

Economic History in the Age of Wikis and iPods:  
Is It Time to Adopt Pedagogy from an Alternate Universe?

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Take it as given that the study of the human past is a worthy endeavor. Take it as a given that the study of history offers our students necessary understanding of how we got here from there and even more necessary understanding of where we might go from here as individuals, as societies, as cultures. Take it as a given that historical ways of thinking offer the opportunity for profound improvements in how we look at ourselves, in how we draw analogies from place to place and from time to time. Take it as a given that your least favorite President or candidate or journalist or business executive would be much improved had he or she paid more attention in history classes. Take it as a given that future Presidents and journalists and business executives will be better than the present lot do they just pay more attention to what you and I have to say about the economic history of technologies, political institutions, or legal regimes.

I say take these things as given because I don't want what I'm about to say to be misunderstood. I believe -- to the depth of my historical economist's soul -- in the value of historical study by undergraduates. Of my accomplishments as an academic, the one of which I am probably proudest is having been able, albeit at a single institution and I fear only temporarily, to return historical modes of thinking to a central place in the economics curriculum. Not only has Luther added economic history courses where none had been offered for decades, not only did we add a major with economic history as a required course, but my colleagues have joined me in increasing integration of historical content into our principles-level economics offering. I do not buy into simplistic stories of technological determinism and paradigm shifts that hold the experience of prior centuries as somehow irrelevant to the progress of life in the twenty-first. That we live in an information age or a knowledge economy or a (insert-here-whatever- you-consider-today's-annoying-buzz-word) world does not reduce our need to pay attention to industrial or pre-industrial worlds.

However, that you -- or that I -- consider the value of history to be a self-evident truth is,

I am sad to say, rather wholly beside the point. The important fact of the matter is that the 18- to 20-year-olds who populate our economic history classes do not share our belief. Worse, the fact of the matter is that the particular “hows” of our students’ unbelief is such that, unless America radically reexamines its educational epistemology, those 18- to 20-year-olds are going to fail to develop historical sophistication at a time when they most need it.

### **Dalian, where?**

To see why, consider a story from the recent past.

It was the spring of 1999. I was in my second year at Luther. My dissertation on the economic and rhetorical history of Victorian company law was unfinished, still. Not yet on the tenure track, I instead combined part-time appointments in economics and history; as historian I was teaching in the two-semester course we at Luther call Paideia (or, in the Greek, education) and require of all first-year students. Paideia, then as now, was intended to be a common experience; and so while there were 20-plus English and history faculty leading discussion sections, all students faced the same lectures, texts, quizzes, and discussion questions. In the spring of 1999, “common experience” included a month-long spring unit on “modern China.” Paideia being “half history,” we began our discussion with readings on Confucianism and the Chinese traditions of ancestor worship, and then spent most of our time talking about the Mao years. Not surprisingly, the “common experience” did vary with the professor’s expertise: mine being “economic history,” students in my sections saw discussion of Mao’s Great Leap “Forward” filtered through the ideas of Alexander Gerschenkron on “backwardness” and economic growth.

Meanwhile, in China it was also the spring of 1999. An economic transformation was well underway in Dalian and other coastal cities. With connections primarily to Russia and Japan rather than the United States -- the Japanese actor Toshiro Mifune grew up there, and it

was one-time capital of Manchuria<sup>1</sup> -- Dalian remains a city unknown to most Americans. Though wholly unmentioned in Luther's unit on modern China, Dalian was becoming a world leader in both information technology and sustainable development. Allowed a separate economic development plan by Chinese leaders in 1985, Dalian has since been named "Model City for the Internationalization of Software Industry," and hosts China's annual International Software Information Service Fair. In October 2000 *People's Daily Online* predicted Dalian's revenues from the software industry would be 5.7 billion yuan by 2005; actual 2005 revenues topped 10 billion. Not only does Dalian currently boast 300 scientific research institutions and over a quarter million science and technology specialists among its population of 6 million, it leads Chinese cities with multilingual language education in Chinese, Japanese, Korean, and English. And its development has been increasingly green: dominated by heavy industry as late as 1995, Dalian today now touts itself as the first Chinese city to receive the "Global 500" award from the United Nations Environment Program.<sup>2</sup>

I juxtapose Paideia and Dalian here not to single out for criticism my college's historical curriculum. That is better done in Luther faculty meetings and in hallway conversations with College colleagues. Too, for reasons too detailed to go into, I believe that Luther's Paideia program -- then as now -- has provided some of the better first-year historical curriculum in American higher education. Nor do I wish merely to point out how dimwitted and uninformed I was on certain "historical realities" just 8 years ago. Though I was: like, I expect, many of my colleagues, I gave no attention to the transformation of Chinese coastal cities that "everyone" knows about now; Dalian was nothing more than an obscure map point I missed as my eyes went naturally to the traditionally important cities of Hong Kong, Shanghai, and Beijing?

No, I juxtapose 1999 versions of Paideia and Dalian to highlight the very dissonance that

<sup>1</sup> Songli, "Discover Dalian." <http://www.discoverdalian.com/vintage/index-frame.htm>

<sup>2</sup> Dalian Software Park, "Why Dalian," <http://www.dlsp.com.cn/english/Investment/investment.asp>; Dalian, China, "Science and Technology," <http://2003.dl.gov.cn/i18n/en/intro/tech.html>; "Port City of Dalian Aims at Software Industry," [http://english.people.com.cn/english/200010/18/eng20001018\\_52975.html](http://english.people.com.cn/english/200010/18/eng20001018_52975.html).

frustrates our pursuit in 2007 of the noble cause of historical education. That dissonance, not George W. Bush or Hillary Clinton or funding cuts or annoying deans or lazy students or any of the other usual suspects we in our best Claude Rains imitation round up whenever our attention focuses on issues of educational policy, is the real threat to the future of higher education. When one combines an educational epistemology built upon a foundation of expert testimony and “student-centered” teaching with lives that are dominated by alternate universe technologies and constantly-changing paradigms of collaboration, the dissonance felt by the student makes our complaints about the dissonance of gangsta rap or Wikipedia pale by comparison. The question is not why they pay so little attention to us. The question is why they pay any attention to us at all.

Did we still live in a world defined by the transformation from agriculture to manufacturing, the overall dissonance would be smaller, perhaps even worthy of attention, the educational equivalent of the best of Bela Bartok or Rage Against the Machine or Public Enemy. Our problem would be merely a contemporary analogue of our parents dealing with our passion for rock and roll. Our current methods for imparting a historical mode of thinking to our students might be sufficient. Did our students believe that we still lived in such a world, we might be able get by. But we do not, and they do not. When students come to the learning enterprise from a world of continuous technological and institutional transformation, however, the trickle-down methods of student-centered learning that dominate modern higher education (and not just in history) are as impracticable ordering course texts available only from an antiquarian bookseller.

Too much is at stake. Even as the dissonance leads our students to express less and less interest in the past, the necessity for them to be sophisticated in their historical ways of thinking is greater than it has ever been. One need not cite the excessively visible corruption of the past in

the stories told by Al-Queda or Timothy McVeigh, George W. Bush or CBS News, to see that twenty-first century culture is badly in need of careful historical thinking; one need only look at the everyday historical illiteracy that manifests itself on the music and video *we* store on our iPods. More than ever, students must appreciate continuity and change. More than ever, students must draw analogies between place X at time A and place Y at time B. More than ever, students must know how we got today from yesterday. More than ever, students must know what might have to happen if we want to get tomorrow from today.

