Chapter Seven

Basic Infrastructures: Education and Credentialing

Introduction: Whom Do Present-Day Schools Really Serve?

Before we ask what would take the place of the existing model of institutionalized schooling, we should examine what function it really serves, and then ask ourselves: how much of that function do we even *want* served?

Despite the propaganda of the institutional schooling system's hangers-on, the primary function of institutionalized schooling has not been to serve the interests of students in pursuing their own, autonomous life-choices as effectively as possible. It has been, as an adjunct of the rest of the institutionalized power structure of the corporate state, to process human resources into the form that is most usable by corporate and state employers.

The current educational system is essentially a Taylorist-Fordist mass production system, geared to supply a uniform, standardized and graded input for corporate employers. According to Cathy Davidson, education

> changed drastically, radically... during the great era of Taylorist standardization of labor and of the laborer.... Compulsory... education in the United States found it needed ways to measure children's educational productivity with the same uniform standardization as was being applied to workers on the Fordist assembly lines....
>
> And in the first burst of Fordist assembly line labor, educators took the apparatus of scientific labor management and turned it into scientific learning management. Virtually all of the protocols now in place for measuring academic success are based on Taylorist principles. ...[O]n a system of reducing human qualities to measurable, standardized productivity designed for the assembly line.[1]

Naveen Jain makes a similar comparison to mass-production industry's process of standardization.

> This process requires raw material that is grouped together based on a specific criteria. Those raw materials are then moved from one station to another station where an expert makes a small modification given the small amount of time given to complete their task. At the end of the assembly line, these assembled goods are standardized tested to see if they meet certain criteria before they are moved to the next advanced assembly line.
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> We are using the same process to teach our kids today, grouping them by their date of manufacturing (age). We put them on an education assembly line every day, starting with one station that teaches them a certain subject before automatically moving them to the next class after a certain period of time. Once a year we use standardized testing to see if they are ready to move to the next grade....[2]

Likewise Joshua Davis:

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1 Cathy Davidson, "Standardizing Human Ability," *DML Central*, July 30, 2012 <http://dmlcentral.net/blog/cathy-davidson/standardizing-human-ability>.

2 Naveen Jain, "Rethinking Education: Why Our Education System is Ripe for Disruption," *Forbes*, March 24, 2013 <http://www.forbes.com/sites/naveenjain/2013/03/24/disrupting-education/>.

> ...the dominant model of public education is still fundamentally rooted in the industrial revolution that spawned it, when workplaces valued punctuality, regularity, attention, and silence above all else. (In 1899, William T. Harris, the US commissioner of education, celebrated the fact that US schools had developed the "appearance of a machine," one that teaches the student "to behave in an orderly manner, to stay in his own place, and not get in the way of others.") We don't openly profess those values nowadays, but our educational system—which routinely tests kids on their ability to recall information and demonstrate mastery of a narrow set of skills—doubles down on the view that students are material to be processed, programmed, and quality-tested.[3]

If traditional education is a mass-production system, it should be obvious who the customer is. You're probably working for one of them. The public schools and higher education system are not designed to facilitate learning. After all, Matt Yglesias notes, for a self-directed student who wants to learn something for her own purposes, the classroom learning environment is—to put it mildly—a suboptimal learning tool.

> Suppose you're curious about something. Like maybe articles about the recent banking crisis in Cyprus have made you curious about the island's history. The best first step, *by far*, is to go to the "History of Cyprus" Wikipedia page and read it. If you're still interested, maybe follow up with a book or two. Watching a person stand up and talk about Cyprus is pretty far down the list, whether you're watching the person live or on a video. It's true that if you want to learn how to tie a bowtie or to properly flip a Spanish tortilla, you may want to watch a video. The visual information is very helpful when you're talking about demonstrating a physical action. But to convey information? Reading is faster than listening, and buying a book—or checking one out from a library—has always been cheaper than paying college tuition, in part because when you go to college you still have to buy all these books.[4]

So, he asks, "Why didn't books kill the university?" The answer, again, is that the student is not the customer. The purpose of college is not to facilitate the student learning about Cyprus. It's to produce a human resource who's certified by one institution to have been processed to the specifications of another institution.

Even more fundamentally than merely processing students to be human resources of some institutional employer, the education system processes students to be managed by institutions *in general*, in every aspect of their lives.

> Many students, especially those who are poor, intuitively know what the schools do for them. They school them to confuse process and substance.... The pupil is thereby "schooled" to confuse teaching with learning, grade advancement with education, a diploma with competence, and fluency with the ability to say something new.... Health, learning, dignity, independence, and creative endeavour are defined as little more than the performance of the institutions which claim to serve these ends, and their improvement is made to depend on allocating more resources to the management of hospitals, schools, and other agencies in question.[5]

Under the institutionalized values inculcated in the education system, students are taught "to view doctoring oneself as irresponsible, learning on one's own as unreliable, and community organization, when not paid for by those in authority, as a form of aggression or subversion.... [T]he reliance on institutional treatment renders independent accomplishment suspect."[6]

As an example of the interlocking interests involved in processing the captive clientele of students, consider the ways the licensing cartels' credentialing requirements interacted with the interests of the higher education industry:

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3 Joshua Davis, "How a Radical New Teaching Method Could Unleash a Generation of Geniuses," *Wired*, October 15, 2013 <http://www.wired.com/business/2013/10/free-thinkers/>.

4 Matt Yglesias, "Why Didn't Books Kill the University?" *Slate Moneybox*, March 26, 2013 <http://www.slate.com/blogs/moneybox/2013/03/26/books_and_moocs_lots_of_ways_to_learn.html>.

5 Ivan Illich, *Deschooling Society* (New York, Evanston, San Francisco, London: Harper & Row, 1971), p. 1.

6 *Ibid.*, pp. 2-3.

> The standardization of these professional guilds benefited undergraduate institutions immensely, a fact that was not lost on university administrators.... The corporate-sponsored consolidation of the medical establishment changed undergraduate education from a choice to a necessity.... "I want to be a doctor when I grow up," the child in the PSA says. "I want to go to college."[7]

It's impossible to overestimate the institutional role of "public" education in the corporate economy. Trained human resources are one of the most important subsidized inputs the state supplies to big business. Because corporate HR departments are provided, at state expense, with an abundant supply of technically trained and credentialed cogs to fit in their machines, encultured to show up on time and to view taking orders from an authority figure behind a desk as normal, the state has already shifted the terms of the bargaining relationship such that employers simply state their requirements and would-be employees meet them as best they can. The conditions of employment and workplace culture are hardly even an issue for negotiation —or at least are far less of an issue than they would be if the educational system weren't geared to processing human raw material to corporate specs.

By 2012, Kevin Zeese and Margaret Flower argued that higher education had become "a commodity that produces automatons to serve big-finance capitalism, prevents campuses from being a source of societal transformation and creates modern indentured servants through debt slavery."[8]

Culturally right-wing libertarians often react with visceral outrage when college students demonstrate for free higher education or student loan amnesty. But their outrage is misplaced. The student demands arise in the context of a system in which, in collusion with employers, the state has made higher education a necessity rather than a luxury, and at the same time driven its costs through the roof. This state of affairs, in which credentialing is necessary for decent entry-level jobs and also costs $100,000 or more, is entirely a creation of the corporate state. As Keith Taylor writes:

> A great deal of research has shown that people used to be able to move upward in corporations and government, facilitated in part by internal educational programs.... These workplaces then require university credentials/degrees in order to land simple entry level jobs or move up one rung of the professional ladder....
>
> In other words professional workplaces have externalized their costs onto society. The barrier-to-entry (time lost at work, time spent hitting the books, and cost for tuition) for even low-skilled, low-paying jobs has increased.
>
> Universities are playing this game too. Universities are paying their administrators loads of money while holding campus wages down. In a public forum, President Hogan of the University of Illinois stated without remorse that while it was difficult to keep staff wages down, he had to pay administration the best money possible to get the best talent possible; I guess that logic doesn't carry over to support staff and professors. By the way, President Hogan makes over $620k a year for living in central Illinois, good work if you can get it.
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> Have a glance at the University of California system's administrator pay packages. The statewide board of trustees has drastically cut educational programs in the humanities and raised tuition. How did the UC Administration cope? They got fat raises....
>
> Administrators also give out sweetheart contracts to their university-business inner circles. Just try to get a copy of your local university's vendor contract and watch their reaction as they attempt to keep you from what is by all measures public information. Part of the reason universities were so reluctant to enter into fair trade certified buying programs for university apparel is the reluctance to open the books to the general public. Their desire to milk the system means more overhead for others to pay in the form of blood, sweat and tears.
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> Have no doubt about it, the student loan venders are making bank off of this downward spiral....

