
BOOK REVIEW

On Avoiding Reductionist Pitfalls in Education: A review of *Systems Theory for Pragmatic Schooling: Toward Principles of Democratic Education*, by Craig A. Cunningham, 2014. New York, NY: Palgrave MacMillan, xi + 176 pp. ISBN 978-1137449313.

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Craig Cunningham's (2014) *Systems Theory for Pragmatic Schooling: Toward Principles of Democratic Education* is a lively and insightful application of the principles of complexity and systems theories to education. His opening quote from Whitehead (1920) serves as a fitting theme for his work: "Seek simplicity and distrust it" (p. 163). Cunningham does seek simplicity as he attempts to make sense of an educational world that is awash in complexity, and, for the most part, he lives up to Whitehead's admonition. However, Cunningham is suspicious of simplistic thinking in the realm of education, and throughout the book, exposes reductionist thinking of all kinds.

Cunningham's book provides a solid demonstration of why education and complexity theory should go hand-in-hand. Following Dewey's lead, Cunningham sees schools and learning as both irreducibly complex. He reminds us that "every entity comes with a surrounding environment, or context" (p. 19), and this is particularly the case with schools. Morin (2008) cautions against "the ravages that simplifying visions have caused . . ." (p. 57). Cunningham also warns his readers of reductionist educational pitfalls. Some examples of reductionism to which Cunningham returns multiple times throughout the book include: reductionism in assessing students (and assessing schools), reductionism in thinking about standards and curriculum, and reductionism in pedagogy. Many of the themes that Cunningham touches upon will be familiar to readers of *Complicity*. For example, he discusses the pedagogical implications of the principles of self-organization, teaching as an emergent activity, and schools as "complex adaptive systems" (p. 52).

Throughout the book, Cunningham makes several connections between the works of Dewey and systems and complexity theories. For example, he argues that in many respects the frustrations that Dewey felt toward the end of his career with the inadequacy of his conceptions of nature had to do with his unawareness of insights that would develop later with these two theories. Cunningham especially sees Dewey's (1929) concept of 'situation' as "the intellectual precursor to the development of systems theory" (p. 13). Like Dewey, Cunningham's

pragmatism can be seen through his emphasis on connecting theory with action. Moreover, Cunningham strikes a similar note to the pragmatism articulated by Dewey and James when he argues that “experience is our interface to reality: we know reality through it” (p. 17).

Reminiscent of earlier works in complexity theory, such as Doll (1993), Cunningham makes the case that it is time to move beyond the existing factory model in schools with its stratification and artificial divisions of subjects and grade divisions by age. Instead of rigid, top-down controls, Cunningham echoes Dewey as he argues that the kinds of schools we need should embrace a democratic approach. They should seek diversity, not standardization and conformity. Diversity among teachers and among pedagogical approaches is a strength to be encouraged, not something to be stifled through emphases on standardization. We need schools in which teachers have the autonomy to teach according to their own individual strengths. Teachers also need to be given back the authority to teach to the needs and interests of their own unique students rather than making use of ‘one size fits all’ approaches. Cunningham argues against prepackaged, pedagogical ‘recipes’ that deprofessionalize and tie the hands of our nation’s educational resource, its teachers. As an alternative, Cunningham makes connections between complexity theory and teacher autonomy, arguing that teachers and schools need to have the freedom to meet the needs of the students in front of them, not being forced into lifeless, scripted lessons. Cunningham also applies concepts from complexity theory to pedagogy when he explains the power of recursion (or ‘iteration’) in the learning process. He explains how the most powerful educational changes can take place in a student not from singular, grand actions but from daily, recursive learning events. Over time, these daily, seemingly inconsequential events can bring about outsized and unexpected changes in learners.

Cunningham is critical of the reductionism that is present in policy discussions about education. He points to the reductionism that exists in the “discourse of [educational] ‘crisis’” (p. 7) and that appears to so many as common sense. He shows how politicians, and even society at large, judge ‘good’ and ‘bad’ schools with the blunt instrument of standardized testing. He elaborates on Ravitch (2010), who reminds us that “when we define what matters in education only by what we can measure, we are in serious trouble” (p. 167). He provides other instances of policy-makers’ failures to think in complex ways, such as the political impulse to continually add to the curriculum. He also shows how, contrary to many existing state curricula, when it comes to curricular decisions, less is more and depth is often better than breadth. Cunningham argues that schools, as they are currently configured, are failing to prepare American students for the world of the future. For this to be changed, it will require new kinds of thinking and new kinds of educational approaches.

In his call for more diversity in schools, Cunningham gives a powerful metaphor of how, with two battery terminals, electrons flow from one terminal to the other because of the difference in voltage between the two terminals. Similarly, he shows that it is through differences in people (e.g., teacher to student or peer to peer) that learning takes place. If we “eliminate differences,” we “eliminate possibilities” (p. 96). If we seek to minimize differences through standardized curriculum and standardized testing then we are likely eliminating possibilities that could emerge that we have not even considered; rather, he argues, diversity makes systems stronger.

Cunningham has written an eminently readable and yet thought-provoking work on the complexity that inevitably runs throughout the education process in general and American schools in particular. While the book is a short read, it goes a long way toward helping the reader think through implications of systems theory and complexity theory for education.

Cunningham's familiarity with Dewey brings additional layers of meaning to his discussion. He shows that thinking about schools as irreducibly complex entities has practical implications for teachers, administrators, and educational policy makers. Cunningham's voice is an important one to consider as we seek to make American schools more relevant to the evolving needs of our society.

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