Historical illiteracy is but the tip of the iceberg. We can no longer afford to be divided into an elite who, by participating in the magnificent liberal tradition of Eliot, Newman, Arnold, and Hutchins, are deeply aware of the past, a vast middle ground of mediocrity built upon the history distribution requirement of “student-centered” learning, and an equally vast mob whose historical understanding is limited by the wisdom of Rupert Murdoch and Oliver Stone. Issues of educational quality have become too important to wait for their resolution to trickle-down from the stars among us.

Stars are nice to have around, whether they are star schools, star programs, star professors, or star students. But what is needed is not the creation of more stars, for the stars among us will ever be too few. What is needed, rather, is a radical subversion of the character of everyday education. What is needed is a transformation not only of the information processing abilities of an elite, but a transformation of the information processing abilities of the average college graduate.<sup>3</sup>

### **VERSION 1.0: Modelling the Problem**

Policy and its implementation: a basic two-stage model. As any issue of *The Chronicle of Higher Education* will attest, I am far from the first to find problems with higher education in

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<sup>3</sup> Ideally, of course, the mob would also be transformed. Unfortunately, however, to imagine a world where “everyone gets it” is to imagine away the reality of second best discussed below. The best that can be realistically hoped for is that the mob be kept sufficiently small.

America. I am also far from the first to complain of the character of historical education in particular. As W. B. Carnochan has pointed out, the debate that have been going on since the beginning of the republic.<sup>4</sup> While detailed consideration of the nuance of the history of higher education is far beyond the scope of this paper, two characteristics highlight almost all the debate. First, these are debates about policy. Though curriculum reform can be the quintessential illustration of “the marketplace of ideas,” it is also discussion of which prescriptive rules of the game should prevail. Second, being debates about policy choice, they tend to be debates built on the ground of ideology, interest, money, and power: the education system needs fixing because it reflects the wrong ideology; or because the wrong people are making the policy; or because the policymakers are corrupt or incompetent; or because the wrong programs are funded; or because teachers aren’t paid well enough. And so forth and so on.

Important as the issues of money and power might be, however, their resolution will not be sufficient. Even if the distortions of ideology and interest could magically be assumed away -- even if, if you will, we instantly make the correct policy choices -- education *still* will not work in a simple, deterministic way. To see why, consider a simplified model of the world of educational choice, one with three simplifying and utterly unrealistic assumptions:

Assumption 1 (focus): All the rules are made by educators. No bureaucrats, deans, committees, administrators, politicians get in the way of a teacher doing his or her job. People with “agendas” other than “education” don’t interfere.

Assumption 2 (benevolence): Each educator is Mother Theresa. The educator is wholly altruistic, guided only by love. The teacher’s own self-interest never interferes. Neither do any problems of public choice or regulatory capture.

Assumption 3 (wisdom). Each educator combines Solomon and Socrates. The educator sees the student’s needs at least as well as the student sees them, usually better. Teacher ignorance, teacher shortsightedness, and teacher incompetence do not exist.

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<sup>4</sup> For those seeking to better understand the history of curriculum debates in America, the discussion and bibliography in Carnochan’s *The Battleground of the Curriculum* is a good place to start. Even though the debates are far from an American invention: they date back to Herodotus and Thucydides, to Socrates and the Sophists.

Simplify matters further, and assume this world by assuming only three players in education, two educator/policymakers (one a historian) and one eighteen-year old student.

Finally, think of educational change as occurring in two stages. In stage I (“curricular choice” or other “policymaking”), the historian (H) advocates a new rule of pedagogy for emphasizing historical ways of thinking. [Advocacy may occur on the floor of the legislature, at meetings of the faculty senate, or in informal conversation outside faculty offices; for the “new rule,” pick whatever educational practice that you wish others valued more highly.] Prior to the adoption of the new rule, at times  $t_i$ ,  $i = 1, 2, \dots, m$ , H and the other educator/policymaker, O, view the expected net marginal benefits of the new rule as, respectively,  $B_H$  and  $B_O$ . By definition,  $B_H > 0$  always, but only at time  $t_m$ , after O has been persuaded by H that  $B_O \geq 0$  as well, will the rule be used in the education of the student, S. Prior to  $t_m$ , O opposes and prevents the change. Persuasion is costly, and thus before O gets persuaded, three conditions must hold, conditions typically satisfied only in sequence:

1. H must be willing each period to incur speaking costs  $S_i > 0$ . If  $S_i > B_H$ , then H will stay silent.
2. O must be willing to incur listening costs  $L_i > 0$ . If  $L_i > \text{expected benefits of listening}$ , then O will not listen and  $B_O$  will remain negative.
3. Having listened, O must become persuaded that  $B_O \geq 0$ .

While necessary, however, these three conditions are far from sufficient to change learning. Learning requires not only coordination of the values held by historians and other educators, but coordination of the values held by educators and their students. To put it another way, we who would change education must not only persuade each other to go along, we must persuade students to go along. And just as the first stage requires three conditions for its

completion so does the second: the teacher has to be willing to incur speaking costs  $S_j > 0$  and the student willing to incur listening costs  $L_j > 0$ , for periods  $t_j$ ,  $j = m, m+1, \dots, n$ , until such time  $t_n$  as the student is persuaded that the net benefits of going along are positive.

In our desire to choose the correct educational policy, we all too often forget that persuasion is necessary also if we are to implement and realize the benefits of that policy. Educators must be persuaded first to think about, then to adopt new ways of teaching. Students must be persuaded first to think about, then to make use of the new ways of thinking their teachers propose. As long as thinking and listening costs are too high, no change will “work.” If we are to address the problems of higher education in general, and the lack of the shared understanding of economic history in particular, we need to decrease those listening costs. Unfortunately, we are doing the opposite.

### **The Dissonant Ecology of (Non-)Listening, 2007**

Listening costs will always be significantly nonzero. Getting students to listen properly has always been a lot of work. Listening costs will always be significantly nonzero. Students will always be more interested in the economic distractions of the present and the economic promises of the future than in the economic puzzles of the past. No matter what rules of the game we come up with for the undergraduate curriculum, our students will miss assignments, skip class, focus on memorizing content and learning what they need to get by, plagiarize, and all the rest. They will cut-and-paste uncritically from Wikipedia or whatever website lands atop a list of Google search results rather than carefully consider the argument in a scholarly article. They will drink and have sex too much, and they will think and study too little. 18- to 20-year-olds will always be, well, 18- to 20-year-olds.

Just as Public Enemy sounded dissonant to our ears or Black Sabbath to the ears of our parents, the sound of education will always have a good deal dissonance to student ears. Shaped

by nineteenth century educational philosophy, twentieth century consumerism, and twenty-first century technology, however, the ecology of listening circa 2007 has a dissonance far beyond what is manageable even by rounding up twice the usual number of suspects of funding, test scores, and grading standards.

The first source of dissonance: trickle-down epistemology. In their everyday practice teachers are unabashed advocates of trickle-down thinking. We who would instruct others in the value of studying the economic past, for example, daily act as if the following is our fundamental creed: Scholars acquire expertise about the past via literature survey and archival research; they hone and develop that expertise by contesting competing stories of the past in conference papers, journal articles, and monographs; they next translate and pass on their acquired expertise of historical understanding for others via textbooks, popular nonfiction, survey courses, lectures, classroom discussion, and the occasional appearance on CNN; and then, finally, the value of the past having trickled down to them, students and other non-experts go forth and sin no more, their decisions better informed by the historical way of thinking. We all worship at the temples of the Cult of Expertise; we differ only on which experts we deem worthy of our tithing.