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7 Cory Doctorow, "Credentialism is Just as Screwed Up as Corporatism," *Boing Boing*, July 7, 2012 <http://boingboing.net/2012/07/07/credentialism-is-just-as-screw.html>.

8 Kevin Zeese and Margaret Flower, "Is Education a Human Right or a Privilege for the Wealthy?" truth.out.org, December 13, 2012 <http://truth-out.org/news/item/13299-is-education-a-human-right-or-a-privilege-for-the-wealthy>.

> One would think that with all the rhetoric used by university administrators extolling their service orientation toward the student populace that they would come out swinging on behalf of students with crippling debt. That is until one realizes that universities are now heavily reliant on their endowments. Guess who manages the endowment funds? That's right, many of the same people who also divvy out student loans. You take away the student loan cash cow, and you severely hit the capacity of endowments to provide a bloated return on investment....[9]

I would also point out the gross asymmetry in incentives for student loan lenders and borrowers, respectively. Repayment of principal and interest to lenders is guaranteed by the federal government; meanwhile, students are barred from even Chapter 13 bankruptcy regardless of what catastrophic event befalls them.

It's an example of what Ivan Illich called "radical monopoly"—the state subsidizes a certain high-overhead, capital-intensive, and costly way of doing things, and then turns that high-cost input into a necessity for everyone by crowding out the alternatives.

The students may be wrong about the solution—free universal higher education, by itself, would just further inflate the credentialing requirements for basic employment and increase the tyranny of professionalism. But they're not the spoiled ingrates those on the Right make them out to be.

The system is riddled with all sorts of other artificial scarcities, like the barriers—which Illich discusses—against the low-cost transfer of knowledge and skill.

> Potential skill teachers are never scarce for long because, on the one hand, demand for a skill grows only with its performance within a community and, on the other, a man exercising a skill could also teach it. But, at present, those using skills which are in demand and do require a human teacher are discouraged from sharing these skills with others. This is done either by teachers who monopolize the licenses or by unions which protect their trade interests....
>
> Skill teachers are made scarce by the belief in the value of licenses. Certification constitutes a form of market manipulation and is plausible only to a schooled mind.[10]
>
> Converging self-interests now conspire to stop a man from sharing his skill. The man who has the skill profits from its scarcity and not from its reproduction.... The public is indoctrinated to believe that skills are valuable and reliable only if they are the result of formal schooling. The job market depends on making skills scarce and on keeping them scarce, either by proscribing their unauthorized use and transmission or by making things which can be operated and repaired only by those who have access to tools or information which are kept scarce.
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> Schools thus produce shortages of skilled persons....
>
> Insisting on the certification of teachers is another way of keeping skills scarce....[11]

Marcus Winters pointed out the absence of any correlation between teacher credentialing and effectiveness, and questioned the need for it. He proposed

> removing the barriers to becoming a teacher, suggesting that since there is no correlation between certification and teacher effectiveness, anyone with a college degree should be given the opportunity to teach if they are able to find someone to hire them. The fact is that many of us who went through teacher preparation and certification programs know they were not very helpful when it comes to the realities of the classroom. It is no surprise then that such certification has little impact on student success.
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> I think Winter's idea deserves some attention, particularly in the case of secondary studies, but I wonder why he believes that a college degree should be required.... Academic inflation is only a recent phenomena [sic]. Historically the majority of careers... did not require such certification for success....

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9 Keith Taylor, "The Student Loan Debt System," Center for a Stateless Society, December 9, 2011 <http://c4ss.org/content/9115>.

10 Illich, *Deschooling Society*, pp. 14-15.

11 *Ibid.*, pp. 89-90.

> What if instead of requiring individuals to jump through certification hoops, we filled our secondary schools with real-world photographers, journalists, scientists, businesswomen, and others. These people also might not necessarily be employed full-time at the school. Instead, they may perhaps teach a class or two each semester. They may take on the important charge of connecting students with mentors in their field, helping them grow their personal learning networks, and supporting them in acquiring apprenticeship and/or internship opportunities.[12]

As our discussion of interlocking bureaucracies above already suggested, higher education also serves the needs of the administrative bureaucracies that run it. Matt Yglesias cites data showing that the number of college administrators increased 60 percent from 1993 to 2009—10 times the growth rate for tenured faculty—and spending on administration at the 198 leading U.S. universities rose almost twice as fast as funding for research and teaching from 1993 to 2007.

> The issue is that schools are finding that they can get away with charging high prices. Since colleges are non-profits, ability to charge high prices doesn't lead to dividend payouts or the acquisition of big cash stockpiles. The money gets spent. And the trend lately has been to spend it on administrators.
>
> All of which is one reason I'm skeptical that you can really do much on the college "cost" front by offering more tuition subsidies. At any given level of subsidy, schools are going to charge families what they can afford to pay and then they're going to take that money and spend it on the stuff that the people running the school want to spend it on.[13]

The education system is a 20th century mass-production age dinosaur in another sense. Like industrial and state bureaucracies, it can only function in an environment of predictability and stability. The "learning" imparted in the bureaucratic school system is only useful for those with carefully managed lives. It is, in Nassim Taleb's phrasing, fragile: that is, useless in the face of Black Swan events that can't be anticipated. Given an uncontrolled environment, it is impossible to create a planned curriculum that anticipates the kinds of knowledge that might be needed for a wide range of contingencies. An anti-fragile educational curriculum, rather than attempting to plan learning for a specific set of contingencies, must evolve organically through self-direction, under a wide range of experiences and spontaneously developing interests, and build a wide variety of fortuitous interconnections between assorted bits of knowledge.

> The biologist and intellectual E.O. Wilson was once asked what represented the most hindrance to the development of children; his answer was the soccer mom.... [S]occer moms try to eliminate the trial and error, the antifragility, from children's lives, move them away from the ecological and transform them into nerds working on pre-existing... maps of reality. Good students, but nerds—that is, they are like computers except slower. Further, they are now totally untrained to handle ambiguity.[14]
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> This made me focus on what an intelligent antistudent needed to be: an autodidact—or a person of knowledge compared to the students called "swallowers" in Lebanese dialect, those who "swallow school material" and whose knowledge is only derived from the curriculum....
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> [When] people... [are] selected for trying to get high grades in a small number of subjects rather than follow their curiosity[,] try taking them slightly away from what they studied and watch their decomposition, loss of confidence and denial.[15]

Imagine, instead of our present unholy alliance between the bloated educational bureaucracies and bloated HR bureaucracies, an educational system that treated pupils as customers—or owners!—rather than a product, and was geared to serving their perceived interests and learning needs. Imagine a bottom-up, user-driven curriculum. Under such a system, without employer access to a supply of ready-made human

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12 "Could the Key to Teacher Effectiveness Mean Dropping Certification Requirements?" *The Innovative Educator*, December 14, 2011 <http://theinnovativeeducator.blogspot.com/2011/12/could-dropping-certification.html>.

13 Matthew Yglesias, "The Administrator Hiring Spree," *Slate Moneybox*, April 11, 2013 <http://www.slate.com/blogs/moneybox/2013/04/11/administrator_hiring_spree_colleges_are_hiring_new_staff_but_not_new_teachers.html>.

14 Nassim Taleb, *Antifragile: Things That Gain From Disorder* (New York: Random House, 2012), p. 242.

15 *Ibid.*, pp. 244-245.

capital produced to order, the prerequisites for employment and conditions of work might actually be a contested issue.

So unlike most analyses of the educational system and proposals for educational "reform," we are not starting from an assumption of the corporate economy and its personnel needs as a given, and then trying to figure out how the schools could better meet corporate employers' needs to "be more competitive in the global economy," and better train pupils for "success in their working lives."

This approach is typified, at its most extreme, by David Coleman—apostle of the "common core standards" cooked up by the Bill and Melinda Gates Foundation in cahoots with the Department of Education: "[A]s you grow up in this world you realize people really don't give a shit about what you feel or what you think.... It is rare in a working environment that someone says, 'Johnson, I need a market analysis by Friday but before that I need a compelling account of your childhood.'"[16]

Well, he at least gets points for honesty. But if nobody in our working environment gives a shit what we feel or think, that makes it all the more imperative that we pay attention ourselves to what we feel and think. And if—as Coleman admits—those in charge of the workplace don't give a shit about us, then explicitly defining the mission of the state school system as shaping human personalities and characters to suit the needs of employers that view them as disposable production inputs is morally equivalent to loading people on boxcars to Auschwitz. It amounts to an explicit admission that students are the product, not the customers, of the educational system.

