complexity makes it possible to seek and access other, ethically more acceptable forms of thought. Loosening ancestral bonds need not wipe the moral slate clean, however. Instead of declaring nothing matters and anything goes, Complexity makes building on evolved morals possible. Founders no longer have to be stained by Original Sin. But Complexity suggests that even if Founders are not literally in an Eden-like state where they “knew not” what they did, neither are they purely innocent. Instead, Founders are creatures of their actual pasts. Limited by inherited symbolic forms and established structures, they cannot erase their pasts, ignore their presents, or successfully institutionalize transformed relationships. Besides, as members of *self-*

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organizing systems, Founders are like E.M. Forster's heroine who did not know what she meant until she heard what she said.

But when heirs refuse to liberate themselves from the discriminatory identities and outmoded practices formalized during societal self-organization, Complexity assigns guilt to them. Complexity makes it clear that refusing to reform contingent, imperfect, and eventually dysfunctional arrangements because it would profane the sacred structures the Founders erected is scientifically indefensible and socially suicidal. Complexity favors historical revisionism – a sort of *moral* bricolage – that takes what the past inaugurated and gives it new meanings.

Historical revisions need not damn the Founders' for not being as moral as their successors, however. Ancestral achievements can be understood historically as real yet relative in time and space. White American slave- and property-owning males, for instance, found it a "self-evident" truth that "all men are created equal" and by right should be free to pursue "life, liberty, and ... happiness." Since they were risking their "lives, fortunes, and sacred honor," there can be little doubt they sincerely pursued equality and freedom for all men. But their perceptions and actions were biased by their structured circumstances, by the hypercycle in whose formation they were caught-up.

As Jack P. Greene pointed out, in their own minds at least some of the Founders were "men" – self-sufficient and mature – because they owned land and slaves. Owning land made them in-dependent, managing resources made them maturely self-controlling, and driving slaves made them "manly." Like every other people mapping their social system, America's Founders identified themselves with what their context made meaningful. As that context has changed over time, of course, it gives the Founders' actions new, more moral meanings.

Complexity accounts for America's Founders abstracting symbolic representations of their beliefs from the environment they mapped. Affirming their own identities and intending to metabolize future generations in their image, Washington, Jefferson, and Madison simply equated themselves with the symbol "men." But by morally justifying their actions, Founders made their ideas attractive to many people and their purposes were socially selected. When Founders moralized goals, however, they said more than they meant. Later generations in altered contexts, Henri Sée explained, tend to take maps of meanings as imagined communities that ought to be real.

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In the minds of successors imitating ancestral reforms, for instance, the word “man,” over time, applied to humankind generally. But their initial overreaching does not make Founders frauds, hypocrites, or sinners; it makes the meanings of their VEMS relative. Although they no doubt sincerely took their meanings to be “true,” meanings change when time transports symbols and actions into new contexts. In altered contexts, bricolage necessarily attributes new meanings to symbolic terms and human behaviors. Tested against the excluded others expanding VEM abstractions make visible, the moral status-quo is problematized, shaming those who unjustly enjoy benefits. Eventually, succeeding generations aspire to fulfill the potential meaning of ancestral ideals and treat all *humans* equally, regardless of race, gender, religion, class, or national origin. There may be no better example of system contexts turning “bad” causes into “good” effects than when the slavers’ demand for liberty turned out to mean driving slaves was illegal.

Sadly, however, reformers too often retain moralistic attitudes as they seek to change social relationships. Such behavior may help correct existing injustices. But by substituting one absolutism for another, it stiffens resistance and lays a foundation for future internal conflicts – i.e., in system contexts, “good” causes can have “bad” effects. A Complexity-based ethics, however, suggests reforms can be advanced for functional reasons. Heirs could then be persuaded to see reform honoring and benefitting themselves as well as improving on the Founders. That is because, rather than shaming Founders by judging them by more developed VEMs, history revised from the Complexity perspective should make surviving by adapting easier by building incrementally on past accomplishments rather than aspiring to shame the past and perfect the world overnight.

Successful adapters, like Lincoln, then achieve the status of Founders, like Washington. But Complexity also recognizes that no lunches are free: if we want wealth-producing societies they must be adaptive. If we need adaptive societies, they must be loosely bound. If societies are bound loosely enough to adapt, then their members must accept self-consciousness and shoulder responsibilities. That is, people must finally realize that while the price for being fully human – vulnerability and uncertainty, alienation, and anxiety – is high, it is worth paying.

Adaptability, Stress, and Community

Complexity shows that systems adapt by transitioning to new states. Transitions are leaps in the collective dark, with fearful individuals acting more for their own interest than lapsing public goods. Absent shared goals, no clear and certain purpose holds people together as their roles and relationships change. Therefore, although a Complexity ethics might make separating people from traditional habits easier, it cannot guarantee that societies will stick together while transitioning. Thus, Complexity ethics should concentrate on building individuals able to bear the stress and turmoil of life in identity changing adaptive systems.

Lincoln explained the American way to adapt without disintegrating during his debates with Douglas in 1858. His argument has more recently been supported by both the conservative historian Rowland Berthoff and the liberal philosopher John Rawls, whose “veil of ignorance” theoretically mirrors the historical process of “constituting” Lincoln and Berthoff discussed. For them the basic premise was practical. They simply remind us that the Framers each imagined such different Americas they could not reach a consensus on the final form society should take.

America’s Framers were unable to agree about whether their society should be rural or urban, agricultural or mercantile. Nor could they unite on whether or how to change exclusionary policies toward slaves and women. They realized that to preserve their independence the different states needed a stronger national government. But there was no consensus on a moralized final form society should take. So, the Framers compromised and settled for providing the political means – the rules for making rules in a public space – by which initially existing differences over system states could be debated and eventually reconciled. The results would be uncertain, which is why Washington termed the Framers’ results “our noble experiment.” But as he wrote leaving the Convention, the Framers hoped they had “raise[d] a standard around which the wise and honest can repair.”

Affirming political *procedures* rather than declaring specific social goals, the Framers broke symmetry with the past. Doing so, they unknowingly anticipated Complexity. Hopefully a Complexity-based ethics could offer similar rules for playing cultural games fairly. Such rules would enable people honest enough to recognize the limits of their knowledge to wisely forswear imposing ultimate solutions and simply agree on how to select behaviors and relationships that will best meet future challenges.

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Perhaps the best example of the Framers' adaptive process has been the American Civil Rights movement, for such a structure allowed Martin Luther King Jr.'s non-violent protests to submit discriminatory laws and practices to Constitutional standards of fair play. Resulting judicial decisions not only rejected those laws for discriminating unfairly; modeling decisions on the example of the Constitution itself, judges went on to order new initiatives – “affirmative actions” – enjoining American society to reform itself by using Constitutional procedures to incorporate the formerly excluded.

Although adapting by generating and assimilating diversity has been difficult and remains far from complete, it is made possible by the Constitutional focus on how laws are promulgated and applied rather than on what the laws are. When the Framers abandoned the effort to describe the end-state morals traditionally map, they unintentionally reversed the relationship between ends and means. For Americans, therefore, the foundation on which society rests is not a moralized state stabilized by any means, for no functioning hypercycle existed in 1787. At that point, of course, Americans only knew they were no longer Englishmen. But they were just becoming conscious of themselves as a people, and the Framers could only settle on “constituting” the instrument around which a society could emerge. Thus, they focused on describing the *means* of legislating rather than prescribing the moral the *ends* society should achieve.

In the past, ends mattered most, for people believed they knew how social systems had to be arranged. Their confidence legitimized whatever means were necessary to achieve their ends. Lacking such certainties, Complexity would still reject an “anything goes,” “God is dead all things are permitted” policy. A complexity ethics would instead place most value on means, thereby allowing new possibilities to be explored because everyone could be trusted to reverse course if results proved unsatisfactory.

This is partly a practical matter. And it is akin to Prigogine's resolution of the anomalies generated by CIQT. He argued that while science could no longer know what nature is, it could understand how nature works. A Complexity-based ethics would similarly argue that when no one *can* know where society ought to go the best strategy is to build the kinds of people who can flourish wherever they end up. Complexity endorses Aristotle and Montesquieu in recognizing that fully human beings are historical constructs and realizes that the ways social systems treat their people affects the kinds of people societies have.

People exposed, alienated, threatened, and polarized by transition, as Erich Fromm explained in 1941, are likely to regain meaning, membership, and identity by scapegoating the nearest available variants. Unable to bear the anxiety of determining themselves, isolated individuals opt to “escape from freedom” and define themselves in opposition to victimized others – by “conflictual validation.” By providing communal support – i.e., “meaning” – for conscious individuals even as their roles changed, a Complexity-based morality would provide a means to build people able to bear the stress and turmoil of living in adaptive systems at Langton’s “edge of chaos.”

Recognizing the importance of communities, Complexity shifts the moral focus from its Modern exaltation of selves. Isolated “Modern” individuals seeking meaning in an infinite universe have become “hollow men,” as exposed and vulnerable as the frail and precarious figures Giacometti sculpted. Being no match for the stresses of life in complex systems, Modern selves – Rousseau’s heirs parading as Populists or Hippies – can be turned into brutal persecutors during transitions between adaptive states. By contrast, Complexity suggests that people whose potential value is systemically protected regardless of status will be more likely to feel secure. Secure people can trust others and themselves to play fairly and together find solutions to problems they cannot solve individually.

An Ethic of Possibilities

Arguing that rules of fair play can keep a system together as it adapts may be naïvely rationalistic. That seems especially the case in our present situation, for in Modern societies anxiously self-conscious individuals deal with stress by grasping for meaningfulness – for being “a contender,” as Terry Malloy put it. But it is nearly impossible for individual members of large-scale systems to demonstrate meaningfulness. The ponds in which all swim are so vast hardly any fish have enough status to feel meaningful. Making matters worse, by denying the reality of social systems Modern individualism decontextualizes people and renders them *structurally* meaningless. Living with a recurring sense of inadequacy, people retreat into small, tightly bonded communities for affirmation. Adherence to the fiercely narrow identities typical of small, tightly bonded communities makes sharing system-wide goals difficult. Fragmented by factional conflicts, the “primal moral scene” dissolves and individuals exalt themselves rather than working together.

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But language demonstrates that lower-level constraints can join people together and make higher level innovations possible. Language – perhaps the best example of an evolving process with which we have intimate contact – typically operates using grammatical rules governing *how* we speak. Those are the rules that keep languages alive, for grammatical rules – and dictionary definitions – make even new statements comprehensible. But grammatical rules do not dictate *what* we say. Nor do dictionaries dictate what we mean to say. Instead, speakers are free to create new expressions any time they talk. Languages endure by adapting, and they adapt by saying new things so long as their speakers cooperate in sustaining grammatical rules and respecting shared meanings.

If adaptive societies are to survive, rules of fair play (ethical grammars) will have to keep social systems together as they transition to new states (moral expressions). Playing fair could then trump winning. Admittedly, it is hard to imagine a society shouting, “it’s not whether you win or lose that counts but how you play the game.” Yet, sticking with the American case, the Framers’ concern for “reputation” above all else suggests such a thing is possible. For them reputation was not a matter of “celebrity.” Instead, “reputation” meant “distinguishing one’s self upon the public business.”