What trickles down varies from time to time and place to place. Teaching today is different than it was 100 or 50 or 10 years ago. We have entirely new disciplines, new questions being asked, new pedagogies. American undergraduates through their general education requirements typically get their economics a mile wide and a half-inch deep in historical understanding whereas those reading history at Oxford get a mile of depth as their ability to connect it to economics languishes at whatever plateau they reached in A-levels. Unless their degree is in engineering neither Iowa nor Oxford student gets much in the way of practical technological knowledge. Any new disciplines, new questions, new pedagogies, British, American, or otherwise, get built on the same trickle-down foundation: professors are expert

holders of the terminal degree who transmit information to students who are not.

Experts in history are needed. A significant fraction of our historical understanding must -- and should, and will -- come down to us through the experts. Approximating in the first instance who did what to whom and how is painstaking and expensive work. While the combination of graduate school/conference paper/monograph/classroom lecture is a damnably expensive way of disseminating historical content, for much of that content it remains the lowest-cost way. But “much” is not all, because not all understanding is content-driven. Economic use of the past, having one’s choices well-informed by a “historical” way of thinking, demands more than the acquisition of the who, what, when, where, and how of American industrialization, Victorian ideologies, or the Great Leap Forward.

Far more. The shortcomings of today’s history students go well beyond their own ignorance of historical content, well beyond even our historical experts’ ignorance of economic change in places like Dalian or Bangalore or Montevideo. The problem of historical education is not that we as cultures fail to pay attention to the past; the problem is how we pay attention. Trickle-down thinking is not paying attention well: it makes it less likely, not more, that our students will develop the tools they need for successful collaboration; and it makes it less likely, not more, that they will develop the informed flexibility they need to evaluate and cope with ever-accelerating technological change.

The second source of dissonance: student-centered teaching. Exacerbating the effects of trickle-down education is what may be the most insidious of “educational innovations” of recent decades, the concept of “student-centered” teaching,

an approach to education focusing on the needs of the students, rather than those of others involved in the educational process, such as teachers and administrators. This approach has many implications for the design of curriculum, course content, and interactivity of courses. For instance, a student-centered course may address the needs of a particular student audience to learn how to solve some job-related problems using some

aspects of mathematics. In contrast, a course focused on learning mathematics might choose areas of mathematics to cover and methods of teaching which would be considered irrelevant by the student.<sup>5</sup>

Given the near universal agreement that student-centered pedagogy is good, my use of “insidious” here is intentionally provocative. Alas, in part *because* of that near-universal agreement, exactly the correct word. Choices are too easily corrupted, and choices are too easily foreclosed, by the rhetorical inertia of “everyone agrees....” A move away from faculty-centered education and toward student-centered education was both good and necessary, just as it was good and necessary to move away from a Ptolemaic worldview and toward Copernican worldview. However, even as relativity showed us the wisdom of moving away from a Copernican vision of the universe, it is time to use what the practice of student-centering has revealed and move education somewhere else.

The several virtues of student-centered education are easy to see. It focuses on what one of its advocates, the psychologist Carl Rogers, called whole-person learning, learning where the student “combines the logical and the intuitive, the intellect and the feelings, the concept and the experience, the idea and the meaning. When we learn in that way, we are whole, utilizing all our masculine and feminine capacities.”<sup>6</sup> It strives to provide a climate of trust, to build student self-esteem, to provide participatory decisionmaking in the learning process, to excite the student’s curiosity and stimulate lifelong learning. It calls for the teacher to be transparent in his or her relationship with the student, to be accepting of the person that is the particular student, and to listen deeply to the student.<sup>7</sup>

The paradox of student-centering, however, is that it encourages self-absorption and reinforces dependence on the trickle-down mechanism. By the very manner of our striving

<sup>5</sup> [http://en.wikipedia.org/wiki/Student-centered\\_learning](http://en.wikipedia.org/wiki/Student-centered_learning).

<sup>6</sup> Rogers, *Freedom to Learn*, 20, quoted in Motschnig-Pitrik and Holzinger, “Student-Centered Teaching Meets New Media,” [http://ifets.ieee.org/periodical/vol\\_4\\_2002/renate.html](http://ifets.ieee.org/periodical/vol_4_2002/renate.html).

<sup>7</sup> This list is adapted from the lists of “goals” and “necessary and sufficient conditions” of student-centered teaching provided by Motschnig-Pitrik and Holzinger, “Student-Centered Teaching Meets New Media,” themselves adapted from Rogers, *Freedom to Learn*, 3, and Aspy, *Toward a Technology for Humanizing Education*.

toward satisfying the “needs of the student,” we have shaped student listening costs in a way that neither necessary nor sufficient conditions are achieved: instead of trust, we reinforce dependence; instead of self-esteem, we get self-absorption; instead of collaboration we get solipsism, instead of curiosity, we get more consumerism. We say “needs of the student,” and our students hear the “me, me, me,” of “What do I need to know?”

We make it cheaper for the student to conceptualize learning narrowly, easier to reduce the process of learning to knowledge transmission. Paying attention to the process of learning, developing intellectual and moral judgment, requires “deep listening” not only from the teacher but from the student. And when we make it easier to learn the outcome, to think in terms of “what do *I* need to *know*?” instead of “how do I *figure out* what I need to know?” we make deep listening more expensive still. Is it any wonder that too few of our students go down the path of deep learning? That too many graduate from college -- as they graduated from grade school, from middle school, and from high school -- too susceptible to the blandishments of junk mail, political campaigns, and the rest of modern consumer advertising?

We desire graduates who are adults, not children, and what adults do (or should do) is live in community with other adults. With a few exceptions community is not centered upon any particular adult. What adults in community do, as Tocqueville realized in 1835 and 1840 when he highlighted the diversity of America’s associations, is participate in a set of overlapping relationships. A pays attention to the needs of B, but B also pays attention to the needs of A, as they strive, more or less together, toward a more or less common good. The insidiousness of student-centered education comes not because its proponents are wrong-hearted, but because it encourages the individual student to ignore how relationships are a matter of mutual responsibility. It reduces -- in the student’s mind -- the teacher’s place in the community to that of servant of B. And, worse, it reduces the student’s place to Person Being Served.

E-mail illustrates the paradox. E-mail's problems follow from its very advantage: as a place of cheap talking and expensive listening, it makes it *too easy* for a student to “ask questions.” Add the question-encouraging that comes along with the “there is no such thing as a bad question” rhetoric of student-centered teaching, and you have faculty inboxes cluttered with requests for “can you tell me what I will miss when I miss class today for ...?” and, effectively, “I haven't had time enough to read the book, so could you tell me what it says?” Worse, the student is being taught to think that deferring to an expert substitutes for careful listening, and encouraged to ignore all costs but his own.

Source of dissonance #3: alternate universe technology. Even the intellectual inertia consequent to the combination of trickle-down education and student-centered teaching might not be overly troublesome were it not compounded by the remarkably dissonant voices of technological change.

Better understanding of the place of technology in our lives is one of the most important reason for systematic and widespread study of economic history. One would need be descended from several generations worth of ostriches to miss the profound possibilities for change offered by the combination of nanotechnology, space development, virtual reality, genetic therapy, and a host of other “alternate universe” technologies. But while some of the stories out there about the importance of technology are good, others are not. Not all technological determinisms are created equal. Some are downright awful. Dangerous, even.

