Learning 2.0

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A New Culture of Learning: John Dewey Meets the Internet

As a rule, I don't review 111-year old books, but when I opened Douglas Thomas and John Seely Brown's just-published *A New Culture of Learning: Cultivating the Imagination for a World of Constant Change,* I could not avoid the kinship it has with John Dewey's classic *The School and Society,* published in 1900. Dewey's ideas and what happened to them contain lessons to teach the world of Internet-mediated learning and thus it is worthwhile to consider the two books together.[1]

The New Culture of Learning starts out with a story about Sam. Sam is 9. He started playing with a computer program called Scratch, created at MIT to help kids understand the basics of design. Sam learned a lot. Within a few minutes he could create basic animations, but then Sam found out he was not alone in his efforts. A community of other kids was on line, and when Sam posted his game others could experiment with it, comment, build on it, and collaborate. Sam had entered the new culture of learning: play, collaboration, questioning, and imagination.

It's Child's Play and an Adult Puzzle

Sam's story and others at the beginning of *A New Culture of Learning* illustrate what the authors call "arc of life" learning, "which comprises the activities in our daily lives that keeps learning, growing, and exploring" (p. 18).

The new culture of learning results from the capacity of the Internet and what scholars already observe in how children born into this age—those called digital natives—interact with "that massive information network that provides almost unlimited access to resources to learn about anything" (p. 18). Most people understand this is the part of the story. It is child's play in fact and in metaphor. The difficult part for adults, and for public policy, comes from the second element of the new culture of learning, that which Thomas and Seely Brown (Thomas/JSB) call a "bounded and structured environment that allows for unlimited agency to build and experiment within things within those boundaries" (p. 19): in other words, a space with rules and lots of freedom within it. As the authors later reveal, their

[1] Dewey, John. *The School and Society*. Chicago: University of Chicago Press, 1900. Thomas, Douglas, and John Seely Brown. *A New Culture of Learning: Cultivation the Imagination for a World of Constant Change*. Author, 2011.

concrete version of the new culture of learning looks a great deal more like a massive, multiuser computer game than it does a conventional classroom. For adults, and particularly for educators, it is tough to imagine, much less endorse substantive learning often taking place "without books, without teachers, and without classrooms" (p. 18). Even though the authors clearly state that the arc of life learning is not a replacement for classrooms, anything that breaches the classroom walls in a way that officially credited as learning becomes an organizational threat.

The existing institution of education *is* a bounded space with rules and agency within, but the bounding rules no longer make as much sense as they once did. What I call Learning 1.0 has existed for the better a century, and it has all the parts of schooling that we consider normal and proper: students divided by grades, lessons, subjects, credits. These rules, plus those that are specific to the cultures of large organizations, such as the Los Angeles Unified School District, form the *grammar of schooling.* Those who play within its rules, get agency; those who don't are decried as weird, experimental educators who don't understand real school.[2]

Clayton Christensen and his colleagues have made a strong argument that Internet technology will disrupt the current institution of public education, but a look back to Dewey shows us that the changes that brought about Learning 1.0, the first full institutional form of education in the United States, didn't come about without a specific program of political and policy intervention.[3] Technology may change our children's heads, but it is the legislatures that will change the rules of the game.

To better understand how insight about learning, a changing society, and politics mix, we need to reach back to John Dewey and the last fundamental redesign of public education during the Progressive Era early in the 20th Century. There are strong parallels between the culture of learning that Thomas/JSB say that the Internet wants to bring us and the kinds of schools Dewey advocated and to a certain extent built, at the University Elementary School in Chicago, the Cottage School in the upper class suburb of Riverside, Illinois, and the African-American PS 26 in Indianapolis. Dewey shows play and imagination at work in schools, and he joins with others in advocating them against the deadness of rote learning and recitation.

Parallels Between Dewey's Time and Ours

There is a common conceit that ours is the only time of rapid change, and the *New Culture of Learning* veers into some of this. We tend to forget that the 19th Century was a time of wrenching social and economic change, and it was these changes that spawned public schooling as we know it. The economy was industrializing, and this was changing everything. As Dewey put it in *School and Society*, "The change that comes to mind first, the one that overshadows and even controls all others, is the

[2] Tyack, David B. "The Grammar of Schooling: Why Has it Been So Hard to Change?" *American Educational Research Journal* 31 (1994): 457-79.

[3] Christensen, Clayton M., Michael B. Horn, and Curtis W. Johnson. *Disrupting Class: How Disruptive Technology Will Change the Way the World Learns*. New York: McGraw-Hill, 2008.

industrial one—the application of science resulting in great inventions that have utilized the forces of nature on a vast and inexpensive scale. The growth of a world-wide market as the object of production of vast manufacturing centers to supply this market, of cheap and rapid means of communication and the distribution of all its parts" (p. 5).