Distinguishing themselves upon the public business meant winning acclaim for finding ways to advance the common good. Washington, imitating Cincinnatus, gave up his military command and even his presidency to keep the American “game” alive by giving others the chance to distinguish themselves. Similarly, instead of making himself the ultimate arbiter of American life, Madison played Solon and refused to immediately clarify clauses in the Constitution by publishing his Convention notes. Both left it to politically engaged citizens to determine meanings of and for themselves.

Were the meaning of selves determined by how members of social systems played the game, societies committed to following lawful procedures – rather than gullibly chasing conflicting utopian ideals – might retain enough coherence to adapt. That is partly because rules of fair play, if obeyed, keep competitions from degenerating to bloodbaths where absolute ends justify every means. Besides, cooperation during transitions would also be more likely because the stresses members of complex societies experience lessen. Stress would lessen because individuals no longer would be held to impossible standards of perfection or be faulted for failing to correctly anticipate long-term system-wide effects of actions.

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Instead, they would be rewarded – their reputations would be enhanced and their meanings valued – by making the relatively simpler choice to act fairly. Suffering fewer pangs of guilt and fewer fears of reprisals while having a clearer sense of what is expected of them, members of fair social systems would be more secure, less guilt-ridden, less fearful of each other, and less hostile to change.

But adapting to new states does mean societal forms will alter and the lives of their members acquire new meanings. However, if the presently privileged and included can be convinced that the benefits of redefining roles and altering relationships outweigh threats to their meaning and status, they can be separated from their moralized commitments. Systems can then endure by adapting as their boundaries become more porous. (See Figure 11 for a rough comparison of traditional VEMs and core practices based on Complexity on page 85).

So, Complexity suggests advocates of adaptive change should not just welcome new people into societies and tolerate deviant behaviors. Reformers should also protect those members that change threatens to displace, lest exposure and potential shame drive them to escape into imagined pasts that abort adaptation. Moderating the shame and exposure driving the privileged to fight adaptive change, a Complexity ethics offers the hope – and it is only a hope – that honoring fair play in deciding what to do would mean life in adaptive systems is no longer a “winners take all” competition. Individuals would have some guarantee that their reputations for playing fairly “distinguished” them, even in identity-changing transitions. While what lives mean might change, confidence that lives remained meaningful might preserve the trust making it possible for adaptive systems to hold together.

Traditional and Complexity-Based VEMs

Traditional VEMs

Idealistic
Universal
 External source
Imposed
Commanded
 Absolute
 Divine origin
 Obeyed
Demand Perfection
Eternal/Enduring
Rigid
Established once & for all
Conserving
 Preserving stability
Value inheres in Acts
Roles suited to stable states are fixed
Transcendent norms independent of
 experience
Moralized
 Secure –
 Know what you are
Choose between Good & Evil
Voiced by saints
Paul & Augustine

Complexity VEMs

Realistic
Relative/Local
 Internally generated
 Adopted/Embraced
Evolved
 Situational
 Experientially derived
 Applied
 Encourage Diversity
Temporal/Transient
Flexible
Revised continuously
Improving
 Adapting
Value depends on Contexts
Roles suited to dynamic states shift
Historic norms shaped by
 contingencies
Pragmatic
 Vulnerable –
 Choose who you will be
Decide what is Good or Evil Exemplified
by intellectual heroes/clowns Camus &
Woody Allen

Figure 11: Complexity and Ethics

Complexity and a New “Golden Rule”

Complex societies survive by adapting to several different stable states, each of which “suffices” to meet existing needs and distribute resources well enough to maintain stability under existing circumstances.

To survive, therefore, twenty-first century societies will select for people who can adjust to dynamic flows at the “edge of chaos.” Jon Sumida reminds us that Lao-Tzu and later Zen masters anticipated this situation. Adjusting to socio-cultural conditions, these Axial Age thinkers mapped the oscillation between natural and social realms as a constantly twisting serpent. Expressing ideas like Prigogine’s notion of fluctuating systems whose persistent interactions define their members, Zen Masters remained poised while navigating cultural space-time serenely. Informed and trained yet uncommitted, their minds were as “empty” – “bland” in François Jullien’s translation – as ours are Uncertain. Entertaining conflicting thoughts while being committed to none, Lao-Tzu and the Zen masters instantly adjusted to the most nuanced shifts in their environments.

Members of contemporary systems face even greater challenges. They not only have to bridge the gap between nature and society. Choosing with emotions – sensations interpreted in rule-based systems – they must learn to align VEMs and behaviors to shifting social states and different aspects of nature. Over their lifetimes members of contemporary societies must assume many different identities – be many different selves – by adapting to different contexts daily. Understanding Complexity and appreciating historical changes could help members of dynamically stable societies finetune emotions and hit their behavioral marks more confidently.

Persistently adaptive people could result from using Complexity science to marry – i.e., align – Modern selves and Daoist practices. That is less preposterous than it must seem since, if this analysis is right, Complexity science simply “maps” an emergent environmental context in which system components oscillate between identities and behaviors. In other words, people are already living this way but have yet to put a fitting name to their behavior. If contexts do determine meanings and people are as pliable as a subatomic nature that shifts between waves and particles, then learning to deal with consciousness and responsibility should be possible. But until people share a set of selected VEMs to define themselves and map their actual, currently existing space, they will live stressful lives.

Even so, accomplishing this feat of cultural bricolage will not be easy. It would require mastering ethical guidelines so thoroughly that spontaneous responses to subliminal messages can be trusted. This delicate blending of moral traditions might be accomplished by placing greater emphasis on how we act than on what we do. Complexity provides a scientific basis for that by reminding us that no moral vision perfectly and fully maps its context. Therefore, believing passionately in “higher” moral causes can no longer justify choices and actions,

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because the “sincerity” Lionel Trilling found fundamental to Modern VEMs is no substitute for knowledge and understanding. Still, while conceding that there is no way to know for certain what social state is best helps avoid the worst consequences of political enthusiasm, the guidance Complexity provides falls far short of a full-blown morality.

Nevertheless, Complexity is “good to think,” and the “stance” it offers can load the dice in favor of humane outcomes by offering at least two rules of thumb. Hopefully they are enough to allow Yeats’s “best” to resist “passionate intensity” while acting effectively – like Hemingway’s bull fighters, members of the French Resistance, or Humphrey Bogart in *Key Largo*. First, Complexity suggests that since the process of history has produced valuable phenomena like free, conscious, rational, and moral individuals, the process itself has value. That implies basic choices should be taken from the perspective of both the products and the process of history. The goal of the process, ordained by the Second Law, is to continue. This leads to an Evolutionary Golden Rule (EGR): *Choose to act so the act of choosing remains possible.*

Adopting the EGR would not guarantee a problem-free human future. But adopting it would help sustain Friedel’s “culture of improvement,” for Zen practitioners of the art of societal maintenance would *want* to perpetuate the adaptive benefits accruing from increasing social complexity – e.g., by assimilating and liberating more diverse individuals. Following Complexity guidelines, members of existing social systems would realize individuals able to freely choose and responsibly act are not the selves Polonius idealized. Rather than being self-generated, selves are products of the process the EGR preserves. Freely and morally choosing individual selves are not “strangers” in an alien universe, either. Instead, as Aristotle thought von Neumann proposed, and Eagleman explained, they are created by and dependent upon historically evolved self-organizing social systems. The included and privileged might further realize the more adaptive social systems are the more security all their members have. The included and privileged might then serve their interest by doing their duty, treating everyone decently, and helping scapegoats become citizens. (See Figure 12 for a diagram modelling Complex Systems on page 88).

However, not even Martin Luther King, Jr. convinced American individualists to risk eroding their status by accommodating descendants of African slaves, women, and cultural minorities. The individualists’ bitter opposition has paralyzed Constitutional processes, making evolution painful. This experience indicates that successful evolution requires social systems to not just be supportive enough to tolerate reservoirs of diversity. They must also be supportive enough to provide security for those displaced by adaptation. This suggests a tit-for-tat codicil to the EGR: *Act to preserve and advance the societies in which our humanity emerged and evolved.*

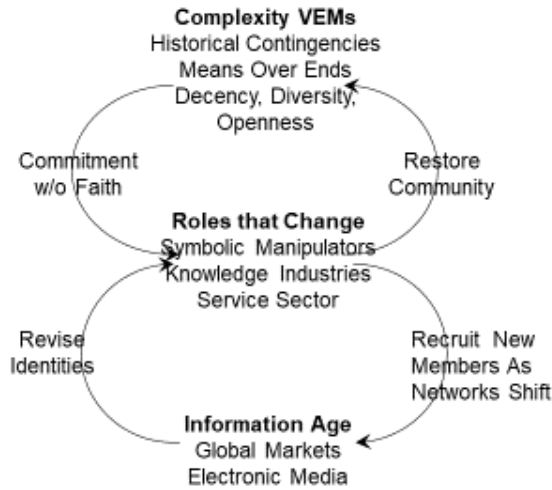


Figure 12: Model of Complex System

Combined, the EGR and its codicil do not remove the obligation to choose or promise to make everyone a winner. But they do put the “rational” back in Adam Smith’s “self-interest” and keep Elias’s “civilizing process” going. Allowing people to hold societies to the same rising standards that have historically been applied to themselves, a Complexity ethics would also help people empathize with *all* sides of issues – John Adams’ version of selves enhanced by political experience. Since empathy makes transitioning easier, a Complexity ethics would improve the odds that people of the future, acting humanely, will live together decently. *Our* historical meaning would then be that we were the people whose new ethical paradigm made their heirs less guilty and progressive change likelier and more peaceful. That should suffice.

Acknowledgements: Alicia Juarrero, David and Penelope Donnelly Ismay, Ben Weems, Brian VanDeMark, and Ernest Tucker provided criticisms aimed at making this essay comprehensible. Hopefully the results do not embarrass them. Mark Hagerott has supported my efforts as he gracefully guided them.

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⁷ Internal references should make it clear that the essay rests on the following books and papers, whose authors *ought* not always be blamed for how their words were used.

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Now a retired emeritus professor, **Robert Artigiani** holds a Ph.D. in intellectual history and taught courses in cultural history, introductory philosophy, and the history of science and technology at three colleges. His published papers recognize Nobel Laureate Ilya Prigogine's "new rationality" as a way to bridge the gap between natural science and the humanities. Describing nature in terms of wholes rather than parts, processes rather

than things, freedom rather than determinism, and symmetry breaking changes rather than continuities, Prigogine proposed a people-friendly paradigm inviting humanists to reroot our species-specific characteristics in reality. Reflecting on these possibilities, this essay proposes that the same processes of interaction, transformation, and self-organization that produced matter and life can account for the historical emergence and evolution of attributes like consciousness, morality, and rationality. If so, the new understanding of nature should allow us to better understand ourselves, justify morals, value our history, and refine our ethics.



*Review essay: Shifting Paradigms: Beyond
Modern Science to Complexity and Ethics, by
Dr. Robert Artigiani*

Dr. Mark Hagerott
Chancellor of North Dakota University System

Dr. Robert Artigiani¹ has tackled one of the most profound mysteries: to explain how our human society has come to be, and how it might best be changed in the future. He does so by building on the tools of Complexity Science, a relatively new field. The *Northern Plains Ethics Journal* has published many works of synthesis, but this essay may rank first in its breadth of integration, incorporating insights and theories from the fields of ethics, economics, physics, philosophy, thermodynamics, sociology, biology, theology, history, politics, and what we might call today, organizational change and organizational leadership. It is this synthesis that allows him to challenge many perceived wisdoms in economics, campus culture, and social innovation.

