Networking the Unpredictable: The Lure of Complexity

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Complex systems are open, self-developing wholes capable of generating novelty without appealing to extrinsic causes and are operative in diverse domains. To read complexity in this way with Mark C. Taylor is to be subject to its lure, the lure of the indeterminateness of relations between the present state of a system and its history in conjunction with the impact upon the system of external influences. I shall consider Taylor’s analysis of complexity as inviting conversation with other accounts of complex systems and consider some possible responses to these encounters. Paul Cilliers’ description of the distributive nature of society as “a connectionist network” will be seen as in consonance with some of Taylor’s principal claims (116–17). Jean-Pierre Dupuy’s discussion of cybernetic complexity in relation to subjectless processes in which “the subject is not a ghost in the cerebral machine but the machine itself” may help to illuminate Taylor’s depiction of networking’s “incarnational logic” (160). Taylor’s account of speed as the essence of contemporary life bears comparison to Eric Alliez’s account of quantity as, in his terms, vanquishing everything and of philosophy’s history as a series of conquests by time. What links Taylor’s version of complexity to the views of these analysts is a certain commonality of lineage in poststructuralist thought, especially its repudiation of all-encompassing theories or metanarrative that would explain and thereby subordinate the distinctiveness and fluidity of individual systems to its overriding claims. In addition, the classical subject is rejected in favor of subjectless processes. In contrast to Taylor, Nicholas Rescher, subscribes to the view that, once the ever-expanding complexity of the world is acknowledged, a return to a view of explanation conceived as rational inquiry grounded in the observation of available data is the best we can do.

Going beyond poststructuralism and its limited functionality as a critique of representation, Taylor suggests ways in which distributed networks actively create intelligent behavior in a variety of contexts ranging from art and architecture to biology and education. Thus, the Global Education Network (GEN) seeks to transform the university through adopting network logic and thereby linking the university to the “real” world. The implications for action that follow from this view would seem to conform to pragmatist philosopher John Dewey’s stipulation laid down in the context of an earlier technological world that it is necessary for individuality to interact with actual conditions. For Dewey, such conditions were needed to foster his goal: individual flourishing (168). Yet, Taylor also argues that what does not benefit an individual may still benefit the whole. Can Taylor (if he were to update Dewey) redress the possible imaginative and intellectual disempowering of individuals and non-elites by harnessing the new technologies to abet individual development? I consider Taylor’s relation to the Deweyan problem of social utility in what follows. I cannot hope to address the issue in detail, but rather suggest that the possibilities for a Deweyan approach warrant attention on the part of complexity analysts. Moreover, can Taylor’s narrative accommodate the face-to-face encounters in densely populated cities that Hugo Lindgren, writing in *Wired* magazine, asserts are indispensable to superpowerful information technologies?

**Parsing Complexity**

Taylor proceeds by viewing the specific changes he tracks through the eyes of seminal interpreters such as Luhmann, Gell-Mann, Dawkins and others whose theoretical works in biology, mathematics and related fields express and create complexity. His summaries of their works are extraordinary feats of condensation and clarity. Cutting across the lines of nature and culture, Taylor wends his way through the manifestations of complexity in art and architecture, in social, economic, mathematical, physical and biological systems without losing the intricate lines of connection among these varied expressions of complexity. Taylor points to the difference between modern and postmodern cultures as a difference between grids, a figure of an all-encompassing rationality for controlling nature and society and their displacement in a variety of contexts by networks, interconnected nodes that communicate with one another and that express the complexity of twentieth-century communication technology.
In analyzing the history and logical structures that enter into the multiple formations of complexity, Taylor's concerns are clear. First, when complexity is viewed as the interaction of components in self-developing wholes, there is no need to explain complex systems by recourse to external teleology, to principles outside the system that cause or explain the whole. Because complex systems are open wholes, they are capable of generating novelty without appealing to the *deus ex machina* of extrinsic causes. Moreover, complexity is not totalization. Second, Taylor fully comprehends the glut of information that inundates contemporary life at every level, but, rather than excoriating the new technologies and the instability they bring, he opens perspectives that are more than coping mechanisms. His standpoint is summed up in the phrase “the incarnational logic of networking,” logical modeling that is inextricably linked to the real.