Like Thomas/JSB, Dewey understood the changes taking place in the availability of information that could democratize learning:

> A high-priesthood of learning, which guarded the treasury of truth and which doled it out to the masses under severe restrictions, was the inevitable expression of these (historic) conditions. But as a direct result of the industrial revolution of which we have been speaking, this has been changed. Printing was invented; it was made commercial. Books, magazines, papers were multiplied and cheapened. As a result of the locomotive and telegraph, frequent, rapid and cheap intercommunications by mails and electricity was called into being. Travel has been rendered easy; freedom of movement, with its accompanying exchange of ideas, indefinitely facilitated. The result has been an intellectual revolution (p. 23).

As fascinated as Dewey was by industrialism and its promise of productivity, he was horrified by what its routines were doing to workers: "How many of the employed are today mere appendages to the machines which they operate!" (p. 22). Thomas/JSB also roil against the machine, the one in education in which learning is treated as a series of "steps to be mastered, as if students were being taught how to operate a machine or even, in some cases, as if the students themselves were machines" (p. 35). But Dewey makes the social and political connection explicit: "[T]he worker has had no opportunity to develop his imagination and his sympathetic insight as to the social and scientific values found in his work….until (children and youth) are trained in social directions, enriched by historical interpretation, controlled and illuminated by scientific methods, we certainly are in no position even to locate the source of our economic evils, much less to deal with them effectively" (p. 22). Thus, the espoused object of teaching shoe making to African-American students at PS 26 in Indianapolis was to educate them in the economics and sociology of production systems, not to prepare them for careers in shoe repair. (Relatively few educators understood the intent of what Dewey called "manual training.")

What Dewey saw was a change in society's master concept. Dewey understood industrialism connected to: "Even our moral and religious ideas and interests, the most conservative because the deepest-lying things in our nature, are profoundly affected. That this revolution should not affect education in some other than a formal and superficial fashion in inconceivable" (p. 6). Urbanism and industrialism replaced America's agricultural heritage, small town life and Jeffersonian democracy, including slavery. That change parallels those taking place now. Between 1870 and 1910 the percentage of the labor force employed in farming

declined from 53 percent to 35 percent (it is now about 3 percent), and between 1950 and 1990 the percentage of employment in the goods-producing sector of the economy fell from 40 to 20 percent of nonagricultural payrolls, a trend that continues.

People followed jobs, moving from the countryside to the cities. From 1870 to 1910 the percentage of the population living in urban areas increased from 25 percent to 47 percent. By the 1940s, nearly 70 percent of the manufacturing jobs in the country were located in cities with populations greater than one million. Since World War II, we have witnessed a flight from central cities to suburbs and exurban locations where desirable work is made possible by telecommunications technology. Migration has also occurred in the form of immigration. Approximately twenty-three million new immigrants were admitted to the United States in the 1870-1910 period and eighteen million admitted legally between 1950-1990.[4]

As a consequence of economic and demographic change, the symbiosis between productive industry and household had been broken. In the economy that was dying, "[t]he entire industrial process stood revealed, from the production on the farm of the raw materials till the finished article was actually put to use. Not only this, but practically every member of the household had his own share in the work. The children, as they gained in strength and capacity, were gradually initiated into the mysteries of the several processes. It was a matter of immediate and personal concern, even to the point of actual participation" (p. 7). Schools needed to bridge the gap.

Dewey's answer was to create schools so that students would make connections between the school and the world outside. Most schools were not built for that function. Even the furniture didn't work. "We had a great deal of difficulty in finding what we needed, and finally one dealer, more intelligent than the rest, made this remark: 'I am afraid we have not what you want. You want something at which children may work. These [pieces of furniture] are all for listening'" (p. 31-32).

Play as Fundamental

Dewey sought to foster the imagination, encourage play as a form of learning, develop collaboration among students, create connections between school and community, and use schooling as a training ground for democracy. These same ideas appear in *A New Culture of Learning,* published more than a century later.

Play, the authors write on the book's site: "is universally recognized as a critical tool for children. As we get older, play is seen as unimportant, trivial, or as a means of relaxation and learning switches to something you do in school where you are taught." But play is fundamental: "All systems of play are, at base, learning systems," Dewey wrote (p. 97). Play teaches, as this example from my life shows:

[4] These data taken from: Kerchner, Charles Taylor, Julia E. Koppich, and Joseph G. Weeres. *United Mind Workers: Unions and Teaching in the Knowledge Society*. San Francisco: Jossey-Bass, 1997, p. 18-22.

> On summer evenings our street used to be the site of a continuing game called Danish. There was a ball, a bat that was sometimes a stick, and something called bases. Thereafter the similarities between Danish and baseball diverged. Playing Danish involved long negotiations over the meaning of certain actions. If the ball went into the tree in Nancy's yard where the hive was and the bees were swarming, was it still playable? If Bugs, the ever-eager Australian Shepherd, caught the ball, was the dog to be considered an interference that stopped play or an outfielder? It soon became obvious to all the children that Danish was not a game of ball skill, but a complex game of trading and negotiations. The fact that there were relatively few balls actually hit or runs scored did not make the game less challenging or less fun.