Artigiani tackles several component problems in his overall explanatory effort. He joins a small group of scholars who challenge the common understanding of the meaning and significance of early 20th century science, in particular, the theories of relativity and quantum mechanics. That contribution alone would warrant reading the first sections of his essay. But his work goes further and offers an alternative to the economic certainties of Joseph Schumpeter and the fatalistic acceptance of ‘creative destruction.’ Artigiani also gives apolitical, reasoned arguments why the current rage of political correctness and attempts to control speech on campuses, from both the Left and the Right, may pose a mortal threat to our adaptability as a society. An additional contribution is to explain why social reformers should include in their theories not just research in the social sciences, but also the field of Thermodynamics.

The first part of the essay synthesizes the work of multiple giants in several fields, to include Ilya Prigogine, Ernst Cassirer, Hannah Arendt, J. Bronowski, Ervin Laszlo, Umberto Eco, and Karl Jaspers. He uses Thomas Kuhn’s definition of “paradigms,” and challenges the received wisdom that early 20th century science

¹ Emeritus professor who taught history of science and philosophy at three different colleges over four decades.

constituted a revolution or ‘paradigm shift.’” He argues that the giants of physics fell short in that they did *not* provide *both* the map of the world AND rules for making new or updated maps of the world. Thus, if the physicists can’t explain the world and map making, who and what can? In the succeeding pages he gives you his answer, built on Complexity Science.

For the historians, Artigiani provides value as what might be described as a gap-filler in the voids left by the likes of A.J. Toynbee and Oswald Spengler, both of whom struggled to explain how societies change, but did not have the tools of Complexity Science. As he engages both science and the humanities he confronts the centuries-old challenge of facilitating communication or common language between the “Two Cultures,” a conundrum made most explicit in C.P. Snow’s seminal essay. Can Complexity Theory help science and the humanities talk to each other, despite coming from such different backgrounds, methodologies, and cultures? Artigiani makes a strong case that such crucial conversations can be thus improved. As both an historian of technology and a former nuclear engineer, I can say that personally, he improves my understanding of the two cultures with a common frame.

While this review cannot capture all of this essay’s contributions to the discussion, clearly Artigiani’s most timely service is to reflect on how societies have changed in the past, and how better to do so in the future. To personalize these observations, I would like to share that I was listening to his essay on my computer, as I was driving thru the undammed Yellowstone River Valley in eastern Montana, the ancient home of aboriginal humans. The road curved with the river, the Northern Pacific railroad tracks snaking alongside the freeway. As I reflected on the societal upheaval of the valley that witnessed the obliteration and displacement of once prosperous Native Americans by European settlers (including my German immigrant ancestors) and their continent-spanning machine systems, I was struck by the explanatory value of Artigiani’s theories. I was viewing the remains of the collision of social ‘hypercycles’, with winners, losers, changed social roles, and changed environment.

All these events came into greater clarity of understanding as I considered the reality of thermodynamics and entropy, on a subzero frozen Northern Plains, as desperate Sioux and Hidatsa women and children tried to survive after the Buffalo, their environmental source of energy, had been largely hunted to extinction. Artigiani’s linking of Values, Ethics, Morals, Environment, and Social Roles (Figure 9) with thermodynamic theories of entropy and dissipative structures were displayed out my car window as I sped along at 85 mph on a federally funded highway, built with tax revenue from the wealthiest, most capitalist nation in the world, the result of an incredible wealth-power creating social “hypercycle” of growth and domination. The fate of Native American’s recalls an insight, alluded to previously, that when social structures or sub-groups of society fail to adapt to

changing environmental conditions, a more ethical approach to change rejects Joseph Schumpeter's pessimistic concept of "Creative Destruction." Artigiani's writing is brutally illuminating when he explains:

Henceforth, whatever is not part of the hypercycle [new social structure] becomes a resource to be consumed, the external environment into which entropic waste is dumped, or a potentially destabilizing threat (Artigiani, p. 72 of this issue).

As you read Artigiani's theoretical explanation, I encourage the reader to visualize desolate Indian Reservations and the Wounded Knee Massacre. A more ethical society informed by theories of complexity, Artigiani argues, should have had then, and should have in the future, more empathy for those persons in subsystems who fall behind in the adaptive race, perhaps because of initial conditions or contingent events, over which the failing members had little to no control. Artigiani argues that there is a better way to achieve societal innovation than destroying or blaming the lagging parts of society.

But Artigiani, who taught military students while on the faculty at the US Naval Academy, is no softy, eager to affirm everyone and everything. His theories make clear that not all social innovations will work. For innovations to be sustainable, new social roles or identities must work in the environment governed by the laws of thermodynamics and entropy. Just because members of early 21st century America imagine themselves in new roles, with new values-ethics-morals, the resulting social structure may not be sustainable if it doesn't conform to the granite-hard reality of the Laws of Thermodynamics. Such a cautionary insight may be helpful to policy makers and the polity as they are presented with a cornucopia of new social roles and values, ethics, and morals promoted as a new foundation for modern society. But Artigiani would remind us to treat the innovators with appreciation and patience, to welcome ALL innovations, both liberal and conservative, because our society evolves best which welcomes attempted innovations, even if doomed to fail eventually. The recent attempt by political parties and even college campuses to limit freedom of speech and open discourse would not fit with Artigiani's conception of an open, adaptive, ethical model for social change.

Ever balanced in his analysis, Artigiani recognizes that free speech, open discourse, and social innovation can corrupt and hijack the adaptive processes. As societies grow larger and more complex, the elites with access to inside information can more easily corrupt the process of change, or 'game the system' than during simpler times. As our country approaches the fifth year of social upheaval that began with the first of two disputed elections, complicated by a global pandemic and made almost incomprehensible by a wave of fake news, Artigiani provides a theoretical basis for what many American's may have suspected: the complexity of our problems, competing policy proposals, impacting

320 million people, have allowed some people to game the system, seeking not to solve problems for the people, but sustaining the advantageous position of key insiders. The recent revelation in late 2021, that amidst the chaos of the COVID pandemic, the net worth of the average billionaire increased 70%, while working and middle-class family incomes stagnated, fits Artigiani's dystopian speculations.

Let me steel us non-experts that THIS IS NOT LIGHT READING. It will prompt us to "Google" a multiplicity of subjects, authors, events, but prompt the reader in a constructive way, because this work is so engaging, revealing mysteries of the past to inform our thinking of today and the future. A second warning, is that his essay may cause us moments of collective discomfort, because we are shown how during social transformations of the past, ancestors, our professions, political organizations, communities, cities, states, nations, may have unwittingly contributed to the holding back of other people, groups, professions, communities that were temporally not as 'adaptive' or 'creative' as the times demanded. But he raises the question: was it ethical for the winners to win in such a way? Was there a better, more compassionate, 'humane' way to adapt, than Schumpeter's "Creative Destruction"? And, thus, as our generation of politicians and polity engage the issues of the day, he hopes we construct an ethical framework informed by the theories of complexity, to create a less destructive way to reward creativity.

A last thought. Artigiani's work is timely indeed, but recent technological innovation makes it urgent that professors, policy makers, and polity use his framework to engage perhaps the most pressing challenge in history: the emergence of intelligent machines and algorithms. We need to engage his complexity models of social change in light of the emergence of social media, cyber space, machine learning, artificial intelligence and the troublesome problem of fake news. Using Artigiani's theories as a point of departure, what does it mean for us when we will now have multiple environments, not just that of real humans in real places, but Cyberspace or what some call the Metaverse? Similarly, how will society adapt Values, Ethics, and Morals, if the information sharing systems are inundated with fake news, and patently false scientific evidence, an occurrence demonstrated across the world by perplexing debates over the scientific validity of COVID vaccines. Lastly, as AI replaces more and more humans in myriad social roles, how does complexity ethics accommodate intelligent robots? If the reader thinks these are fantastic speculations, consider that the European Union just called for outlawing the impersonation of human social roles by A.I. or robots. I look forward to how this generation of scholars builds on Artigiani's "Shifting Paradigms" to engage the emergence of intelligent machines and metaverses in the quest to build a more adaptive and ethical society of *real* humans in a *real* natural environment.

In conclusion, Dr. Artigiani seeks to operationalize an ethical framework for us today, to the condition of the average human, so that he/she and their

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offspring may live in a more ethically adaptive society. While it is too early to tell for certain, his analysis and conclusions may prove to be highly significant to both the academy and to policy makers. At the very least, they must be taken seriously in the current discussion. His work is commendable for the breadth of his synthesis, readability, and his practical policy recommendations that might prove helpful to the “man in the street” as he or she navigates these times of change.

*Prior to taking on the role as Chancellor of North Dakota, **Dr. Mark Hagerott** worked in the technology fields of nuclear energy and information systems, including early applications of specialized artificial intelligence in the US Navy. After his transition to an academic career, he served on the faculty as distinguished professor and deputy director of the Center for Cyber Security Studies at the Naval Academy and served on the Defense Science Board summer study of unmanned systems 2014-2015. He is a commissioner on the Midwestern Higher Education Compact, and Western Interstate Commission for Higher Education.*

Chancellor Hagerott’s research and writing are focused on the evolution of technology and the human response to these changes, with emphasis on education reform. As part of his academic work, he was selected to serve as a Cyber Studies Fellow (non-resident) of the New America Foundation, 2015-2017. As a result of his research on human adaptation to the evolution of weapons systems, he was among the first military professors from the United States to be invited to brief the Geneva Convention on the challenge of lethal robotic machines and argue the merits of early arms control measures in 2014. In addition, his proposals for national education reform of the Land Grant universities have been published in The Chronicle of Higher Education, by publications of the National Academy of Sciences, Engineering, and Medicine, and have been presented on Capitol Hill and the White House.



Fall 2021

Community Section



Saving the Souls of Our Communities, One Newspaper at a Time

Erin Hemme Froslic

Instructor, English and Multimedia Journalism
Concordia College

Abstract: *Local journalism is a place to celebrate the odd and acknowledge the traditional. It's a place for community critique and photos of dogs wearing brightly colored bandanas. Most importantly, journalism is the primary source of credible information and identity building and maintenance for thousands of communities. In this essay, we consider two examples of local journalism that demonstrate its value and effectiveness. And yet, these community bulletin boards are becoming rarer – and it's the souls of our community that are threatened. When a community loses its news source, it also loses its sense of common identity, the stories that bind community members to each other. A community loses the mirror that reflects both its beauty and its scars. If we want healthy, thriving communities and neighborhoods, we need institutions that tell our stories or let us tell our own. Without this, we lose a sense of who we are and where we are going.*

Keywords: Community journalism, community identity, newspapers, local news

When I began my journalism job at *The Forum*, North Dakota's largest daily newspaper, I carried one small clip from my previous life as a suburban weekly reporter. It was not a story I wrote. In fact, it wasn't even a story. It was a letter to the editor.

The letter was not a response to anything I wrote. It hadn't even come from my own paper. It had run in a small daily a short drive away. In the letter, which I later stuck to my file cabinet with a magnet, a woman expressed her dismay that a local photographer had declined her invitation to take a picture of a carrot that had – mysteriously? miraculously? – grown out of the end of a garden hose in her yard.

