Thinking Complexity

Complexity & Philosophy

Volume 1

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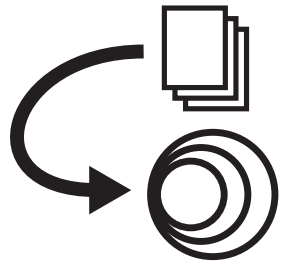

Complexity and Philosophy

Albert Einstein once pointed out, "The results of scientific research very often force a change in the philosophical view of problems which extend far beyond the restricted domain of science itself" (Einstein writing with Leopold Infeld). This is certainly true with regard to contemporary research into complex systems since, by stimulating a re-thinking of many of our fundamental assumptions about the nature of our organizations as systems, complexity theory is radically altering the sundry folklore and outmoded conceptual freight underlying traditional models of organizations. By re-thinking assumptions, the varied sciences of complex systems are inspiring a re-look at age old philosophical and metaphysical issues.

The new insights offered by complexity theory, therefore hold the promise that Schopenhauer once gave voice to, "...the corrected, extended, and more thorough knowledge of nature is the very knowledge that always undermines and finally overthrows the metaphysical assumptions that until then have prevailed." That is why *E:CO* includes a section committed to offering fresh and insightful papers on the interface of complexity and philosophy. In this section, researchers and scholars grapple with foundational questions emerging from the debate between modernist and post-modernist perspectives, a debate which has led to intriguing and fresh speculations in ontology, epistemology, cognition, semiotics, ethics, and aesthetics. Again, these articles have been selected through their recognition that new constructs are not merely ends in themselves, but can offer new methods with pragmatic benefits.

Jeffrey Goldstein

The Philosophical Importance of Thinking Complexity

Paul Cilliers
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Complexity theory has now been part of a wider intellectual world for the best part of two decades. One could probably mark the start of this interest with the publication of the two popular books by Lewin and Waldrop (both in 1993). In this time, thinking about complexity has had a marked influence in a number of disciplines, including but not limited to: Sociology, Health Care, Political Science, Anthropology, Management and Organizational Science, Sustainability Studies, Economics, Literary Studies and the Arts, in the Social Sciences; Physics, Biochemistry, Biology, Genetics, Ecology, Mathematics and Computational Theory in the Natural Sciences. Perhaps even more importantly, talk about the nature of complexity has generated a new and vibrant interaction between these various disciplines.

What is a little strange, however, is the relatively small impact Complexity has had on professional Philosophy. Two aspects of Philosophy in general may explain something of this strange state of affairs. In the first place, much of complexity theory has resulted from developments in mathematics and computational theory. This is not the normal domain of most philosophers. Complexity has been discussed in philosophy of science, mathematics and computation to a certain extent, but not really in philosophy of culture and social philosophy. A second reason may be that philosophy has somehow always been engaged with complex issues, even if it has not been done in the language used by contemporary complexity theorists. Many philosophers may feel, incorrectly in my view, that the language of Complexity is just a banal form of talking about things they have dealt with in a more subtle way for a century or two.

There is a certain irony in this state of affairs since I am convinced that the most important contribution made by Complexity is on a philosophical level. It has radically changed the way we think about science and society, with specific reference to notions like fundamental truth, objective knowledge, reductionism and causality. None of these notions have been dismissed, but the perspective from Complexity has necessitated a re-evaluation of their role and status. Thus, to my mind, Complexity has had less of an influence on the actual scientific methods we use to gather knowledge about the world, but a huge influence on how we interpret the results we obtain using these methods.

It is for this reason that one may distinguish between Complexity Theory, and what one could call Complexity Thinking. This second category, I would argue, comprises the *acknowledgement* of complexity as a vital first step. Once we realize that we are dealing with complex things, and we accept the consequences of this, our approach to what we are do-

ing, irrespective of how we are actually doing it, will change fundamentally. The "complexity attitude" may be thoroughly informed by the findings of complexity theory, but not fully determined by it, for if that were the case, complexity theory would have become the new source of final truth and in the process contradict some of its own premises!

This position is, of course, a contested one. There are many who believe that complexity theory is uncovering fundamental truths about the nature of nature and that we are making progress towards a more comprehensive science of everything. This way of understanding Complexity will see less of a break with traditional science and continues the search for regularities and laws which have escaped us thus far. Those focussing on chaos, universality, power laws and fractal mathematics generally, but not exclusively, fall in this category.

There is absolutely no way in which I want to dismiss the importance of mathematical and computational complexity theory and the insights it generates. I just think that it is important to recognise the difference between these views and reflect upon the implications thereof. The distinction is sometimes marked by referring to "hard" complexity and "metaphorical" complexity. In this understanding, the first category would imply true scientific activity whereas the second refers to the softer, more interpretative strategies of the social sciences. This may be a useful way of thinking about the difference, but it does mask some of the underlying philosophical problems.

In order to make these problems more explicit, Morin (2007) distinguishes between what he calls "restricted" and "general" complexity. He argues that much of "hard" complexity science has not escaped the positivist and reductionist paradigms of traditional science. Although it produces significant shifts in the boundaries of a modernist worldview, it does not transcend it. What we need, he insists, is an acknowledgement of the real difficulties complexity brings with it. To a large extent we still lack the language in which to explicate a "general" understanding of complexity, but we should resist an unreflective use of a scientific discourse which re-instates an essential, if disguised, reductionism. If we do this, we deny some of the essential insights we have gained from complexity theory.

I think Morin is largely correct. One should make clear, nevertheless, that this position is not an excuse for relativism. It constitutes a challenge to develop a new kind of scientific understanding, it does not want to argue that sloppy work is okay. This position does not make things easier, it makes it more difficult, and we should acknowledge these difficulties (see Cilliers, 2005).

This volume of essays should contribute to the ongoing discussion about the nature of complex things. No attempt has been made to select only articles conforming to a specific understanding of complexity, nor does the editor want to impose an interpretation of these articles that would try to reconcile the many differences between them. The idea is exactly to present them *in* their difference and thereby to stimulate the discussion between the many viewpoints represented here. The only criterion used for

selection was that all of them appeared as refereed papers in the journals *Emergence: Complexity and Organization* and its predecessor, *Emergence*.

Reading through these papers, it will soon become apparent that all the central philosophical themes affected by complexity thinking are addressed: Pluralism, Reductionism, Emergence, Political and Social Science, Organizational Science, Ethics and Aesthetics. The works in this volume should be approached with as little prejudice as possible, and also with a certain charity. They are dealing with difficult issues and it is not easy to talk about difficult things. Even so, I am convinced that the reader will come away with a general feeling of excitement. In each article there is an engagement with the world in which we live, coupled with a desire to understand it better. Ultimately, that is what Philosophy is all about.

Perhaps Complexity has not had such a great impact on hard core Philosophy, but Philosophy does owe Complexity a certain debt. I think that the language of Complexity has provided a way for a much larger audience to discuss a number of crucial philosophical problems. In the long run this may help the generate philosophies which are more accessible outside the lofty halls of Philosophy departments. It will also help to remind us that we all have to be philosophers at least some of the time.

This volume would not have been possible without the existence of *E:CO* and the efforts of its managing editor, Kurt Richardson. Competent and enthusiastic editorial assistance was supplied by Rika Allen.

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