Thomas/JSB describe riddles and epiphanies in games and about the ability to connect and make sense of becoming. "The structure of play makes the player's agency central to the learning process," they write (p. 98). Students are the real workers in this system, and serious play is their work. Players have the combination of imaginative capacity, goals, agency and boundaries that are necessary. No game can be won without skill and imagination; no game is possible without limits and rules.

Children gain the capacity to play in infancy, Dewey writes: "The child has not much instinct for abstract inquiry. The instinct of investigation seems to grow out of the combination of the constructive impulse with the conversational. There is no distinction between experimental science for little children and the work done in the carpenter shop. Such work as they can do in physics or chemistry is not for the purpose of making technical generalizations or even arriving at abstract truths. Children simply like to do things and watch to see what will happen" (p. 43).

Yet, the focus of play changes with maturation. Play blends with experimentation and experience in things connected to what is recognized as work outside school: Weaving, cooking, shopwork, modeling, dramatic plays, conversation, discussion, story-telling, ect. These forms of expressive activity dominate schooling to maintain the "intimate connection between knowing and doing." (p. 98)

The staging and maturation of play also occur among the digital natives of the 21st Century. Thomas/JSB devote a chapter to summarizing the work of Mizuko Ito and her colleagues, which, as the title of their book says, progresses from "hanging out," to "messing around," to "geeking out".[5] "Hanging out, in her terms, is about learning how to be with others in spaces that are mediated by digital technology" (p. 101). Messing around involves a sense of personal interest and agency, when "technology

[5] Ito, Mizuko. *Hanging Out, Messing Around, and Geeking Out : Kids Living and Learning With New Media*. Cambridge, Mass: MIT Press, 2010. Also, Ito, Mizuko, Heather Horst, Matteo Brittanti, Dana Boyd, Becky Herr-Stephenson, Patricia G. Lang, C.J. Pascoe, and Laura Robinson. *Living and Learning With New Media: Summary of Findings From the Digital Youth Project*. Chicago: John D. and Catherine T. MacArthur Foundation, 2008.

and digital media begin to be viewed as an extension of oneself" (p. 103). Experience is changed into experimentation and play that reveals the resources and possibilities available. Geeking out is a deeper dive into specialized knowledge networks and Internet-based communities. Sam, the 9 year-old whose story began this review, moved up the progression from hanging out to programming to remixing: taking other programs and building on them. Asked about why he looks at others' programs, he said that it was because he could learn "something really cool you could never know yourself" (p. 23). Sam did not so much learn how to program as he learned how to learn.

The Organizational Dimension

This brings us to the organizational aspects of Dewey and of the new culture of learning. All organizations share a common set of problems. They must import energy in the form of capital, labor, and ideas. They must control their processes without getting stuck, and they must innovate and create without having things fly apart. Both Dewey and Thomas/JSB carried their ideas about changes in learning into thinking about organizations, how they should be designed and operated.

Interestingly, Dewey attacks the organizational issue from the perspective of "waste," and in doing so he joined other Progressive Era reformers who successfully changed school governance and administration. "It deals with the question of organization," Dewey writes, "because all waste is the result of the lack of it, the motive lying behind organization being promotion of economy and efficiency" (p. 59). "All waste is due to isolation, he said, urging school administrators to design an integrated system. "One must, however, recognize that they [the different parts of the education system] have never been welded into a complete whole. The great problem in education on the administrative side is how to unite these different parts" (p. 64).

His solution is what organizational scholars would later call vertical and horizontal integration (p. 60). The levels of education would be better meshed, and school would become connected to home and community. It would be important, for example, that teacher preparation include both practical teaching techniques and substantive knowledge, both "what" and "how" (p. 64-65).

Dewey designed models of schools and by 1915, when he and Evelyn Dewey wrote *Schools of Tomorrow,* numerous examples existed.[6] He lauded the work of Gary, Indiana, superintendent William Wirt, who kept the schools open late so that students would spend time in a productive learning environment rather than in the grubby back alleys of the city. Most notably, Wirt organized the upper grades and high schools according to what would be called the "platoon" system. There were two groups of students in the school each day. While one platoon used the academic classrooms, the other used the labs, workshops, and exercise spaces. This movement of students, now typical in high schools, had its origins in what was then

[6] Dewey, John, and Evelyn Dewey. *Schools of To-Morrow*. New York, NY: E. P. Dutton & Company, 1915, p. 175-178.

a working class steelmaking city, and subsequently it spread throughout the country.

The book's photographs provide example and context for Dewey's ideas. In Gary, students, who appear to be about 9, are learning industrial molding (p. 255) and teenagers are setting type and printing in a photograph over the caption, "Training the hand, eye, and brain by doing useful work" (p. 255). At the Cottage School in Riverside, Illinois, children dramatize what appears to be a Greek myth on the patio of a building that bears the unmistakable design of a young local architect named Frank Lloyd Wright (p. 129).