The students themselves certainly perceive this, which may explain a lot about why some kids do badly in school. Consider the example of Marina Gorbis's son Greg, after he transferred from a progressive school based on self-directe learning to a conventional high school. Within a year or so of the change, learning went "from being a joyful, often invisible part of the fabric of his daily life to being a chore, something he did because someone else was forcing him to, something he would be judged on and for which he would be either rewarded or punished."[17]

Since the existing system obviously deserves to be condemned as unfit for human beings, what will we build in its place? Unlike most analyses, we will not hold everything constant *except* education, and then figure out how to "reform" education so as better to serve the needs of the other institutions.

Instead, we will assume a society which has come into being as the culmination of *all* the trends underway at this minute: the replacement of large, centralized, hierarchical employers as the dominant economic form by small, largely family- or cooperatively owned, neighborhood micromanufacturing enterprises, truck farms and permaculture operations, commons-based peer producers, mutuals, and informal and household enterprises. The destruction of large-scale bureaucratic enterprises and their monopsony power in the labor market, and the rise of networked learning alternatives, mean that bargaining power will become more equal and credentialing standards will be negotiated rather than declared by fiat. In such a society, the interaction of the training and credentialing requirements of business enterprises with the educational interests of would-be employees will be a matter for negotiation, on a case-by-case basis.

I. Alternative Models

Robert Pirsig, in the "Church of Reason" passage of *Zen and the Art of Motorcycle Maintenance*, describes the functioning of an education system when it becomes a tool for self-directed learning, rather than processing human resources for institutional consumers. Phaedrus speculated on the likely career of a cramming, résumé-padding "good student" who was exposed for the first time to an educational system in which

16 Sam Smith, "The war on education (and reading): David Coleman's common core of nonsense," *Undernews*, November 4, 2011 <http://prorevnews.blogspot.com/2011/11/war-on-education-and-reading-david.html>.

17 Marina Gorbis, *The Nature of the Future: Dispatches From the Socialstructured World* (New York, London, Toronto, Sydney, New Delhi: Free Press, 2013), pp. 73-75.

grades and degrees had been eliminated. Absent the motivation of grades, the student would gradually cease attending lectures and completing assignments, and finally drop out.

> But what had happened? The student, with no hard feelings on anybody's part, would have flunked himself out. Good! This is what should have happened. He wasn't there for a real education in the first place and had no real business there at all. A large amount of money and effort had been saved and there would be no stigma of failure and ruin to haunt him the rest of his life. No bridges had been burned.
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> The student's biggest problem was a slave mentality which had been built into him by years of carrot-and-whip grading, a mule mentality which said, "If you don't whip me, I won't work." He didn't get whipped. He didn't work. And the cart of civilization, which he supposedly was being trained to pull, was just going to have to creak along a little slower without him.
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> This is a tragedy, however, only if you presume that the cart of civilization, "the system," is pulled by mules. This is a common, vocational, "location" point of view, but it's not the Church attitude.
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> The Church attitude is that civilization, or "the system" or "society" or whatever you want to call it, is best served not by mules but by free men. The purpose of abolishing grades and degrees is not to punish mules or to get rid of them but to provide an environment in which that mule can turn into a free man.
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> The hypothetical student, still a mule, would drift around for a while. He would get another kind of education quite as valuable as the one he'd abandoned, in what used to be called the "school of hard knocks." Instead of wasting money and time as a high-status mule, he would now have to get a job as a low-status mule, maybe as a mechanic. Actually his real status would go up. He would be making a contribution for a change. Maybe that's what he would do for the rest of his life. Maybe he'd found his level. But don't count on it.
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> In time...six months; five years, perhaps...a change could easily begin to take place. He would become less and less satisfied with a kind of dumb, day-to-day shopwork. His creative intelligence, stifled by too much theory and too many grades in college, would now become reawakened by the boredom of the shop. Thousands of hours of frustrating mechanical problems would have made him more interested in machine design. He would like to design machinery himself. He'd think he could do a better job. He would try modifying a few engines, meet with success, look for more success, but feel blocked because he didn't have the theoretical information. He would discover that when before he felt stupid because of his lack of interest in theoretical information, he'd now find a brand of theoretical information which he'd have a lot of respect for, namely, mechanical engineering.
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> So he would come back to our degreeless and gradeless school, but with a difference. He'd no longer be a grade-motivated person. He'd be a knowledge-motivated person. He would need no external pushing to learn. His push would come from inside. He'd be a free man. He wouldn't need a lot of discipline to shape him up. In fact, if the instructors assigned him were slacking on the job he would be likely to shape them up by asking rude questions. He'd be there to learn something, would be paying to learn something and they'd better come up with it.
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> Motivation of this sort, once it catches hold, is a ferocious force, and in the gradeless, degreeless institution where our student would find himself, he wouldn't stop with rote engineering information. Physics and mathematics were going to come within his sphere of interest because he'd see he needed them. Metallurgy and electrical engineering would come up for attention. And, in the process of intellectual maturing that these abstract studies gave him, he would he likely to branch out into other theoretical areas that weren't directly related to machines but had become a part of a newer larger goal. This larger goal wouldn't be the imitation of education in Universities today, glossed over and concealed by grades and degrees that give the appearance of something happening when, in fact, almost nothing is going on. It would be the real thing.[18]

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18 Robert M. Pirsig, *Zen and the Art of Motorcycle Maintenance: An Inquiry Into Values* (New York: William Morrow Publishing Company, 1979). Online version courtesy of Quality page, Virtual School Distributed Learning Community <http://www.virtualschool.edu/mon/Quality/PirsigZen/index.html>.

That sounds a lot like Brazilian teacher Paulo Freire's pedagogical philosophy, in which students "meet around a problem chosen and defined by their own initiative." He

> discovered that any adult can begin to read in a matter of forty hours if the first words he deciphers are charged with political meaning. Freire trains his teachers to move into a village and to discover the words which designate current important issues, such as the access to a well or the compound interest on the debts owed to the *patron.* In the evening the villagers meet for the discussion of these key words. They begin to realize that each word stays on the blackboard even after its sound has faded. The letters continue to unlock reality and to make it manageable as a problem. I have frequently witnessed how discussants grow in social awareness and how they are impelled to take political action as fast as they learn to read. They seem to take reality into their hands as they write it down.[19]

Or in Freire's own words:

> Knowledge emerges only through invention and re-invention, through the restless, impatient, continuing, hopeful inquiry human beings pursue in the world, with the world, and with each other.[20]
>
> Liberating education consists in acts of cognition, not transferrals of information.[21]

Compare this to the working-class discussion groups in early industrial Britain, where newly literate or perhaps illiterate workmen gathered to hear passages read from some radical periodical or from the works of Thomas Paine, and to discuss them. E.P. Thompson relates an especially vivid example of the learning path of north country coal miners, whose self-education and radicalization quickly fed on one another to reach critical mass (as evidenced by this note left in the house of a supervisor during an 1831 strike):

> I dinna pretend to be a profit, but I naw this, and lots of ma marrows na's te, that wer not tret as we owt to be, and a great filosopher says, to get noledge is to naw wer ignerent. But weve just begun to find that oot, and ye maisters and owners may luk oot, for yor not gon to get se much o yor own way, wer gan to heve some o wors now....[22]

Networked learning writer Will Richardson, in an open letter to his kids, takes a similar "life as classroom" approach:

> I promise to support you for as long as I can in your quest to learn after high school, whatever that might look like. I'll do everything I can to help you find what your passions are and pursue them in whatever ways you decide will allow you to learn as much as you can about them. I'll help you put together your own plan to achieve expertise in that passion, and that plan may include many different activities and environments that look nothing like (and in all likelihood will cost much less than) a traditional college experience. Some of your plan may include classrooms, some may include training or certification programs. But some may also include learning through online video games, virtual communities, and informal networks that you will build around your interests, all moving you further along toward expertise....
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> And throughout this process, I will support you in the creation of your learning portfolio, the artifact which when the time comes, you will share to prospective employers or collaborators to begin your life's work. (In all likelihood, in fact, you will probably find these people as a part of this process.) Instead of the piece of paper on the wall that says you are an expert, you will have an array of products and experiences, reflections and conversations that show your expertise, show what you know, make it transparent. It will be comprised of a body of work and a network of

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19 Illich, *Deschooling Society*, pp. 18-19.

20 Paolo Freire. *Pedagogy of the Oppressed*. 30th anniversary edition. Translated by Myra Bergman Ramos. Introduction by Donaldo Macedo (New York and London: Continuum, 1970, 2000), p. 72.

21 *Ibid.*, p. 77.

