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# Is the U.S. Education System Adequately Polycentric?

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MICHAEL D. STRONG

A key advantage of polycentric systems is that they allow institutions to evolve according to different values and objectives and thus allow for the emergence of new institutions that attract those whose needs are more fully met by the newer institutions. Despite considerable polycentricity in U.S. education with respect to district-level governance, a combination of other factors—ranging from federal legislation to collective-bargaining contracts to network effects locking in existing institutional technologies—prevent the current system from enabling the evolution of newer, more-effective institutions. Lock-in to obsolete institutional technologies is preventing the emergence of newer institutional technologies that may provide better outcomes with respect to social mobility, adolescent well-being, and adult well-being.

## **Polycentricity as a Framework for Evolutionary Competition**

Insofar as the very concept of polycentric governance was first brought to mainstream academic attention as a study of metropolitan areas (see Ostrom, Tiebout, and Warren 1961), it might seem as if public schooling in the United States provided a paradigmatic case of polycentricity. That text explained that “polycentric connotes many centers of decision-making which are formally independent of each other” (831). Certainly, the

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nearly fourteen thousand school districts across the United States constitute centers of decision making that are formally independent of each other.

However, monocentricity and polycentricity exist on a continuum. Paul Aligica and Vlad Tarko refine the concept of polycentricity in light of the lifetime corpus of Elinor Ostrom and Vincent Ostrom: “Polycentricity emerges as a nonhierarchical, institutional, and cultural framework that makes possible the coexistence of multiple centers of decision making with different objectives and values, and that sets up the stage for an evolutionary competition between the complementary ideas and methods of those different decision centers” (2012, 251).

Unfortunately, the evidence shows that the U.S. K–12 system in its present form does *not* set up the stage for an evolutionary competition among different ideas and methods based on “multiple centers of decision making with different objectives and values.”

### **Secular Academic Schooling as a Monocentric System**

Compulsory government schooling around the world consists of the following structural elements:

1. Sequenced, grade-level advancement (e.g., first grade, second grade, etc.)
2. A mandatory core academic curriculum (e.g., math, science, social studies, language arts)
3. Seat-time-based progression as the norm (i.e., one year to complete first grade, etc.)
4. Grade-level standards for obtaining “credit” for the year (e.g., in theory a student must “pass” or make “satisfactory progress” before moving on from grade to grade, though this is rarely a reality in much of the world)
5. The expectation that government-licensed teaching professionals teach the specified curriculum to students, which is then assessed using examinations

Note that an approach as simple and obvious as a self-paced, competency-based education or a completely personalized approach for a particular student is not compatible with these basic structural assumptions (though some educators and students manage to break the rules enough to get there in part).

Graded, sequenced, age-segregated schooling is the dominant form of “education” around the world today. If we regard “schooling” as a global standard, and if we believe that there may be forms of learning that are nonschool, nonsecular, and nonacademic, then education appears to be remarkably monocentric. To return to the U.S. case, all state departments of education and all public-school districts assume “schooling.” They specify a sequenced grade-level set of standards combined with assessments for those standards. They require attendance reporting that is based on a specific number of days in a school year, with truancy arrests and prosecutions possible for those parents who do not send their child to school for the required number of days.

Students who do not progress adequately through the system may be regarded as falling behind. Students who do not attain appropriate grade-point averages and who do not graduate from high school are often regarded as having limited their opportunities in life. Because parents typically are concerned for their child's well-being, they are reluctant to take risks that could result in a loss of opportunities for their child. As a consequence, unless they have a high degree of certainty that a pathway outside of the traditional schooling model will provide significantly greater rewards and opportunities, most parents are reluctant to pursue nonschooling approaches to their child's education.

Homeschooling is a growing exception, especially in the United States (for an excellent overview of homeschooling, see Kunzman and Geither 2013). Since 1993, homeschooling has been legal in all fifty states, but with significant variation in the degree of freedom. Many states allow significant autonomy, but some northeastern states require that specific material aligned with state standards be taught and that the homeschooling education be supervised by a licensed teaching professional. Homeschooling has gradually grown to about 3.3 percent of K–12 students in the country (National Center for Education Statistics 2017).