Despite the novelty, the odd-shaped carrot never made the front page of a newspaper in southeastern Minnesota. And, this resident was irate. So angry, in fact, that she took the time to write and send a letter for publication to document her dismay. “You even take pictures of dogs with handkerchiefs,” she wrote, trying to point out the hypocrisy.

That letter to the editor struck me then, and still makes me pause some 25 years later. After all, what is local journalism if not a place where you can celebrate the odd and acknowledge the traditional? Yes, we cover school boards and crimes and politics. But what is local journalism if not also a space for critique of the institution of news itself? What is journalism if not also a place for photos of dogs wearing brightly colored bandanas and weird-shaped vegetables? Most importantly, what is journalism if it’s not about the community? What is community without journalism?

Building Community Identity

My first job out of college was at a suburban weekly in Minnesota’s Twin Cities region. Every week I was responsible for covering the school board, covering the city commission, checking the crime logs at the local police department, finding feature stories, taking photos, typing up obits and engagements. And then, every Friday morning, I’d design the week’s newspaper – writing headlines, determining story placement, triple-checking jump lines. I was a one-woman journalist who balanced all newsroom responsibilities. If I didn’t do it, frankly, it didn’t get done.

Like any young aspiring journalist, I wanted to leave that small newsroom with its whirlwind of duties. Yes, I was living in a metropolitan area, but working at a community weekly was only a stepping-stone to what I hoped would be bigger and better publications. Mere miles away were the state’s flagship papers, *The Star Tribune* (Minneapolis) and *The Pioneer Press* (St. Paul), where journalists were covering “real” news while I profiled local poets and covered the antics of a mayor nicknamed “Babe.”

As I longed for bylines on important stories in a large daily newspaper, I failed to appreciate the value my little shopper brought to the community it served. In a large, sprawling metro area, my stories focused on how small towns handled a population boom that would turn them into cities. I wrote about air quality in the local schools and safety issues on the neighborhood roads. It took decades, but in hindsight, I have a soft spot in my heart for hyper-local news coverage. Perhaps this is why I was drawn to the tale of the *Eden Prairie Local News*, a weekly newsletter that started in the southwestern metro suburb during the COVID-19 pandemic.

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The newsletter was founded by a group of community leaders – among them, a former mayor, a former state representative, and a retired pastor – when the city’s weekly newspaper, the *Eden Prairie News*, was sold and later closed, depriving the community of 65,000 people any local coverage.

The primary reason for starting a digital newsletter was relatively straightforward: To provide voters in Eden Prairie with truthful, non-partisan information about candidates for local elections. In a world where all politicians can polish their image and publish their own talking points, these community members still yearned for the checks and balances of a partisan-free referee. But the newsletter also filled a need to tell the stories that distinguished Eden Prairie from its neighbors.

Stories about carrots? Perhaps.

“Without a newspaper, you lose the connections that make a community a community,” says Stuart Sudak, co-editor of *Eden Prairie Local News*. “The Eden Prairie News was here long before many of the people in the community were. When it was gone, it was like losing a part of yourself. All the stories that had been told were gone.”

The graduations. The honor rolls. The highlights from city council meetings. While the state’s large dailies swoop in when the school’s football team wins another state title, nobody else cares about the city clerk who retired. For 33 years, she administered elections and maintained the city’s official records, unglamorous but important work that promoted her neighbors’ well-being.

“That’s a story that needs to be told,” Sudak says. “And we’ll tell it.”

A Challenge

When we celebrate or critique journalism, the national media are what typically comes to the top of mind during the conversation – *The New York Times*, *The Washington Post*, *The Wall Street Journal*. If our news habits bend toward television, we’ll mention CNN or Fox News or MSNBC. Certainly, these publications and broadcasts contribute to our understanding of national and international matters. But, just as all politics are local, so should be news.

Even more challenging than the loss of newspapers in the fabric of our communities is the loss of trust in those who present our news. While about six-in-ten U.S. adults (58%) say they have at least some trust in the information that comes from national news organizations, it’s the smallest share over the past five years this question was asked., according to a Pew Research Center survey published earlier this year. There is also a partisan gap. In just five years, the

percentage of Republicans with at least some trust in national news organizations has been cut in half – dropping from 70% in 2016 to 35% this year.

There is a bright spot, however. For the most part, Americans like their local news providers. A related Pew Research Center analysis in 2019 found that 71% of people say local news providers report news accurately; 62% say they deal well fairly with all sides. What is most intriguing to me, however is that 58% said that local media do well at including “people like you” in their stories. In other words, readers and news consumers could see themselves in the stories that were reported.

There is something beautiful and valuable about that. Especially in the upper Midwest, we are accustomed to people from the outside telling us who we are and what we should believe in. We wait for others to tell us we’re “cool” and “hip” and worthy of seeing our lives documented. In a world where it often feels like we are more different than alike, community journalism plays a role in finding our common ground. We are not merely defined by the schools our children attend and the addresses where our homes reside. Community transcends governmental boundaries and happens when we identify with and respond to the stories we tell ourselves about ourselves.

Ron Heifetz, professor at Harvard University’s John F. Kennedy School of Government described it this way: a newspaper “reminds a community every day of its collective identity, the stake we have in one another and the lessons of our history.”

For some, that identity and those lessons might be reflected in a story about the 5K race that raises awareness and money for cancer or the neighbors who gather to harvest the field of a farmer who has passed away too soon. For others, it might be the carrot in the garden hose.

Initiating Conversations

Cole Short is an owner and editor of *The Hillsboro Banner*, North Dakota’s oldest weekly newspaper that has collected an impressive number of awards while covering a community of 1,601 souls between Fargo (metro population of nearly 250,000) and Grand Forks (population 100,400). As he and a small staff scramble to report stories to fill the print pages, he recognizes their work for the balancing act it is. The paper both builds collective identity while also challenging the status quo.

Community journalism has a powerful role, he says. Yes, certainly community news can be shared during coffee at the local café, but a newspaper has wider and more consistent reach. It provides a standard foundation for

Saving the Souls of Our Communities, One Newspaper at a Time

commentary and critique. “People want to be engaged in their communities. They want to be connected to their fellow neighbors and residents,” he says. “They also want to feel important and want to know what’s going on. There’s a sense that people want to know how they fit into a community.”

And so, Short considers *The Hillsboro Banner* the caretaker of the community. The newspaper chronicles the lives of its residents, so that someday they can look back and see how they and the city have developed over time. That means considerable time is spent covering important milestones in lives: graduation, the homecoming game, prom, parades. Every year the paper prints letters to Santa Claus and regularly asks high school seniors to revisit the letters from their childhoods.

Once the community faced a daycare shortage. A story in *The Banner* caught the attention of *The Forum*, the regional newspaper out of Fargo, which decided to report its own version of the story. Within a short period of time, someone who read the Fargo story contacted the Hillsboro community leaders with an idea for addressing the shortage. Now the city has a daycare for 50 kids.

This doesn’t mean, of course, that local journalism only celebrates and advocates for a community. Journalism also has an obligation to hold the community accountable, to push it to become something better. Just as community journalism needs community support to survive, a community needs the promise of journalism to share the truth, whether it's comfortable or not.

This fall, a video surfaced of a male Hillsboro student, who appeared to be holding a handgun and saying that he is hunting for Black people, although, instead of saying “Black”, he used a racial slur. When Short saw the video, he took one look and knew exactly who the student was. He has covered the school for years and quickly identified the individual as the son of one of the school board members. *The Hillsboro Banner* ran the story.

Early in his journalism career, when Short worked in Roseau, Minnesota, a judge described working in a small town like this: you make a decision and 15 minutes later you run into the people your decision affects in the grocery store. Six days after the story ran, Short had to sit 20 feet away from the school board member. “Could we have looked the other way and let a bigger newspaper cover the story? Yeah,” Short says. “But at some point you have to say, is this story important to the fabric of our community or not?”

There’s a responsibility when one is both a mirror and a window into the soul of the community. But when a community’s journalists show up for everything, that builds cache and good will. When a community newspaper amplifies celebrations, there is, perhaps, a willingness to pay attention when the

ugly scars are shown. Did Hillsboro invent racism? No. Will it solve it? No. But in response to the incident, the Hillsboro Banner asked students of color in the school whether they felt safe and how they reacted to the incident. Their responses were an important part of the continuing dialogue.

“If we can learn about our neighbors, that’s what our world needs,” Short says. “That’s our role.”

What We Have to Gain (and Lose)

Yet, if what our world needs is a place where people can exchange ideas and engage with tough topics, it’s becoming harder to find.

Everyone already knows the number of newspapers in the U.S. has plummeted in recent years. A study released by University of North Carolina’s School of Media and Journalism in 2018 found that nearly 20% of all metro and community newspapers in the U.S. have gone out of business or merged since 2004. Hundreds more have scaled back coverage so much that they become what the researchers call “ghost newspapers” – newspapers that exist in name, but do very little informing, educating or entertaining.

The northern plains has not been immune. Minnesota lost two dailies and 80 weeklies between 2004-2019; North Dakota lost one weekly; South Dakota, 19. Those numbers have certainly become more dismal after a lengthy pandemic that has affected both the ability to cover stories and the availability of advertising dollars.

The loss of these local news sources cuts deeply. For when a newspaper fails or is sold or merges, a community loses more than a source of information. It loses its sense of common identity and the stories that bind community members to each other. A community loses the mirror that reflects both its beauty and its scars. It loses its soul.

Indeed, it is easy to look at these numbers with apathy or despair. It is more challenging to engage these trends head-on and embrace the challenge of supporting our local news sources through our readership, our viewership and, bluntly, our money. If we love our communities and want them to thrive, we have a moral obligation to champion community journalism.

And let me be specific here. While I may have a personal affection for the newspaper, the actual paper and ink, as a delivery system, I understand the reasons for its fading. A once daily print newspaper is often just too slow. The supplies are expensive. But a newspaper is simply an outlet for journalism; it is not journalism itself. Curiously, we now have online newspapers that use no paper at all. Personally, I’m happy to see the former print only name stick around.

Saving the Souls of Our Communities, One Newspaper at a Time

In whatever form it comes, local journalism is the primary source of credible information and identity building and maintenance for thousands of communities. These organizations are also the community historians and documentarians. Want to know who passed away last week? Check your local newspaper. Want to know whether the local football team won? Check your local newspaper. Want to know who bought that old church? Check your local newspaper.

Maybe that's why I believe in and support local journalism, why I think there is value in even something as silly as a letter to the editor about a carrot. We need institutions that tell our stories or let us tell our own. Without community journalism, accountability is diminished, accomplishments are fleeting, improvements are undocumented. Without someone to ask the questions and share the responses, we lose a sense of who we are and where we are going. And, frankly, that would be the most painful loss of all.

Erin Hemme Froslic *is an instructor in the English department at Concordia College, Moorhead, Minnesota, where she teaches writing, journalism and advises the student newspaper. She started her career as a newspaper journalist, including nearly 12 years at The Forum in Fargo, North Dakota. She has worked in marketing – serving as editor of a college alumni magazine and weekly digital newsletters – and founded her own writing and editing business, Whistle Editorial.*



2021 State of the University Address

Dean Bresciani, Ph.D.