22 E. P. Thompson, *The Making of the English Working Class* (New York: Vintage Books, 1961, 1966), p. 715.

learners that you will continually turn to over time, that will evolve as you evolve, and will capture your most important learning.[23]

Universities originally came into being through the efforts of self-directed students operating on something like Pirsig's model. The University of Bologna, for example, started as a sort of guild or cooperative organized by individual learners. According to Roderick Long:

> In the 12th century, Bologna was a center of intellectual and cultural life. Students came to Bologna from all over Europe to study with prominent scholars. These individual professors were not originally organized into a university; each one operated freelance, offering courses on his own and charging whatever fees students were willing to pay. If a professor was a lousy teacher or charged too much, his students would switch to a different professor; professors had to compete for students, and would get paid only if students found their courses worth taking.
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> Bologna soon became crowded with foreign students. But being a foreigner in Bologna had its disadvantages; aliens were subject to various sorts of legal disabilities....
>
> The foreign students therefore began to band together, for mutual insurance and protection, into associations called "nations," according to their various nationalities; one "nation" would be composed of all English students, another of all French students, and so on. If any student needed assistance..., the other members of his "nation" would chip in to help. Each was willing to pledge a contribution to the group for this purpose, in exchange for the assurance that he would himself be able to draw on these pooled resources in time of need.
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> In time the different "nations" found it useful to spread the risk still more widely by combining together into a larger organization called a *universitas.* This was not yet a university in the modern sense; the closest English equivalent to the Latin *universitas* is "corporation." The *universitas* was essentially a cooperative venture by students; the professors were not part of the *universitas.* The *universitas* was democratically governed; regular business was conducted by a representative council consisting of two members from each "nation," while important matters were decided by the majority vote of an assembly consisting of the entire membership of the *universitas*....
>
> Once the *universitas* had been formed, the students now had available to them a means of effective collective bargaining with the city government.... The students were able to exercise considerable leverage in their disputes with the city because if the students decided to go on "strike" by leaving the city, the professors would follow their paying clients and the city would lose an important source of revenue. So the city gave in, recognized the rights of foreign students, and granted the *universitas* civil and criminal jurisdiction over its own members. Although the *universitas* was a purely private organization, it acquired the status of an independent legal system existing within, but not strictly subordinate to, the framework of city government.
>
> How did the *universitas* of Bologna become the University of Bologna? Well, after all, this new means of effective bargaining with the city could also be used as a means of effective collective bargaining with the *professors.* The students, organized into a *universitas,* could control professors by boycotting classes and withholding fees. This gave the *universitas* the power to determine the length and subject-matter of courses, and the fees of professors. Soon professors found themselves being hired and fired by the *universitas* as a whole, rather than by its individual members acting independently. At this point we can finally translate *universitas* as "University."...
>
> The professors were not completely powerless; they formed a collective-bargaining association of their own, the College of Teachers, and won the right to determine both examination fees and requirements for the degree. A balance of rights thus emerged through negotiation: the obligations of professors were determined by the students, while the obligations of students were determined by the professors. It was a power-sharing scheme; the students, however, continued to act as the dominant partner, since they were the paying clients and collectively carried more clout.[24]

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23 Will Richardson, “Dear Kids, You Don't Have to Go to College,” *Weblogg-ed*, November 7, 2006 <http://weblogg-ed.com/2006/dear-kids-you-dont-have-to-go-to-college/>.

24 Roderick Long, "A University Built By the Invisible Hand," *Formulations* (Spring 1994) <http://www.freenation.org/a/f13l3.html>.

Other major European universities, as well, started as either students' or professors' guilds.

And today, students and precarious faculty at legacy universities around the world are becoming increasingly active in their demands to reshape their institutions in a radically democratic form. Combating the neoliberal restructuring of the university, in which the number and salaries of administrators explode while most teaching positions are assigned to low-paid adjuncts or graduate assistants, is a global rallying cry. In 2015 there has been an increasing number of high-profile strikes by graduate assistants and adjunct faculty at univerities around the world, with a strong worldwide support and media advocacy network.

Once we abandon the idea of schools as institutions run by "educational professionals," and of learning as an activity that takes place at a designated location under the supervision of such professionals, the possibilities for linking individual learners to sources of knowledge are almost infinite.

If the institutionalized educational system is a mass-production factory with the human resource as its product and the employer as its customer, an educational system organized around the agency of the learner will be a lean, demand-pull system. Rather than moving human beings to an assembly line to be processed, it will move knowledge to the point of consumption, when and where it is needed. If young people are alienated from the old mass-production schools, they understand instinctively how to use new networked learning tools for their own autonomous purposes. Mimi Ito writes:

> It is no wonder my daughter wants to mess around with the guitar and the Internet and pursue some interests at a pace that doesn't feel like the relentlessly scheduled pressure of school and structured activities. For her, the Internet has been a lifeline for self-directed learning and connection to peers. In our research, we found that parents more often than not have a negative view of the role of the Internet in learning, but young people almost always have a positive one.
>
> When we interview young people, they will talk about how the Internet makes it easy for them to look around and surf for information in low risk and unstructured ways. Some kids immerse themselves in online tutorials, forums, and expert communities where they dive deep into topics and areas of interest, whether it is fandom, creative writing, making online videos, or gaming communities....
>
> ...I am proud of her for managing a rigorous course of study both in school and out of school, but I'm also delighted that she finds the time to cultivate interests in a self-directed way that is about contributing to her community of peers. The Internet and her friends have offered my daughter a lifeline to explore new interests that are not just about the resume and getting ahead of everyone else. In today's high-pressure climate for teens, the Internet is feeling more and more like one of the few havens they can find for the lessons that matter most.[25]

Sugata Mitra's model of self-directed learning, in which students are given free access to laptops and left alone to explore, individually or cooperatively as they see fit, is a high-tech update of the Montessori approach. It was put into practice by Sergio Juárez Correa in a run-down, impoverished school in Matamoros, Mexico. The result was a 12-year-old girl who scored first in mathematics out of all the students in Mexico, and ten more students who scored at the 99.99th percentile.[26] It's hard to imagine a better answer to the elitists who say “self-directed learning is great for students who are capable of benefiting from it, but what about the majority of ordinary kids who need the structure and discipline of the traditional system?”

Proudhon, writing in the mid-19th century, wrote of breaking down barriers between the rest of society in ways that anticipated Illich. His provisions for technical training, for example, relied heavily on linking the public education system with the workers' associations, the latter serving as

> both centers of production and centers for education.... Labor and study, which have for so long and so foolishly been kept apart, will finally emerge side-by-side in their natural state of union.[27]

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25 Mimi Ito, “What Teens Get About the Internet That Parents Don't,” *The Atlantic*, March 8, 2013 <http://www.theatlantic.com/technology/archive/2013/03/what-teens-get-about-the-internet-that-parents-dont/273852/>.

26 Joshua Davis, *op. cit.*

27 *On the Political Capacity of the Working Classes* (1865), in *Selected Writings of Proudhon*. Edited by Stewart Edwards.

Contemporary ideas of p2p education, likewise, usually envision some sort of horizontal integration between learning groups and production groups in an organic p2p culture (although the quote below arguably puts heavy emphasis on what we would call post-secondary educational functions rather than primary education).

> **The P2P mode of production overcomes the division between doing and knowing** that characterizes the currently hegemonic system. Project development communities (OSE, WikiSpeed, Mozilla, etc.) generate both "products" and the research and innovation associated with them.
>
> - "Schools of the Commons"... would make sense as facilitators of free research on general social theory and basic scientific research. They would not offer training or degrees, but they would generate pedgaogical materials of all kinds by themselves or with the help of specialized work groups.
> - The local learning groups would use these materials, as well as those developed by the development communities, to become, hand in hand with the **local production groups**, facilitators of local P2P culture everywhere, by building the structure that would facilitate access to pedgaogical materials and tutors for those who would like to learn.[28]

Over forty years ago, Illich envisioned low-tech "learning exchanges" or "educational webs" based on widespread distribution of small tape recorders/players, educational tapes, and local peer-matching services that maintained lists of teachers with skills or subject matter to share and students with learning goals and then facilitated connections between them.[29]

> We must conceive of new relational structures which are deliberately set up to facilitate access to these resources for the use of anybody who is motivated to seek them for his education. Administrative, technological, and especially legal arrangements are required to set up such web-like structures.[30]
>
> The operation of a peer-matching network would be simple. The user would identify himself by name and address and describe the activity for which he sought a peer. A computer would send him back the names and addresses of all those who had inserted the same description. It is amazing that such a simple utility has never been used on a broad scale for publicly valued activity....
>
> A complement to the computer could be a network of bulletin boards and classified newspaper ads, listing the activities for which the computer could not produce a match. No names would have to be given. Interested readers would then introduce their names into the system....[31]

Now imagine the same functions organized today through the Internet.

The integration of education into the community can be physical, as well as functional. In Claude Lewenz's Villages, classroom space—rather than being concentrated in some centrally located specimen of Stalinist architecture and serviced by a bus system—is decentralized throughout the community. He quotes Christopher Alexander's Pattern No. 18 (from *A Pattern Language*):

> Instead of the lock-step of compulsory schooling in a fixed place, work in piecemeal ways to decentralise the process of learning and enrich it through contact with many places and people all over the city: workshops, teachers at home or walking through the city, professionals willing to take on the young as helpers, older children teaching younger children, museums, youth groups travelling, scholarly seminars, industrial workshops, old people and so on.

