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The Career Pathways Movement: A Promising Strategy for Increasing Opportunity and Mobility

Robert B. Schwartz*

Harvard Graduate School of Education

As the movement to raise academic standards has grown over the past 25 years, so has the notion grown that the primary purpose of the American high school is to prepare all students for college. High school students and their families have increasingly bought into the notion that the only legitimate destination after high school is “college.” The “college for all” mantra has to some degree been fueled by the dire predictions of economists that we were headed into a world in which there were only going to be two kinds of jobs: high-skill, high-wage jobs for those with at least a 4-year degree; and low-wage, low-skill jobs for everyone else. The career pathways movement—based on the premise that everyone needs something beyond a high school diploma but not necessarily a 4-year degree, and designed to connect young people to middle-skill jobs in such growing fields as information technology, health care, and advanced manufacturing—offers a promising route to upward mobility for those young people not well served by our current education system.

Introduction

In the world in which those of us born before 1950 grew up, the markers of social class, while little discussed, were quite evident. Working class people by and large worked with their hands, either on farms or in factories. While their shirts might not necessarily have had blue collars, their dress differentiated them from the white-collar workers who mostly worked in stores and offices. Unless you grew up in an inner city or isolated rural community, you might have hardly been conscious that there was in fact an “other America” of poor people left out of this picture until Michael Harrington’s powerful book with that title appeared

*Correspondence about this article should be addressed to Robert B. Schwartz, Harvard Graduate School of Education, 13 Appian Way, Cambridge, MA 02138. Tel: 617-496-6303 [email: robert_schwartz@gse.harvard.edu].

in 1962. As for the upper class, they existed for most of us in books, magazines, and film.

The class structure described above was reflected in the highly regarded suburban high school I attended in the 1950s. If there were any very poor kids in the school, they were essentially invisible. The community did in fact have a few very wealthy families, but their children by and large were sent off to independent private schools. The community was divided into quadrants, each with a junior high school serving neighborhoods with a distinctive ethnic mix. The high school was organized into four tracks: an honors track, serving students aspiring to attend highly competitive colleges; a second college prep track, for those headed for less demanding colleges; a general track, for those heading mostly into office or retail jobs; and a vocational track, for those preparing for entry into one of the traditional trades or crafts. The first two tracks were filled primarily from students who had attended the two junior highs on the south side of the community, serving mostly middle-class Jewish and Protestant families. The other two tracks served mostly working class kids from the Irish and Italian Catholic families on the north side of town. What I experienced in my suburban high school was the postwar comprehensive American high school at work, bringing together under one roof students from different social classes in a seemingly democratic exercise but then sorting them into different tracks and occupational destinations largely on the basis of family background.

In a world in which only a minority of young people went off to college and there were still good jobs paying good wages especially for young men going directly into the manufacturing sector right out of school, the social and economic consequences of the sorting and selection process that characterized the role of the mid-century suburban high school may in hindsight look relatively benign. But when we widen the lens to take in urban as well as suburban high schools, the pernicious effects of tracking become much more visible and pronounced. With the rise of the Civil Rights movement in the 1960s, the gap between our rhetoric about schooling as the engine of opportunity and economic mobility and the experience of African American and (later) Latino students became too great to ignore. Strong vocational programs might have served White students well in preparing them to enter apprenticeship programs in such unionized, well-paying occupations as plumbing, construction, and electrical work, but because of continued discrimination such fields were mostly closed to students of color. In large urban districts, students of color were too often shunted off to low-quality, low-demand vocational programs leading only to dead-end jobs. The worst vocational schools and programs acquired the reputation of being “dumping grounds,” places to assign students seen as incapable of doing serious academic work. Consequently, subsequent generations of African American and Latino parents understandably viewed vocational education with deep suspicion, fearful

that it would close off opportunities for their children to advance in the world rather than open opportunity.