The emergent *administrative progressives* organized around Dewey's call to create a system. In the early 20th Century, a major focus reform was to shift management of consolidated school systems toward central administrative bureaucracies modeled on the contemporary organization of business and industry. These hierarchical, specialized "central offices" insulated the school system from parochial views on education, and enabled "leading citizens" and professional experts to create what they viewed to be efficient, effective schools.[7] The business-oriented *administrative progressives* held that "centrally controlled, hierarchically structured and rationally managed bureaucracies are the archetypical modern organizations."[8] Nowhere was this truer than in Dewey's home city, where the Commercial Club of Chicago controlled the educational reform agenda, and to a great extent, still does.[9]

The worldview of *scientific management* advocates, such as Frederick Taylor, became highly influential in shaping the early 20th Century educational reforms.[10] His views were perfectly fitted to emerging political ideas such as those of Herbert Croly and Walter Lippman, whose *New Republic* magazine was established in 1916. Irrationality in politics, greed, and corruption could be replaced by scientific and objective bureaucrats, "pure politics guided by selfless experts."[11] These ideas legitimated bureaucracy, and school managers became unknowing disciples of Max Weber's notions that bureaucracy was a strong and distinct form of organization different from and superior to traditional family or tribal-centered organizations. (In fact, Weber had almost no direct influence on either businesses or schools in the United States; his work was not translated into English until 1946.)

Unlike Dewey, Thomas/JSB do not mount a frontal attack on the existing education establishment. Existing schools are too mechanistic, too answer and test driven,

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[7] Tyack, David and Elisabeth Hansot, *Managers of Virtue: Public School Leadership in America, 1820-1980* (New York: Basic Books, Inc., 1982); Michael B. Katz, ed., *School Reform: Past and Present* (Cambridge, MA: Harvard University Press, 1987).

[8] Mitchell, Douglas E. "Institutional Theory and The Social Structure of Education," in *The Politics of Education and the New Institutionalism: Reinventing the American School*, ed. Robert L. Crowson, William Lowe Boyd, and Hanne B. Mawhinney (Washington, DC: Falmer Press, 1995), p. 167.

[9] Shipps, Dorothy. *School Reform, Corporate Style: Chicago, 1880 -2000*. Lawrence, Kansas: University Press of Kansas, 2006.

[10] Taylor, Frederick Winslow *The Principles of Scientific Management* (New York: London: Harper, 1911).

[11] Noble, David W. *The Progressive Mind, 1890-1917*. Minneapolis, MN: Burgess, 1981, p. 39.

they say, joining a growing chorus of teachers and reformed reformers, such as former test advocate Diane Ravitch.[12] But still, they do not argue that classrooms are obsolete or teaching does not matter. Rather, classroom learning can be enhanced if we will stop thinking of schools as organizations, think of them as learning environments. Thomas/SJB argue, "By reframing the discussion this way, we can see how the new culture of learning will augment—rather than replace—traditional educational venues." Reframing the problem as one of creating a learning environment, sidesteps the current "schools are broken" argument, because environments don't break, they say. They adapt, and thus the question is whether schools blend or fail to blend with the "freedom and wealth of the digital information network" (p.35-36).

For Thomas/JSB, the precise organizational form is uncertain, and perhaps there is no single form:

> [T]raditional approaches to learning are no longer capable of coping with a constantly changing world. They have yet to find a balance between the structure that educational institutions provide and the freedom afforded by the new media's almost unlimited resources, without losing a sense of purpose and direction. Some posit that one of the primary problems with education, for example, is that our schools suffer from excess structure, which has no room for new technologies like Facebook and Wikipedia. Others believe that the trouble lies with insufficient structure, which cannot fully harness the power of new media and technology (p. 48).

Neither of these positions will work, the authors argue: "The challenge is to find a way to marry structure and freedom to create something altogether new" (p. 49).

Where Dewey reaches back to the 19th Century farm and family for his metaphor of an integrated learning system, Thomas/JSB envision learning as a giant computer game that combine the elements of the new learning culture: peer-to-peer learning, working in a collective, encouraging imagination, changing the authority of knowledge, and putting the learner in charge of learning. "In our view, MMOs (Massive Multiplayer Online games) are almost perfect illustrations of a new learning environment" (p. 107). Games, such as *The World of Warcraft, Star Wars Galaxies, and Lord of the Rings Online,* have both the expansive and contained conditions of the new learning culture. They "produce massive information economies, composed of thousands of message forums, wikis, databases, player guilds, and communities…. On the other hand, they constitute a bounded environment within which players have near-absolute agency, enjoying virtually unlimited experimentation and exploration—more of a petri dish" (p. 107).

The authors hasten to distinguish these games from the shoot-em-up variety, *Grand Theft Auto* and the like. They argue that gamers learn through experimentation. Gamers "keep an eye on the bottom line" and the game's goals without being slavish

[12] Ravitch, Diane. *The Death and Life of Great American School Systems*. New York: Basic Books, 2010.

to them; they "understand the power of diversity" because it is impossible to accomplish many of the tasks alone; they "thrive on change," and they "see learning as fun" (p. 87). But perhaps most important, gamers seem ready to "explore radical alternatives and innovative strategies" intellectually living on the edge (p. 88).

