
HUMAN CAPITAL AND THE LABOR OF LEARNING: A CASE OF MISTAKEN IDENTITY

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ABSTRACT. In this essay, Alexander Sidorkin offers a conceptual critique of the human capital theory that makes erroneous assumptions about the nature of student work and the private cost of schooling. Specifically, human capital theorists underestimate the private cost of schooling by taking low-level manual labor as the basis for estimating students' forgone earnings. This does not take into consideration the nature of students' labor of learning. In the essay, Sidorkin describes student work as a form of labor, not an investment activity, and considers the implications such an understanding of student work has for school reform.

Go To College, Make A \$Million
– United States Bureau of the Census¹

The human capital theory (HCT) rests on one mesmerizing empirical fact: more education generally means higher lifetime income. The theory considers education to be a kind of investment, the costs of which are recouped — at a profit — by higher future earnings. The theory is very influential among both economists and educational policy makers. The only serious glitch is that the theory does not explain the practice of compulsory schooling. As Philip Oreopoulos aptly puts it, “viewing education as an investment suggests compulsory schooling laws should not exist, since the laws place constraints on individuals already optimizing.”² In this essay I attempt to explain the paradox by providing a conceptual critique of HCT, and I outline some implications for school reform that derive from considering school learning a form of labor.

Several major critiques of the theory have been unsuccessful; I will briefly discuss the two most prominent of these here. First, there is the “screening theory,” which maintains that schooling is just an expensive screening mechanism for sorting students into groups of more and less able. A sophisticated analysis of empirical evidence demonstrates that this formulation does not reflect actual experience, and formal education does in fact build the productive capacity of individuals.³ Schooling may have a screening or sorting component, but it also creates significant value for the society as a whole as well as for individual students. In addition, it is difficult to imagine that such an incredibly expensive screening mechanism would have been adopted by virtually all economically successful

1. Bureau of the Census, “Statistical Brief: More Education Means Higher Career Earnings” (Washington, D.C.: U.S. Department of Commerce, 1994), http://www.census.gov/apcd/www/statbrief/sb94_17.pdf, p. 2.

2. Philip Oreopoulos, “Do Dropouts Drop Out Too Soon? International Evidence From Changes in School-Leaving Laws” (National Bureau of Economic Research Working Papers, 2003), <http://nber.org/papers/w10155.pdf>, p. 26.

3. D.R. Winkler, “Screening Models and Education,” in *Economics of Education: Research and Studies*, ed. George Psacharopoulos (Oxford: Pergamon Press, 1987), 287–290.

societies. The availability of less expensive screening tools — including testing, for instance — makes the screening theory of schooling implausible.

Samuel Bowles and Herbert Gintis present a view that critiques HCT from a different angle.⁴ According to these two authors, schooling raises earnings not because it makes people smarter, but because it creates “incentive-enhancing preferences” — that is, schooling makes us more obedient. But even if this is so, obedience can certainly be considered a kind of skill and therefore included in the notion of human capital. In a generous reading, obedience may be interpreted as a sign of higher social intelligence, an ability to get along with others. Therefore, Bowles and Gintis’s critique is ultimately compatible with HCT. One may suppose that schooling makes students both “smarter” and more socially adept.

HCT seems unassailable: years and decades go by and no one seems to be able to find a hole in its logic. The theory fits so well with contemporary society’s educational ethics; however, one has to wonder if its unassailability has more to do with social mores than with the theory’s own strength.

A CONCEPTUAL CRITIQUE OF HCT

The very idea of a compulsory investment is somewhat troubling: investment implies choice of not only where but also whether to invest. Any restriction of such choices limits efficient allocation. Mandatory investment takes on the quality of taxation. Although payment of some taxes may be described as private investment, generalizing this theoretical point would render the concept of “private investment” meaningless. To Gary Becker’s credit, he understands this problem even if it does not trouble him nearly enough. He demonstrates that compulsory education laws increase investment in human capital, but then wonders,