And one of the great virtues of the intellectual discipline called “economic history” is its capacity for debunking awful stories about technology. Economic history can point out how and when technology matters, and it can point out how and when technology is not enough. The pathbreaking work of Robert Fogel does not only show how the economic value of the railroad was a lot smaller than usually thought; it shows the fallacy in any technological determinism that

focuses on the importance of a single technology. No matter how important we might consider the Internet, its overall effect on the economy *by itself* must be small. Similarly, a lifetime of work by Fogel's fellow 1993 Nobel laureate, Douglass C. North, has explored how institutions and ideologies play at least as big a role in shaping economic change as does technology.<sup>8</sup>

That our 18-year-olds are technological determinists should not surprise. Stories of the necessities of the technological have regularly shaped their family dinners taken at McDonald's and their assignments at keyboards in their secondary school classroom. The omnipresence of the gods of technology gets reinforced every day in the liturgy published by magazine, textbook, and evening news; and gets prayed to constantly through the student's Daily Office of iPod, Internet, and cell phone.

Technological determinism is deeply ingrained in us, whether we are young or old. Whether one talks to a software engineer in Dalian or a first-generation college student from rural Minnesota, technology is seen as the default engine of economic and social change. America is rich because of its technological history. America will stay rich only if it keeps its technological base on a par with the up-and-comers in India and China. Social ills from environmental degradation to economic inequality to international terrorism to health care -- all are problems of technology. Some problems have technology as cause, others as cure; but virtually none have technology as neither. Even religious fundamentalists who consider themselves nonbelievers in the centrality of technology, prove exceptions only in the starkness of their irony. Christian evangelists of the Trinity Network speak of faith as a matter of personal relationship with God, then raise funds from millions via satellite and top-of-the-line stadium sound systems. Osama bin Laden and his fellows decry Western ideas by navigating the Internet, Al Jazeera, and jet airplanes.

However, the third source of dissonance is more than a case of mistaken or overstated

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<sup>8</sup> See Fogel, *Railroads and Economic Growth*, North, "Structure and Change," "Institutions, Institutional Change, and Economic Performance," and "Understanding the Process of Economic Change."

technological determinism. Simplistic determinism is dangerous, but so too is the middle-aged college professor who combines Captain Ludd and Sergeant Schultz. The issue is not *whether* technology matters or not; the issue is *how* technology matters. Because of technology, the world has changed; and, thanks to the alternative universe technologies, the manner of that changing has also changed. Living in a nanotech world is not just identifying the existence (or lack thereof) of a particular paradigm shift; it is living in a world where the economic reality is *continuous* paradigm-shifting. We who would teach the importance of the economic past must, somehow, keep up with the paradigm shifting as we must continue to find ways of pointing out which kinds of technological change may/may not be significant. We must ensure that our students have the tools to keep up with post-graduation paradigm shifting.

The world demands technological literacy, and technological literacy requires hitting a moving -- and accelerating -- target.<sup>9</sup> It demands an awareness of what the *Esquire* magazine columnist, Chuck Klosterman, has called the “significance of potentiality.” Musing in the July 2006 issue upon why there are no video game critics, no video game equivalent of Pauline Kael or Lester Bangs, Klosterman notes that “[u]nlike a film director or a recording artist, the game designer forfeits all autonomy over his creation -- he can’t dictate the emotions or motives of the characters. Every player invents the future.” It is a point all who would have increased technological literacy would do well to heed: the question has become not “what does this mean?” It has become “What *could* this mean?” or “What *might* this mean?” Video games might appear a trivial example (though let us not forget how many of them are in today’s dorm rooms), they illustrate nearly perfectly how the dominant determinism of our day already reduces technological change to its consumerist function. Without accompanying the acceleration of technological change with an acceleration in the awareness of technology’s potential, we risk from our students an acceleration of the unethical use of technology --- or worse. As Klosterman

<sup>9</sup> Indeed some, such as the futurist Ray Kurzweil ([www.kurzweilAI.net](http://www.kurzweilAI.net)), argue that the rate of acceleration is itself accelerating.

eloquently puts it (just substitute “technology” for “games,” and “life” for “artistic”):

There is a very conservative element to gaming because absolutely *everything* is built around consumerism. Game designers are asking themselves questions about how a game should look and what it should do, but not about what the game is supposed to mean.

And that, ultimately, is why the absence of video-game criticism is a problem. If nobody every thinks about these games in a manner that’s human and metaphorical and contextual, they’ll all become strictly commodities, and then they’ll all become boring. They’ll *only* be games. And since we’ve already agreed that video games are the new rock music, we’d be facing a rather depressing scenario: This generation’s single most meaningful artistic idiom will be -- ultimately -- meaningless.<sup>10</sup>

Yet hitting that moving target -- and, more importantly, ensuring that today’s 18- to 20-year-olds hit that moving target -- requires far more than putting more resources into “science and technology education.” Any “solution” demands more than better attention to the technological elite; and any solution demands more than changing general education requirements via the usual years-long deliberation of “faculty governance.”

Anglo-American epistemology has long separated technological and “liberal” education. While Matthew Arnold’s vision for liberal education may have differed from that of his contemporaries or from John Henry Newman’s, while Robert Hutchens' vision for liberal education differed from that of his contemporaries and from that of Charles Eliot, all shared the medieval belief that learning for some should focus on the liberal arts while others pursue the vulgar. Leading stories, whether in the *Chronicle Review* or from outside the academy, continue the separationism, either trumpeting the ills of today’s liberal education, or emphasizing the need to improve science and technology education. Only rarely will one see an integrated call to do both.

Here, too, the epistemology trickles down to shape the cost of student listening. Every year I find my liberal arts students more sophisticated about cell phones, web surfing, and other current consumer technologies. Yet when it comes to the technologies of the past or the

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<sup>10</sup> Klosterman, “The Lester Bangs of Video Games,” 68 [italics in original].

technologies of the future, the pattern changes. Their engagement of a seminal work in technology history like Joel Mokyr's *The Lever of Riches* regularly runs aground when it comes to paying attention to the details of "how things worked." One cannot draw well upon the economics and politics of the "industrial revolution" without learning something about how steam engines or steel-making work; yet though most students demonstrate facility in speaking generally about the economic causes or consequences of industrialization, few can speak to how particular spinning or smelting technologies might have shaped particular workplace organization. Some, coming from a "life on the farm" or having "mechanical" hobbies, will dig into the technological detail, but more -- having for several years been on the educational track of "reading, 'riting, and 'rithmetic" rather than the technical one of wood shop, welding, and electronics -- are fish out of water.

Their systematized ignorance of technology extends to technologies of today and tomorrow. My liberal arts students recognize that the future will see continuing evolution of technology, and can with great self-assurance talk about the ethical implications of today's cutting-edge technologies, but they have only rudimentary ability to describe the particulars of nanotechnology, gene therapy, or any of the rest of today's alternate universe. Moreover, they demonstrate little interest in doing so: indeed, those we applaud for being more concerned with the "ethical consequences" are often those least concerned with the messy technical bits. Not only is technological ignorance ubiquitous, but it is the ignorance of the sophomore who believes himself quite knowledgeable indeed.

And the sophomore poses a particularly thorny listening cost problem. On the one hand, the student's own vision of what matters cannot be trusted: student-centering won't work, because ignorance of the hows of technology is not bliss. Implementation of technological change is not morally neutral, nor is it limited to a consumption function, nor is it inevitably good. On

another hand, sophomores remain notoriously difficult to reach: sophomores do not only have to learn new content, they must unlearn old ways of thinking. Yet unlearning demands a willingness to incur high listening costs, and why listen when you are convinced of your own wisdom? And on the third hand, even assuming we can find ways to get beyond the sophomore's wall of stubbornness the teacher/policymaker cannot take a one-size-fits-all approach to educational requirements.

