THE BOOKS

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Rethinking Education in the Age of Technology: The Digital Revolution and Schooling in America, by Allan Collins and Richard Halverson. Teachers College Press, New York, NY, USA, 2009. xv + 176 pp. ISBN 978-0-8077-5002-5.

How many times have we heard of technological changes leading to an educational revolution? Often. And how often has the revolution occurred? Not yet. Entering deeply plowed, even rutted, territory of predicting fundamental changes in the organization and operation of schools in the twenty-first century, Allan Collins and Richard Halverson have written *Rethinking Education in the Age of Technology: The Digital Revolution and Schooling in America*.

The book is thoughtful. It is drawn, in part, from their experiences team teaching a course at Northwestern University on the history of school reform. I point that out because unfolding historical movements in schooling—from one-room schools and apprenticeships in a largely rural, small town nineteenth-century society to mass schooling in an industrialized twentieth-century economy where cities dominate the landscape—is the backbone to the argument that Collins and Halverson make.[1]

In brief, the authors argue that the first revolution in schooling occurred when industrialization in the United States produced the factory system and an ever-increasing flow of migrants and immigrants to cities where the earlier one-room schoolhouse of teaching and learning and apprenticeships broke down. Replacing this hit-or-miss system of schooling and job preparation, beginning in the mid-nineteenth century, were age-graded schools. Here curriculum measured out in discrete slices to children by individual teachers in self-contained classrooms led to annual tests where pupils who passed were promoted and moved through the grades, slowly accumulating the knowledge and skills to enter the workforce.

By the mid-twentieth century, this revolution in schooling had become institutionalized into elementary and secondary schools in nearly 15,000 K-12 systems across the nation. The dream that tax-supported public schooling would make Americans out of multilingual immigrant groups and rural migrants to cities while giving every child an equal chance to succeed has propelled millions of parents and students to view public schools as a socioeconomic ladder that anyone with gumption and determination could climb.

Now, the authors argue, as industrialization had transformed one-room schoolhouses and apprenticeships into universal age-graded schooling, technological changes in the economy and culture are leading to a "second" revolution, one that will transform institutionalized *schooling* into *education*, formal *teaching* into *lifelong learning*. Why are they so sure this second educational revolution will occur?

[1] Readers should know that I am cited in this book a few times and classified by the authors as a skeptic of technology, which, in my opinion, is fair. My disagreement with the authors' argument flows from their use of history and our differences on the institutional persistence of schooling.

They see a host of "learning alternatives" creating a new "education system" such as home schooling, private learning centers such as Internet cafes and for-profit tutoring centers, workplace sites for learning where technical certification can be gotten, and distance education schools offering a smorgasbord of courses. Children, youth, and adults spend increasing amounts of time in these "learning alternatives," slowly altering the dominant age-graded industrial model of schooling. The growth and spread of computers, hand-held devices, and ever-evolving technological innovations have, they claim, created interactive learning environments that have changed "how we think" and "how we communicate" (pp. 10–11).

These emerging "learning environments" feature "just-in-time-learning," that is, "whenever you need to learn something in order to accomplish a task" (e.g., buy a car, invest in stock, learn mathematics), "you can find out what you need to know" (p. 14). Customization or the high-tech devices that "cater to individual preferences" for information, advice, travel such as books, art, music, blogs, and politics, and the like is another feature.

Connected to customizing information is the idea that individuals can now control learning rather than be subject to a teacher's pace in delivering content. Each person, through text messaging, blogs, and responding to polls and surveys, is both a producer and consumer of information. Information is decentralized far more than it was, and students who have to listen to teachers can step outside of a classroom and tweet followers about the class or finish a personal blog and punch the "publish" button. That these new technologies also feature interaction through simulations, games, online debates, writing that offers immediate feedback and allows, most importantly, for reflection are all key ingredients for learning to occur.