Since the purpose of a minimum standard is to offset the effects of poverty and niggardliness, appropriate subsidies could in principle achieve the same result without compulsion. The effectiveness of voluntary investment in human capital is often underrated because subsidies to human capital usually cover, at best, only a portion of earnings forgone. If they cover all costs, including those forgone, almost all children, I am confident, would continue in school through the age desired.⁵

This short passage contains an implicit but radical proposal: governments should pay students to attend school. While Becker treats it as no more than an aside, the suggestion is remarkable, and it is consistent with my own conclusions. However, this view remains marginal to HCT because it contradicts Becker’s own overall framework. Understanding education as a form of investment paints a picture of

4. Samuel Bowles and Herbert Gintis, “Does Schooling Raise Earnings by Making People Smarter?” in *Meritocracy and Economic Inequality*, ed. Kenneth Arrow, Samuel Bowles and Steven Durlauf (Princeton, New Jersey: Princeton University Press, 2000), 118–136.

5. Gary S. Becker, *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education* (New York: Columbia University Press, 1975), 128. This work will be cited in the text as *HC* for all subsequent references.

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education that is much too rosy to allow for serious reform. HCT makes schooling look so attractive and beneficial to students that any compulsion becomes very easy to justify. If the investment is so profitable, and some people are less than enthusiastic about it, well, something must be wrong with those people. On this view, therefore, compulsion is warranted.

Both Becker and Theodore Schultz, the founders of modern HCT, rightly argue against viewing education as consumption. Schultz simply and clearly writes, "costs of schooling are incurred deliberately to acquire a productive stock, embodied in human beings, that provides future services."⁶ Indeed, while a portion of education may be described as consumption, the whole cannot be reduced to the consumption component without ignoring the growing economic effects of schooling. Such a change of focus by human capital theorists was justified; it helped to remove the expenditures associated with public schooling from the category of current consumption, and it instead demonstrated their economic effectiveness. Treating education as a public investment makes a great deal of sense, especially at early stages of a national education system's development. Human capital theorists may have taken this logic too far, however, by treating school learning as a form of *private* investment. The logical move Becker makes in this regard is puzzling:

Instead of assuming that time can be allocated only between market labor force activity and nonmarket consumption activity, I now introduce a third category, investment in human capital....Each person produces his own human capital by using some of his time and goods to attend "school," receive on-the-job training, etc. (*HC*, 63)

If a theorist has two potentially applicable categories, and the first one does not fit, he should try the second available category before introducing a third one. In fact, neither Becker nor any other human capital theorist I know has ever explained why what students do in school cannot be described as labor. My own admittedly speculative hypothesis consists of three explanations: (1) Human capital theorists are accustomed to equating labor with wage labor; therefore, if going to school does not result in a paycheck, it cannot be labor. (2) What students produce in schools (their essays, calculations, paintings, performances) does not directly enter the marketplace, therefore schoolwork cannot be labor. (3) Going to school has never been considered labor; therefore, it cannot be labor.

Whatever the reasons, no one explicitly considers students' own input in education to be labor. However, even if one accepts the basic premises of HCT, students' own work is implicitly included in the cost of human capital. Indeed, if people invest in themselves, what exactly do they invest? Aside from some insignificant (for elementary and secondary education) direct costs, the lion's share of this investment is students' own efforts. It is not just lost time, for learning can only happen when a student expends some energy, exercises her mind and body, and makes a deliberate effort. Any purposeful, effortful activity outside of leisure should be considered labor, especially if it has direct economic consequences. "Using some of his time," as Becker puts it, is a euphemism for "working." There

6. Theodore W. Schultz, *Investing in People: The Economics of Population Quality* (Berkeley: University of California Press, 1981), 31.

is no need for the third category he proposes, because there are no demonstrable differences between creating one's own human capital and working.

The methodology Becker and everyone after him use in estimating costs of schooling contains an erroneous assumption. They calculate the private cost of schooling on the basis of "forgone earnings." In other words, the cost of education to a student is a case of opportunity cost, or what the student would have earned if not attending school. Empirically, Becker considers several methods that estimate either actual earnings of students from part-time jobs, or the incomes of dropouts, or the incomes of high-school graduates in the workforce extrapolated to college students and high school students (*HC*, 348–251). In all cases, unskilled, low-end labor is, in effect, used as a baseline, because students do not yet have the education and experience typically associated with higher earnings. This approach does seem reasonable, if school learning is not presented as labor. Yet, if it is, the whole methodology becomes vulnerable.