Consider the pedagogic tool of repetition as it is used to help the student learn “the economic way of thinking.” Because my primary goal is to prepare students for economic citizenship rather than guiding them in their first steps toward becoming economic experts, I follow the lead of the late Paul Heyne and my own college advisor, Edward Kaschins, and take a different approach than most teachers of the introductory economics courses. Rather than surveying the ideas of the field, I emphasize a few core concepts (opportunity cost, supply and demand, thinking at the margin, the importance of careful counting) ; and then consider them over and over again, in as many different contexts as possible. Being an economic historian, I also stress daily the importance of paying attention to the particulars of time and place. The contexts used are regularly “historical.” (Indeed, believing with Deirdre McCloskey that economics is a subset of history rather than the other way around, I don't believe it is possible for examples to be otherwise.)<sup>11</sup>

Yet while in its content the introductory course is historical, in its epistemology of repetition it must be significantly ahistorical. And therein lies the danger that makes crucial how the ahistoricity gets limited. Repetition means students will be made aware of (“told”) they have to master the short list of concepts. Each term they will be told within a week of the term's beginning and a dozen times over the course of the course that “opportunity cost” will be a

<sup>11</sup> McCloskey, “Economics as an Historical Science,” 64. The best place to see Heyne's approach is his own introductory economics text, *The Economic Way of Thinking*, ably continued since his death by Peter Boettke and David Prychitko. Indeed, even the apparently non-historical “widget” example beloved by Econ 1 teachers isn't: read the information on the right can of imported beer and you'll discover actual widgets exist in today's world.

significant part of not one, but two exams. At the same time, however, the particular contexts within which opportunity cost and the other ideas are applied must be chosen so that memorization of the context isn't their listening response. They must be chosen knowing that some will "work" better for some students, and others better for others. They must be chosen knowing (indeed, hoping) that none will work for all, and they must be chosen in a way that the teacher does not end up always revealing which contexts matter when.

When the method works, it has worked not by trickling down my context-specific answers but by subverting the individual student's way of thinking. It has worked when the student comes to me six months after she received her "B" and tells me that her roommates are getting annoyed by her pointing out opportunity costs everywhere. It has not worked when the student's listening convinces her to apply the economic way of thinking to the contexts of my "final" exam, only when it has convinced her to apply it to *some* contexts of her everyday life, contexts that *she* has chosen.

My methods do not always work. Worse, and I have ten years of course evaluations with complaints about "confusion" and "disorganization" to prove it, sometimes I increase listening costs and a student becomes less likely to "buy it" than they were at the beginning of term. Listening costs are particular to the individual student, and so teaching must aim to engage the contexts of the individual student. (Here, the advocates of student-centered education are correct.) However, no matter how careful and intentional the pedagogy, no economics teacher can predict what contexts matter in the future, individual or otherwise.

Because what is true for an individual class is true *a fortiori* for any "policies" that we might seek to apply university- or nationwide. An individual instructor can change her syllabus from one semester to the next. An individual instructor can change whether he talks about Mao or about Dalian, about the technology of industrialization or about the technology of information.

An individual instructor can change how to talk about Dalian, can shift from an example about iBooks to an example about iPods to the story of how China plans within 2-4 years to issue 250 million open source laptops to its K-20 students.<sup>12</sup> “Institutional” requirements must focus upon the fungible parts of knowledge, the kind acquired whenever one takes a “social science” course or whenever one satisfies a “historical study” requirement. When the processes whereby faculty and administration approve “curricular reform” take years, however, they cannot be expected to account for the nonfungible and collaborative parts of knowledge, the parts of knowledge for which Moore’s law may be a *lower* bound of the rate of change.<sup>13</sup>

Source of dissonance #4: Cheap data combined with cheap collaboration. Careful readers of footnotes will have noticed that I have from time to time cited Wikipedia definitions. Academic purists may have scoffed at such sophomore-like rhetoric. Speaking as a recovering purist, however, the scoffing is the problem. To be sure, arguments should never be built entire upon encyclopedia definitions and the like. I have made the “don’t rely on Wikipedia as a source” argument many times, and will continue to do so. I no longer make the argument in a sneering tone, however, affecting the pose of the “serious,” professional, “expert” scholar. Wikipedia is neither the Britannica nor the abysmal *Encarta*. While the uncritical student of 2006 will use Wikipedia the same way an uncritical student of 1991 used *Encarta* and an uncritical student of 1976 used *Brittanica*, it offers opportunities for learning that *Encarta* and *Brittanica* never have. We who would have our students better understand the economic past must go beyond our “it’s not a good source” dogma.

The problem is not Wikipedia; the problem is how Wikipedia gets used -- and how

<sup>12</sup> Stuart Cohen, “Building Open Source Collaboration in Government,” keynote lecture, Government Open Source Conference (GOSCON), Portland, Oregon, October 15-16, 2007. (Streamed video of presentation can be found at <http://goscon.org>.)

<sup>13</sup> Technically, Moore’s “law” is only a claim about the speed of computing, being the prediction in 1965 by Gordon Moore (cofounder of Intel) that the density of transistors on a semiconductor chip would double every 18 months. Some dispute whether it should be extended to technological change in general. [http://en.wikipedia.org/wiki/Moore's\\_law](http://en.wikipedia.org/wiki/Moore's_law). Others consider it a substantial underestimate of the future of that technological change. Perhaps the most visible of the latter position is Ray Kurzweil. See, e.g., Kurzweil’s “Law of Accelerating Returns” (<http://www.kurzweilai.net/articles/art0134.html?printable=1>).

Wikipedia does *not* get used. Most students -- as do most of us in the first instance; as did I above with Moore's Law -- use it because as an encyclopedia it provides its information very cheaply. Type in a word or phrase, hit <enter>, and one gets a quick and dirty definition, with illuminating detail and links to both connected ideas and to other references. Surf a few Wikipedia articles and you quickly discover that you are dealing with more than just not another encyclopedia. It is the encyclopedia of encyclopedias, the überEncyclopedia. It is **wikiPEDIA IN REALLY LARGE PRINT**.

Yet even as the typical student finds it cheap to listen to Wikipedia entries, he misses Wikipedia's real significance, the wiki-ing by which the encyclopedia *and* its outline *and* its detail *and* its links get constructed. More than OpenOffice or Mozilla Thunderbird, more even than Linux, Wikipedia may be the defining example of the open source world. It shows open source to be not only another enthusiasm of techies, but a new reality for the everyday acquisition, understanding, development, and use of information.<sup>14</sup>

As Friedman, Malone, Florida, and a host of others have pointed out, networking and other forms of collaboration are essential for a world of alternate universe technology. Thus the real tragedy lies not in the average 20-year-old's use of Wikipedia, but in his belief (which too many of the professorial critics of Wikipedia share) that Wikipedia is merely a source to be consumed. The problem is not that Wikipedia is being used too much; the problem is that the student sees herself as only a consumer of information rather than a collaborator in its creation. Indeed, the collaborative character of the wiki may in the end make its practice via Wikipedia as important for use of the economic past in this age of alternate universe technology as the traditionally high-valued academic sources of monograph and refereed journal article. Does a

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<sup>14</sup> That quality problems exist cannot be denied. Wikipedia is not yet the twenty-first century equivalent of the 11th edition of *Encyclopaedia Britannica*. On the other hand, *Brittanica* had 140 years of practice prior to that 11th edition. Wikipedia has only existed for five, yet it now has more than 4.6 million articles (1.2 million in English), has editions of at least 50,000 articles in fifteen languages, and is the top 20 most visited websites. <http://en.wikipedia.org/wiki/Wikipedia>.

student seek to grow up to be a historical scholar, an expert in the field of technological history or of the history of institutions, publications of the Oxford University Press and in the *Economic History Review* will matter more, but the average user of the economic past will never grow up to be an expert. He will, however, need to work collaboratively and do so on a daily basis. The complexity of technology means the design and production of video games, the design and production of nanoassemblers, the design and production of just about everything, demand it.