“College for All” As an Equity Strategy

If we fast forward to the present and consider the changes that have taken place both in the American high school and in its relation to the economy, there is much to be proud of. While tracking has not entirely disappeared, its effects have been substantially reduced. With the rise of the standards movement, virtually all students are now expected to reach a common level of proficiency in reading, writing, and mathematics before leaving high school, and most states have adopted a core curriculum designed to prepare all students for some form of education beyond high school. We no longer separate students into “college bound” and “work bound.” In fact, nearly 90% of high school seniors say they are going off to some form of postsecondary education after high school, and nearly 66% do in fact enroll in postsecondary education upon graduating high school (U.S. Department of Education, 2015). College-going rates among students taking three or more related vocational courses in high school are in fact higher than those of their peers (75% vs. 66%), suggesting a significant change in the perception of what is now called “career and technical education” among young people and their parents (Association for Career and Technical Education, 2014).

These changes in aspirations and enrollment in higher education reflect a growing understanding among parents and educators of the changes taking place in the economy. In 1973, nearly two thirds of jobs required a high school education or less. In today’s economy, this percentage is reversed (Carnevale, Smith, & Strohl, 2013). Only one third of jobs are available to those with only a high school diploma, and these are overwhelmingly low-skill, low-wage jobs on which it is very difficult to support a family. We have all seen the bar graphs showing that for every additional increment of education, one’s projected lifetime earnings increase. High school counselors now tell students considering dropping out that this is a million dollar decision, based on the likely difference in earnings between a high school dropout and a college graduate. These statistics have contributed to the steadily rising high school graduation and college-going rates.

The unstated assumption of the standards movement seemed to be that if we could succeed in equipping all young people with a solid foundation of core academic knowledge and skills before leaving high school, then virtually all would go on to college, get launched on careers that would enable them to earn a middle-class wage, and contribute to the continued growth and vitality of the U.S. economy.

The growing “college for all” movement served to reinforce a core American belief: namely, that education is not only a key contributor to overall economic productivity and growth but, more important, is the engine of opportunity and

upward mobility for individuals. We Americans have stoutly resisted the view that demography is destiny. We prefer not to acknowledge the degree to which our education system replicates the social structure (as in the example of my old high school) but rather to focus on the inspiring stories of those heroic individuals who have beaten the odds and through education have climbed the rungs of American society. We tell ourselves that only in America could a Barack Obama have become President.

Our view of ourselves as a uniquely open society in which talent and merit could overcome the circumstances of one's birth has taken a significant hit in recent years as we have had to come to grips with international comparative data on mobility. Contrary to our view of ourselves, the United States is no longer the country where those born into poverty have the greatest chance of moving up in the world. Denmark, Finland, Germany, Norway, and Canada all have significantly higher rates of economic mobility than we do. In one study, 42% of American men whose fathers were in the bottom fifth of the income distribution remained in the bottom fifth, while in Denmark, Finland, and Norway the numbers were between 25% and 28%. Even in England, the land of "Upstairs, Downstairs" and "Downton Abbey," only 30% of men with fathers in the bottom quintile remained there (Isaacs, 2008). If increasing educational attainment is in fact the key to increasing economic mobility, what would it take to restore America's leadership in the education race, and would success in increasing education attainment necessarily result in increasing opportunity and mobility for those at the bottom of the economic pyramid?

The Pathways to Prosperity Report

These questions were in the air when in 2008, I began meeting with two Cambridge colleagues, Kennedy School economist Ronald Ferguson and visiting journalist William Symonds, to discuss the possibility of producing a report on the need for high schools to pay more attention to preparing young people for the world of work as well as further education. Year 2008 was the twentieth anniversary of a powerful report issued by a commission established by the W.T. Grant Foundation, *The Forgotten Half: Non-College Youth in America*. One question I hoped our project might answer: despite all of the progress cited just above: was there still a "forgotten half" of young people all these years later?

In February 2011, my colleagues and I released *Pathways to Prosperity: Meeting the Challenge of Preparing Young Americans for the 21st Century*. Although the report contained no new research, we drew on several existing data sources to raise three provocative questions. Our first question grew out of our look at the postsecondary attainment data. Twenty years into the standards movement, with growing rhetoric about "college for all" and steadily rising college enrollment data, fewer than one in three 25-year olds were attaining a 4-year degree. Only about

6 in 10 young people enrolled in a 4-year college or university were completing within 6 years—a much higher dropout rate than in our high schools. When we added in those with 2-year degrees and 1-year occupational certificates, this totaled just over 50% of the age cohort with a meaningful postsecondary credential. In a world in which the returns to skills and credentials were rising steadily, this finding raised our first big question: what is our strategy for equipping this other “forgotten half” of young Americans to thrive in our increasingly challenging economy?