Translated by Elizabeth Fraser (Garden City, N.Y.: Anchor, 1969), pp. 86-87; *General Idea of the Revolution in the Nineteenth Century*. Translated by John Beverly Robinson (New York: Haskell House Publishers, Ltd., 1923, 1969 [1851]), p. 274.

28 "The system of intellectual production of the p2p mode of production," *Las Indias in English*, July 7, 2012 <http://english.lasindias.com/the-system-of-intellectual-production-of-the-p2p-mode-of-production/>.

29 Illich, *Deschooling Society*, pp. 76-77.

30 *Ibid.*, p. 78.

31 *Ibid.*, p. 93.

"The Village," Lewenz writes, "serves as a life-long classroom." By decentralizing control of education to the primary community of a few thousand people, the Village can greatly reduce overhead. Lewenz again quotes Alexander on the elimination of expenses from overpriced, centrally located buildings and administrative salaries, and the use of the savings to reduce student-teacher ratios down to ten or so. He recommends building small schools, one at a time, located in the public part of the community, "with a shopfront and three or four rooms."[32]

The relevance to this of the platform-module architecture seems obvious.

The old educational system was a classic example of the kinds of authoritarian institutions described by Paul Goodman in *People or Personnel* and Ivan Illich in *Tools for Conviviality*: characterized by a bureaucratic, hierarchical culture, enormous overhead, cost-plus accounting, and markups of 300% or more over and above the costs required by the purely technical considerations involved in doing anything.

As John Robb has pointed out, a system of higher education that fully exploited all the possibilities of new forms of organization—networked platforms and open-source materials—could make the equivalent of a college education available for $20 a month.[33]

One central principle that's apt to govern any liberatory, user-driven model of education is—in Michael Staton's phrase—the disaggregation or unbundling of services currently performed by the education system.

> The Internet has challenged business models that serve bundled services by offering unbundled alternatives. Offering direct access to targeted services tends to disintermediate (the process of cutting out middlemen between producers and consumers) institutions whose value proposition relies on placing a premium on the aggregation of services and resources. We have seen these forces disrupt the music and journalism industries, and similar forces are beginning to affect the education sector. [34]

Besides housing and all the ancillary services associated with colleges, this will mean unbundling the curriculum itself. The current credentialling system offers curricula—designed by higher education bureaucracies in collaboration with human resources bureaucracies—presented as a package deal. In order to get a credential acceptable to a corporate employer, the student is typically forced to pay for an entire curriculum of 100-plus credit-hours mostly unrelated to the skill she'll actually be using. Here's how Daniel de Vise describes unbundling:

> For thousands of years now, the university has been the middleman of the higher education system. The university provided the needed infrastructure, the branding, and an easy route to a white collar job or graduate school. In return, students had to agree to taking courses that the faculty thought were needed. The courses could be recommended because they would help the student understand the subject, or for other completely unrelated reasons (to make them a “well rounded” person, or to give a faculty colleague some students to teach). Faculty, on the other hand, did not have to look for students, could bask in the reflected glory of the university name, and still had a regular paycheck. Accreditors were the accountants of academia, making sure that “quality” was maintained.
>
> The astonishing pace of technology in the last few years has changed the landscape of academia completely in several ways:
>
> (1) There is an excess of information available. Instructors are no longer required to be a source of information. Rather, they curate existing information.
>
> (2) Students today want practical skills that they can use to get a job, and not necessarily a degree....
>
> (3) Infrastructure, at least in the West, has improved to the extent that anyone with a video camera and basic tools can design, deliver, and take payment for courses.

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32 Lewenz, *How to Build a Village*, p. 119.

33 John Robb, “The Education Bubble,” *Global Guerrillas*, April 13, 2011 <http://globalguerrillas.typepad.com/globalguerrillas/2011/04/journal-the-education-bubble.html>.

34 Michael Staton, “Disaggregating the Components of a College Degree,” American Enterprise Institute, August 2, 2012 (draft), p. 6.

(4) Students are no longer just your typical 18-22 year olds. They can be a mom who wants to get a certification, a soldier in Afghanistan, or an office worker in Hanoi....

(5) Technology has eliminated a lot of the manual work teachers (grading) and administrators (registration) used to do.

(6) Students want short courses that utilize all the technology available (multimedia, social media, games).

This has created a situation where technology is freely available and can let anyone teach or learn: students who want flexibility, teachers who can now become one-man or -woman universities. Yet many schools are still stuck in the past.

Radical changes in educational content and delivery mechanisms will lead to an unbundling of the university as we know it.[35]

David Blake argues that unbundling will amount to a long tail in the education market.

> The traditional degree, with its four-year time commitment and steep price tag, made sense when the university centrally aggregated top academic minds with residency-based students. Education required extensive logistics, demanding deep commitment from students worthy of being rewarded with the all-or-nothing degree.
>
> But education isn't all-or-nothing. College and its primary credential, the degree, needn't be either. The benefit of modern, online education is that the burden of logistics and infrastructure are greatly reduced, allowing for the potential of a fluid, lifelong education model. The problem, to date, is that formal, online education is still being packaged in all-or-nothing degree programs, falsely constraining education innovation. The New Republic writes, "Online for-profit colleges haven't disrupted the industry because while their business methods are different, their product—traditional credentials in the form of a degree—is not."
>
> Technology creates efficiencies by decreasing unit size while increasing utility. To falsely constrain anything to historically larger canons is to render technology impotent to do what it does best.
>
> Clay Christensen predicts, "I bet what happens as [higher education] becomes more modular is that accreditation occurs at the level of the course, not the university; so they can then offer degrees as collection of the best courses taught in the world. A barrier that historically kept people out of university [is] blown away by the modularization and the change in [course-by-course] accreditation."[36]

The great majority of education at present is probably driven either by the signaling needs of HR departments (is able to show up on time, take orders, and put up with bullshit) or the need for licensing cartels to erect artificial barriers against practitioners. When most production is uncoupled from institutional employment, and individual learning programs and course selections are driven by the needs of the student, we can expect course selections to be made on an ad hoc basis and tailored to the immediate requirements of the situation (as illustrated by Pirsig's lifelong learner). As Stephen Downes argues,

> Earning a degree will, in such a world, resemble less a series of tests and hurdles, and will come to resemble more a process of making a name for oneself in a community. The recommendation of one person by another as a peer will, in the end, become the standard of educational value, not the grade or degree.[37]

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35 Daniel de V ise, "Guest post: An 'Arab Spring' of free online higher education," *Washington Post*, February 3, 2012 <http://www.washingtonpost.com/blogs/college-inc/post/guest-post-an-arab-spring-of-free-online-higher-education/2012/02/03/gIQAXiOFnQ_blog.html>.

36 David Blake, "Jailbreaking the Degree," *Techcrunch*, May 5, 2012 <http://techcrunch.com/2012/05/05/jailbreaking-the-degree/>.

37 Stephen Downes, *The Future of Online Learning: Ten Years On* (2008) <http://halfanhour.blogspot.com/2008/11/future-of-online-learning-ten-years-on_16.html>, pp. 19-20.

II. Potential Building Blocks for an Open Alternative

The industrial model of transporting human resources to a central processing site is just plain stupid, at a time when information can be transported anywhere more cheaply than tap water.

Why pay the salary of the teaching assistant who teaches a first- or second-year class in an enormous lecture hall—and the overhead costs of the physical plant and utilities that host the class—when lectures by the greatest minds in a field can be replicated at zero marginal cost for millions of students, via streaming video?[38] If there's any justification for it, it certainly doesn't lie—as any college student can tell you—in the greater one-on-one interaction or tailoring of material to individual needs provided in the auditorium class.

There's no disputing that an intimate seminar of a few students conducted by a leading scholar in her field is a unique experience—like sitting on the opposite end of a log from Mark Hopkins. But the large auditorium class of several hundred students—even one taught by a first-class scholar—is a different matter. As Clay Shirky describes his education:

> four years at Yale, in an incredible intellectual community, where even big lecture classes were taught by seriously brilliant people. Decades later, I can still remember my art history professor's description of the Arnolfini Wedding, and the survey of modern poetry didn't just expose me to Ezra Pound and HD, it changed how I thought about the 20th century.
>
> But you know what? Those classes weren't like jazz compositions. They didn't create genuine intellectual community. They didn't even create ersatz intellectual community. They were just great lectures: we showed up, we listened, we took notes, and we left, ready to discuss what we'd heard in smaller sections.
>
> And did the professors also teach our sections too? No, of course not; those were taught by graduate students. Heaven knows what they were being paid to teach us, but it wasn't a big fraction of a professor's salary. The large lecture isn't a tool for producing intellectual joy; it's a tool for reducing the expense of introductory classes.[39]

And of course networked collaborative platforms—think of blogs and wikis as the grandfather and Google's abortive Wave as the father—make it eminently feasible for students to interact with their instructors and with each other. Robb suggests the potential for gaming architectures as an educational tool.