And the path of information in a collaborative world is radically different than the path of information of an industrial world. The hierarchical systems of trickle-down work well for industrial information, the kind of information that emphasizes the coordination of repetitive tasks. But collaborative information is something different: Instead of the linear path of knowledge with “teacher/policymaker” at the top and “student/user” at the bottom, think of a triangle where the bottom two vertices each represents a different student/user. The line connecting those two vertices represents collaboration. And as collaboration becomes more important, the base of the triangle gets longer and the triangle “flatter.” In an industrial economy, actual collaboration between “manager” and “worker”, or between worker and worker, is minimal. Workers must “work together,” but the boundaries and decisions about how to work together are determined by someone else (their employer). The “working together” is merely another example of coordination through the “Visible Hand” of managerial control. A collaborative world demands more: workers and managers are increasingly replaced by “independent contractors,” and these independent contractors must themselves, somehow, determine together the course of their common endeavors.<sup>15</sup>

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<sup>15</sup> “Visible hand” is, of course, Alfred Chandler’s term. The metaphor of flatness is adapted from Thomas Friedman’s *The World is Flat: A Brief History of the Twenty-first Century*. While *The World is Flat* unfortunately shows Friedman firmly attached to trickle-down epistemology (see chapter seven, “The Quiet Crisis”), overall it may be the most important economic book yet written in the young twenty-first century; certainly it is a book every educator should read. As did his earlier work on globalization, *The Lexus and the Olive Tree*, Friedman’s consideration in *The World is Flat* of economic “flatteners” such as the fall of the Wall, offshoring, outsourcing, and open sourcing shows both an historian’s eye for detail and an economist’s ability to work out the implications. The wake-up call of the opening essay, “While I Was Sleeping,” alone justifies purchase of the book.

Open sourcing is no unmixed blessing. Quality collaboration continues to require expensive listening. Cheap data means a substantial free rider problem. Students weaned on Napster have learned how cheap it is to use information “owned” by others. Since open source means “anybody can play,” there will always be a tension between the quality of contributions and the quality of peer review. The very cheapness of Wikipedia and other “sources” means an increase in the relative price of listening to teachers and other advocates of careful thinking.

### **VERSION 2.0: Searching for common ground**

The economic world of 2006 is no more the industrial world of 1906 than it is the agricultural world of 1706. Ours has become a world of alternate universe technology, a world that demands new forms of everyday collaboration, a world of continuous paradigm-shifting that demands rules of thinking better than those provided by trickle-down education and student-centered learning. Just as we must recognize the historical character of other parts of economic choice, we must recognize the historical character of using the past. If our students are to gain the wisdom that comes from historical ways of thinking, we must change the way we strive toward their historical education; and we must change the way *they* strive toward *our* historical education.

What is needed is transformation of our common ground. The two-stage model cannot be sufficient. True education is far from the linear “first the policymaker/teacher decides, then the student decides.” True education is an iterating and reiterating practice of relationships among teachers, students, policymakers, and a host of others, a practice of pedagogic wrong turns and feedback loops and inertia.

Yet finding and reshaping that common ground far from a straightforward and predictable task. Common ground is not the content being transmitted from teacher to student: the value of content is what students must be convinced about; content is what students must be convinced

to listen to. Content requires expensive listening. Nor is common ground where teacher and student have conflicts of values about study habits or plagiarism or course selection, much less where you and I might argue about the changes to be made in educational policy. Rather, common ground is made up of those questions we and they agree upon, the shared principles that justify our working out those conflicts of value and our listening during those arguments.

Common ground is the agreement under our disagreement.

It is also agreement whose existence is difficult to see and easy to mistake. Common ground typically is found language unspoken (when we truly agree, we have no need to speak), and so in seeking it we are limited to what Northrop Frye in another context disparaged as “naive induction” and the “psychology of rumor.” Worse, those rhetorical places where we express agreement, places one might think evidence of common ground, often are anything but. Consider, for example, the following dialogue in the style of Plato:

Student in the back row, sleeping: *Zzzzzz.*

Teacher at podium: Wake up! Do you not agree that one needs to study the economic past?

Student in the back row: Of course, wise teacher. One must study the economic past.

Teacher at podium: Of course. Then let us all stay awake so that we may get down to the details of learning economic history.

What agreement exists here about the meaning of “needs” and “must.” The teacher (or an eager student listening from the first row) may think “need to study to make better future choices,” but the just-awakened student sees it as “need to pass this course and graduate on time” or “need to look attentive so the teacher will bother someone else and I can get back to my daydreams.”

The details of agreement matter. Common ground is an historical phenomenon, not an ahistorical state of human nature. It both shapes the ecology of listening and is shaped by dissonance currently prevalent in that ecology. To stand on the common ground of what Stanley Fish calls an “interpretive community”<sup>16</sup> requires more than physical presence in a

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<sup>16</sup> For examples of Fish on the character of interpretive communities, see, e.g., *Is There a Text in This Class?*

classroom or vague agreement that “we need to study the past”). It requires more than a combination of Plato’s Socrates (the wise teacher of the *agora* and classic portrait of trickle-down at work) and Plato’s sophomore, the soph(isticated) mor(on) whose wisdom is always shown to be that of a fool.

The map to common ground is provided not by Plato, but by Kenneth Burke and Adam Smith. Burke, like Frye and Fish a literary critic, noted how a form of expression could “awaken an attitude of collaborative expectancy,” how persuasion happens through “identification,” through demonstrating to the audience that “you can talk his language by speech, gesture, tonality, order, image, attitude, idea, *identifying* your ways with his.” Adam Smith spoke at length about the virtues of specialization, but also made clear those virtues get realized only when specialization is followed by trade. Education that evokes a *collaborative* expectancy will allow teacher and student each to identify with the other, to exercise what Smith called “sympathy” or “fellow feeling,” and thus take advantage of “the natural inclination everyone has to persuade.” Applying their “propensity to truck, barter, and exchange,” student and teacher will “trade” ideas, and the community will be improved.<sup>17</sup>

**The modesty principle.** Finding and using the map is far from easy, for common ground requires both shared habits of mind *and* habits of sharing minds. Sharing can be short-circuited by the student’s failure to listen and listening can be short-circuited by the teacher’s failure to share. Any proposed “solution” has to both recognize and live by the modesty principle: dissonance can be reduced, but it cannot be avoided. No matter how good the teacher, no matter how good the teacher’s “program,” our teaching is are going to miss significant Daliens. Not could miss. Not might miss. *Will* miss.