President, North Dakota State University

Editor's Note: *Normally, the Northern Plains Ethics Institute (NPEI), which publishes the Northern Plains Ethics Journal (NPEJ), would not be publishing a State of the University address for any institution of higher education, much less that of the university at which the NPEJ is based.*

*However, this particular one is of interest to the NPEI, whose mission is to promote democratic participation in social and ethical issues affecting the Northern Plains and beyond. North Dakota State University (NDSU) is the land-grant university of the state, which makes it a unique institution within North Dakota. According to the Morrill Act of 1862, which established them, all land grant universities have a mission to focus on the practical fields of agriculture, science, and engineering "without excluding other scientific and classical studies". The result is that land-grants combine what Aristotle and others thought as purely practical with theoretical reasoning to educate students about **how** to act and be as a person as well as **why** they should act and be that as a person. In other words, to prepare students for excellence in their professional and private lives as engaged citizens in the real world.*

President Bresciani's speech does a masterful job of drawing on NDSU's history and future as a land-grant to show that as the world's circumstances change, so must the land-grant's focus, if it hopes to achieve the charge given it in the Morrill Act. Part of which, by the way, is to consider where we as individuals and a community want to be and how to get there – the two questions posed by the Northern Plains Ethics Institute in all of its activities.

Keywords: education, land-grant university, purpose of higher education

As you know, this will be my last state of the university address. Twelve years ago I came here from Texas looking for the opportunity, with you, to make a positive contribution to those we serve ... defining that in the broadest terms possible: NDSU, Fargo, our state and even our nation. Along those lines, I'd like to talk through our past, present and future – and what makes me feel so connected to this place.

Dean Bresciani

As a reminder of the past, our modest beginnings were as the North Dakota Agricultural College (NDAC), which would become North Dakota State University of Agriculture and Applied Science, which matured to North Dakota State University – and is commonly now simply NDSU.

Keep in mind that Fargo, and the “Ag School,” were never supposed to be much. NDAC was intended to stay a sleepy campus in a sleepy town and not much more. It's tempting for me to jump ahead to today, and the NDSU and Fargo we've come to be -- but I'm going to resist.

If you go back with me to our campus in the late 1800s, we'll look to the west and see Dr. H. L. Bolley's agricultural research test plots – which predate the establishment of the college. Their over-130-year records, under every imaginable pest, disease and weather condition, offer a research baseline with few if any comparisons, in any discipline, nationwide. That research has created the leading economic engine of our state over time. As a result, North Dakota's agricultural viability and competitiveness is measured not on a national basis, but on a world-wide basis.

Did you know that of the 16 major commodity crops grown in the United States, the #1 producer of eleven is North Dakota? Know we're no slackers on the other five; we are either the #2 or #3 producer in the nation.

As we cross campus, we'll find ourselves standing next to chemist Edwin Ladd, who in 1906 was one of our first full-time faculty members, and began a project to improve paint through research on its adherence to fence planks. We talked about that in 2010 when I shared my first state of the university address with you, and I still think about that today.

If history has taught us nothing else, it has taught us that research, teaching and service to our citizens can launch a university to levels unimaginable back in 1890 when our first six students arrived. It has taught us that no problem is unsolvable, no challenge is insurmountable, and no aspiration is out of reach. Successfully creating knowledge never before known, teaching it to our students, and applying it to the challenges our citizens face – completely changed the future for NDSU – a place which by today's standards, *in the 1800s*, was extraordinarily humble.

However, let's keep moving down the path we are on – to today. Criticism of contemporary higher education is rife in national media. Assertions are that it costs too much, students learn too little, and everything done on a college campus can be accomplished through online approaches.

While there is only dubious economic and educational merit to those assertions, in contrast, it is interesting to note that more students than ever before in the history of our country have access to post-secondary education.

Also, after a year-long national experiment with online and hybrid forms of education, we have learned that many if not most students simply don't do as

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well through that mechanism. While it was a forced and painful experiment, that did at least allow students to stay on a path to graduation, we learned it is not the panacea once thought.

Like our peers nationally, NDSU has certainly been stressed by the “COVID defined” past 19 months. However, the long-standing “can do” attitude of NDSU faculty, staff and students has never before been so evident.

Teaching, research and service continued – and have actually been trending upward. Our students responded by enthusiastically returning to campus this fall, and they did so in substantially larger numbers of new first-year students (up 8%), new international students (up an incredible 49%), and new transfer students (up 5%)!

In addition, a new degree completion program is attracting students who had stopped out of college before finishing their degree. The program has been wildly successful, re-enrolling over 60 students in the first three semesters of its existence, and has already graduated 30. The program’s success has undoubtedly been elevated by the over \$100,000 it has received in private scholarship support.

In an overall sense, it is worth noting that:

- More ND high school graduates attend NDSU on a full-time basis than any other college or university in the state.
- More out of state high school graduates attend NDSU on a full-time basis than any other college or university in the state.
- Those students lead our state in retention and graduation rates – and ...
- The majority of our graduates stay in North Dakota to enter our workforce in some of the best compensated jobs in the state, which means an improving tax-base that all North Dakotans benefit from!

What we do, and what our students receive by being at NDSU, is more than ever before recognized and appreciated by our graduates. They “get” that NDSU is quite possibly the best financial investment they will make in their lives.

NDSU’s other performance metrics don’t lie, and over the past twelve years, there are some metrics that should matter to anyone who cares about North Dakota higher education:

- Bachelor degree completions have increased
- Graduate degree completions have increased
- Student to faculty ratios have decreased
- Administrative costs have decreased, and are now the lowest in the state higher education system
- The NDSU endowment has increased by 220%

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- Our long-term financial stability has gone from one of the worst to one of the best in ND
- Our bond-ratings by every national firm evaluating us have substantially improved
- Deferred maintenance, long-accumulated prior to 2010, has been more than cut in half
- Our annual economic impact on the state is a stunning \$1.5B!
- Research expenditures have been trending back up...in spite of there being 165 less faculty and staff on our campus due to serial state budget cuts
- Licensing and royalty income have hit their highest point ever
- There are more new and renovated building than ever before in NDSU history:
 - including the new and largest academic buildings on campus
 - including the new and largest non-academic buildings on campus
 - including grounds and campus-wide infrastructure that has never been in better shape

The bottom line? One could easily argue that NDSU, in its entire history, has never been in a better position – and poised to be even more successful in the future.

Against all odds, NDSU has gone from a struggling small agricultural college to our state's only National Science Foundation top-100 ranked public research university. We have become the student school of choice in our state, and we have accomplished these things, over the past twelve years, in spite of daunting if not unprecedented challenges too often put before us.

While it would be understandable to sit back and declare victory, that is not what I see anyone at NDSU doing. That sets up why I'd like to now shift to our future, and the emerging opportunities before us.

Aside from NDSU's performance to date:

- We are living in the largest city in our state. Our metropolitan statistical area well exceeds a quarter million people, is projected to exceed a third of a million in the foreseeable future, and is faster growing than any other location in North Dakota.
- NDSU has become recognized as one of the pillars of our local community's successes, and we do that in partnership with the other four outstanding colleges and university here, which with NDSU, represent some 35,000 college students!
- Our private sector friends are ecstatic about what is happening at NDSU, and have demonstrated that enthusiasm in a very material way through the "In Our Hands" campaign. *In our Hands* is by far the largest fundraising effort not just in state *higher education* history -- but relative to any

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fundraising effort, ever, in North Dakota. That's with a full year left on the original timeline for the campaign, and its early ending now scheduled for December 31st of this year. People don't invest like that -- in the future of students, faculty and staff, programs and facilities, unless they are *sure* they are putting their hard-earning personal resources in to a university that has a proven track record and even greater potentials.

- In the future, it's hard to argue that our enrollments won't grow. We are uniquely positioned in our state to do so, and North Dakota desperately needs that to be the case if we are to see our economy prosper. The three burgeoning K-12 school system here, in combination with NDSU's growing national reputation with students living not just in North Dakota, but all over the country and the world, in combination with NDSU's noteworthy retention and graduation rates, clearly bolster that aspiration.
- As the gift-wrapping and bow on our future, a burgeoning local community, and quality of life here, offer an incredible and relatively unique springboard to even greater collective accomplishments.

In a nutshell, the passion and the fun that our campus family enjoys, together in a rich and robust learning environment, seems to suggest that our successes will continue to open doors that would have been unimaginable to Dr. Boley, or Dr. Ladd, or those first six students who walked through the gates southeast of Old Main.

Dr. Dean L. Bresciani was named North Dakota State University's 14th president in 2010. He brings to campus the knowledge and experience of a more than 36-year career in higher education, which has included roles at three land grant universities overlapping three AAU universities. He has developed broad leadership experience in the academic, administrative and political aspects of higher education. Dr. Bresciani came to NDSU from Texas A&M University in College Station, where he was in a vice president role from 2004 to 2008 and an adjunct full professor in the department of educational administration through 2010. Previously he held a vice chancellor role at the University of North Carolina at Chapel Hill, and adjunct faculty positions both there and at North Carolina State University. He also served in administrative and faculty roles at public universities in Nebraska, Arizona, Minnesota, Wisconsin, Ohio and California. Bresciani earned his doctorate in higher education finance, with a doctoral minor in economics, from the University of Arizona. He has held national leadership positions in professional organizations including council chair for the Association of Public and Land-Grant Universities, board of directors for the National Association of Student Personnel Administrators, and a variety of committees and counsels for the NCAA leading to his current role on the Association's Division-I Board of Directors. He is also a member of the Council for the Advancement and Support of Education, EDUCAUSE, Association for

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the Study of Higher Education, and National Association of College and University Business Officers. He has produced an array of invited and juried publications and presentations, and his scholarship focuses on the organization and funding of public higher education.



Let's Start Valuing Ownerships

Leann Wolff

Owner, Great Outcomes Consulting
Associate Director, NPEI

Abstract: *People who think and act like owners rarely get the recognition and appreciation they have earned for their role in making their organizations and the economy run. Entrepreneurs are generally willing to take more risks to pursue their vision; there is no doubt they are willing to invest their time and money into their dream. But they also need people who think and act like owners do the work behind the scenes to make that vision a reality. Not all entrepreneurs think and act like owners, but every entrepreneur needs people who do.*

Keywords: business community, business education, entrepreneurships, owners

It seems as though the business community, and especially business education, have developed a love affair with entrepreneurship. Ask business students – finance, accounting, marketing, business management – what they want to do for work and probably half will tell you: Be an entrepreneur.

It is no wonder that they lean in this direction when magazines and business schools often lift up and romanticize entrepreneurs as though they are the primary drivers of the economy. Entrepreneurs have this mystique about them – successful people who are smarter than most, rake in the cash for extraordinary innovation, beat the competition by getting to market first or doing something better, then selling out when the prices get high enough.

While it is true small businesses do drive a significant chunk of our economy (44% of GDP pre-pandemic), there is so much more to it than the mythos of being an entrepreneur. We need to break the entrepreneur infatuation, therefore, by lifting up those who think and act like owners, regardless of what they do and where they work in the organization. These folks are the ones who are the real economy builders. Part of that work is to identify how owners think and what they do to build ownership.

People who think like owners take responsibility at every level of the business. You won't hear people who think like owners say, "Not my job." They also don't see any task is beneath them. They fill the dishwasher in the breakroom, take out the garbage, fill the paper in the copier when it's low – whatever task it may be simply because it needs to be done. They often come in early, and sometimes also leave late, to make sure they are ready for what is coming up.

People who think like owners recognize that the work of their team and department are important but no more or less important than other departments. Everyone has the same goals: To serve the customer and make the company successful. When these folks lead teams, they ensure the team knows how their work drives the mission and the financial success of the company. The "and" is what drives them.