Inventing spaces and connections to conventional schools is difficult. As Ito, who studied how youth use new media says, "As a parent and educator who is also an anthropologist committed to appreciating youth perspectives, I stand at the cusp of two different learning cultures—one that is about youth-driven social engagement and sharing, and the other that is embodied in educational institutions' adult-driven agendas."[13] One of the most advanced attempts to bridge the two worlds has been built at the downtown Chicago Public Library, not five miles from Dewey's original lab school on the University of Chicago campus. Described as teaming with teens on bright comfy sofas, the space was "loud, sociable, and hip," a space to check out laptops, make media, read books, engage in workshops and special projects, or just hang out with friends in a safe environment. The idealized space, as presented by John Seely Brown, involves space to get up to speed, to practice, and to perform ones work and watch others do the same.[14]

Like Dewey's, the Thomas/JSB vision of organizational settings necessarily involved organizations outside of school. Ito asks:

> Imagine what it would mean to think of public education as a mission shouldered not only by schools, but by a wide range of public institutions committed to knowledge and learning? When we think of public education, do we include the efforts of those in public and independent media, who develop radio, television, movies and games with an educational mission? Do we include organizations like Mozilla, Wikipedia, Creative Commons, and the Internet Archive committed to the production of knowledge in the public interest and in the public domain? Do we think of the efforts in broadband policy that seek to make the online knowledge accessible to families across the country? To me, these are all efforts in public education that are often overlooked in our often exclusive focus on schools.[15]

Thus, Dewey's central idea about connecting school and society and using resources external to the school to educate comes forward again, and it is all the more important to understand what happened to Dewey's ideas the first time around.

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[13] http://www.huffingtonpost.com/mimi-ito/when-youth-own-the-public_b_787866.html (Assessed March 19, 2010).
[14] http://www.johnseelybrown.com/Re-Imagining%20Dewey.pdf (Assessed March 19, 2011).
[15] http://www.huffingtonpost.com/mimi-ito/when-youth-own-the-public_b_787866.html (Assessed March 19, 2010).

Why Dewey Lost

"One cannot understand the history of education in the United States during the twentieth century unless one realized that Edward L. Thorndike won and John Dewey lost," historian Ellen Condliffe Lagemann, has written.[16]

Throughout his long career at Teachers College, Thorndike developed an influential behavioral theory of learning. "Instead of viewing curriculum as a medium for developing mental faculties, which could then be transferred to other content areas, he argued that curriculum constituted the substance of learning since the transferability of knowledge was a myth." Instead of a classic liberal education, students needed a curriculum that matched the abilities and future occupational roles of particular students. In contrast, Dewey and the pedagogical progressives focused instruction around the principle of stimulating the student's natural desire to learn. Instead of thinking of schools as simply teaching students the "three Rs," Pedagogical progressives viewed the school as "a fundamental lever of social and political regeneration" in a decaying urban landscape.[17] School, would be "recalled from isolation to the center of the struggle for a better life."[18]

"If the central vision of education promoted by the administrative progressives was utilitarian and socially efficient, the central vision of the pedagogical progressives was romantic and naturalistic."[19]

Despite his damning commentary on waste in education, Dewey's pedagogical ideas fell victim to the organizational mandates of industrial efficiency. Where Dewey had sought individualization, industrial efficiency produced a batch processing system. Where Dewey had sought matching school to student, industrial efficiency created tracking and social separation.

Despite Dewey's effort to connect the school system with the family and community, schools became more identified with professional expertise and the relative power of the school over the family in matters such as attendance, acceptable behavior, and certainly the curriculum. His ideas about teaching and student discipline were seen as overly permissive. Despite the social movement that his ideas fostered, Dewey's Progressive Education became the object of opposition and ceased to exist as an organized entity by 1960.

The latent tensions between the rising bureaucracies and teaching and learning surfaced quickly. Even while the administrative progressives were using the language of professionalism and implementing some of its characteristics, such as licensure and specialized training for teachers and administrators, teachers did not share in occupational self-determination. Ultimately, it was difficult to express the

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[16] Lagemann, Ellen Condliffe. 1989. The plural worlds of educational research. *History of Education Quarterly, 29:*2, 185-214. p. 185.
[17] Cremin, Lawrence Arthur *The Transformation of the School* (New York: Alfred A. Knopf, 1961), vii.
[18] Ibid., 119.
[19] Labaree, David F. *How Dewey Lost: The Victory of David Sendden and Social Efficiency in the Reform of American Education*. Stanford, CA: Stanford University, School of Education, 2010. p. 7.

vision of cooperation, democratic schooling within the hierarchical bureaucracy which issued from administrative reform. Dewey himself recognized the need to balance bureaucratic reform with teacher influence; until his death he carried membership Card No. 1 of the American Federation of Teachers.[20]

The new culture of learning could face a similar fate. It challenges the existing system more substantively than Thomas/JSB suggest. The new culture of learning posits a fundamentally different production system than industrial-era information management with different rules about managerial authority and about proprietary rights. Instead of vertical and horizontal integration within a bureaucracy, the new arc of learning is essentially a network. Instead of a single controlling hierarchy, the new culture of learning depends on webs of expertise in which learning often depends on relationships between peers. And instead of a high trust system that was avowedly non-partisan, the new culture of learning takes place in a nation that is profoundly politically polarized with downstream consequences for the politics of education.