## **Education outside the Dominant K–12 Schooling Model**

Prior to the creation of the compulsory schooling system, there were many different ways in which young people learned the skills needed to become successful adults:

1. In indigenous cultures, young children learned through playing, imitating adults, and ultimately taking on increasingly mature and responsible roles in the tribal community. There was no “school.” (See Gray 2008.)
2. With the rise of literate religions and philosophical traditions (the Greco-Roman world), a subset of society chose to learn to read in order to access the texts and the disputations about those texts. Literacy and the associated study of texts was a voluntary, self-selected activity. (See Jaeger [1939] 1986.)
3. As specialized skills and trades developed, informal and then formal apprenticeships became increasingly common.

This is a nonexclusive list, but as a starting point it is worth noting that for thousands of years in cultures around the world human beings thrived and civilizations advanced without the formal, compulsory, graded K–12 schooling that is ubiquitous today.

The standard narrative is that modern civilization demands such a system of schooling. But insofar as governments around the world have imposed schooling systems on their populations, the notion that schooling is necessary for modern civilization may be an *ex post facto* rationalization that has become a self-fulfilling prophecy.

For a counterexample, consider the education of Laura Deming. Deming was working in a lab at the University of California–San Francisco at the age of twelve, was admitted to MIT at the age of fourteen, won a Thiel Fellowship to work on anti-aging research (and dropped out of MIT) at seventeen, and by twenty was a leading anti-aging venture capitalist.

Her father “unschooled” her, which meant that she followed her own interests at home with little supervision or instruction. At no point did she take a regular course; at no point was she taught by licensed, accredited teachers; at no point was she schooled at all. To get into MIT, she had the recommendation of her lab supervisor, a world-renowned researcher, she had done well on the SAT, and she had audited several college math and science courses.

For another counterexample, consider Cliff Spradlin, who dropped out of high school and dropped out of a brief attempt to take college courses at the University of Texas–Austin. He had almost no formal secondary schooling but became a self-taught coder online who developed a reputation for his coding, obtained a job designing video games online, then went on to work for SpaceX, Tesla, and Waymo as a senior software engineer designing some of the most sophisticated software systems for cutting-edge technologies.

Of course, there are millions of successful adults working at all levels of the twenty-first-century economy without traditional schooling (consider homeschoolers plus alternative schoolers alone). In Kuhnian terms, as counterexamples accumulate, they ultimately result in a crisis for a scientific paradigm. Given both that compulsory government schooling was unnecessary for success prior to the twentieth century and that it remains unnecessary for success on into the twenty-first century, we should consider the notion that it is neither a necessary nor a sufficient condition for human flourishing despite its dominance.

Among the kinds of education that might be constrained by graded schooling as a mandated government standard are (1) distinctive virtue cultures, (2) learning systems optimized for autodidacticism, and (3) radical variation in the time, pacing, or style of learning. The growth and evolution of each of these factors are likely to be constrained by compulsory schooling as the standard model. If institutions serving such options were fully based on equal footing with the government-mandated standard, they would certainly represent “multiple centers of decision making with different objectives and values.”

## Distinctive Virtue Cultures

Religious cultures are the most obvious distinctive virtue culture: most religious traditions specify particular behavioral norms and ideals of excellence as well as beliefs, rituals, and practices that may support the inculcation of those norms and ideals. But some parents might wish for their child to be brought up in a distinctive ethnic or moral or ascetic or military cultural tradition.

Historically, most religious and secular virtue cultures (e.g., Stoicism, Zen) around the world emphasized some form of self-discipline or self-control. In some cases, a significant portion of one’s education was devoted to learning self-control. In Buddhist temples, students might learn to meditate for many hours per day. In hunter-gatherer cultures, young hunters might learn to lie in wait silently for prey for many hours. What if parents believe that learning self-discipline is a greater priority than academics for a number of years of a child’s life?