The notion of opportunity cost applies to the same asset that can be allocated differently. For example, one can invest money in a number of different ways, because money is a universal commodity. One can use barley to produce beer or bread; one can use corn to produce animal feed or ethanol fuel. The logic of opportunity cost applies only when the initial commodity is the same. If one has two different commodities to begin with, it is impossible to calculate opportunity cost without first converting them into equivalents. A corn grower can only estimate the opportunity cost of not growing barley if he has a clear monetary representation of production costs and sale prices. Most importantly, he needs to make an assumption that his labor will be the same or similar. The homogeneity (actual identity or comparability) of the asset initially invested is a clear logical assumption of the concept of opportunity cost.

However, in estimating the costs of schooling, we begin with two different initial commodities: the labor of a low-skilled worker cannot be easily equated with the labor of a student. Just because the same person can perform different kinds of labor does not mean that any labor the person performs is of the same value. The value of one kind of labor cannot be calculated through the value of another significantly different kind without first exposing *both* to the labor market. Wages are determined through the valuation mechanisms of the labor market and the general equilibrium of labor supply and demand. Of course, labor markets are somewhat different from commodity or capital markets, and they are also subject to numerous constraints.⁷ Yet, as a matter of principle, the value of labor estimates cannot stray too far from the actual wages received. The cost of a high school students' school labor is not exposed to the market at the time the work is performed, but that does not mean that the cost is low or nonexistent.

The root of HCT's error is this: a high school student does not receive any payment for taking calculus until several years after graduating. Yet, when this

7. See, for example, Fred Block, *Postindustrial Possibilities: A Critique of Economic Discourse* (Berkeley: University of California Press, 1990), 75–119.

student does receive payment, it comes in the form of the differential between his or her own wages and those of a classmate who dropped out of school without ever taking calculus. That market test is the only true measure of the values of this student's labor. HCT assumes that a worker is compensated for labor actually provided at the time of employment, not for labor previously required of the worker when he or she was a student. I am not sure how such an assumption can be valid. If my employer requires me to produce an instrument in order to have a job, I will assume that the time spent producing the instrument is a part of labor sold to the employer, even though I am not compensated for it until later. Can one call this an investment? Deferring payment until some later time may be a form of simple (interest-free) savings, but it is not an investment.

Becker's treatment of school learning as a private investment is also puzzling because going to school has so little in common with what is normally called "investment." An investment, in general, is the purchase of an asset or a good that is not consumed but is used in production, at a profit to the investor. In the case of a profit-generating asset, the output should be larger than the input. Let us now describe this as a relation between investment and labor. If I invest in a tool, it must make my work more efficient — that is, to be a true investment, the tool must reduce my labor input relative to my production output. A tool that creates more work but yields the same output is useless. Similarly, if I invest in stocks, I should receive more money than I have paid, thus also effectively reducing my labor relative to consumption. On a very basic level, investment can be described as a way of reducing one's overall workload by acquiring an instrument that makes labor more efficient. Yet skills, or what Karl Marx called labor power, are not such a tool. Labor power does not reduce labor input; in fact, it does the opposite. It is well established that human capital is an illiquid asset (*HC*, 77), but what does that really mean? In order to "sell" the skills of a doctor, one has to apply the more sophisticated labor of a doctor. In this analysis, we can substitute quantity for quality: applying a doctor's skills requires the person to exert more (better quality) labor than if selling, say, the skills of a harvester. Of course, the doctor is paid more than a harvester, but this is not because the former has more of some mysterious substance but rather because the doctor provides more (or better) labor. To convert labor power (or human capital) into money, one has to work; the more labor potential one has, the harder one has to labor to use it. In fact, the very notion of labor power (or human capital) is a mere abstraction that does not exist outside of the actual process of labor. This is why working rarely feels like spending capital. If this argument seems tautological, it is, but the blame for this rests with HCT.