They see each person in the organization as a colleague, regardless of their position, that includes the janitors and the administrative staff. They recognize that these colleagues make life easier for those around them and respect and appreciate the work they do.

People who think like owners don't automatically defer to people in senior positions. They are as respectful to these folks as they are to the assistants who manage the execs' calendar and access. The difference is people who think like owners are willing to question and push back on the execs as much as they do with their peers. They appreciate execs for having a different role and perspective, but people who think like owners don't think that execs are smarter or better than others.

People who think like owners seek out people who don't think like them. The former want to hear different perspectives, especially from the "hole-shooters" who can't help but find the gaps in ideas and plans. They include people closest to the work because they know more than anyone how a decision or a change will affect a process or outcome – and including them creates ownership as well as improves the results.

People who think like owners make the best mentors because they willingly invest in their colleagues.

They are lifelong learners because they know the only constant is change and they want to be ready for whatever is next, for good or not good.

By all means, let's give the visionary entrepreneurs due respect. Let's applaud the entrepreneur's initiative, drive and risk taking.

But don't stop there: look behind the ones taking the accolades for those who will stay when the big sales are closed. Entrepreneurs fail without those who

Let's Start Valuing Ownership

think like owners – nothing gets done without the dedication, skilled focus of the owner-minded worker. The economy will stumble – has stumbled – without them.

Shine the spotlight on the ones who improve on the vision and do the hard work to make the vision reality. If you value and recognize what they have done and can do, you will see the amazing results of people who take ownership of their work. That is why we should get more students and workers focused on being owners rather than on entrepreneurship.

Leann Wolff *has spent more than 30 years working with some of today's best-known companies and gathering proven, best practices. Throughout her career, she has built many high-functioning teams and facilitated hundreds of training, brainstorming and decision-making sessions with teams ranging in size from three to 100. In her consulting practice, Wolff focuses on helping clients identify their mission, values, strategic potential and visions. With those key elements in place, she works with individuals and management teams to improve their leadership and business execution. In addition to her consulting work, Wolff teaches Ethics & Leadership at Concordia College.*



Fall 2021

Student Section



*The Grievance Studies Hoaxes in Retrospect:
The Issues and the Ethics of the Affair*

Mx. Christopher M. Hansen
Saginaw Valley State University

Abstract: *In this article, it is argued that the “Grievance Studies Affair” and the subsequent book Cynical Theories (2020) launched by Peter Boghossian, James A. Lindsay, and Helen Pluckrose were fundamentally flawed from their start, and that the trio of authors performed such with numerous unethical methods and goals in mind. The article explores the numerous methodological issues, the misrepresentations of “grievance studies” fields by the trio, and argues that their work was ultimately never intended to be scientific but merely a bad faith indictment of fields which they ostensibly failed to understand.*

Keywords: feminism, grievance studies, Boghossian, Lindsay, Pluckrose

From 2017-2018, the scholars Peter Boghossian, James A. Lindsay, and Helen Pluckrose conducted an “experiment”¹ wherein they wished to assess the state of so-called “grievance studies”² journals’ peer review statuses and standards by submitting hoax articles to a number of journals in an attempt to see which ones would be accepted and which ones would not be. A stated influence in doing this was Alan Sokal’s similar 1996 hoax (which was a single paper published in a journal which did not use peer review at the time). The trio released a total of twenty papers, of which four were published, three were accepted, and the other thirteen in various states of review, rejection, or resubmission at the time the hoax was then exposed by *The Wall Street Journal*. The newspaper had latched onto one of the pseudonyms - “Helen Wilson” - and found that such person did not exist. Once published, the trio then admitted to what they were doing.

¹ Given the numerous issues discussed in this paper, it seems prudent to put “experiment” in quotation marks to describe the work of Boghossian, Lindsay, and Pluckrose, since it does not qualify as such in any scientific sense.

² A largely derogatory term aimed at Feminism, Critical Race Theory, Queer Theory, Postmodernism in general, Postcolonialist theory, intersectionality, and more.

James A. Lindsay and Helen Pluckrose followed up this work up in their book *Cynical Theories* (2020). In it they attempted to analyze and criticize various critical theories further, arguing that they are largely unneeded and even harmful. *Cynical Theories* was published through an atheist pop book press called Pitchstone Publishing,³ not through any academic or respected house. The book received mixed reviews when it was released, but has since become a best-seller in *Publisher's Weekly* among others. A number of academics responded to the book and the hoax expose, though these responses have likewise been mixed.

In what follows, it will be argued that the “Grievance Studies Affair” work conducted by Boghossian, Lindsay, and Pluckrose was unethical and methodologically incoherent, and that it revealed nothing about the state of grievance studies journals’ standards for a number of reasons. In addition, it will be argued that the authors largely misunderstood and misconstrued many of the theories and scholars they critique, meaning that, in effect, their book, *Cynical Theories*, and all the results of their “experiment” are suspect on numerous ethical and logistic grounds.

The Grievance Studies Affair: How it Proved the Opposite

Lindsay and Boghossian began their first attempt at discrediting gender studies by publishing a hoax article in the journal *Cogent Social Sciences*, a journal not even solely devoted to the issue of gender studies, on May 19, 2017.⁴ They exposed the hoax soon after publication.⁵

The response, however, largely backfired for multiple reasons. Firstly, it was noted that the article had already been rejected at *NORMA*, a journal specifically devoted to gender studies of masculinity. In short, they were not able to get this article published at a specialized journal, but one which was not only largely irrelevant to the gender studies’ field *Cogent Social Sciences* was requiring that authors pay money to them as well, which had already caused

³ This press is also known for publishing extremely specious and non-academic material, such as Aron Ra, *Foundational Falsehoods of Creationism* (Durham: Pitchstone, 2016); Robert M. Price, *Jesus Christ Superstition* (Durham: Pitchstone, 2019); and Richard C. Carrier, *Jesus From Outer Space: What the Earliest Christians Really Believed About Christ* (Durham: Pitchstone, 2020), all work which is very problematic to various degrees.

⁴ Jamie Lindsay (pseud.) and Peter Boyle (pseud.), “The conceptual penis as a social construct,” *Cogent Social Sciences* (2017) 3.

⁵ Peter Boghossian and James Lindsay, “The Conceptual Penis as a Social Construct,” *Skeptic* (2017) https://www.skeptic.com/reading_room/conceptual-penis-social-construct-sokal-style-hoax-on-gender-studies/.

The Grievance Studies Hoaxes in Retrospect

academics to largely consider it dubious and academically suspect.⁶ the result, at best, demonstrated that they could publish a hoax article in a journal widely regarded to be unreliable and lacking professional credibility to begin with.

Lindsay and Boghossian were joined by Helen Pluckrose in August of 2017. From that point on a second series of articles were prepared, which eventually totaled twenty by the time that the hoax was uncovered. The stated research goals of the trio were to demonstrate that these various “grievance studies” (what they called fields which analyzed issues in society on systemic micro and macro levels) were “corrupting academic research” and they wished to “reboot” conversations on issues of gender, race, LGBTQ+ issues, and more.⁷ One article entitled “Human reactions to rape culture and queer performativity at urban dog parks in Portland, Oregon” came to the attention of *The Wall Street Journal*, *Reason*, and *The College Fix* (among others).⁸ The hoax was exposed and the authors revealed themselves on October 2, 2018, several months short of when they planned to end the experiment in January 2019. In total, four articles were published and three were accepted at the time of the second hoax being revealed, and thirteen more were either rejected or told to resubmit with alterations.

Given the stated research goals, there was a clear vested interest and bias from the beginning of this project in having a specific outcome: that “grievance studies” were corrupt and needing to be abandoned in their current forms and “rebooted.” For this and other reasons, the Grievance Studies Affair, even if it had not been revealed and the hoax and research concluded to the trio’s satisfaction, would never have actually revealed anything about the state of grievance studies or their standards.

The first question about scientific rigor is that there was no control group when the study was conducted. In any scientific or proper statistical analysis, in order to note whether something is out of the ordinary, abnormal, or otherwise notably problematic in comparison to any other field or issue, one has to have a control group to determine a baseline by which to compare collected data. The trio

⁶ Scott Jaschik, “Hoax with Multiple Targets,” *Inside Higher ED* (2017) <https://www.insidehighered.com/news/2017/05/22/faux-scholarly-article-sets-criticism-gender-studies-and-open-access-publishing>.

⁷ James Lindsay, Peter Boghossian, and Helen Pluckrose, “Academic Grievance Studies and the Corruption of Scholarship,” *Areo Magazine* (October 2, 2018) <https://www.areomagazine.com/2018/10/02/academic-grievance-studiesand-the-corruption-of-scholarship/>.

⁸ Helen Wilson (pseud.), “Human reactions to rape culture and queer performativity at urban dog parks in Portland, Oregon,” *Gender, Place & Culture* (2018): 1-20. This article has since been retracted by the journal.

had none, which has since been pointed out by academics such as Mikko Lagerspetz.⁹ Because there was no control group, they could not assess to what degree, if any, the number of hoax articles being accepted to these journals was in keeping with any field.

Here I wish to note that this lack of scientific rigor is not, in fact, out of the ordinary. In the field of psychology, Diederik Stapel was recently exposed as having published *fifty-eight* works with fabricated data in academic journals and presses.¹⁰ Likewise, these kinds of fabrications and fraudulent materials have been found in fields such as geology as well.¹¹ One could also point to the heavily criticized and methodologically dubious work of V. A. Shiva Ayyadurai and Prabhakar Deonikar, which has been noted for poor math and data as well,¹² even though it was published in the peer reviewed journal *Agricultural Sciences*. There are also Bharat Aggarwal, Piero Anversa, Joachim Boldt, and Yoshitaka Fujii who in total have 315 papers with fabricated and falsified data in medical and other natural scientific research fields that have now been retracted.

Returning to the case at hand, the lack of control, plus the known proliferation of hoaxes and fabrications in so-called natural and social science journals, largely means that the trio definitively proved nothing. Even if all twenty papers were accepted and published, the results still would have been no more indicative of grievance studies's quality than those in any other academic field. The mere presence of those articles being published does not indicate anything by itself. Furthermore, it would be curious to know to what extent the proliferation of hoaxes persists in the trio's own fields of philosophy (Boghossian), mathematics (Lindsay), and early modern studies (Pluckrose). In their fields, one could point to plagiarists Dănuț Marcu, Magali Elise Roques, Peter Johannes Schulz, and others who have numerous papers all retracted for plagiarism, falsified data, and more. In a meta-analysis of several thousand doctoral students and faculty using twenty-one surveys, Daniele Fanelli found that around 2% of respondents have admitted to academically dubious aspects in their papers, and 34% admitted to questionable

⁹ Mikko Lagerspetz, "The Grievance Studies Affair' Project: Reconstructing and Assessing the Experimental Design," *Science, Technology, and Human Values* 46, no. 2 (2020): 402-424.

¹⁰ For continued updates on this situation, see <https://retractionwatch.com/category/diederik-stapel/>.

¹¹ A. Ruffell, N. Marjury, and W. E. Brooks, "Geological Fakes and Frauds," *Earth-Science Reviews* 111 (1-2) (2012): 224-231.