> Online games provide an environment that connects what you do (work, problem solving, effort, motivation level, merit) in the game to rewards (status, capabilities, etc.). These games also make it simple to get better (learn, skill up, etc.) through an intuitive just-in-time training system. The problem is that this is virtual fantasy.
>
> ...In short, turn games into economic darknets that work in parallel and better than the broken status quo systems. As in: economic games that connect effort with reward. Economic games with transparent rules that tangibly improve the lives of all of the players in the REAL WORLD.[40]

As we already saw earlier in this chapter, the basic mapping architecture of MMORPGs can be tied to real-world geography, persons and objects, as a platform for coordinating their real-world interactions in virtual space. And as Robb pointed out in the passage above, much of our real lives—the way we pay our bills, etc.—already are governed by what amounts to a virtual architecture piggybacked on physical reality.

In surveying open course materials and open learning platforms, you probably can't do better than to start out with Anya Kamenetz's work.

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38 Robb, "Industrial Education?" *Global Guerrillas*, January 13, 2009 <http://globalguerrillas.typepad.com/globalguerrillas/2009/01/industrial-education.html>.

39 Clay Shirky, "Napster, Udacity and the Academy," Shirky.com, November 12, 2012 <http://www.shirky.com/weblog/2012/11/napster-udacity-and-the-academy/>.

40 Robb, "Online Games, Superempowerment, and a Better World," *Global Guerrillas*, March 18, 2010 <*http://globalguerrillas.typepad.com/globalguerrillas/2010/03/online-games-superempowerment-and-reality.html*>.

Her resource book for DIY scholars, *The Edupunk's Guide to a DIY Credential*,[41] was designed to be

> a comprehensive guide to learning online and charting a personalized path to an affordable credential using the latest innovative tools and organizations. This guide is full of people, programs, and ideas that are part of the future of learning. I've spoken to over 100 learners from programs and sites around the country and around the world that offer new methods of content delivery, new platforms for socialization, and new forms of accreditation. Most of them take advantage of the technology now at our disposal— they're either all-online programs that complement the experiences you're already having; or hybrid programs, combining in-person and online experiences. Nearly all of them are cheaper than your average state university. Many are even free! And I've given you the tools to go out and find even more options, and to create them for yourself.[42]

DIY education "means getting the knowledge you need at the time you need it, with enough guidance so you don't get lost, but without unnecessary restrictions. DIY doesn't mean that you do it all alone. It means that the resources are in your hands and you're driving the process."[43] The Guide includes chapters on how to do research online, write a personal learning plan, teach yourself online, build your personal learning network, find a mentor, get a credential, and demonstrate value to a network.[44]

The Personal Learning Network may well evolve into the peer network from which one seeks credentialing and work opportunities.

> in the long run, no one learns alone. You need people to bounce ideas off, answer questions, and help you when you get stuck, and to give you ideas about where to go next in your learning.... In a true PLN, you're a contributor, not just a consumer.... Over the course of your learning plan, your PLN will begin to overlap with the professional network of practitioners in your field, where you'll need to demonstrate value in order to connect with opportunities....[45]

The second half of the guide is a catalog of resources—reproduced in more easily accessible form on the Resources page of the book's website—that are of potentially immense value to an independent scholar. The first two categories consist mainly of means for obtaining class credit for extracurricular learning, alternative or irregular major programs, and the like. The third, the most important for someone engaged in self-directed learning outside the formal university system, is "Open World"—a guide that includes sections on open content, open social learning, open learning institutions, open ed startups, and reputation networks.[46]

The open content includes a wide array of open course materials like syllabi, lectures and textbooks—among them MIT's Open Coursework, Open Yale Courses and Open Textbooks. The open social learning section includes various online networks, but has the serious shortcoming—in my view—of neglecting field-dedicated scholarly email lists. Open learning institutions and open ed startups are unconventional learning networks and open universities, like P2PU and Uncollege.

III. Open Course Materials

For a major share of introductory learning, zero marginal costs of reproducing information can lower the price of education to almost zero. Freshman and sophomore auditorium classes, taught to

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41 Anya Kamenetz, *The Edupunk's Guide to a DIY Credential* (Bill and Melinda Gates Foundation, 2011) <http://www.smashwords.com/extreader/read/77938/1/the-edupunks-guide-to-a-diy-credential>. Various free online versions of the actual text can be found at <http://www.smashwords.com/books/view/77938>.

42 "About the Guide," *The Edupunk's Guide* <http://edupunksguide.org/about>.

43 Online html text <http://www.smashwords.com/extreader/read/77938/4/the-edupunks-guide-to-a-diy-credential>.

44 *Ibid.*

45 *Ibid.*

46 <http://edupunksguide.org/resources>.

hundreds of students at a time—often by graduate assistants—are designed to spread the cost of teaching out over as many students as possible. Student-instructor interaction is virtually nil. So expanding the number of students taught in a single lecture course a thousandfold at no additional cost, through video transmission over the Internet, should involve no appreciable reduction in quality. In fact the replacement of harried grad assistants just going through the motions with the leading figures in each field—and supplemented by independent access to an array of online material unimaginable twenty years ago—should increase instruction quality immeasurably.

According to Stephen Carson and Jan Philipp Schmidt,

> Not only is online learning beginning to scale massively, but it is also beginning to do so at almost zero marginal cost. The expense of adding an additional student in a campus setting remains relatively stable. In online learning, however, the cost of adding one more user is often so close to zero that it can be ignored....
>
> MIT, open education pioneer and founder of the OpenCourseWare movement, announced in December 2011 the creation of MITx as an open and non-profit alternative to for-profits like Udacity and Coursera. MITx is currently offering its first course, "Circuits and Electronics", which attracted large numbers of users, and is developing an opensource platform that anyone will be free to use. A number of other universities, including Harvard University and Georgia Tech, are paying close attention and developing their own massive, open, and online strategies.
>
> Open content lies at the core of these massive online courses. Typically, a series of video lectures, with short quizzes built in, make up the bulk of the instruction for users. This is good news for traditional universities, who already have vast amounts of high-quality teaching materials ready to share online. And because knowledge generation will continue to take place at universities, especially those that do advanced research, there will always be a need to update and revise materials. Since 2002, more than 250 universities in the OpenCourseWare movement have been publishing their academic materials openly on the Web and have shared materials from more than 15,000 courses in a wide range of disciplines and languages. These institutions are well positioned to add online-only courses to their open course work projects.
>
> A number of online services already allow free hosting and streaming of instructional videos. Since the materials are openly licensed, the need for sophisticated access management is obviated, and the materials can thus be made freely available.

Peer-to-peer learning networks can provide student support of a kind learners weren't getting from faculty in conventional course models in the first place.

> There are not enough subject matter experts to meet the needs of learners, and education systems worldwide are straining to find enough qualified teachers. MOOCs recognize this fact by setting up informal Q&A systems that allow participants to engage with each other. In some cases where peer-to-peer interactions are not directly supported within an online course, informal learning communities can emerge spontaneously on separate platforms....
>
> Systems to support peer-to-peer learning on the Web are widely available at very low cost or without charge. A range of Q&A systems can be self-hosted; open education projects, including OpenStudy and P2PU, provide platforms for such interaction; and Google groups, Yahoo groups, Ning sites, and Moodle installations can also be used to structure peer-to-peer interaction.[47]

An important consideration to bear in mind is that open course materials don't simply involve the transfer of the same material to a new venue; they involve a fundamental change in how the content is used. Anya Kamenetz writes:

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47 Stephen Carson and Jan Philipp Schmidt, "The Massive Open Online Professor," *Academic Matters*, May 2012 <http://www.academicmatters.ca/2012/05/the-massive-open-online-professor/>.

> MOOCs are content = a MOOC is not a course. A sage-on-stage lecture-based course is not particularly innovative, I know. But take those same lectures, chop them up into short segments, make them fastforwardable, pausable, allow people to add comments, ask a question in the forums, start and stop any time they want, work examples in realtime alongside the instructor, go to Wikipedia to look something up–
>
> –you have changed the fundamental nature of the experience. The power relationship is different. The talking head is shrunk to the size of a thumbnail. She speaks at the whim of the student. And her truth is represented as one among many hundreds of options, all of which are accessible for free.
>
> Content is infrastructure = If you look at it this way, a MOOC is really more like a glorified (really glorified) textbook. It's not an end-to-end solution. It's the basis of an experience that people have individually and collectively. Interaction with other people around the ideas is always going to be the important part of what happens to people when they are engaged with any kind of educational content.[48]

This reminds me of Marshall McLuhan's observation that each new medium has its predecessor as its content. And Matt Reed argues just that: technical innovations in the transmission of higher ed follow a progression much like that McLuhan describes in media.