In the absence of schooling monocentrism, we might see the evolution of new secular cultures that provide students with greater self-discipline vis-à-vis social media, diet, emotional self-regulation, time management, manners, and sexuality.

Viewed from the perspective of traditional cultures, in which students were embedded from childhood in a set of consistent norms, beliefs, and practices that developed specific virtues, contemporary notions of “character education” are thin gruel indeed. A thirty-minute “lesson” on grit in a contemporary school is no substitute for growing up as a farmer in the nineteenth century or as an aspiring young Samurai or as a Spartan.

## Learning Systems Optimized for Autodidacticism

Schools are premised on the notion that knowledge is to be transmitted from teacher to student. Thus, schooling standards specify which knowledge is to be transmitted at what grade level. But what if the optimal learning system for the twenty-first century is the cultivation of the skills to learn on one’s own? Schooling is not optimized for autodidacticism. Deming was clearly an exceptional autodidact whose father nurtured her autodidacticism. Spradlin was an independent autodidact who succeeded in learning on his own despite his parents’ repeated attempts to cajole or force him back into schooling. Both would have been held back by sequential, graded, age-segregated schooling.

## Radical Variation in the Time, Pacing, or Style of Learning

Suppose a parent believes that (*a*) a child should not begin reading or doing math until the age of ten; (*b*) students should learn to read at age three but then take a two-year break from academic learning during puberty in order to work or travel; and (*c*) teens ought to be engaged primarily in a real-world apprenticeship from age thirteen on (which in today’s world might be an apprenticeship in coding or video production).

These and other “nontraditional” paces for human learning have been used by homeschoolers and alternative schoolers who have succeeded in becoming successful and happy adults. What if some very different pathway with respect to time, pacing, and style of learning was significantly better for particular children or cohorts of children? At present, compulsory K–12 schooling does not allow for such radical variations from mainstream grade-level pacing across the disciplines.

By preventing these and other nonschooling options from emerging on a level playing field, governments have de facto dictated “schooling” as the optimal path for human development from ages five to eighteen. They have foreclosed other options that might potentially have greater benefit for some individuals and communities.

## Switching Costs in a Network

W. Brian Arthur has shown that network effects in a competitive market can result in customer lock-in: “Modern, complex technologies often display increasing returns to adoption in that the more they are adopted, the more experience is gained with them, and the more they are improved. When two or more increasing-return technologies



‘compete’ then, for a ‘market’ of potential adopters, insignificant events may by chance give one of them an initial advantage in adoptions. . . . Thus a technology that by chance gains an early lead in adoption may eventually ‘corner the market’ of potential adopters, with the other technologies becoming locked out” (1989, 116).

Of course, schooling as the default educational technology did not have a head start due to “insignificant events” but rather through the highly significant event of enforced compulsory schooling financed coercively by the state. The network effects of schooling have made it challenging for competitors outside the schooling standard to obtain and grow market share.

Consider the position of the average education consumer. Prior to the victories of the Homeschooling Legal Defense Association in the 1980s and 1990s, in most states parents either chose between government schools or government-accredited private schools (so that through government-approved accreditation agencies, even most private schools held to the school model). Thus, most parents’ only experience of “education” was graded schooling. When they have children, they assume that they will send their children either to government schools or to government-accredited private schools.

If they happen to have heard of homeschooling or unaccredited private-school options, which is unusual, their expectation may be that there is substantial risk associated with such options. Their belief is that if their child falls behind the standard grade-level mastery sequence or fails to obtain a government-approved high school credential, there will be severely negative lifetime consequences for him or her. Thus, even among those parents who have heard of educational options outside of government-sanctioned schooling, there may be an *ex ante* perception of high risk so that they don’t engage in further research of those options (which is costly).

If they do, they may discover that there are, in fact, real risks (of course, for the earliest homeschooling parents, fines and imprisonment were the risks). A parent might fear that a child who enters schooling “behind grade level” may be put in lower academic tracks or may be at risk of being diagnosed (rightly or wrongly) as learning disabled. The parent might also fear that graduating without a government-sanctioned diploma will eliminate university as a valuable (or even essential) postsecondary option for their child.