The notion of investment implies that one spends less than one receives at the end, unless the investment fails. But how does one determine what a student spends in terms of his or her labor expenditure? The only way of determining this is to measure this expenditure against the wages received when the accumulated labor power actually reaches the labor market. The student earns what he or she earns, and one must assume that this is what learning calculus is worth. There is no investment, no capital, only labor compensated now or later. The opportunity

cost is applicable to investment, because investors can actually allocate capital differently, thus producing different rates of return. Student labor cannot be allocated elsewhere, because students who choose to work rather than study will perform significantly different labor, and that labor will be worth significantly less than the labor of learning.

Consider an example: university janitors are paid twice a month while professors are paid once a month. By being a professor, I incur an opportunity cost of not being a janitor. I forgo two paychecks of \$1,000 each, but in the end I am rewarded with a single \$5,000 paycheck. Therefore, the return on my investment in working as a professor is 250 percent a month — what a deal! This description is absurd because it ignores the actual nature of the labor I do as a professor. Yet, if we change this case to stretch it over several years, it becomes a respectable economic theory. In fact, Becker assumes that the nature of student work in school is irrelevant, that there is no difference between learning calculus and flipping burgers. This assumption leads him to estimate the value of the former by the opportunity cost derived from the latter. No wonder he comes up with an 18 percent rate of return on high school (*HC*, 201). Subsequent estimates by other human capital theorists have calculated private returns ranging from 4 to 16 percent.⁸ All of these estimates are based on versions of the Mincerian equation, which takes the difference in wages created by years of schooling and deducts costs — including the foregone earnings, which are, essentially, the wages of an unskilled worker.⁹

Instead, the rate of return on schooling should be held at constant zero. If the rate of return from schooling appears to be at a certain level, all it indicates is the undervaluation of student labor. The true reflection of a worker's productivity as measured by the labor market is one's lifetime income. Long-term exposure to the market is a much better indicator of labor valuation than any short-term exposure. Absence of a paycheck in the first 13 to 30 years of one's work life describes only the nature of social arrangements for labor marked as "schooling."

Students are paid nothing for their work while at school. How much, if at all, should they be compensated? The answer to this has nothing to do with the actual value they produce, but everything to do with the incentives to work efficiently. Every paycheck is but an imperfect reflection of the labor market at work. Every paycheck is a mixture of compensations for previous, current, and, in some cases, future labor. Yet wages at each stage of one's work life also perform a signaling function, telling workers how much effort to allocate toward what kind of activity.

SHIFTING FOCUS TO STUDENT LABOR

The consequences of the methodological error inherent in HCT are significant. By severely underestimating the private costs of schooling, the theory provides

8. Mark Gradstein, Moshe Justman, and Volker Meier, *The Political Economy of Education: Implications for Growth and Inequality* (Cambridge, Massachusetts: MIT Press, 2005), 32.

9. Jacob Mincer, *Schooling, Earnings, and Experience* (New York: Columbia University Press, 1974).

justification for compulsory schooling. At the same time, compulsory schooling is the very mechanism that makes the private cost of schooling appear significantly lower than it actually is. Such a view creates a number of distortions and is the root cause of many failings of K–12 education. Not the least of these is inadequate effort on the part of most students.

Even Nobel Prize winners are sometimes confused by appearances, as are K–12 students. If Becker overestimated the value of education, students often underestimate it, for the same reasons. Because they are not being paid right away, students assume that they are not getting paid at all. The whole arrangement of schooling manifests itself to students as unpaid, compulsory labor. Viewing school learning as labor removes one mystery from the question of compulsory education laws. Compulsory laws exist because primary and secondary school does not appear to be such a good deal for most students. It has little to do with immaturity or lack of rationality among students or their parents.

Student labor is a major tax collected by governments and invested in public education, along with traditional tax revenues. Student labor is thus a form of public subsidy to employers, who obtain such labor at public expense in two ways: the direct cost of schooling is subsidized by taxpayers, and the labor of students is subsidized by students themselves (not without using publicly funded coercion apparatus). So far, there is nothing ethically or economically wrong with the description; public subsidies in this case may be appropriate. Yet the institution of compulsory schooling also lowers the quality of labor, because student labor lacks incentive; it is not responsive to market demands and is wasteful.