And in missing, we can make things worse. Building any common ground will have us reducing *some* listening costs, but to keep dissonance under control we must reduce *the correct*  
<sup>17</sup> Burke, *Rhetoric of Motives*, 55 [italics in original], 57; Smith, *Theory of Moral Sentiments*, I.i.1.5; *Lectures on Jurisprudence*, Report of 1762-3, vi.56; and *Wealth of Nations*, I.ii.1-2.

listening costs. However, whether we get it right still depends on the uncertain particulars of student listening. Students must still listen well; to listen well, they must still be willing to listen; to be willing to listen, they must be first get convinced that listening is worth the cost. Listening as a practice of “social cost” has a circular character, a character unavoidably of what the economist calls “second-best.”<sup>18</sup>

The notion of second-best is the sort of idea that seems straightforward when being reduced to an exam question but in application becomes annoyingly indeterminate and frustratingly subversive. Imagine the earnest sophomore describing constrained optimization: “Let choice of conditions  $x_1^*$ ,  $x_2^*$ , ... ,  $X_n^*$  be the ones which, in a perfect world with no constraints, yield an optimal solution  $A^*$ . Now add a constraint such as positive listening costs that precludes the attainment of  $x_n^*$  and  $A^*$ . Our next best solution is to still choose curriculum  $x_1^*$ ,  $x_2^*$ , and so forth down to  $x_{n-1}^*$ , and then choose our  $x_n$  as “close” to  $x_n^*$  as we can. The result, call it  $A^{**}$ , may not be as good as  $A^*$  but it is better than the other  $A$ ’s out there.”

Unfortunately, the sophomore’s logic, for all its impeccable imitation of William of Ockham and Jeremy Bentham, is seriously flawed. Thinking “second-best?” demands more modesty: some other  $A$ , call it  $A^{***}$ , may be, and often is, better than  $A^{**}$ . In the best of worlds, we would have education both giving great attention to the whole student and preparing students for citizenship. The existence of positive listening costs, however, doesn’t just mean we sometimes fail to get perfect, always sympathetic citizens; it means by centering our educational practices on the “needs of the student,” whether we choose the need of self-esteem or the need of technological literacy, we get even less of a citizenry. Students in their self-assurance become more sophomoric, not less. Student-centeredness becomes self-centeredness.

Application of the modesty principle demands, above all, epistemological transparency on the part of we who would “teach.” It means never assuming that students will see the value

<sup>18</sup> See Coase, “Problem of Social Cost”; Lancaster and Lipsey, “General Theory of Second Best.”

of historical knowledge, and it means always being upfront about the limitations of that knowledge. The real “problem” in the opening story about Paideia and Dalian was not that I missed the historical importance of Dalian’s development (though I did). The real problem was not even that there was “error” in the historical content I transmitted to my students that year (though I did that, too). The real problem was in my intellectual arrogance and in my students’ response to that arrogance. The real problem was our *collective* failure to explore sufficiently either the limits of my expertise or the limits of theirs.

Many college professors will acknowledge the painful extent of his own ignorance. (Some “senior faculty” or young “international experts” might require a few free cocktails first.) When it comes to being regularly upfront about the particulars of our ignorance, however, we are more reticent. We tend to delay any serious student inquiry into matters epistemological as long as we can, preferring to offer undergraduates the open-ended and vague “What do you think?” and “Why do you think that?”, questions epistemologically akin to Hollywood’s hackneyed portrayal of the psychoanalyst’s couch. Tougher or more specific questions get postponed to graduate school or the occasional senior honors project. Ideally, we defer to the expertise of Nobel laureates and chaired professors.

Such delay is, of course, fully consistent with trickle-down thinking. But it seems singularly inappropriate for the collaboration-driven world of continual paradigm-shifting, where the real tradable good that “teachers” and other “curriculum experts” offer is not the content they have mastered about technology or economics or history, but rather the very degree of their epistemological awareness. What we have to sell, above all, is what we know about the strengths and weaknesses of our own ways of thinking. To put it in the language of history, the “who,” “what,” “when,” and “where” we know is not what justifies our paid position, but our ability to discern and grapple with “how” and “why.” Realization of the benefits of how and why,

however, demands openness on everyone's part. It demands openness from the "teacher" and from the "student." Epistemological awareness cannot be transferred via unilateral transmission from the person "with it" to the person "without it." It requires the trading of limitations, each person offering up their own awareness and juxtaposing it against the simultaneously-offered awareness of the other. The social benefits of trade come only after the *agora* has been entered, only after going to market; and going to market requires both someone putting the goods on the table for the customer to see *and* someone showing the seller that the purse holds a Visa card.

When in our use of the past we fail to be open, we constrain development of collective judgment. We not only fail to listen to "the lessons of the past," we fail to learn how to listen to those lessons. We fail to learn how to assess the wisdom of those who claim to be experts, be they the anonymous experts of Wikipedia or the multi-degreed experts of textbooks. We fail to learn when to trust what is being claimed and when to dig deeper. We fail to learn *when* to listen.

And have no doubt: living under the constraints of a world of alternate universe technology makes the particulars of daily trust more important than ever before. The consequences of misplacing trust, as with all forms of inadequate listening, are bigger. The speed of change requires us to regulate each other out of fear less, and collaborate out of trust more. The complexity of technology means we cannot keep up with everything. We can, and do, and must, spend part of our time surfing the web and paying attention to the historical details of 18-year-olds' consumption patterns, but we cannot trace all the hits of a daily Google on technology and we cannot keep up with, much less prevent, the networking permutations of Facebook and Myspace and YouTube.

I cannot confront all of my student's hidden assumptions, and my student cannot confront all of mine. I cannot even confront all of my own. No one has time, and now we have less than ever, to take everything back to "first principles." I can, however, be open about my

assumptions. I can be in the habit of exposing how I place my trust and, in so doing, reveal to the student more situations where *she* must decide how to ground her own.

I can be in the habit of exposing the extent of our intellectual codependency. I may have advanced degrees in economics, history, and law, but I am neither intellectually self-sufficient nor some hyper-competent John Wayne. Yet how often have I had students show a trust in my expertise that suggests they believe I am both? How many times have I reinforced their ill-conceived trust by willingly “giving the answers” in the manner of Herr Doktor Expert Professor Shilts? What if, going back to my opening story one more time, I had started that unit on China with a small research assignment to “go out on the internet and find something about today’s China and connect it to something about China in the Mao years,” and only afterwards distributed a “required reading”? Would either my weaknesses or those of the Paideia program have made the same difference?

**Teaching from the alternate universe.** The world of second-best is frightening. It asks -- of our students, and of ourselves -- that we be shaped by the *ex ante* unavoidable uncertainty of our collaborative economic lives. Trickle-down thinking, student-centered learning, and technological determinism each offer the comfort of apparently predictable outcomes: the comfort of knowing what is on the exam; the comfort of putting oneself at the center of the universe; the comfort of reducing complex technologies into terms even a president can understand. But theirs are the wrong solutions, for the economic world of 2007 has but one certainty: that we will keep facing new uncertainties.

If we are to build the historical common ground necessary for the uncertainties of our economic future, those of us who would teach must admit and deal with our most cherished fears, our most ingrained places of mistrust about education and its processes. We must confront, carefully and in detail, our fears of showing the extent our ignorance. We must confront, carefully

and in detail, our fears about our students' capacity. Finally, we must confront, carefully and in detail, our fears of being guided from outside the academy.

We must confront our fears of our own limitations. We must admit that we worry about our abilities to control the classroom: What happens to the sophomore's willingness to listen when he is told that "we don't have the answers, only more questions"? What happens to our ability to teach technological history when we admit too our limited understanding of today's technologies? Can we get students beyond "Fogel showed the actual social savings of the railroad to be small" to Fogel's more important lesson about the follies of single-cause determinism? Yes, historical understanding is fuzzy, but if we admit that fuzziness to an 18-year old, will the 18-year-old pay less attention?