¹² EFSA, "EFSA scientific advice to EC on new scientific information in relation to the risk assessment of genetically modified organisms," *EFSA Supporting Publication* (2015), 10 pages. <https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/sp.efsa.2015.EN-885>.

research practices.¹³ As such, academic fraud and dishonesty took place in other fields at rates immensely higher than what Pluckrose, Lindsay, and Boghossian were able to falsify in their “experiment.”

One could even make the case that their sample size was so small (twenty-one papers if including Boghossian’s first) that it could never have been conclusive of anything to begin with. Indeed, the trio stated later that they had predicted they might get ten published in journals when their “experiment” was meant to have ended.¹⁴ Of course, even if we supposed they had managed to have ten of their articles published, that would still be such a small sample size (especially when compared to the many hundreds of papers found to be fraudulent in scientific fields) that their results would have been indeterminate and never would have told academics anything about the state of those fields whatsoever.¹⁵

The second reason to question this study’s credibility and reliability is that the trio were continuously adjusting to the styles of writing, theory, and information that were required to get published by the reviewers, meaning that it is quite possible that the four articles that were being resubmitted with revisions actually may not truly fit the definition of a “hoax.” Since the work had to be corrected by third party suggestion in order to be accepted, then it essentially is no longer a hoax in the most concrete sense. Hoaxes are false and made-up devices, not things which have been corrected into a degree of accuracy by experts in the field. Thus, the fact that the researchers had to correct papers to get published, demonstrates that they could not truly get many “pure” hoaxes actually through to publication. This issue has been discussed by Lagerspetz at length.¹⁶

The third issue was that despite their claims that the fields and the associated journals under investigation were flawed, they had actually weeded out the majority of all their papers. The first run only had one singular paper published in a dubious quality journal, and it had been rejected at a previous journal, thus it had a 50% success rate. Only seven of the twenty hoaxes in total had been accepted in the second wave, which is a success rate of only 35%. This percentage changes, however, if one factors in requirements to resubmit with revisions to be published,

¹³ Daniele Fanelli, “How Many Scientists Fabricate and Falsify Research? A Systematic Review and Meta-Analysis of Survey Data,” *PLoS One* 4 (2009), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2685008/>.

¹⁴ Lindsay, Boghossian, and Pluckrose, “Academic Grievance Studies and the Corruption of Scholarship.”

¹⁵ For sample size discussion, see J. E. Bartlett II, J. W. Kotrlík, and C. Higgins, “Organizational research: Determining appropriate sample size for survey research,” *Information Technology, Learning, and Performance Journal* 19, no. 1 (2001): 43-50.

¹⁶ Lagerspetz, “‘The Grievance Studies Affair’ Project,” 412-414.

rejections at other journals, and more. In total they received fourteen rejections, and seven acceptances, with one of those being without peer review between the three. Thus, discounting the poetry piece as entirely inconsequential for any research on grievance studies, the overall acceptance rate was only 30%. Considering all papers and the decisions made in totality, (using Lagerspetz's table 1, the poetry, and the first hoax paper by Boghossian¹⁷), the rates are eight positive decisions (for the seven accepted peer reviewed papers and one poem), fifteen negative decisions (including the first rejection of Boghossian's original paper), and seven "unresolved cases" (according to Lagerspetz), or a total success rate of 36.36%. In short, if they demonstrated anything it is that hoaxing grievance studies journals (even primarily low impact ones) has a 73.64% failure rate in total.

Fourth, because there was no singular method in how the papers were written, which journals were chosen, or the content of the papers, there is no actual way to assess the standards of the journals that did accept the researchers' papers. Thus, the fact that the authors wrote satirical absurdities incidentally made their "experiment" so methodologically incoherent that they could not have produced results which demonstrated anything relevantly negative about the standards of grievance studies journals.¹⁸

Lastly, as Lagerspetz noted, the fact that the researchers' hoax was uncovered and the project forced to end as a whole demonstrates quite clearly that the field under investigation was already self-correcting. The field was rooting out the hoaxes to begin with (as noted above), and then the whole project was exposed in less than a year,¹⁹ something which scholars in natural science fields at times avoided for decades with hundreds of falsified papers. For example, Joachim Boldt's fabrications were discovered starting in 2009, even though the earliest paper retracted, according to *Retraction Watch*'s database,²⁰ is from 1986, showing a near twenty-three-year span during which he remained largely undetected for fabricating data.²¹ Meanwhile, Pluckrose, Lindsay, and Boghossian did not finish a year before their work was found out, which indicates a self-correcting field of inquiry and publication.

¹⁷ Lagerspetz, "The Grievance Studies Affair' Project," 410.

¹⁸ Lagerspetz, "The Grievance Studies Affair' Project," 409-410.

¹⁹ Lagerspetz, "The Grievance Studies Affair' Project."

²⁰ *Retraction Watch* (accessed 5/26/2021),

<http://retractiondatabase.org/RetractionSearch.aspx> (search for "Joachim Boldt").

²¹ As of writing, there are 153 papers with Boldt as an author that have been retracted, with the latest paper retracted being published in November of 2019 and retracted in March of this year (according to *Retraction Watch*). This shows a three-decade career of fabricating papers, with some being published even after it was made public that he fabricated his research.

The Grievance Studies Hoaxes in Retrospect

One could continue with other notable problems concerning the research results' reliability and credibility. For example, Lagerspetz noted that most of the journals that they published in had a lower impact-median, i.e. they were largely those which were not notable in terms of their scholarly impact. The researchers, therefore, published hoax articles in places which were not representative of what was being used in academic research. Likewise, numerous articles that were rejected never even made it to peer review, being rejected at the editor's desk almost immediately, further reinforcing that these journals had higher standards in what they were publishing than the Grievance Studies Affair concludes.

The results of the "Grievance Studies Affair" seem to have been inconclusive at the very best. Even by ignoring that almost all their articles were rejected, some more than once, when subjected to peer review (or the editor's desk for that matter), the fact that there was no control group means the study demonstrated nothing about the state of any grievance study or journal (at least nothing negative, which was the stated goal of the project²²). Furthermore, the entire experiment was predicated on a false impression of how peer review functions. As Carl T. Bergstrom noted, peer review is not meant to detect fraud of the sort that the trio performed and passed off.²³ It simply cannot do this. Fraud is detected afterward when more research is conducted on those issues and reveals the fraudulent activity. As such, even those articles which were accepted (ignoring those that were dismissed) indicated nothing about the journals or the peer reviewers involved.

Indeed, given Diederik Stapel's work and publications, if one compared these two sample sizes (fifty-eight accepted and now retracted works of Stapel's and the six peer reviewed works of Boghossian, Lindsay, and Pluckrose), one may conclude that the issue of poor standards applies more to psychology than it does any grievance study field (of course this too would be problematic and inaccurate,

²² As the three wrote when their project was exposed, "We undertook this project to study, understand, and expose the reality of grievance studies, which is corrupting academic research. [...] We hope this will give people—especially those who believe in liberalism, progress, modernity, open inquiry, and social justice—a clear reason to look at the identitarian madness coming out of the academic and activist left and say, 'No, I will not go along with that. You do not speak for me.'" (see Lindsay, Boghossian, and Pluckrose, "Academic Grievance Studies and the Corruption of Scholarship").

²³ Carl T. Bergstrom, "A Hollow Exercise in Mean-Spirited Mockery," *The Chronicle of Higher Education* (October 2018) <https://web.archive.org/web/20181010122828/https://www.chronicle.com/article/What-at-the-Grievance/244753/>. Bergstrom wrote, "It is not a peer reviewer's job to protect authors from their own willful stupidity."

but no more so than any conclusion Boghossian, Lindsay, and Pluckrose drew). The fact that the researchers ignored very notable research available to them at the time, such as Daniele Fanelli's paper demonstrating nearly 2% of thousands of doctoral students and faculty admitted to some degree of fraud in their papers,²⁴ means the former did not sufficiently perform background research the issues at hand. Moreover, they did not demonstrate that grievance studies were better or worse than any other fields, be them in social sciences, natural sciences, social studies, philosophy, mathematics, humanities, etc. The stated goal of wishing to "expose the reality of grievance studies, which is corrupting academic research," indicates there was at least a motivation to come to these negative conclusions despite the dubiousness of their "research."²⁵ Perhaps this was why disciplinary action was taken against Boghossian, restricting him from doing further research while at his university

Cynical Theories and Misconstruing Postmodernist Theories

Following this failed and ethically problematic experiment, Lindsay and Pluckrose published the best-selling *Cynical Theories* in 2020. This book did not pass any peer review, did not have any academic editing assigned to it, and was instead pushed through a pop-publisher (Pitchstone Publishing) that specializes largely in books which promote misinformation and the fringe science and history of atheists, and appear to have been rejected in their academic fields, such as the work of Richard Carrier and Robert M. Price.²⁶ As such, ironically (given the previous complaints they had about the standards of grievance studies and their journals), Lindsay and Pluckrose published in a press with standards more questionable than any of the journals they used for their hoax experiment.

The basic theme of *Cynical Theories* is to trace the origins of postmodernist theories, and make the pointed claim that postmodern social justice has been reified in activism and has displaced liberal (and capitalist) approaches to social justice. The two authors endorse liberalism throughout the book.

The book itself has numerous problems. It begins, as the grievance studies affair did, with their stated aim of showing that the postmodernist theories and fields, which they dislike, are corruptive and problematic. The work attempts to prove this conclusion primarily through numerous occasions of misrepresenting various academics of those fields, to a point at which it almost seems prudent to

²⁴ Fanelli, "How Many Scientists Fabricate and Falsify Research?"

²⁵ Lindsay, Boghossian, and Pluckrose, "Academic Grievance Studies and the Corruption of Scholarship."

²⁶ For some review of these figures, see Christopher M. Hansen, "The Christ and the Discourse: A Critique of the Historiographical and Rhetorical Trends in the Christ Myth Debate," *Northern Plains Ethics Journal* Vol. 8, no 1 (2020): 97-123.

suppose that the authors may not have fully read the works which they were critiquing or were purposefully misconstruing them.

Lindsay and Pluckrose, for example, claim that Judith Butler denies all “necessary correlation” between sex and gender and that Butler claims that gender is wholly a social construct while sex is different.²⁷ There are a number of problems with this interpretation, but the prime one is that Butler actually argues that gender and sex are intertwined in the fact that both of them are performative, (which Lindsay and Pluckrose also misconstrue heavily), and that the category of sex may actually be considered a reified aspect of gender, i.e. a part considered “natural” for political purposes (primarily in promotion of a cis-heteronormative purpose).²⁸ As Butler writes:

If the immutable character of sex is contested, perhaps this construct called “sex” is as culturally constructed as gender; indeed, perhaps it was always already gender, with the consequence that the distinction between sex and gender turns out to be no distinction at all.²⁹

In short, Lindsay and Pluckrose have fundamentally misunderstood Butler’s argumentation to such an extent that they have reversed what Butler actually argues. For Butler, sex and gender are intimately intertwined in how they function. In fact, Butler holds that the distinction is simply nonsensical, there is no such dichotomy for Butler. Lindsay and Pluckrose misconstrue Butler on this despite the fact that they cite *Gender Troubles* (1990) on the very next page. As such, they appear to have a tenuous grasp on the works which they critique. Other such

²⁷ James Lindsay and Helen Pluckrose, *Cynical Theories: How Activist Scholarship Made Everything about Race, Gender, and Identity—and Why This Harms Everybody* (Durham: Pitchstone, 2020), 101. They also notably misgender Butler throughout the book, who uses “they/them” pronouns.