Bureaucracies v. Networks

As we have seen, the administrative progressives created well-functioning bureaucracies. They followed the pattern of late 19th and 20th Century information processing and knowledge production in which the explicit tools of knowledge—texts, pedagogy and tests—were highly centralized. For most of the century, large school districts led the country in creating pedagogy, sometimes with the support and collaboration of universities and schools of education. Districts would typically employ large staffs of curriculum designers, and smaller districts frequently used their programs of instruction. Over the last two decades, as the capacity of school districts has been hollowed out, the role of pedagogical development has increasingly been taken by for-profit corporations. Book publishers morphed from publishing texts written by teachers and sometimes college professors to creating whole programs of instruction: texts, teachers guides, supplementary material, aligned tests. The industry has become increasingly centralized as the costs of entry into the field increased.

Peer-to-peer production, the social arrangement that allowed Sam, the 9-year-old, to learn animation and which allowed the students that Ito studied to "geek out," is substantively different than the production system of the traditional information society. Entry costs are minimal and barriers are low.

In the *Wealth of Networks,* Yochai Benkler argues that peer-to-peer information production is a vital new source of wealth, vitality, and knowledge. But the old sources of information will not go away quietly. They will attempt to commodify

[20] Kerchner, Charles T., and Douglas E. Mitchell. *The Changing Idea of a Teachers' Union*. *Stanford Series in Education and Public Policy*. New York and London: Falmer Press, 1988, p. 53.

information, wrap it in copyright protection, and create channels of authority through which it must flow.[21]

Thus, in school districts, discussions about how to get new learning information in are not as organizationally prominent as those about how to keep information out. Network construction is not as challenging as network security. Part of the desire to restrict flows of information, of course, come from the pastoral concern and legal duty to protect young people from smut peddlers and pedophiles. But an equal concern is the protection of school districts from tort liability that follows the unauthorized use of copyrighted material. Obtaining materials from an authorized vendor, such as a textbook publisher, immunizes school districts to a great extent. Just as textbook publishers are now willing to provide all manner of beyond-the-book supplies and experiences, vendors are ramping up to provide managed and legally sanitized Internet material.

The channeling of Internet use into programs of instruction also meshes with the efficiency criteria favored by the existing institution. For the better part of the century, no one built a cheaper mode of instruction than putting 30 students in a classroom and a teacher in front of them, unless it was putting 32 or 39 students in the class.

However, in the last quarter-century, the efficiency claims of existing public education have been called into question, and it is problems with cost, rather than thrall with the new culture of learning that is capturing the attention of school administrators. As fiscal and political conservatives are fond of pointing out, the cost of public education has increased faster than Consumer Price Index inflation. Those who study these things counter that all service-intensive industries suffer from rapidly rising costs; certainly this is the case with higher education and health care. But, in fact, public schools have been delivering a much more expensive mix of services than they used to.[22]

Changes in the cost structure of public education have largely resulted from the social and legal expectation that all students learn to relatively high standards and that most all of them complete high school. These are vastly different expectations than was the case in Dewey's time, when barely five percent of students finished high school. When I visited a Milwaukee middle school recently, I marveled at the relative extravagance of the facility and the richness of the architectural detail in the 1920s era structure. There were labs and shops, two gymnasiums, a full theater-style auditorium, and a complete library. There was elegant tile and masonry work. My host told me that at that time the school had been heavily supported by local businesses because it was a source of their work force: after eighth grade the boys, in particular, would start part time work and take on full time jobs in a couple years.

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[21] Benkler, Yochai. *The Wealth of Networks: How Social Production Transforms Markets and Freedom*. New Haven, CN: Yale University Press, 2006.

[22] Hill, Paul, and Marguerite Roza. *Curing Baumol's Disease: In Search of Productivity Gains in K-12 Schooling*. Seattle: Center for Reinventing Public Education, University of Washington, 2010.

School leaving, as early as age 13, connected to a place in the adult economy. Rather than geeking out, Sam would have gone to work.

Now, Sam stays in school, even if he has a learning disability or a profound dislike of conventional schooling. Public policy and the graduation-rate statistics that are carefully watched by civil rights organizations, expect Sam to graduate regardless of his race or economic status. What has been called the "standards movement" of high expectations for all is replacing the variable expectations of student achievement associated with aptitude testing.

In response, schools have created a much more expensive mix of services. While the inflation-corrected costs of a conventional classroom have increased very slowly, not at all according to some economists, those associated with special education and ancillary services have increased rapidly accounting for virtually all the increased costs of public education.