As Becker notes, “A school can be defined as an institution specializing in the production of training, as distinct from a firm that offers training in conjunction with the production of goods” (*HC*, 37). The emergence of schooling can be viewed as a consequence of the division of labor, where schools emerged as specialized firms. Unlike other firms, schools have never paid their workers; they had to resort to cultural, ideological, and legal pressures to force students to work. There are many historical precedents demonstrating that a system of bound labor can coexist with a sophisticated market economy. While the institution of slavery in the New World is the most notorious example, it is not the only one. In general, bound labor is an attempt to obtain labor at a discount through using some means of extra-economic coercion, especially in cases where the labor supply is constrained and wage labor is too expensive to be practical. We also know that although institutions of bound labor may be born of necessity, they take on lives of their own and are very hard to convert to free labor markets without major economic disruptions.¹⁰

Shifting attention to the labor of students allows research to focus on factors that make labor more or less efficient — specifically, on incentives. Dealing with education requires that one recognize a fundamental contradiction: it is an essential public investment, but its cost is much higher than we have been led to

10. Frederick Cooper, Thomas C. Holt, Rebecca J. Scott, *Beyond Slavery: Explorations of Race, Labor, and Citizenship in Postemancipation Societies* (Chapel Hill: University of North Carolina Press, 2000).

believe. Part of this cost is covered by regular taxes, but another substantial cost comes from the uncompensated, compulsory labor of school students. This hidden cost of education must be acknowledged if we are to address all of the problems it creates. Most importantly, it creates a disincentive for student labor.

K–12 students lack incentive because they operate largely outside of the labor market for a very long time. Delayed income is less attractive than immediate income, in general. In the case of K–12 students, the lengthy delay in payment is exacerbated by the significant risks they incur of not being compensated at all. In middle- and upper-class families, the risk of school labor is significantly reduced because family resources and parental example act as quasi-guarantors. For lower-class students, the unpaid labor of schooling becomes more of a gamble: there is no guarantee that it will ultimately be compensated. Staying in school longer compounds this risk because it increases the amount of contributed labor more than it increases chance of reaching the top level of the occupational pyramid.

IMPLICATIONS FOR SCHOOL REFORM

While the current standard-driven reform of education is important and may be somewhat productive, it reinforces the essentially Soviet-style command economy of public education. To make a real difference, educational reform must harness market mechanisms to optimize student labor. I do not want to predict the impending doom of education if it fails to take notice of my theory. It just might continue unchanged for a very long time. The nonmarket educational system faces only theoretical limits at this point. One can imagine a time when its ability to squeeze labor from students has been exhausted, thus impeding further technological progress and economic growth. When this might happen, I will not try to predict.

Student labor is different from other forms of productive labor. Its productivity cannot be significantly raised by the two usual means: use of machines and division of labor (specialization). In contrast, one's productivity in learning is proportional to effort. The use of machines only changes the nature of the skills and knowledge to be acquired, but it does not produce more learning per unit of effort. Similarly, efficiencies achieved through specialization cannot be significant in education, especially in its early years. Specializing in one type of knowledge and skills hurts the applicability of education to a wide variety of occupations and activities.

However, school learning contains significant reserves associated with low levels of effort by most students. For example, in 1992, only 15 percent of fourth graders spent more than an hour a day on homework, while only 19 percent spent less than two hours a day watching television.¹¹ Twenty-four percent of teachers report that students' disruptive behavior interferes with teaching to a great or moderate extent, and 44 percent of all teachers report that students' misbehavior does

11. National Center for Education Statistics, *Digest of Education Statistics Tables and Figures* (Washington, D.C.: U.S. Department of Education, 2004), http://nces.ed.gov/programs/digest/d04/tables/dt04_140.asp, Table 140.

the same thing.¹² These are indirect indicators of low intensity of student labor. There is no good empirical measure of on-task to off-task ratios of school days, but it clearly varies widely, depending on school quality. In other words, the productivity of the schooling sector can be improved only by raising the level of student effort and extending actual working hours (not necessarily the stated classroom hours).