²⁸ No doubt Pluckrose and Lindsay would attempt to claim that Butler is denying biology here, but nowhere does Butler deny biological sciences. In fact, biological sciences have identified sex as existing on a spectrum as well, see Claire Ainsworth, “Sex Redefined,” *Nature* 518 (2016): 288-291 and Anne Fausto-Sterling, “The Five Sexes: Why Male and Female are not Enough,” *The Sciences* (March/April 1993): 20-24. Effectively, binary sex is a social construct.

²⁹ Judith Butler, *Gender Trouble: Feminism and the Subversion of Identity* (New York: Routledge/Taylor & Francis E Library, 2002), 10-11. Butler also discusses this at length using Wittig’s work (141-171), which pretty much makes the case that Lindsay and Pluckrose did not read Butler’s work carefully.

instances have been spotted as well, as they tend to misrepresent scholars and basic facts throughout the book, straining, cherry-picking, and misunderstanding them frequently, which Samuel Hoadley-Brill pointed out in their review of *Cynical Theories*.³⁰ Lindsay and Pluckrose, in their work on academic skeptics on knowledge and truth, very distinctly misrepresent Dotson, Fricker, Wolf, and others.³¹

Pluckrose and Lindsay's poor understanding of social justice stances and critical postmodernist theories meant the book's arguments often function only if these errors were true. Besides the Judith Butler section, is the underlying pro-liberalism. This is problematic, especially with how much the authors claim that liberalism supports civil rights, LGBTQ+ people, women, and more, which is immediately called into question by the disproportionate murder rates by police of black men, the growth of anti-Islamic violence since the rise of liberal agendas under the Trump administration, race based wealth disparity (and wealth disparity in general), and more. All of these are things which liberalism permitted.³² These issues did not disappear at any point and liberalism is not the cause of the positive changes that have been made. In fact, in many cases, liberalism is merely making more issues, including the restriction of academic freedom,³³ and devaluing and oppressing disabled people.³⁴ The fact that liberalism's innumerable failings and allowances of inequality - even the defense of and promotion of inequality that liberal societies often come with³⁵ - go without criticism or analysis in *Cynical*

³⁰ Samuel Hoadley-Brill, "The Cynical Theorists Behind *Cynical Theories*," *Liberal Currents* (August 2020) <https://www.liberalcurrents.com/the-cynical-theorists-behind-cynical-theories/>.

³¹ As Hoadley-Brill goes at lengths to show.

³² Katayoun Kishi, "Assaults against Muslims in U.S. surpass 2001 level," *PEW Research Forum* (2017) <https://www.pewresearch.org/fact-tank/2017/11/15/assaults-against-muslims-in-u-s-surpass-2001-level/>; Angela Hanks, Danyelle Solomon, and Christian E. Weller, "Systematic Inequality: How America's Structural Racism Helped Create the Black-White Wealth Gap," *Center for American Progress* (2018) <https://www.americanprogress.org/issues/race/reports/2018/02/21/447051/systematic-inequality/>; *Mapping Police Violence*, <https://mappingpoliceviolence.org/>.

³³ Erik Juergensmeyer, Anthony J. Nocella II, and Mark Seis (eds.), *Neoliberalism and Academic Repression: The Fall of Academic Freedom in the era of Trump* (Leiden: Brill, 2019).

³⁴ Roddy Slorach, *A Very Capitalist Condition: A History and Politics of Disability* (London: Bookmarks, 2016).

³⁵ Such as immense wealth disparity between economic classes (Terry Eagleton, *Why Marx was Right* [New Haven: Yale University Press, 2018], 8). Pluckrose and Lindsay also try to distance liberalism from fascist ideologies that stem from it (Pluckrose and

Theories is telling, since the book essentially becomes a one-sided criticism of any postmodernist theory which the authors dislike, even if that criticism is built upon a misconstruing of theory (or theorist).

It is ironic that in attempting to provide an analysis of grievance studies as disingenuous, without proper academic rigor, and as harmful to society, Lindsay and Pluckrose incidentally demonstrated a lack of proper rigor with their own work. Errors and misrepresentations of their ideological opponents were not fixed or caught, the critiques do not factor in many nuances that invalidate several of their criticisms, and even research on basic factual points such as biological sex is often outdated, many claims go uncited, and more still, some citations are just questionable, such as defining terminology using *Wiktionary*.³⁶

The Professional Ethics of the Trio

Boghossian, Lindsay, and Pluckrose are notable for the numerous ethical issues that they have made us aware of, but not of the fields they critique. Instead, it is more the professional ethical issues with their own work which have been brought to light by these hoaxes and *Cynical Theories*.

To start, the entire process of sending hoax articles to journals, in order to effectively deceive reviewers and others into publishing this work is a form of academic dishonesty, for these works were not done with the consent of the journals or reviewers in question (and this is leaving aside the papers where they fabricated empirical data). Instead, consent should have been sought from the journals and reviewers and then the experiment conducted. The papers could then be mixed with some legitimate papers, and through double-blind review, evaluated. If accepted, the articles would then be pulled and not published. The resulting data would have been acceptable for the study, since they would show that the articles *would* have been published. But because the researchers did their experiment without consent of all parties, the ethics of the entire Grievance Studies Affair are suspect. In addition, because the researchers did not gain consent and make this a known experiment.

The researchers risked damaging the reputations of various scholars and their livelihoods. For example, a reviewer came out later and noted that the trio had misrepresented and cherry-picked their comments when the researchers

Lindsay, *Cynical Theories*, 247). The reality is that fascism and liberal economics actually went together rather succinctly (Robert O. Paxton, *The Anatomy of Fascism* [New York: Vintage Books, 2004], 10-11, 66-67). Liberal democratic ideology was also used as a defense for Confederate slavery, see Jason Stanley, *How Fascism Works: The Politics of Us and Them* (New York: Random House, 2020), 30-31.

³⁶ Lindsay and Pluckrose, *Cynical Theories*, 103.

exposed their work to the public.³⁷ If there were an indictment as to the state of the trio's work, it is Schieber's notes after the three announced their hoax, in which Schieber states:

In their article announcing the hoax, the writers used selected quotes from my review to argue that I supported this paper (despite recommending a rejection). This selective use of my comments seemed disingenuous. They were turning my attempt to help the authors of a rejected paper into an indictment of my field and the journal I reviewed for, even though we rejected the paper.³⁸

The lack of any control in the experiment is likewise questionable (especially when mixed with the trio's defense and lack of critique of liberalism). Firstly, since this data was readily available, it shows there was not enough research done to have any reliable conclusions drawn. In Boghossian's own field of philosophy, it is worth noting Martin William Francis Stone was found to have committed plagiarism in more than forty of his own published papers.³⁹ In short, in Boghossian's non-grievance study field, one person managed to commit academically dishonest work at a 471.42% increase from what Boghossian, Lindsay, and Pluckrose managed between the three of them. One need only observe the number of retractions for plagiarism, fraud, fabrication, and even hoaxes documented by *Retraction Watch*, an online database tracking retractions and dubiously published materials in academic journals.⁴⁰ As of writing, the database listed 3,235 papers retracted in the subject field of mathematics alone for hoaxes, plagiarism, fabrication, fraud, and more. None of this data was used to form a control or to inform the experiment design. The fact that the researchers came to the conclusions they did despite this lack of background research being done is suspect then, especially when taken in tandem with their stated goals of "exposing" grievance studies for "corrupting academia."

There is additionally an apparent level of hypocrisy that runs through this work. Despite the entire focus of the affair centering around the inadequate

³⁷ David Schieber, "A Strange Start to Peer Reviewing," *The Chronicle of Higher Education* (October 2018)

<https://web.archive.org/web/20181010122828/https://www.chronicle.com/article/What-at-the-Grievance/244753/>.

³⁸ Schieber, "A Strange Start to Peer Reviewing."

³⁹ M. V. Dougherty, P. Harsting, and R. L. Friedman, "40 Cases of Plagiarism," *Bulletin de Philosophie médiévale* 51 (2009): 350–391.

⁴⁰ *Retraction Watch* (accessed 5/26/2021) <http://retractiondatabase.org/>.

standards of grievance studies journals, the reality is that the researchers only proved that the journals were mostly rigorous. Lindsay and Pluckrose followed this up by going to an un-reputable publisher (Pitchstone), which has a noted history of publishing misleading falsehoods and inaccurate information in numerous fields, and has a noted bias in the material it releases. In short, the very thing which they criticized grievance studies of doing, Lindsay and Pluckrose used for publishing their own book. Given the inconsistent application of standards, then, along with the lack of control and stated goals of negatively assessing grievance studies, one must question the ethicality of *Cynical Theories*' publication.

There is the further issue that their criticisms are largely built on strawmen and misunderstood information about their ideological opponents' positions and writings. The case of Judith Butler is not isolated, as Hoadley-Brill found, and shows that the three researchers seem to have little grasp on the material they are so heatedly opposing in their work. Lindsay and Pluckrose (along with Boghossian, who helped read their work and offer critiques) did not ensure they had accurate understandings of the work they were criticizing, and, as a consequent result, were misleading their audience (intentionally or not). If they were concerned with whether their professional work represented their opponents correctly, it is curious they do not appear to have had the book reviewed by academics in those fields prior to publication. In addition, they make errors extremely simplistic in nature, such as claiming Judith Butler thinks gender and sex are distinct, while just a few pages later quoting Judith Butler as saying the opposite of what they stated.

What begins to emerge from an analysis of *Cynical Theories* and the "experiment" which the trio undertook, is that their professional work was ethically dubious in numerous ways and undertaken with insufficient scientific rigor. With the whole Grievance Studies Affair critically analyzed, the ethicality of the project and the intents behind it are suspect on the grounds of professional ethics, and there is very little at which one should be willing to take at face value about it.

Conclusion

A fair conclusion from reviewing the "Grievance Studies Affair" and *Cynical Theories* seems to be that Lindsay, Pluckrose, and Boghossian could not effectively critique any of the fields, which they quite clearly dismissed, without numerous scientifically and ethically suspect methods. The affair was conducted without a control, without a set method for writing the papers, without consent of all the participating parties, and ignored all data from other fields by which to establish the validity of any of their conclusions. As such, the Affair was unethical by scientific standards which required consent of participating parties and would

hold the misrepresentation of reviewers as academically dishonest, especially when the conclusions of their research were *hinged* on the reviewers in the first place.

In looking back on these issues, it becomes clear that these projects were far too flawed (methodologically and ethically) to show anything problematic in any grievance studies. While it is most certainly the case that such an examination of various fields could happen and be conducted properly, the authors of the “Grievance Studies Affair” only showed a failed attempt to discredit those fields (as they stated was their goal). The claims of poor professional ethics and bad standards were soon shown to more reflect the “Grievance Studies Affair” project and *Cynical Theories* than any of the critiqued fields.

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Christopher M. Hansen is a Michigan-based student at Saginaw Valley State University earning their degree in English Writing and with a minor in Religious Studies, with current plans to enter into grad-school and, eventually, become a professor of New Testament studies. When not involved in academics, Hansen is an activist for Racial Equality, LGBTQ+ equality, feminism, Marxism, and more, trying to get people more involved in activism and politics. Hansen is, in addition, a member of the Democratic Socialists of America party and opponent to capitalism.