Increased use of technology is seen as a partial solution to increasing costs. The use of computer-driven instruction is booming in what is called "credit recovery," remedial instruction for high school students who lag behind their peers in collecting the necessary graduation units. But for the most part these students are not engaged in the flight of play and imagination that Thomas/JSB find in the new culture of learning. They are being marched through programs of instruction that look a great deal like old-fashioned workbooks and problem sets. The more sophisticated programs are beginning to have adaptive qualities, checking for understanding of a concept before moving on and building toward mastery. But in concept, these programs are almost the opposite of exploration, allowing students to do "real science," or to take on adult roles in the world of information and analysis. In the main, we are seeing expansion of direct instruction via computer, the ark of learning rather than the arc. The attention to standards and their accompanying tests will intensify this concentration in how technology is used.

The problem now, as was the case in Dewey's time, is that the schools will tend to invest in technological tools that are efficient at the narrow tasks rather than mind expanding and interesting. The answer to this problem lies in the conscious redesign of pedagogy. There are now, just as there were in Dewey's time, gross inefficiencies in the educational system. Dewey, in a series of wonderfully hand drawn charts, noted the unnecessary overlap between levels of schooling and schools and other educating entities. This problem has not abated. Remedial education for students who did not understand a lesson, grade, concept, skill the first time it was taught is a constant problem and the source of much recrimination and finger pointing between elementary and secondary schools and school districts and higher education institutions. Consciously using design to approach this issues promises substantial returns.

Design can also produce the beauty, innovation, and the bounded structures with agency within that Thomas/JSB advocate. Although interesting applications exist, there is no *World of Warcraft* for elementary or high school. The question then becomes, who designs?

The Tension Between Teaching and Learning

Teachers want to teach, and for most of them, most of the time, that means whole-class, direct instruction. In *How Teachers Taught: Constancy and Change in American Classrooms, 1890-1980,* Larry Cuban's study of large-scale reforms of curriculum and pedagogy in the wake of the progressive education movement, he concluded that progressive practices, defined as movement away from teacher-centered and toward student-centered pedagogy, "seldom appeared in more than one-fourth of the classrooms in any district that 'systematically tried to install these varied elements.'"[23] Even in settings where teachers made a conscious effort to incorporate progressive practices, the result was more often than not a hybrid of traditional and progressive, in which the major elements of the traditional core of instruction were largely undisturbed:

> The dominant pattern of instruction, allowing for substantial spread of these hybrid progressive practices, remained teacher centered. Elementary and secondary teachers persisted in teaching from the front of the room, deciding what was to be learned, in what manner, and under what conditions. The primary means of grouping for instruction was the entire class. The major daily classroom activities continued with a teacher telling, explaining, and questioning students while the students listened, answered, read, and wrote. Seatwork or supervised study was an extension of these activities.[24]

Cuban's research, which also extends to how teachers use technology, underscores the slowness of changes in classroom instruction. A teacher's sense of craft is involved and so, too, are the existing mechanisms for job, employment, and economic security.

Changing the paradigm from teaching to learning, challenges these longstanding teacher self-images, and it also challenges the set of work rules that bound their jobs. Regulations as straightforward as class size or the requirement for certified teachers to monitor students working with technology become immediately salient when the external environment of technology penetrates the classroom walls.

Unions have been painted as the primary culprit, and there is no question that labor contracts contain restrictive work rules, but each of those restrictions rests on larger assumptions about how learning is to be produced. Restrictions on class size, for example, presume that students will be grouped into a class and taught as such.

Regardless, movement of education toward a network form of production is profoundly threatening to teacher unions. Historically, changes in the mode of production have spelled the demise or decline in particular unions, although not the

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[23] Cuban, Larry *How Teachers Taught: Constancy and Change in American Classrooms, 1890-1980* (New York: Longman, 1984), 135.
[24] Ibid., 137.

union movement itself, which tends to ebb and flow with economic change. As any labor historian knows, the change from craft production to industrial production brought about a revolution in organized labor. Typically, the introduction of technology is seen as simply a capital-labor substitution, occasioned by gradual adoption of technology, grudging buyouts of older workers, and a move toward using more advanced technologies in non-union settings.

But to focus only on the capital-labor substitution possibilities and the short-run economies that may—or may not exist—in technology utilization, is to miss the potential for enhancing and redefining teaching. Learning technologies could liberate teachers, as some of the examples in *A New Culture of Learning* illustrate. Technology could be designed to enhance the artistic, craft, and professional dimensions of teaching, or it could intensify the tendency to organize teaching as an industrial production routine.[25]

However, I am not optimistic about the political possibilities of linking technology and more interesting teaching jobs. The sponsors of innovation investments are largely either venture-capital new Democrats, who see restrictions on the use of labor as a diversion from the rise of innovation, or Republicans who are opposed to any form or organized labor. Given these realities, teachers are unlikely to gain agency over their own jobs.

Play v. Compliance

Play is central to the new culture of learning just as it was to Dewey. Although contemporary schools are much more student centered than they were when Dewey wrote, they are still rooted in compliance, not play.

It was compliance with mandatory attendance laws that brought students from immigrant households to the schools in the early part of the last Century. For some students, it is no less the case now. In Los Angeles, for example, city and school police issued 47,000 citations to truant or tardy students between 2004 and 2009. [26] Fines start at $250.[27]

It is not just the students who are objects of compliance requirements. If teachers have tendencies toward micromanaging students, it may be because they have decreasing agency in their own working lives: that the system is micro-managing them.