Another productivity reserve is the method of curriculum construction. In the current climate, it is a thoroughly politicized and haphazard process. In most cases, it boils down to a group of teachers, content-knowledge experts, and community members spending a few months in a state capital, arguing about what should and should not be taught. The process is very removed from any labor market pressures. These pressures kick in suddenly, albeit inconsistently, at the level of higher education. No one knows what knowledge, skills, and dispositions acquired in the first thirteen years of schooling are actually being used. When confronted with this mismatch, curriculum theorists inevitably point to the “learning to learn” and other metaskills that can be gained from learning any irrelevant material. Of course, the same metaskills can be gained from learning *relevant* material, but we just do not know which material is relevant and so cannot focus our efforts on that knowledge. In fact, this is exactly the kind of knowledge that seems impossible to obtain in a centralized, planned economy, but it can be reliably gauged by self-regulating market mechanisms.

There are two scenarios of school reform that fall within the theoretical perspective just outlined. The first one is to improve labor conditions within the existing nonmarket economy of schooling. The second scenario involves a radical transformation of K–12 education into a quasi-market economy.

The first scenario is perhaps more realistic in the short-term perspective; it may significantly complement and strengthen the current accountability reform, but it will not solve long-term problems arising from our approach to student labor. It takes into account the fact that, in real life, motivation to learn depends on social aspects of schooling. Students that like to attend school for social interaction, and like to be around their teachers, generally apply more effort to learning. In fact, good schools already compensate students for their learning efforts by providing desired services in their capacity as community centers and entertainment providers. One clear example of this type of nonmonetary exchange is school athletics: one must maintain a certain GPA to play sports. An obvious but little explored way of raising the level of student effort would be to expand the service-providing capacities of schools. Expanding the range of extracurricular activities available to students in exchange for improvement in their academic work can produce better results than those achieved by tightening control over teaching activities (which is the dominant approach of current accountability reform). Such a reform would require making the links between receiving services from school and doing high quality academic work explicit.

12. National Center for Educational Statistics, *Teacher Survey on Safe, Disciplined, and Drug-Free Schools* (Washington, D.C.: U.S. Department of Education, 1991), <http://nces.ed.gov/surveys/frss/publications/91091/>.

Politically, such a reform is a remote possibility, at least in the United States, but it may have a better chance in other industrialized countries. Perhaps the failure of accountability reform can open the possibility for this approach, if a political party can formulate this type of reform as a plausible alternative. I would try to distance such a reform from Progressivist rhetoric and simply point out to the public that kids need to like school, their teachers, and the opportunity to belong to something. One can also imagine ways of blending other well-established extracurricular institutions, such as the YMCA and Boys and Girls Clubs of America, with traditional schools. Ultimately, the public must accept the idea that enticing children to learn is a legitimate public spending item. One only has to make clear that this approach does not dilute the curriculum with frivolous classes, but instead institutes a form of compensation for student labor.

The second scenario is an outline of a long-term solution that is quite impractical today but that may become more and more appealing in the future. It has to do with paying students money for their labor and linking labor market demands to curriculum development. Some rudimentary forms of such an arrangement already exist. The state of Ohio has paid its high school graduates bonuses for passing the Ohio Graduation Test. Students elsewhere may receive small cash premiums for perfect attendance. Kids read for pizza coupons and behave for ice cream socials. The problem, of course, is that these payments are merely symbolic. Education can be significantly improved with a real investment, not only in the quality of teaching but also in the quality of learning.

In another interesting experiment Mexico and Brazil have adopted programs (called *Progresá* and *Bolsa Escola*, respectively) that offer remuneration to poor families if their children attend school and receive regular medical check-ups.¹³ The results are very promising, and I fail to see why some similar scheme would not work in the United States and other developed countries — among the poor population first, and eventually for everyone. You want people do something that they would rather not do? Pay them.