Moreover, “behind grade level” vis-à-vis the government school might be any form of learning that is not aligned with government-approved grade-level standards. Thus, a fourteen-year-old child who is programming at an adult level but who has not yet mastered pre-algebra may be “behind grade level.” A child who is publishing in online magazines but who has not mastered grade-level language arts standards is “behind grade level.” Real-world ability and performance, validated in the marketplace as valuable human capital, is of no value at all in the sequenced, grade-level curriculum. Government schools tend to be a mechanical bureaucracy that does not (and often by law cannot) evade required standards and procedures.

At the high school level, the Carnegie credits system that is universal in government schools acts as a default standard for private schools as well. If a teen has not earned the required “credits” (in math, science, language arts, social studies, health,

etc.) at a government school or government-accredited school, he or she most likely will not be eligible to graduate from high school in most states.

Given the high level of risk that their child might “fall behind” and “not earn credits” at every grade level, few parents are willing to take the risk of exploring educational options outside the existing schooling system.

If for some reason parents do explore homeschooling or nonaccredited schooling options, they may engage in significant search costs. Once they find an alternative, such as Montessori, they may be concerned that there will be significant switching costs should they decide (or need) to switch back to the regular schooling system. In addition to “Will my child be behind?,” they may now be concerned with “Will my child know how to take tests?” and “Will my child be able to sit still in a regular classroom?” and “Will my child know how to deal with bullies?” And so forth.

Finally, insofar as schooling is an experience good for which it is not obvious *ex ante* in which environment a child will do best, without taking the risk of trying an alternative and thus perhaps being locked in for a full academic year, there is no way of knowing if one’s child will be better off in alternative X rather than in the default schooling system. The fact that the child of a friend or neighbor does, in fact, do better under alternative X does not prove that it will also be better for one’s own child. The risk of losing a year of one’s child’s schooling for an “unproven” option implies that those parents who do choose such an option must have a very high level of confidence that the alternative provides a positive expected value high enough to compensate for the perceived risk.

Finally, with all of these nonschooling options, it is likely that there are significant network effects with respect to the capital goods needed to provide the nonschooling option. Consider the capital investments that go into facilities, curriculum and instruction, teacher training and professional development, student-management systems, assessment, administration and leadership, and research and development.

Each of these systems has benefitted from a century of focus on “schooling” in which trillions of dollars have been invested in ongoing development. But if an alternative approach has the potential to improve human lives, then it has suffered a relative dearth of investment in capital and talent along with the time and iterations needed to evolve.

In 2015–16, taxpayers spent \$706 billion on K–12 education (National Center for Education Statistics 2019), which is a similar order of magnitude to new automobile sales, at more than \$518 billion in 2018 (National Automobile Dealers Association 2019). In automobiles, if a more effective technology is developed, it is adopted, meeting the criteria of polycentrism that the system result in an evolutionary competition within an ecosystem of private enterprise. But automobiles are themselves part of a transportation standard that requires roads, gas stations, repair shops, and replacement parts. If we consider transportation as a category, then automobiles are but one option among many. There are planes, rail systems, buses, automobiles, and in some cases ferries and ships. If, say, state-run schooling and Montessori education are as different as railways and automobiles but only one of them receives an annual expenditure of nearly a trillion dollars, then only one of them will become a developed technology. The other will languish in a relatively primitive state.



## Case Study: Montessori and Autonomy

Montessori education is a distinctive approach outside the norms of standard schooling. Although “public-school Montessori” is a growing movement, Montessori educators agree that it is a challenge to implement it authentically within a schooling framework. Because Montessori public schools are forced to adhere to government school standards, they necessarily compromise on key elements of Montessori education; they are public schools first and “Montessori schools” second.

To begin with, mixed-age cohorts are fundamental to Montessori education. Insofar as standard schooling is based on grade 1, grade 2, and so on, with associated curriculum and assessment, it is ipso facto inconsistent with an authentic Montessori educational experience.