The claim that non-teleologically construed open wholes resist inclusion in totalizing structures and metanarratives has been considered in a wide range of contexts, from the work of American pragmatists to that of French poststructuralist thinkers. Writing in a pragmatic vein, Nicholas Rescher asserts that complexity is a feature of the real and that a system's complexity is a “a matter of the quantity and variety of its constituent elements and of the interrelational elaborateness of their organization and operational make-up.” Rescher adds: “Complexity can in principle make itself felt in any domain whatsoever” (1). Yet, for Rescher, complexity, especially that of the new information technologies, accelerates unmanageability. Far from conceding that computer programs can generate novelty, he argues that “the classic dictum holds good: as far as the efficacy of computational information manipulation is concerned, garbage in, garbage out.” (178). What is more, the more complex the program, the greater the chance for mishap. It is not to computational instruments that one must turn for the understanding of complex phenomena, but to older modes of scientific inquiry. The world does not exhibit an incoherent lawlessness. Chance in nature generates an order that is amenable to “probabilities and plausibilities” that, when grasped, at least allow us to muddle through (178). In an effort to salvage what he sees as rational intelligibility, Rescher cordons off his own views from those of continental thinkers. He concludes that developments in the sciences are “outside the range of our present day [postmodern] culture gurus, so that the facts of life about the complex natural world in which they live are something they neither can nor wish to understand” (208). Taylor might respond that Rescher imposes a top down reading of
complexity rather than one in which interpretation emerges from the recursiveness of the system's activities. To be sure, such complexity can be seen as complicated in an additive sense, but not all that is complicated exhibits complexity.

A conclusion opposed to that of Rescher, one with which Taylor might be in accord, is reached by research-engineer-turned-philosopher Paul Cilliers, whose account of complexity as involving the behavior of systems without fixed structures is, as such, not only amenable to but requires postmodern interpretation. Complexity is the result of the interaction of a system's components that may remind philosophers of Derrida's view of language as a play of differences among signs, of "a meaning that is never produced but always deferred" (Cilliers 44). Complex systems are often associated with living things, from bacteria to brains and language, and are made up of multiple elements in dynamic interaction. "There are loops in the interactions" that feed back on one another. Such systems have a history, "are ignorant of the behavior of the system as a whole" and are responsive only "to local information" (4). Each system is self-organizing and has the capacity to store information. Cilliers contends that the postmodern stress upon a multiplicity of discourses in constant interaction struggling for territory and upon "the distributed nature of the society as a connectionist network" is itself an example of complexity. "Self-organized criticality," he continues, a mark of postmodern discourse, "is the mechanism by which networks diversify their internal structures maximally" (116-17).

In still another rejection of teleology, cognitive scientist Jean-Pierre Dupuy endorses the deconstruction of the subject that he finds both in French postmodernism and in cognitive science. Tracing the forgotten roots of the latter to a cybernetics that construes thinking as a form of computation, Dupuy argues that cybernetics was the first conceptual effort to have recognized subjectless processes. On this view, "when I think, remember, desire, believe, decide and so on, the subject of these predicates is not a ghost in the cerebral machine, a concealed homunculus, as it were, but the machine itself" (160). This notion, Dupuy contends, took on another form as "the product of a post-Nietzschean post-Heideggerian thinking." Despite its pointed critique of the essence of technology, Heidegger's account shares with the cybernetic view "the destabilizing of the anthropocentric conception of man" (108-09). In sum, for Dupuy, "the French Heideggerians were sensitive (and quite rightly so) to this aspect of cybernetics in what they had to say" (110). While Taylor does not comment on their work, his interpretations
confirm key structural features to which Cilliers and Dupuy independently point.