Play, for all its possibilities, is a hard sell for educators and public officials. Dewey's legacy should teach us that pedagogical movements that are not anchored in organizational design and public understanding are doomed. In the years following

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[25] For a discussion of teaching modeled on these different work routines, see: Kerchner, Charles T., and Douglas E. Mitchell. *The Changing Idea of a Teachers' Union*. *Stanford Series in Education and Public Policy*. New York and London: Falmer Press, 1988.

[26] http://latimesblogs.latimes.com/lanow/2011/04/police-will-avoid-issuing-expensive-truancy-tickets-to-students-late-for-school.html (Accessed April 19, 2011).

[27] http://www.ascjweb.org/cloutier/truancytickets.html (Accessed April 19, 2011)

publication of *The Schools of Tomorrow,* progressive education grew rapidly. By 1919 a Progressive Education Association was founded and with it a journal and by the beginning of World War II it enjoyed a substantial measure of acceptance. Why, then, did it decline to cartoonish status, frontally attacked by critics, social commentators, and politicians with sufficient strength that both the association and its journal were out of business by 1960?

Educational historian Lawrence Cremin suggests four nails in the coffin.[28] First, like all social movements, as progressive education grew, it became distorted. Dewey's pedagogy morphed into a highly individualistic "child centered" idea in some quarters and socialistic political reform in the hands of others. George S. Count's *Dare the School Build a New Social Order?* became a lightning rod for political conservatives.[29]

Second, progressive education, like the rest of the Progressive Era reforms, was, in fact, a social movement. Conditions in schools were often horrible, teachers ill trained, and teaching highly repressive. While the originators knew how to connect social beliefs with on-the-ground teaching, social catch-phrases such as "creative self-expression" were not good guides to teachers a generation hence, and they simply lost the original intent.

Third, the movement was a victim of its own success. A lot of Dewey became standard operating procedure in Learning 1.0, and its routinization came at the cost of some of the beauty. Projects and activities, that originally were designed to connect students to the life around them, became pedagogical set pieces.

Fourth, there was, in fact, a conservative backlash in the years following World War II. By 1953, Arthur Bestor had written *Educational Wastelands,* and the anti-Dewian Council for Basic Education had been established.[30] It continues to this day, its instinct forwarded by the movement toward national standards and accompanying tests.

Apostles of the new learning would be well advised to follow the practice of doing radical things without sounding radical and to adopt the language of the current system as much as possible. One of the most innovative school superintendents I know has a practice of "never naming anything new, because it becomes a target." Call it 21st Century skills, or higher order thinking skills, or higher standards, but not *play.* No legislature I know of is going to believe that *The World of Warcraft* is good for kids.

To an extent, John Seely Brown tries to connect the new and conventional. In speeches and accompanying slides, he builds a bridge between the emerging world

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[28] Cremin, Lawrence A. "What Happened to Progressive Education." *Teachers College Record* 61, no. 1 (1959): 23-29.

[29] Counts, George S. *Dare the School Build a New Social Order*. New York: The John Day Company, 1932.

[30] Bestor, Arthur E. *Educational Wastelands: The Retreat From Learning in Our Public Schools*. Urbana: University of Illinois Press, 1953.

of social networking and geeking out and the achievement of conventional standards.[31]

The Challenge of Systems Design

The Administrative Progressives won and Dewey lost in part because the administrators and their supporters could envision a whole system and build around it. In David Tyack's words "they had a clear vision of how to reform American school systems…Their reforms were not piecemeal ones but a package they considered coherent."

> They wanted to buffer schools from lay influence, to eliminate ward school boards, to consolidate small districts, to restructure city schools as hierarchical and specialized bureaucracies, and to differentiate the curriculum to fit the presumed abilities and needs of students. They sought to reorganize schooling systematically on principals of business efficiency and educational science. [32]

In one sense, the job was easy. They needed only to borrow heavily from practices being put in place in business and in the rapidly growing civil service. They favored elite politics, and so, crowded out parents and students out of the decision-making processes. They created a world of substantial agency for themselves.

The design challenge is more difficult now. The current politics of education, and its largely unquestioned belief in market solutions and data-driven decisions, is for the most part non-systemic and largely attached to changing governance and school management rather than redesigning learning. As a result, existing school mechanisms are likely to conform new modes of learning into its existing structures and standard operating procedures.

Thus, to be successful, the designers of new cultures of learning, must also become adapt at systems design and the politics of institutional change. As Thomas/JSB say: "The challenge is to find a way to marry structure and freedom to create something altogether new" (p. 49).

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[31] http://www.johnseelybrown.com/Re-Imagining%20Dewey.pdf (Accessed April 19, 2011).
[32] Tyack, David. "Public School Reform: Policy Talk and Institutional Practice." *American Journal of Education* 100, no. 1 (1991): 1-19, p. 10.