In addition, Montessori education encourages guides (not “teachers”) to “follow the child” with respect to the timing of introducing various materials and content. The education is thus much more highly personalized than is the norm in the usual grade-level-sequenced set of state academic standards.

In addition, in order for Montessori classrooms to allow the considerable student autonomy for which they are known, it is critical that most of the students are introduced into the norms of behavior—the habit of student-initiated learning; quiet, polite behavior; and extended cognitive focus—that allow Montessori classrooms to function well. These ways of being are best learned while young, which is why most Montessori schools prefer to start with three-year-olds (if not toddlers) and then add additional levels as the students mature. A “normalized” classroom of older students (i.e., the students have internalized Montessori behavioral norms) can enculturate a small number of outsiders, but more than, say, 10–20 percent of outside students can destroy the carefully developed culture. A private Montessori elementary school can choose to accept only a small percentage of older students who have not had Montessori training since preschool. Government schools are not allowed to restrict upper grades to those with particular training since a young age.

Maria Montessori developed her system in Italy in the early twentieth century and soon became an international celebrity because of the astounding maturity and initiative of children in her classrooms. But after Montessori’s tour of the United States in 1913 that led to the initial launch of a Montessori movement here, a hostile review of Montessori education by an authoritative Columbia University education professor killed it. Meanwhile, after increasing success in Italy, Montessori’s focus on peace brought hostility from Benito Mussolini, who shut down all of her schools in the 1930s. She spent the war in India and died in 1952, shortly after attempting to relaunch her movement in Holland.

In the late 1950s, Nancy Rambusch brought Montessori back to the United States (for the Montessori history, see American Montessori Society 2020). Montessori preschools spread rapidly in the culture of the 1960s, gradually growing into elementary schools in the 1970s and 1980s, into middle schools in the 1980s and 1990s, and finally into high schools in the twenty-first century.

Montessori established her own pedagogy, curriculum, teacher-training, and school-accreditation systems. All are orthogonal to conventional schooling. A teacher with standard teacher training is not prepared to guide a Montessori classroom, and vice versa. They have different skill sets designed to be implemented in different contexts to achieve different goals. For instance, the constructive use of a child's agency in the classroom is a high priority for Montessori guides. In most standard classrooms beyond preschool, children have very little agency. In Montessori primary and elementary classrooms, guides are taught how to introduce Montessori learning materials to children. Children learn primarily by practicing with the materials. In a standard classroom, the teachers' primary goal is to transmit academic material to the students, typically in a didactic and systematic manner for recitation on exams.

Today there are an estimated five thousand Montessori schools in the United States and twenty thousand globally. The schools are often very small, each with fewer than a hundred students. Because a purist Montessori system is not compatible with government schooling, most Montessori schools are privately funded. Only a handful of Montessori teacher-training programs are integrated into universities. Thus, most prospective Montessori guides cannot obtain government loans in order to get trained. They must pay out of pocket, or one of the small, tuition-financed schools must subsidize their training.

Despite these obstacles, Montessori education continues to grow. But how much faster might it have grown over the past century if it had been allowed to play on a level field with standard schooling? To estimate annual expenditures on Montessori education, if we assume 5,000 schools with an average of 100 students each (which is almost certainly too high) and an average annual tuition of \$10,000 per student (which is almost certainly high as well), then our annual expenditure for Montessori schools is on the order of \$5 billion annually, two orders of magnitude smaller than the average annual expenditure for conventional schooling. Would the quality of our automobiles be different if annual sales were two orders of magnitude smaller for the past century?

With both homeschooling and Montessori as examples of "beyond schooling" options in mind, let's consider the current constraints on polycentricity in education.