Our second question grew out of our examination of labor market data, and especially the skill requirement projections over the next decade or so. For the previous two decades, many economists had been warning that the middle was hollowing out of the U.S. economy, and that we were moving into a world in which there would only be two kinds of jobs: high-skill, high-wage jobs requiring at least a 4-year degree; and low-skill, low-wage jobs for everyone else. As indicated above, the projections were that nearly two thirds of jobs would require education beyond high school. However, there were now a growing number of economists challenging the notion that middle-skill jobs were disappearing. Anthony Carnevale at the Georgetown University Center on Education and the Workforce, for one, argued that nearly half the jobs requiring education beyond high school would be in this middle skills category: good technician-level jobs in such fields as IT, health care, and advanced manufacturing requiring a solid underpinning of STEM skills but not necessarily a 4-year degree (Carnevale, Smith, & Strohl, 2010). The best of these jobs are ones that employers say they are having the most difficulty filling. One does not have to take sides in the ongoing debate about the skills gap to ask question #2: why are we not building more career pathways from high school to community college to prepare young people with the skills and credentials to fill these middle-skill jobs?

Our third question came in response to two studies published in 2010 by the Organization for Economic Cooperation and Development (OECD), *Learning for Jobs* and *Jobs for Youth*. Both studies—one from the Education Directorate, the other from Labor and Social Affairs—looked across 16 participating countries to examine how these countries prepare young people to make a healthy transition from the end of compulsory schooling into the labor market. The headline was that those countries with strong vocational education systems, especially the so-called “dual system” countries where 40–70% of students split their time between learning at a workplace and learning in a school setting, had much greater success in integrating young people into their economies while maintaining strong overall economic performance. This led us to question #3: if countries like Austria, Germany, the Netherlands, Norway, and Switzerland have healthy economies and much lower rates of youth unemployment than the United States, why aren’t we studying their vocational policies and practices to see if there are lessons we can adapt to our own setting?

The response to our *Pathways* report greatly exceeded our expectations. Consequently, in 2012 I joined forces with colleagues at a Boston-based nonprofit, Jobs for the Future, to invite a handful of states to join with us to form the Pathways to Prosperity Network to address the questions and challenges laid out in our report. Four years later, we are now working in about 40 regional labor markets in 12 states to help state and regional leaders establish career pathways in such fields as IT, health care, and advanced manufacturing that span grades 9–14 and are focused on equipping young people with the skills and credentials to get launched in these fields, without closing off options to continue on to a 4-year degree.

Why the Rising Interest in the Career Pathways Movement

The development of the Pathways to Prosperity Network is but one manifestation of the growing interest in strengthening career-focused education and moving away from the view that everyone should aspire to a 4-year college degree. Our *Pathways* report may have helped create this interest, but if so, it's not because we produced any new research or data. Rather, we simply said aloud what many others had been thinking and used the platform of a prestigious “brand” university to make our case. More important, we tapped into a growing anxiety among parents about the rising costs and no-longer-certain financial returns of a 4-year college education. In 2011, there was substantial media attention to the plight of young college graduates working as waitresses and returning home to live in the family basement but little hard data to indicate how widespread this phenomenon was. In 2014, however, the New York Federal Reserve Bank released a report confirming the basis for such parental anxiety about the return on investment to a 4-year degree. The Fed report indicated that 44% of young 4-year degree holders were underemployed, working involuntarily in part-time jobs or in full-time jobs that traditionally did not require such a degree, while an additional 9% were unemployed (Abel, Deitz, & Su, 2014).

