

Editorial (8.2)

An embarrassment of riches

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Introduction

Even a quick perusal of the contents of this issue of *E:CO* cannot but reveal it to be, in Ovid's wonderful phrase, "an embarrassment of riches," or, as a similar sentiment is expressed in Spanish, "que rico"! This issue provides a veritable feast of theories, pragmatics, cases, speculations, poetry, criticisms, news, reviews, and more. Common themes on complex systems abound in this issue, having to do with evolutionary drives in innovation, mathematical models using the famous logistic equation and fractals, the interaction of multiple levels, and the applications of complexity in social systems on different scales.

The first article under the Theory Section presents an approach to evolutionary change based on micro-level diversities, their selection and amplification, and the resulting higher level emergence of innovations. The paper demonstrates how this model is applicable on different scales: socio-economies, industries, communities, and individual organizations. The article dramatically demonstrates how the sciences of complex systems are drastically revising how evolutionary change comes about: rather than through effective planning and prediction, the key is "Ignorance and error making [as] very robust sources of such exploration." Moreover, instead of aiming at some kind of optimality, evolutionary change involves a "co-evolution of successive layers of interacting elements both horizontally and between levels." The authors make the crucial point that the simpler and more mechanical the model, the less they have to do with reality.

The next Theory article also explores innovation and complexity but focuses on a logistic equation model. Using the mathematical dynamics first explored by Robert May and Mitchell Feigenbaum 30 years ago, the author, discusses how the diffusion of innovative products (five bulk chemicals, four engineering plastics, six electric appliances, crude steel, and automobiles) proceeds according to this pattern unless disturbed by economic turbulence but, when the tumult subsides, the pattern reasserts itself. Moreover, there is a marked presence of fractal self-similarity among different scales in innovation.

The next two articles are Practitioner based. The first applies complexity theory to the ubiquitous phenomenon of mergers that we read about every day, in particular, an international engineering firm and a company in the service sector. A daunting task faces the two organizations undergoing a merger as to how to integrate two very different cultures. An ideal post-merger integration, according to the author's read on complexity, would resemble the creation of a child by possessing characteristics inherited from each parents while also having its own unique personality and identity. This paper brings up the issue of the diversity inside the system again, concluding that a *resilient* organization has to somehow accommodate several heterogeneous cultures.

The second Practitioner article also looks at actual organizations as case studies, but this time in the aerospace industry. Here complexity science is put to work in evaluating the relation between organizational strategy, innovation, and evolution. Again, fluctuations (micro-level diversity) is posited as a key to success.

Then we switch gears with the Classical Paper which is a philosophical analysis of the central complexity idea of *emergence*. This article follows suit with the reprints of the Classical Paper of Pepper (*E:CO*, 2004 – 6.4: 72-76) and Baylis (*E:CO*, 2006 – 8.1: 71-83). Moreover, I provide an introduction which provides a background and frames the conceptual stances towards emergence taken by the author of the Classical Paper.

The Philosophy Section paper discusses the arrival of complexity theory within the context of both postmodern thought and the political and cultural rise of the European Union. In particular, the author makes a case for how complexity reflects particular strands of European philosophy and politics. This article doesn't shy from controversial conclusions, another indication that *E:CO* is staying true to course!

The Forum Section of this issue is another example of just how wide the spectrum is of the perspectives encouraged by *E:CO*. The first article, in a playful but rigorous use of the mathematics of chaos and fractals, explores the current divisiveness among cultures and countries in the world as well as the concomitant quest for peace and harmony. Using such nonlinear dynamical constructions as the Cantor set and the Devil's Staircase Again, we are led to visualize the proliferation of economic imbalances as well as the futility of totalitarian regimes. The ultimate goal though is to stretch both our imaginations and our praxis to ameliorate the growing inequities.

The second offering in the Forum Section makes the critical point that emergence need not be socially or organizational advantageous (a similar point is made in the Classical Paper) but may also lead to extremely negative, even evil, outcomes. A very telling case in point is described, namely, the role of emergence in the work of research scientists and politicians in the

Soviet Union in developing biological warfare (e.g., using tularemia and anthrax). In such a context emergence can magnify a confluence of people, factors, and forces into a terrifying systemic evil. The role of emergence in evil is something that no culture and no country can ignore.

The third item in the Forum Section is by our columnist. In this issue he explores a social entrepreneurial organization that works with existing corporate service fellowships, i.e., corporations that offer four-week to full-year opportunities for employees to take a sabbatical from the corporation and apply their skills within struggling communities around the world to help them address their social issues and needs. The expediting of such programs throughout the world, as the author says, follows the complexity principle that change is not a matter of huge events but instead “a series of small nudges leveraging adjacent opportunities” so that the next higher level of greater opportunities emerge, i.e., “Shift happens”!

Three in-depth book reviews covering a gamut of complexity topics round out the issue. The first review looks at Peter Corning's *Holistic Darwinism: Synergy, Cybernetics, and the Bioeconomics of Evolution*. The next two books involve the relation of complexity and leadership: Sharon Daloz Parks's *Leadership Can Be Taught: A Bold Approach for a Complex World* and the compilation, *Complexity and the Experience of Leading Organizations*, edited by Douglas Griffiths and Ralph Stacey.

This editorial introduction to issue 8.2 just gives a tease of just how rich this issue is. There are many places that demand rereading not just because they are difficult (which they can be), but in order to continue to grapple with the many issues raised. This embarrassment of riches, of course, does not come without controversy. I myself don't agree with some of conclusions, disagreements that I won't share here so as to not contaminate the reader's own recognitions. But these are valuable wrangles for prompting us to think deeper about our presuppositions and taken-for-granted dispositions about complexity. What you'll find here will not be found in conventional academic journals. That is because we take seriously our mission to probe, prod, and excite.