Critical for Taylor is the conception of complex adaptive systems (cas) emanating from research devoted to natural and social processes at the Santa Fe Institute, work on which he comments extensively. John Holland's conception of genetic algorithms is a case in point. In his own account, Holland stresses the need for simulation models to interface with the world. On the one hand, a cas simulation affords the opportunity to observe alternative outcomes in fields as varied as ecology and economics, alternatives that could not be tried in real systems. On the other, because adaptive agents resist rigorous modelling, simulations alone are not enough but must have an interface with the "real" world (159–60). It is the reciprocal imbrication of model and world that often blurs the distinction between them that Taylor explores in a variety of complex systems. Without shortshifting complexity's manifestations in biology, cognitive science and information technology, Taylor analyzes complexity's generative role in art and architecture as, for example, in the paintings of Chuck Close or the buildings of Frank Gehry. What sets Taylor's work apart from the accounts of complexity I have touched on is not only the range of his interest, but his never-absent Kierkegaardian perspective. Consider his reading of physicist Per Bak's claim that within complex activities in nature "large systems with many components tend to evolve into a poised critical state, way out of balance, where minor disturbances may lead to events called avalanches. [...] Most of the changes take place through catastrophic events" (qtd. in Taylor, Moment, 148). Bak argues that it is possible to know that an avalanche will occur but it is not possible to predict where and when it will happen.

It is the unthinkability of critical turning-points that intrigue Taylor. In his earlier work nOts, a term intended to express what lies between being and non-being, Taylor weighs the meaning of turning points in the context of human existence. He cites a text of Kierkegaard, who, in this context, takes on the pseudonym of Johannes Climacus: "When the determination of motion is replaced by the determination of rest, it is the absolutely different," for which no distinguishing mark can be found (nOts 80). The different, Kierkegaard contends, cannot transcend itself but can only recursively think its own complexity, the many different thoughts that are intrinsic to it.

Equally Kierkegaardian is Taylor's ongoing self-scrutiny. The complexity that he analyzes is also a recasting of his own intellectual itinerary from his early work on Hegel and Kierkegaard to his analyses of
postmodern thought, from his groundbreaking accounts of modern art and architecture to his discussion of visual and information technologies. Moreover, the book itself is an instantiation of a complex adaptive system the description of which is its theme. Seen in this light, the recommendations of the final chapter, the application of information technology to education as modeled by GEN, is intrinsic to the account of complexity. In each of its parts, _The Moment of Complexity_ embodies the complexity it depicts.

**Opportunities of the Possible**

For Taylor complexity entails speed, the essence of contemporary existence. But speed cannot be considered apart from economy. Following Baudrillard, Taylor notes that economy moves from production to reproduction: “exchange value displaces use value.” He goes on to say that “when economic relations are mediated by blips of light transmitted through fiber optic networks and displayed on computer screens, the economy and media become virtually indistinguishable” (68). Their convergence must be understood in the context of a global economy or, in journalist Tom Friedman’s language, the world of the Lexus and the olive tree.

Despite its impossible Francophone density, _Capital Times_, the work of Eric Alliez, is an interesting foray in this direction. According to philosopher Gilles Deleuze, the force of Alliez’s work lies in its “discovering and analyzing the processes of extension, intensification, capitalization, subjectivation, that become something like the conditions for a history of time” (xii–xiii). In the context of this heady mix, Alliez analyzes the history of capital as one of transforming time into money and (later) money into time while the history of philosophy is viewed as a history of the conquest of time, in which “quantity conquers everything.” Alliez distinguishes potential time as “the pure force of time shaking off its subordination to the world’s movement, provoking aberrant movements of all kinds, and abstract time [. . . that captures] being within representation,” an expression of which can be seen in modernity’s conversion of time into money. “Man” (as Marx would have it) “becomes time’s carcass” (xvi–xvii). Everywhere quantity overrides quality. But Alliez does not stop there. He goes on to urge that time is to be studied as a function of its history, a history that has itself unfolded through times that are never the same. This account of the genealogy of time and of time’s practices is not merely descriptive but promissory, pointing in the direction of what Alliez calls an archeology of potentiality.
It is precisely the parsing of potentiality as opportunity that can be found to guide Taylor’s work. For Alliez, this archeology is an exhuming of the relation between time and the subject, “a subjectivity that is not ours but time itself,” a conclusion that Taylor might endorse (xix). It should be noted that the work of Taylor and that of Alliez are ventures in the interest of thought that is still to come and in a process of self-formation that enables one to cut free of oneself.