With these "seeds of a new education system" (p. 3) being sown, the authors unpack in generic rather than practical ways how a new digital world would require different curricula, assessment, leadership, and ways of creating community and achieving equity. They explore these challenges in their "vision for the future" of a coming second educational revolution.

Although the authors elaborate features of the new technological infrastructure they see around them, they also carefully and fairly summarize the views of two historic groups opposed to one another on the issue of technologies in schools: the Enthusiasts and the Skeptics. Their own previous position as "advocates for advancing the use of technology in schools" tilts toward the Enthusiasts, but they do worry about the potential losses in "social cohesion and equity" (p. 7) should age-graded public schools lose dominance in a new digital world. And they believe that this is more than a possibility. At the end of their Preface they warn readers: "If educators cannot successfully integrate new technologies into what it means to be a school, then the long identification of schooling with education, developed over the past 150 years, will dissolve into a world where the students with the means and ability will pursue their learning outside of the public school" (p. xv). This warning of future social inequities in learning, the authors' use of historical parallels, and the growing technological infrastructure already in place outside of schools combine to give heft to a compelling argument. Yet, it is one that is hardly free from criticism.

Consider the authors' uses of history. Historians try to give a fair rendering of past events and people just as a mapmaker places rivers, cities, and roads in proper relation to one another. But a map is not the same as a compass. A map can tell you where you are now, but it cannot tell you what direction you should go. Collins and Halverson, however, use the past as a compass for the future. Just as the Industrial Revolution, they say, led to transformation of one-room schoolhouses into age-graded schools with self-contained classrooms, textbooks, tests, and the full regalia of a regulated system of tax-supported public education, the growth and spread of new technologies in the past three decades have already prepared the way for the second educational revolution. Public schools, they predict, will no longer be dominant. Most adult and children learning will occur outside

formal organized schooling. That may happen. Too often, however, those who look into the past are easily seduced by superficial similarities into prophesying.

Other scholars and pundits—to their regret—have predicted the future based upon the past. Even trained historians have succumbed to the seduction of forecasting. Yale University historian Paul Kennedy in his 1988 volume *The Rise and Fall of the Great Powers* predicted that Japan would continue to grow economically and that Russia would persist with Communism and hardly grow in the 1990s and early twenty-first centuries. Both predictions flopped. Then there is Francis Fukuyama who forecast the "end of history" with the dissolution of the Soviet Empire (Brendon, 2010).

Collins and Halverson run that risk in their predicting that the schooling created during the industrialization of the United States is about to wither away because the technological revolution is already knocking out the scaffolding of this antiquated system. I know of no historical law of inevitability when it comes to economic changes leading directly to educational transformation. If anything, the authors underestimate the crucial social and political roles that public schools have played in the past two centuries and the forces that have kept these systems in place.

Of course, no one has 20/20 vision into 2020 or beyond, but my guess is that the powerful civic, economic, political, and social interests—including parents (who have a huge stake in public schools civilizing the young, providing custodial care, granting credentials to those who negotiate the system, and, yes, academic learning)—will ensure that the familiar structures of age-graded schools will continue to accommodate new technologies for many decades to come. Those interacting interests sustain the kinds of schooling that Collins and Halverson predict will dissolve in the face of the impending second educational revolution (Scott & Meyer, 1994).

Which brings me to a final point. Because of the authors' embrace of a historical inevitability thesis on technological transformation of schools, they have either dismissed or are blind to other approaches that are equally sensible, given the above argument that the existing system of schooling will persist because of civic, economic, political, and social supports. Others have made that point and argued that judicious and wise uses of technology can transform current structures (Zucker, 2008). And even others have offered arguments and blueprints for removing the system's prevailing obstacles—the structures, policies, and processes—that daily prevent entrepreneurs and activist educators from integrating new technologies into school activities and classroom lessons (Hess, 2010).

Even with these objections, Collins and Halverson have added nicely to the genre of futurist claims for educational revolutions. They are fair in their appraisals yet worried about the future of public schools and persisting inequalities, a future they say is inevitable in the ushering in of the second educational revolution. Perhaps.

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