Meanwhile, Carnevale et al. at the Georgetown Center were reporting rising evidence of the differential returns to different types of postsecondary credentials. While it remains generally true that the more education you have, the higher your lifetime earnings, we are now seeing significant overlaps depending on what you study and how well your skills align with labor market demands. For example, 43% of young workers with licenses are out-earning the average Associate's Degree recipient, and 27% are out-earning the average Bachelor's degree holder (Carnevale, Rose, & Hanson, 2012). More striking, 2-year technical degree (AS) graduates in the state of Florida in the years 2007–2011 out-earned the average BA recipient during those years by about \$11,000 (Chen, 2013). While there is international evidence that, whatever the initial advantage that those with vocational credentials might have over university graduates, over time that advantage



Fig. 1. Rising earnings disparity between young adults with 4-year degrees and with high school diplomas. Median annual earnings, full-time workers aged 25–32 in 2012 dollars.

Source: Pew Research Center, “The Rising Cost of Not Going to College,” February 2014.

disappears (Hanushek et al., forthcoming), a recent look in Colorado at the returns to different majors and degrees 10 years after graduation suggests that, in some technical fields at least, the relative advantage of 2-year degrees holds up over time (Schneider, 2015).

Economists seem especially fond of data comparing the earnings of those with only a high school diploma and those with a 4-year degree. As the Figure 1 shows, the gap has been steadily widening and is now about twice what it was in 1979.

The big story here, however, is not the growth in the earnings of college graduates, which has been quite modest, but the precipitous decline in the real earnings of those with only a high school diploma. This suggests that the more relevant comparison may not be between those with a college degree and those with only a high school diploma, but rather between those with a 4-year college degree and those with other less expensive and time-consuming forms of postsecondary education. A recent study by the Federal Reserve Bank of New York argues that the return on investment to 2- and 4-year degrees is about the same—15%—and has been so for decades (Abel & Deitz, 2014). Given an average student loan debt burden of about \$27,000, the no-longer-certain economic returns to a 4-year degree, and emerging evidence that those with “some college” (i.e., the college dropouts) fare no better in the labor market than those with only a high school diploma (Rosenbaum, Ahearn, Becker, & Rosenbaum, 2015), it shouldn’t surprise us that, despite the aggregate data, parents are increasingly asking whether pursuing a 4-year degree is necessarily the best option for their own child. Consequently, policymakers have become increasingly open to the need to build alternative pathways to postsecondary education and training alongside the dominant 4-year college pathway. Our Pathways to Prosperity

Network is but one manifestation of this growing interest among state and local policymakers.

Core Principles Guiding the Pathways Network

Our first principle was that all pathways must be built on a foundation of rigorous academics and lead to some form of postsecondary education or training. Until the publication of our report there was ambiguity in the reform community about whether the goal should be all students leaving high school prepared for college *or* career, or college *and* career. Although there continues to be debate about what we mean by “college *and* career,” this is now the stated goal of virtually all education policymakers.

A second principle, like the first designed to emphasize the difference between the new CTE and the old vocational education, is that states should focus primarily on developing pathways to prepare students for careers in such high-demand, high-growth fields as information technology, allied health, and advanced manufacturing.

This is not to say that we don’t value the trades and crafts that have traditionally been the focus of most high school vocational programs, but we wanted to emphasize those emerging fields that require both a strong STEM foundation and a postsecondary credential in order to get started on a career ladder with room for growth and upward mobility.

A third principle is that ultimately we should aim to build new statewide career pathways systems that serve at least 40% of students. A big lesson from Europe is that the strongest vocational systems are mainstream systems, serving a very broad range of students. If CTE in the U.S. continues to be seen as second class, designed mostly for “other people’s children,” it will never muster the needed support from employers and policymakers. The strongest European systems are demand-driven, led by employer associations that understand why it is in their self-interest to invest early in building their future workforce rather than sitting back and relying on educators to decide by themselves what knowledge and skills will be required for success in their industry. Taken together, our view is that programs built on these principles can not only overcome some of the historical baggage associated with vocational education but sidestep some of the political debates that have divided the education reform community in recent years.