In what appears to be a contrary line of inquiry, Dominique Janicaud’s Heidegger-inspired analysis of the relation of power to reason, Powers of the Rational: Science, Technology and the Future of Thought, depicts reason as an all-encompassing submerging of difference. Janicaud sees power as an upheaval in rationality itself, born not out of rationality as such but rather from a particular mode of excessive rationality. Although Taylor speaks of open wholes, the all-embracing logic of techno-science is not inconsistent with Taylor’s claim that we are inundated by a global sea of information. Is there no egress from the planetary expansion of what Janicaud describes as the composite that is techno-science? Has not the sacred, a sacrality that might have opposed the hegemony of techno-science, been altogether lost? However, in a complex analysis of time, Janicaud argues that the dimension of future time opens the power of the rational to the possible, that “the future is the sacred in time” and that it unfolds in three parts, “the ethical, the political and the poetic” (260). Can Taylor’s moment of complexity not be viewed as the emergence of novelty in these three domains construed as open systems?

It is his openness toward the future that precludes Taylor’s joining the chorus of critics who excoriate the infoculture. Instead, he fashions positions of integrative accommodation, confirming what Alliez called the archeology of potentiality. Taylor is not unwilling to draw upon the insights to be found in critical analyses of contemporary culture, such as those of Jean Baudrillard. He refuses, however, to endorse Baudrillard’s bleak vision of complexity’s outcome. Rather than “mourning what cannot be changed,” Taylor prefers to envision the prospects of network culture (Moment 72).

I have yet to consider whether Taylor’s rendering of emerging networks allows for the flourishing of the individual as insisted upon by John Dewey. What is needed for such flourishing or growth (Dewey’s preferred term) is, in the language of the industrial society of the 1920s, “equal opportunity, and free association and intercommunication” (18). These ideals, Dewey contends in Heidegger-like terms, have been squelched in the interest of “quantification, of esteeming technique as an
end, so that life is totally rationalized and standardized" (23–24). Dewey acknowledges that “today there are no patterns sufficiently enduring to provide anything stable in which to acquiesce, and there is no material out of which to frame formal and all-inclusive ends. [ . . . ] Fixed and comprehensive goals are irrelevant dreams” (150). Dewey goes on to say that individuality is formed only through interactions with actual conditions, and he concludes, surprisingly, that “only by accepting the corporate and industrial world in which we live and thereby fulfilling the precondition for interaction with it [do we] create ourselves as we create an unknown future” (171). Can Taylor’s account of the acceptance of emergent complexity not be seen as a foray into an unknown future earlier conceived by Dewey from the perspective of the grid?

In consonance with Dewey’s view of the social configuring of thought, Taylor maintains that “thinking is impossible without implicit or explicit conversation with the living as well as with the dead. Conversation reveals that thinking is not just taking but also giving” (Moment 197). The struggle of concepts to adapt to one another, as Dewey also recognized, is neither smooth nor linear. But there is the other Taylor who goes on to say, “When a growing number of experiences and ideas can no longer be adequately processed, thought is pushed far from equilibrium and approaches the tipping point. In this moment danger and opportunity intersect” (198). He acknowledges that some possibilities of thought preclude others and that only some can be actualized. Is this seemingly cognitive dilemma, he asks, not akin to the Kierkegaardian moment of decision, of “self-organized criticality”? Has Taylor not fashioned a new moment of complexity in which discriminative adaptiveness is joined to a Kierkegaardian subjectivity in crisis forced to recursively think itself? Taylor’s work is oriented toward the future, a future that comes into being in and through the labyrinthine paths of networking. The boundary between model and world is permeable. It is in this regard that GEN is significant. As an educational process, it is driven by a concern with and for the future, modeling and shaping what is to come. In this regard, Taylor is addressing the Deweyan question: what might the outcomes of networking entail for the flourishing of the individual and the social whole?

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Notes

1. This is the general thesis argued in his Capital Times.
2. The work of the Santa Fe Institute is chronicled in Waldrop.

Works Cited