We must confront our fears of our students' limitations. A typical 18-year-old *is* an epistemological contradiction: on the one hand, he cannot be trusted with his own learning; on the other hand, he must be trusted with that learning. We must admit, and deal with, the contradiction. We must ask why, and when, we believe only those already established in a discipline through immersion and experience are able to examine its underlying principles. To ensure that students join the commons, we must consider how the certainties of our carefully constructed syllabi and graduation requirements reinforce our students' unwillingness to think outside their comfort zone. We must think about when the necessities of "grading" to ensure "excellence" may increase student dependence *and* decrease excellence in the creative flexibility that a paradigm-shifting world demands. We must ask how in-class prescriptions about what was important about China ten years ago or about what is important about Bangalore today may make it *less* likely that ten years from now our students will be able to assess what has since become important about Montevideo.

Finally, we must confront our fears of the limitations of the world outside. We must

acknowledge that we have separated ourselves, *and* that we like it that way. We regularly admit our ignorance to our “peers” (as long as they are not also deciding our tenure or promotion), yet we shy away from doing the same with people outside the academy. We have spent years mastering the reigning methods of higher education, and intellectual generations defending them against the criticisms of presidents, legislatures, and money-grubbing businessmen. We prefer being source rather than recipient of the rules of “how to do education.”

Great value accompanied our historical separation. Specialization in history and economics and engineering has been good. We must acknowledge, however, that our separation has also made it easier to sleep through important economic change. Most of us have noticed the existence of nanotechnology and virtual reality, and we have had no shortage of proclamations about the danger of new technologies; but how many of the details of any of those technologies have we learned? As we proclaim the implications of technological change how many of us are truly aware of *when* we apply the rigor of our chosen disciplines and *when* we do not?

Worse, at a moment when we need to be working out new curricula and pedagogies of collaboration, our separation has made it easier and easier for us to ignore how those outside the academy are already working on the problem. The alternate universe means nanotechnology; it means Steve Bezos of Amazon.com buying 160,000 acres of Texas land to build a spaceport; and, yes, it means the University of Phoenix. But the alternate universe also means the information processing skills developed through Edward de Bono’s Six Thinking Hats and Lateral Thinking and the late Genrikh Altshuller’s TRIZ. A simple use of the Six Hats can help a business meeting accomplish *at least* twice as much in *no more than* a third of the time. TRIZ is *designed* to solve contradiction problems like that of the “can’t be trusted/must be trusted” student, and solve them in a way that enables not only a zero-sum solution of “either/or” but a

positive-sum solution of “both.”<sup>19</sup> Yet how many academics have been willing to read de Bono’s work? How many academics have even heard of TRIZ?

Worst of all, separation not only divides the academy from today’s “working world,” it makes it easier to divide ourselves from those who will shape tomorrow’s. We may be okay with computers and iPods but blogs are another matter. The Pew Internet and American Life project has reported that 39% of all internet users now read blogs.<sup>20</sup> Academics, however, having slept through most of blogging’s spread focus on how it distracts students from serious learning. Instead of reaching out to blogs as a place for trading ideas and working out new forms of collaboration (what most regular bloggers are in fact doing), we attempt to remove the distraction in our usual scholastic way: we point out the difficulty of tracing sources and we sneer at the how often bloggers lack professional certification. And in so doing, our rhetoric only increases the cognitive dissonance: on one hand we assert epistemological superiority, on the other we show our students we have no clue as to what the blogosphere is all about. Is it any wonder that student willingness to listen continues to decline?

### **Where Do We Go From Here?**

Admitting our fears of the alternate universe is a first step, but it is not sufficient to ensure sufficient epistemological transparency. We must also radically change our practice. But how, exactly, should we change our curriculum, our pedagogy, our scholarship? I have four brief suggestions and a warning.

Start by increasing your trade with the alternate universe. Regularly read popular nonfiction. In particular, rather than sneering at “vanity publishing” read one self-published

<sup>19</sup> For de Bono’s work, a good place to start is *Serious Creativity*, which discusses both Six Hats and Lateral Thinking tools; for TRIZ, see, e.g., the website of the Technical Innovation Center ([www.triz.org](http://www.triz.org)) and follow the link to Kraev’s [short for Valery Karsnoslobodtsev, its author] Corner. TRIZ is the Russian acronym for “Theory of Inventive Problem Solving,” and was developed by Altshuller, a Russian engineer, through the examination of thousands of Russian patents. Googling TRIZ will reveal the marketing of a number of variations, improvements, and extensions, of the original TRIZ; taking a different, more “open source” approach, than de Bono, Altshuller refused to make TRIZ proprietary. Of particular interest is Roni Horowitz’s ASIT [or Advanced Systematic Inventive Thinking], information about which can be found at [www.start2think.com](http://www.start2think.com).

<sup>20</sup>[http://www.pewinternet.org/trends/Internet\\_Activities\\_1.11.07.htm](http://www.pewinternet.org/trends/Internet_Activities_1.11.07.htm)

book each month. Yes, you'll discover some of them to be awful stuff that never made it past the slush pile at Cambridge or Norton for a reason; but others will prove more important than anything those publishers have shown you lately. And don't stop with books. Ask your students for the URL of some interesting, but non-class-related, website they have encountered. Then, starting from that site, follow links at random as your impulse prods you. You'll find that the networked character of information leads you within five or ten clicks to something you can use in class or in your research.

Second, get a copy of an mind-mapping program like Inspiration or MindManager , and use it to explore your newest project or generate a new class lecture. Better yet, use it to map the thinking that you followed in the random web search described above. We who hold the "terminal" degree in our discipline are hardwired with hierarchical notions of information value: primary sources are superior to secondary; monographs and peer-reviewed journals are superior to popular nonfiction or the average website. Explore the networked character of information with mind-mapping software, however, and think of how cheap it is to move around nonlinearly in, and you start to see why our usual methods for inculcating that hierarchy have so little success. More importantly, you start to see the value of the nonlinear ways your students use information.<sup>21</sup>

Third, change your syllabi and embrace presentism for the first part of the term. Spend the first section of a course having the students talk about why history might be valuable. Instead of starting the American economic history course with the colonial period or the European course with the agricultural revolution or Western Civ with the French Revolution, start it with a month on Friedman's *The World is Flat* or Malone's *The Future of Work*. Don't start by telling the students why historical modes of thinking matter. Instead, subvert them into discovering why.

<sup>21</sup> Both Inspiration ([www.inspiration.com](http://www.inspiration.com)) and MindManager ([www.mindjet.com](http://www.mindjet.com)) offer an excellent free trial version. Another way to see the networked character of information is to visit "The Brain" at [www.kurzeilAI.net](http://www.kurzeilAI.net).

Finally, radically change the objectives of your assignments. Get rid of term papers and replace them with assignments that have students exploring together the difficulties in putting together a project outline. Get rid of your 15-minute lectures on the virtues of primary sources and the vices of Wikipedia, and replace them with homework assignments that require them first to trace the sources that text chapter relies upon, and then to compare what the text claims with what the sources (or the sources' sources) say. And make the homework assignment large enough, and due early enough, so that they must find ways of working together to complete it.

One last warning. If you think these particular proposals intractable or unsound, so be it. While I have done all three with success, what works for me and my students may not work for you and yours. Too, However, problems with these three particular suggestions should not be taken as license for rejection of the main point: stop running your classes as if just because the 20-year old is in your class or majoring in your discipline, he or she shares your convictions about how the class matters. Remember that you still have a significant burden of persuading the kid in the back to listen. Despite being a lifelong reader of science fiction, I was surprised to awake having missed the birth of the alternate universe. But, whether we saw it coming or not, whether we approve of it or not, it is here to stay. And our failure to come to terms with it should make us uneasy. Very uneasy.

But, here, too, we must avoid the counsel of our fears. The alternate universe is our universe now. We must respond with courage and with creativity. In the words usually attributed to Frederick the Great: *L'audace, l'audace, toujours l'audace.*

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