A Design Framework

In our work with the states and regions that comprise the Pathways Network, we began by developing a simple five-part framework to guide program design. At the center of the framework is the creation of career pathways that combine rigorous academics with a CTE focus and that span grades 9–14. The other four

components of the framework are what we call “implementation levers.” These are early and sustained career awareness, information, and exposure; employer engagement, both in program design and standard setting and in providing work-based learning opportunities; intermediary organizations designed to build linkages between employers and schools to support the scaling up of work-based learning opportunities; and a state leadership structure focused on creating a favorable policy environment to support the growth of 9–14 career pathways.

Each component of the framework needs some elaboration. Our thinking about 9–14 pathways that link academic and technical education has been heavily influenced by our experience with two national reform networks with strong track records of success with low-income and minority youth. The first of these is career academies, developed first over 30 years ago in New York City, Philadelphia, and California and now several thousand strong all over the country. At their best, as in a model sponsored by the James Irvine Foundation in California called Linked Learning, these academies combine strong academics, real-world technical skills, work-based learning, and personalized support. The largest and best-organized network of career academies operates under the umbrella of the National Academy Foundation, now NAF, launched 30 years ago and still led by Sanford Weill, then CEO of American Express and later Citigroup. NAF currently sponsors 667 academies serving nearly 82,000 students in five fields: Finance, Hospitality and Tourism, Information Technology, Health Sciences, and Engineering. About two thirds of their students are African American and Latino. NAF academies have very high graduation rates and college-going rates, and over half of NAF graduates complete a 4-year degree (National Academy Foundation, 2015).

The second reform network is composed of early college high schools (ECHS), started in 2002 by grants to several organizations from the Bill and Melinda Gates Foundation. There are now about 280 such schools in the Gates-sponsored network, serving roughly 80,000 students. These are schools that typically start in grade 9 (although some start as early as grade 6), operate in partnership with a higher education institution, serve predominantly low-income and minority youth, and are designed to enable students to graduate high school with at least 1 year of college credits. They are achieving impressive results. They have a 90% graduation rate, with the average ECHS student graduating with 38 college credits, and roughly 30% graduating with an associate’s degree or a postsecondary occupational certificate (Berger et al., 2013; Webb & Gerwin, 2014). The 9–14 career pathways we advocate combine the strengths of career academies, with their focus on the integration of academic and technical education, with the early college enrollment feature of the ECHS model.

If the states and regions are successful in building out 9–14 career pathways, an obvious next question is, on what basis will students be assigned to such pathways?

Given our troubled history around tracking, it is critical that it is students and their families making these choices, not schools on behalf of students. Hence the importance of a systematic, sustained investment in providing enough information about, and exposure to, the world of work and careers so that by the time students arrive in grade 9 or 10 they have some sense of the intersection between their own interests and strengths, the careers that align with those interests, and the education and training requirements associated with those careers. This work needs to start as early as the middle grades. With support from the Noyce Foundation, our Pathways team has developed a career-focused set of curriculum modules called “Possible Futures Possible Selves” to get young people started on career exploration. These are designed for middle school students and can be taught either in the school curriculum or after school.

The single biggest challenge in building the kinds of career pathways systems we are advocating is engaging employers. As will be apparent below in our discussion of the Swiss vocational system, the role of employers and their associations is absolutely central in the strongest vocational systems around the world. In such systems, employers are at the table from the very beginning of the process of pathway design to assure that the standards and curriculum are aligned with industry requirements, and they partner with educators in program implementation, especially in the provision of extended workplace learning opportunities that complement the in-school instructional program. In the United States, strong CTE programs typically have active industry advisory groups, but the programs are designed and led by educators. We need a different level of engagement and leadership from employers, one based on a recognition that it is in their long-term economic self-interest to invest early in building their future workforce rather than sitting back and waiting to see what the education institutions send them. In a word, we need to transition from a CTE system that is supply-driven to one that is demand-driven and much more responsive to the changing requirements of a dynamic economy.