## **Constraints on Polycentricity in U.S. K–12**

Within the United States, the only strict limits on polycentricity in education come from federal regulation. Starting in the 1960s, through Title I programs the federal government sends funding for low-income students with considerable strings attached. In the 1970s, additional legislation was passed for students with disabilities, which gradually grew to the point at which special education today is highly regulated by the federal government. Finally, in 2001 the federal Every Student Succeeds Act (ESSA)

reauthorization, known as “No Child Left Behind,” implemented high-stakes, test-based accountability for schools. Although greater state-level flexibility was provided in Barack Obama’s ESSA legislation in 2015, there are still federal accountability standards that did not exist prior to the twenty-first century. (See Hornbeck 2017 for more detail on federal legislation.) Overall, this federal regulation has forced a monoculture on government schooling across states that was unknown in the first two-thirds of the twentieth century.

But consider the additional constraints premised on the schooling paradigm: (1) state regulations, (2) union collective bargaining and lobbying, and (3) federally recognized accreditation agencies (essential for foreign students to obtain visas). There is some flexibility in some of these factors, but they cumulatively provide an onerous set of obstacles for educational approaches that are based on objectives and values different from those in state-run schooling. The cumulative network effects are substantial.

For example, collective-bargaining agreements (CBAs) have been described as “the most important policy document governing school districts”: “CBAs regulate education policy regarding teacher assignment and transfers, teacher evaluation, class size, grievance procedures, leaves, association rights, student placement, instruction and curriculum, layoffs, preparation periods and non-instructional duties and more. Nearly every aspect of teachers’ work and school operations is negotiated into teachers’ union contracts, leading one scholar to note that union contracts are the most important policy document governing school district operations” (Cowen and Strunk 2015, 213). Insofar as teachers unions are attached to their own interests within the existing system, both their CBAs and their lobbying at federal, state, and district levels will act as a monocentric force that does not encourage multiple centers of decision making based on different values and objectives.

## **Why Might It Matter? Social Mobility and Adolescent Well-Being**

There are two reasons why the schooling-as-monocentric paradigm might matter. Both are related to the role of culture in human well-being. State-run schooling, with its focus on transmission of academic knowledge and skills, is not well designed to develop specific cultural norms that may be more important for life outcomes than is schooling per se. Specifically, social mobility and adolescent well-being may depend more on the culture in which children find themselves embedded than on the curriculum and instruction they receive for thirteen years.

Consider the fact that Salt Lake City ranks first in social mobility among all Commuting Zones (geographical aggregations of counties that are similar to metro areas but cover the entire United States, including rural areas) in the United States (Chetty et. al. 2014), yet Utah ranks dead last in K–12 spending per pupil (McArdle 2017). The obvious interpretation is that Latter-Day Saints culture is more important

for social mobility than is K–12 spending. In 2016, Utah spent \$6,953 per pupil to land the top spot with respect to social mobility, whereas New York spent \$22,366 per pupil, more than three times as much, and is ranked tenth in social mobility.

In *The Case against Education* (2018), the economist Bryan Caplan estimates that the earnings premium associated with education is 45 percent due to ability, with the remaining 55 percent allocated between human capital (20 percent) and signaling (80 percent). In essence, he makes the case that the actual “human capital” value-added portion of education is very small.

But what if that is because schooling contributes very little to human capital, and enculturation contributes significantly more? That is, the case of Utah suggests that the human capital “value added” is significantly more dependent on Mormon culture than it is on schooling.

Thomas Sowell has produced a lifetime of work showing that cultural capital plays a significant role in social mobility. For instance, he has documented how second-generation black West Indians earn more than white Americans and much more than African Americans. He attributes their success explicitly to their cultural capital, “a whole constellation of values, attitudes, skills, and contacts that are related to success in the labor market” (1981, 282).

Based on these and other examples, it is worth considering that being embedded in a culture that cultivates particular habits and attitudes may be more important than schooling for life outcomes. Right now we think of these cultural traits as necessarily religious (e.g., Latter-Day Saints) or ethnic (e.g., West Indians). But in a world in which schooling was not the dominant mode of being educated, it could have been the case that with significantly more funding across a century and without the coercive force of the state, deliberate micro cultures such as the Montessori culture of initiative and agency could have grown into a much more significant social technology for social mobility.