> The animating principle behind the organization of traditional colleges was the scarcity of knowledge. Before movable type, the scarcity of knowledge was based on the scarcity of print; "recitation" sections were literally recitations of texts.... It was the only economically feasible way to share information.
>
> With movable type the game changed a bit; it became possible to expect students to read outside of class.... At that point, the value added by the professor had to go beyond simply reading the text. The professor was expected to analyze texts, to pit them against each other, and to help students develop the skills to interpret—and even challenge—the books themselves. Entire academic departments sprung up to interpret the sudden proliferation of print.
>
> In this model, information isn't as scarce as it had been, but it was still expensive in large quantities, and the skills needed to interpret it took more development. Professors were valuable in showing students how to handle the material, and in guiding them towards the "right" material. The definition of "right" material changes over time, but the principle remains.
>
> Now, with the web and social media, the entire concept of information scarcity is moot. Now the role of the professor is something like "sherpa," helping students navigate through mountains of information. Students can access information from just about anyone and anywhere; the goal now is in knowing what to do with it.
>
> Colleges have fought the most recent shift. We still allocate lecture time as if it were a scarce commodity. Online classes are different, but for the most part, they're still based on the traditional model. They're like filmed plays, as opposed to movies. We charge higher rates than we ever have for access to lectures, even though information has never been more available from more sources more freely. And we act as if the only way to learn information is to ignore most of what has come along in the last ten years.[49]

Each new mode of knowledge transmission takes the previous mode as its subject matter. The scarce information in one node becomes the free subject matter of the next mode. The next mode incorporates the previous one as subject matter—treating it as a raw material that in itself is no longer scarce, but adding a new layer of interpretive framing, or value added, that IS scarce. But the power structure associated with an old mode wants to artificially impose the same laws of scarcity on the new one. Most MOOC online courses are the moral equivalent of a filmed play, rather than a new form of content adapted to the movie format.

Indeed, perhaps the biggest drawback of MOOCs, is that they're an example of new wine in old

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48 Anya Kamenetz, "MOOCs are Infrastructure," *DIY U*, February 6, 2013 <http://diyubook.com/2013/02/moocs-are-infrastructure/>.

49 Matt Reed, "What if Colleges Used Social Media Well," *Inside Higher Ed*, April 16, 2013 <http://www.insidehighered.com/blogs/confessions-community-college-dean/what-if-colleges-used-social-media-well>.

bottles—that is, they are an attempt to fit online learning into the traditional lecture format of brick-and-mortar higher education. As Radhika Morabia argues:

> •**Why are we trying to recreate a college lecture?** Online education is the chance to do something different. At this stage in MOOCs, we're trying to adapt the online world to education. We can go so much farther if we do the exact opposite. I've learned 99% of what I know from the internet. What if we adopted that kind of model to a more accessible form, instead of being scattered and not being user-friendly? That would be a true online education platform. (Some courses which attempt to teach students to code are doing this well.)
> •**Why do we have to do video?** There are so many problems with trying to use video as the main form of learning.... [F]or the user, video is absolutely passive. It also forces a speed (no, YouTube's speed-control option doesn't help), and isn't compatible with students who want to learn at their own pace, which is the most interesting possibility online.[50]

The present packaging of MOOCs not only impedes their effectiveness from the standpoint of self-directed learners and their goals, but also leads to underestimation of the effectiveness even of the existing MOOC model from that standpoint. Critics of MOOCs point to the 5% completion rate as evidence of their failure. But much larger numbers

> explored significant parts of courses, which may be all they wanted or needed. “This in many ways mirrors the preferences of students on campus... In a survey of students, approximately 40 percent of respondents report that they have taken MIT classes that they feel would benefit from modularization.”[51]

In December 2011, the MIT Open Courseware program introduced MITx: an interactive learning program which certifies completion for students who demonstrate master of course material.[52] As of 2015, MIT had begun organizing its Open Courseware courses into longer sequences, "starting with a seven-course sequence in computer programming that begins with introductions to coding, computational thinking and data science, and then moves to software construction, digital circuits, programmable architectures and computer systems organization." This is a step towards the kind of "open badges" certification of specific learning and skills, rather than entire degrees, that we discuss later in the chapter.[53]

The Washington State Board for Community and Technical Colleges has (as of November 2011) undertaken an Open Course Library project, hosting the textbooks, readings and other materials from the 81 most popular general education courses, which will result in a drastic reduction in college textook costs.[54]

The UK Open University in December 2012 announced a new free/open learning platform called Futurelearn:

> Futurelearn will be the UK's first large-scale provider of Massive Open Online Courses (MOOCs), a new kind of educational offering that charges no fees, offers no formal qualifications and has no barriers to entry. The first generation of MOOCs, which has attracted millions of students from around the world, laid the foundation for widespread change in higher education. The universities of Birmingham,

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50 Radhika Morabia, “Reflections on MOOCs,” *RMorabia*, April 14, 2014 <http://rmorabia.com/mooc/>.

51 Jeffrey R. Young, “Are Courses Outdated? MIT Considers Offering ‘Modules’ Instead,” *Chronicle of Higher Education*, August 5, 2014 <http://chronicle.com/blogs/wiredcampus/are-courses-outdated-mit-considers-offering-modules-instead/54257>.

52 “MIT launches online learning initiative,” *MIT News Office*, December 19, 2011 <http://web.mit.edu/newsoffice/2011/mitx-education-initiative-1219.html>.

53 Kevin Carey, "One vision of tomorrow’s college: Cheap, and you get an education, not a degree," *Washington Post*, February 15, 2015 <http://www.washingtonpost.com/lifestyle/magazine/one-vision-of-tomorrows-college-cheap-and-you-get-an-education-not-a-degree/2015/02/11/7b2ed78c-8617-11e4-9534-f79a23c40e6c_story.html>.

54 Liz Dwyer, “In Washington State, the End of $200 Textbooks is Here,” *Good Education*, November 3, 2011 <http://www.good.is/post/in-washington-state-the-end-of-200-textbooks-is-here/>; <http://www.opencourselibrary.org/>.

> Bristol, Cardiff, East Anglia, Exeter, King's College London, Lancaster, Leeds, Southampton, St Andrews and Warwick have all signed up to join The Open University in Futurelearn.[55]

IV. Open Textbooks.

"Pirated" Proprietary Texts. And of course there's the expedient of simply using unauthorized reproductions of conventional texts, thereby circumventing the enormous copyright markup of the textbook racket. The government of Guyana, for example, has responded to the high cost of proprietary textbooks by buying cheap knockoffs from firms that sell photocopies.[56] There is growing support for the model Aaron Swartz promoted, of jailbreaking paywalled scholarly articles and posting the pdfs at some academic version of The Pirate Bay along with scanned-in textbook files. Most recently, scholars can avoid the $30 or more fees for access to paywalled journals articles by using the Twitter hashtag #ICanHazPdf, simply posting their email address with the bibliographic data for the article they're requesting and downloading the pdf that some kind soul sends them as an email attachment in response.

V. Open Learning Platforms

P2PU. P2PU[57] is a free, open platform which anyone can use to set up courses. In many ways, it's a revival of the medieval model of the university: those with something to teach can set up a course, select the course materials, organize lesson plans, and solicit learners; groups of learners interested in learning about a subject can perform the same functions for themselves and learn together. Of course it's possible to create synergies between the open learning platform and open course materials available elsewhere like MIT Open Courseware (see below), structuring courses around such open syllabi and reading lists.

University of the Commons. According to its official site the University of the Commons[58] is "a collective of teachers, artists, activists, scholars, writers, and students dedicated to the idea of education for the sake of education," which began with an informal meeting in April 2011 and invited the Bay Area community to form a free university. It launched with its first offering of free classes in Spring 2012. Fall 2012 courses listed were:

- **SCIENCE LITERACY: The Physical Science of Global Warming and Cooling, Climate Change**
- **RESPONSIVE CINEMA: Filmmaking Workshop**
- **INTRODUCTION TO WESTERN MUSIC: From Hildegard to Handel**
- **BASIC COMPUTER SKILLS INTENSIVE**
- **OCCUPY U.: Present-Day Strategies For Change And Their Effectiveness**

Unishared. Unishared is an attempt to remedy one deficiency in the free open courses that conventional American universities provide through Coursera, Academic Earth, or in-house platforms: "they are too weak in collaboration and peer learning, key points of successful education."