Now I am done with the argument, so please indulge a bit of utopian fantasy. Here is how the curriculum piece might work. The U.S. Bureau of Labor Statistics has an extensive Occupational Outlook Handbook. It provides not only the number of jobs available and anticipated in each category, but also briefly describes the nature of work. For example, it says that college professors, among other things, should be able to do the following:

Faculty keep abreast of developments in their field by reading current literature, talking with colleagues, and participating in professional conferences. They may also do their own research to expand knowledge in their field. They may perform experiments; collect and analyze data; and examine original documents, literature, and other source material. From this process, they arrive at conclusions, and publish their findings in scholarly journals, books, and electronic media.¹⁴

13. See, for instance, Cristovam Buarque, *Bolsa Escola: Bridging Two Worlds*, <http://siteresources.worldbank.org/INTCL/Resources/SPectrumBolsaEscola.pdf>.

14. Bureau of Labor Statistics, *Occupational Outlook Handbook* (Washington, D.C.: U.S. Department of Labor), <http://www.bls.gov/oco/ocos066.htm#nature>.

In this resource we have the humble beginning of a catalog of all the skills used in the American economy. We live in the midst of a data management technological revolution that allows us to know things that we were never able to know before. Theoretically, we can accurately estimate demand for the skill of, say, analyzing data by multiplying the number of people in occupations requiring the skill by the average wage of those people, and then dividing this sum by the relative importance of the skill to these occupations. With this information, the government can tax both the employer and employee for the use of the skill, and direct earmarked revenue into an educational fund. In addition, individuals can demonstrate through an exam or performance test that they possess the skill in question and can be compensated for the labor they put into developing it. To assist their development of the skill, they may or may not engage the services of teachers or schools. The level of compensation will be determined by the amount of funds available in the skill fund, divided by the number of people who are willing to take the exam at a certain time. In other words, the labor market will provide immediate feedback regarding the value of specific skills. At the same time, if a certain skill is valuable because not many people can master it, it will remain rare and well compensated, both when it is learned and when it is used in production.

If a political entity such as a state or federal government believes that certain skills are important for citizens to have, it will contribute money to the fund dedicated to, say, attitudes of citizenship. It may not be possible to demonstrate mastery of some skills or attitudes through an exam; competence in these areas may only become evident in the course of a longer program with required attendance. Still, it will be up to students and their families to decide whether attending a citizenship day camp is worth the amount paid to its participants. Such an arrangement cannot guarantee that every student will take the citizenship test, but public school does not guarantee anything of the sort now in any case. If a state legislature feels strongly about certain content knowledge, dispositions, or skills, all it has to do is provide more money to the appropriate educational fund. Churches might create a Bible knowledge account, health authorities a health education account, environmentalists a green education account, and so on. Instead of requiring children to know something or to attend school, the fund will offer monetary incentives to learn. And, yes, various interests will be competing for children's attention. One can imagine a formula for diverting money from complex skills accounts to more foundational ones. For example, data analysis skills require the ability to read, so mastery of reading at a designated level should be coded into a job description and funds should be diverted to cover the years of reading instruction necessary to reach that level. Because many occupations and social roles depend on reading, there will be more money available to younger learners. However, because almost all kids will want to read, compensation for developing this skill may not be high.

A market of knowledge, skills, and dispositions can include both the consumptive and productive sides of education. For example, some skills will generate little revenue (taxed or voluntary), but if many children want to learn them, they can

pay to do so rather than be paid for learning. A kid might make money learning algebra, for example, and then spend it on guitar lessons. In other cases, the balance will be just right for the traditional — that is, free to students, but uncompensated — approach to the labor of learning. Creating such a market may take decades, but it will be superior to the existing system that promotes low student effort and more or less random design of the curriculum.

This proposal is rooted in the belief that self-regulated market-like systems are more efficient than centrally controlled ones. So, even though it is more radical and looks somewhat utopian, it may have better a better chance of success in the political realm. It is clearly rooted in free-market ideology and thus may be more appealing to the ever-stronger political muscle of conservative politicians. Education is the last remnant of the preindustrial nonmarket economy; it will benefit from joining the rest of the economy. Perhaps these musings are not so utopian after all.