Adolescent well-being in the United States is a growing public-health disaster. Linda Rosenberg argues that “behavioral health has become a public health crisis. No other public health crises are as widespread or contribute as much to the burden of illness in the U.S. as do behavioral health disorders. By 2020, mental and substance use disorders will surpass all physical diseases worldwide as major causes of disability” (2012, 1). Less well known is that mental illness and substance abuse are sometimes regarded as the “chronic disease[s] of the young.” Anxiety, depression, bipolar disorder, and schizophrenia tend to be adolescent-onset illnesses. Lifelong substance abuse also typically begins in adolescence (Strong 2016).

There is considerable evidence that these conditions are analogous to Type 2 diabetes, which clearly has both a genetic aspect and an environmental aspect. More specifically, there is a compelling case that these conditions, as with Type 2 diabetes, are due to an evolutionary mismatch.

Daniel E. Lieberman, a professor of human evolutionary biology at Harvard, explains the role of evolutionary mismatches as a causal factor in the increasing prevalence of such diseases. “Broadly speaking, most mismatch diseases occur when a

common stimulus either increases or decreases beyond levels for which the body is adapted, or the stimulus is entirely novel and the body is not adapted at all. Put simply, mismatches are caused by stimuli that are too much, too little, or too new” (2014, 169). Although his book *The Story of the Human Body* focuses largely on physical diseases, Lieberman recognizes that the same mismatch principle is likely to be responsible for some mental illnesses: “There is good reason to believe that modern environments contribute to a sizable percentage of mental illnesses, such as anxiety and depressive disorders” (2014, 159).

To anxiety and depression, he also adds attention deficit hyperactivity disorder, eating disorders, chronic insomnia, and obsessive compulsive disorders as mental illnesses whose modern prevalence is likely due in part to an evolutionary mismatch. Indeed, moving beyond mental illness, a case may be made that much of adolescent dysfunction more broadly is due to an evolutionary mismatch between human nature and schooling (Strong 2019).

Moreover, Lyndal Bond and her colleagues discovered a direct connection between early teen experiences and mental health. They surveyed a cohort of almost three thousand teens at grade 8, grade 10, and one year after graduation: “Overall, young people’s experiences of early secondary school and their relationships at school continue to predict their moods, their substance use in later years, and their likelihood of completing secondary school. Students with good school and good social connectedness are less likely to experience subsequent mental health issues and be involved in health risk behaviors, and are more likely to have good educational outcomes” (2007, e9). Insofar as adverse social interactions at school may lead to behavioral disorders, including anxiety and depression, and to substance-abuse issues—“the chronic diseases of the young”—the cost of “schooling” rather than healthy enculturation may be very high indeed. If these adolescent-onset issues become lifelong issues, and if behavioral health is already the leading cause of disability, we ought to be concerned by schooling as a social institution that is not addressing this growing public-health catastrophe.

## Conclusion

Although from one frame of reference, public education in the United States is polycentric, from a broader perspective it is monocentric. The key element with respect to frame of reference is whether one regards secular, age-graded schooling as an important monocentric feature that limits an evolutionary competition among different ideas and methods based on “multiple centers of decision making with different objectives and values.” If one regards the diversity of ideas and methods and the existing range of different objectives and values as adequate, then the current system may be regarded as polycentric.

But if one believes that a broader range of objectives and values might produce a more valuable evolutionary competition, then the existing system is overly monocentric, with secular schooling as the government-enforced norm in many respects. In addition, insofar as there are significant network effects, especially for ongoing

investment and iteration, the fact that small opportunities currently exist for substantially different models (e.g., homeschooling and alternative schooling models such as Montessori that are mostly privately financed) does not serve as evidence that we do not need greater polycentricity.

In particular, if the transmission of a healthy, positive culture is a higher priority than simply the transmission of knowledge, then a rigid system that is based exclusively on the transmission of knowledge and skills rather than on healthy habits and attitudes may be suboptimal. Yet because of coercively financed and enforced network effects, we may be locked into an inferior system until we can devote orders of magnitude more resources to the creation of fully developed alternatives—or allow for the freedom that will entice private investors to do so.

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