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55 <http://www.futurelearn.com/> ; block quote from Cory Doctorow, "Open University is now more open," *Boing Boing*, December 14, 2012 <http://boingboing.net/2012/12/14/open-university-is-now-more-op.html>.

56 Zachary Knight, "Guyana Resorts To Buying Pirated Textbooks Because Legal Copies Are Too Expensive [Updated]," *Techdirt*, October 2, 2012 <http://www.techdirt.com/articles/20120923/22524020492/guyana-resorts-to-buying-pirated-textbooks-because-legal-copies-are-too-expensive.shtml>.

57 <http://p2pu.org/en/>.

58 <http://www.uotc.org/wordpress/>

> You mainly learn by asking questions, by interacting informally with professors and peers and becoming part of the right learning community where people motivate you.... And here come the power of the internet which is not the media of one to many like TV....
>
> Many students are already sharing on the new Unisharred platform, from Copenhagen to Stanford. "Students are willing to take action to change the way the world is learning. And with the internet capabilities, a small change in their habits – taking notes online – can have a huge social impact and make their time at university way more efficient and meaningful."...
>
> François Fourcade, whose students used UniShared during classes explains: "Once the notes are shared, the students start to reflect on the lesson, to see similarities and differences between the perception of a same class (ie/ soft skills development, meta competence development).... The students are creating a network, motivating people to join their learning community, they are able to track inside this network who learns what faster than others, who is more knowledgeable in a certain field."[59]

The Open Masters Program. The Open Masters Program was created with advice and support from a large number of open eduction projects, including DIYU, Uncollege and the Hub.

> We are creating an experience together to take ownership of our higher education and, in the process, designing a program that we hope can be replicated by a virtually unlimited number of small, self-organized peer groups anywhere in the world.
>
> The prototype group for the Open Master's program began in Fall, 2012 in Washington, DC, with a few of us joining from around the world. We set off with a vision to create a form of higher education that is:
>
> - **Open** - To all people.
> - **Experiential** - We learn through projects and experiences, in addition to courses and other traditional ways of learning.
> - **Social** - We learn in supportive groups of peers that learn through teaching and mentoring each other. We aim to ground ourselves in specific communities through hosts like Hubs and universities.
> - **Flexible** - All topics of study are welcome. Each personal learning plan is tailor-made and refined with our peers and mentors. Detours along the way- and figuring out your plan as you go- are perfectly fine, even encouraged.
> - **Transformative** – We're not just learning functional skills. We're learning how to grow as humans, to be better self-directed learners- to learn and relearn for the rest of our lives- to be seasoned team collaborators, and to have a positive impact on the world.
> - Design around **abundance**, not scarcity.
> - **Credible** - We are making ourselves credible by creating impressive portfolios of work, holding each other to high standards, peer reviewing each other's work, and earning letters of endorsement from peers, mentors, and organizations we respect.[60]

Other programs include, among others, UnCollege[61] (which "provides Gap Year programs for young adults who want to drive their own education"), The Open University,[62] University of the People (a "tuition-free online university")[63] and Udemy.[64]

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59 Ricardo Geromel, "Unishared: Revolution in Online Education Beyond Coursera, Edx, and Udacity," *Forbes*, September 17, 2012 <http://www.forbes.com/sites/ricardogeromel/2012/09/17/unishared-revolution-in-online-education-beyond-coursera-edx-and-udacity/print/>.

60 "About," The Open Masters Program <http://www.openmastersprogram.com/about/> (accessed March 26, 2013).

61 <http://www.uncollege.org>

62 <http://www.open.ac.uk>

63 <http://www.uopeople.org

64 <http://udemy.com>

VI.. Credentialing

The signaling function of post-secondary education is a way of overcoming the transaction costs of evaluating individual qualifications for specific functions on an ad hoc basis, when the hiring unit is a giant bureaucracy and the hiring functionaries are bureaucrats who need a standard procedure for evaluating large numbers of people on an impersonal basis. The solution is to process workers in batch lots with bureaucratic certification of their skills.

But when most production and training units are distributed, small and local, the transaction costs for horizontal certification systems become much lower. When the entity doing the hiring is a neighborhood garage factory, and Dave is applying for a job as a machinist, his credentials might be something like this: I took these metal shop classes at the town learning center, apprenticed in Bob's machine shop, and passed the certification exam with the NE Ohio Machinists' Guild. "OK, Dave, let's try you out."

Emlyn O'Regan writes that universities provide three major sources of value, which are in the process of being de-linked from one another:

- learning (largely replaceable with free online content /study guides)
- networking (replaceable online, in fact a lot of why nerds built the net in the first place)
- credentialing – this is still the hard one

> Credentialing is the force behind the higher education bubble. People pay more and more to get that piece of paper. It's an unjustifiable, unproductive, exploitative money pump. If you could route around that, you'd blow this industry to pieces.
>
> Now one way to split credentialing off from the rest of the concerns of "education" is to provide something like "recognition for prior learning".... But, it's tough; you have to test people rigorously to figure out if they deserve a credential or not, and you can easily make mistakes. That's why we prefer the Unis, because we know the person had to more or less sit through X many years of study, so there's some minimal learning assumable even if everything else fails.
>
> But I'm wondering, can we crowdsource credentialing?
>
> Take a social network, or even better a professional network like LinkedIn. Let people just add "qualifications" they have ("skills"? Is there a more appropriate word?). Then, crucially, get others to rate them.
>
> To make this work, you need some kind of credibility rating for the raters.[65]

(That last feature is sadly missing from LinkedIn's current endorsement system).

But what about voluntary certification through somewhat more formal arrangements? For example:

- Professional associations or guilds certifying the ability of members, and providing continuing education, with the incentive to avoid "grade inflation" being the need to maintain the credibility of their "brand."
- Voluntary courses in various skills, with certain course providers becoming the "gold standard" based on their reputation.
- Apprenticeship programs conducted through guilds or professional associations.

The Mozilla open badges project is a good model. It's a modular, stackable system of badges that learners can collect and aggregate in any particular package or combination suits their individual needs.

> **A digital badge is an online representation of a skill you've earned.** Open Badges takes that concept one step further, and allows you to verify your skills, interests and achievements through a credible organization. And because the system is based on an open standard, you can combine multiple badges from different issuers to tell the complete story of your achievements—both online and off. Display your badges wherever you want them on the web, and share them for employment, education or lifelong learning....

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65 Emlyn O'Regan, "Crowdsourced Credentialling," *point7*, August 20, 2010 <http://point7.wordpress.com/2011/08/20/crowdsourced-credentialling/>.

- **Mozilla Open Badges is not proprietary—it's free software and an open technical standard.** That means any organization can create, issue and verify digital badges, and any user can earn, manage and display these badges all across the web.
- **Open Badges knits your skills together.** Whether they're issued by one organization or many, badges can build upon each other, joining together to tell the full story of your skills and achievement.
- **With Open Badges, every badge is full of information.** Each one has important data built in that links back to the issuer, the criteria it was issued under and evidence verifying the credential....
- **Individuals can earn badges from multiple sources, both online and offline.** Then manage and share them using the Open Badges backpack....

Open Badges makes it easy to…

- **Get recognition for the things you learn,** both online and off. Open Badges includes a shared standard for recognizing your skills and achievements — and lets you count them towards an education, a job or lifelong learning....
- **Display your verified badges across the web.** Earn badges from anywhere, then share them wherever you want—on social networking profiles, job sites or on your website.
- **Verify skills.** Employers, organizations and schools can explore the data behind every badge issued using Mozilla Open Badges to verify individuals' skills and competencies.[66]

Even without state-mandated licensing or college accreditation, one's credentials would still carry weight based on the degree of public confidence in the reputation of the accreditor.

Conclusion

Let's go back now and take another look at the self-driven model of education Pirsig described in his Church of Reason piece. We're approaching a state of affairs where the widespread availability of cheap, networked educational technology coincides with the widespread availability of cheap, networked manufacturing tools—resulting in a two-pronged attack on the institutional alliance between the HR departments of large corporate employers and large educational institutions. In a world where course materials are freely available to anyone interested in them, and students (whether officially recognized as such or not) can interact with each other and contact an entire world of scholars from their own homes, the environment will be far more conducive to informal credentialing arrangements between employers or work teams and workers. Instead of a small number of accredited institutions acting as credentialing gatekeepers and providing an entire educational package (if you want any of it, you have to buy the whole thing) as a condition for certifying you to potential employers, the work team at the local garage factory or permaculture truck farm can negotiate with would-be members as to what particular course certifications are most useful.

[Last modified December 4, 2015]

66 "About," OpenBadges.org <http://openbadges.org/about/> (accessed March 26, 2013).