The single most important resource that employers have to contribute to the development of young people is access to the workplace. This can begin with workplace visits, job shadows, and other relatively light-touch opportunities for young people to get exposure to work, but ultimately we need employers to provide internships and other forms of extended workplace learning if the pathways movement is going to fulfill its promise. In an earlier era most young people were able to get some kind of work experience on their own by age 16 or 17, when afterschool or weekend or summer jobs for older teens were plentiful. As recently as 2000, 45% of teenagers were able to acquire some work experience. By 2012, that percentage had dropped to 26%, and those teens from families earning \$120,000 or more were three times as likely to find work as those from families earning less than \$20,000 (Sum, Khatiwada, Trubskyy, & Ross, 2014). A recent report from the Social Science Research Council tells us we now have 5.5 million

“disconnected youth,” young people 16–24 who are neither in school nor at work (Lewis & Burd-Sharps, 2015). These figures suggest that if we can’t figure out a way to get most young people, especially those who are at risk of dropping out, some access to work experience while they are still in school, they may not be able to get it on their own. In this economy if you arrive in your early 20’s with only a high school diploma (or worse yet, no diploma) and no work resume, you are at the back of the hiring queue and are likely to stay there.

If we are going to be able to scale up access to work experience for young people, we need a strategy that will facilitate the participation of small and medium size employers, for this is where the bulk of the jobs are in our economy. Large firms typically have HR departments and community relations offices that can help organize and manage a firm’s engagement with schools in providing students access to the workplace. For small firms, however, there needs to be an employer-facing organization at the community or regional level that can aggregate workplace learning opportunities across companies, interface with schools, and handle most of the logistics involved in moving young people back and forth between schools and workplaces and ensuring that the workplace experiences are well designed and supported. This is the role that well-structured intermediary organizations play in communities like Boston that have managed over the years to engage hundreds of companies in providing thousands of well-structured internships, mostly in the summer, for the city’s young people. In some communities, this function can be carried out by a workforce development board, as it is in Boston, while in other regions it may be a chamber of commerce or special unit within a community college that takes on this function. But without some such organization to play this role, it will be very difficult to create a large enough pool of workplace learning opportunities to serve all students who desire them.

Although this work plays out primarily at the regional labor market level, our view is that without strong state leadership to run political interference and help resolve regulatory and budget challenges, even the best work at the regional level can get stalled. Because in our design career pathways cut across secondary and postsecondary institutions and cut across the education and workforce systems, there are inevitable barriers and constraints that may require state-level intervention. Each of these systems has its own bureaucracy, its own funding sources and regulations, and its own political constituencies, which sometimes means that only an intervention from the Governor’s Office or some high-powered leadership group can resolve stalemates that stymie regional progress. One example of a critically important issue in most states is, who pays for dual enrollment courses? Dual or concurrent enrollment is central to our career pathways model, but if states don’t have a funding scheme that incentivizes both high schools and community colleges to participate, this critical component of our career pathways strategy will be crippled.

Achieving Scale: The Swiss Example¹

We are often asked, “Where can we see the kind of pathways system you are advocating at scale?” The answer, unfortunately, is nowhere, at least in the United States. In a paper prepared for a 2014 conference sponsored by the Fordham Institute, Nancy Hoffman and I profiled five high-quality CTE programs, each exemplifying a different model: a full-time vocational high school (Worcester Tech, MA, USA); a part-time regional CTE center (Center for Advanced Research and Technology, Clovis, CA, USA); a STEM-focused early college high school (Wake Early College of Health and Sciences, Raleigh, NC, USA); district-wide career academies (Long Beach, CA, USA); and an employer-sponsored school in a workplace (Southwire 12 for Life, Carrollton, GA, USA) (Schwartz & Hoffman, 2016). While all of these schools do a great job in using their career focus to engage students in learning and help them to plan for college and career, they are not designed to get young people *launched* on a career. For reasons cited above, virtually all jobs in the U.S. labor market that can get you started on a career path that can ultimately propel you into the middle class require some kind of postsecondary credential. Consequently, to see a system organized at scale to provide most young people with a credential of value in the labor market requires a trip outside the United States. Switzerland in our view offers the best “existence proof” of the career pathways concept.

As soon as one mentions to a U.S. audience the lessons we might learn from a country like Switzerland, one needs to acknowledge all the differences. Yes, Switzerland is the size of a medium-size state, more comparable to Maryland than to the entire United States. Yes, it is more racially homogeneous (although one-quarter of its students are not born in Switzerland). And yes, it tracks students in middle school (but so does the United States, perhaps more subtly). The question is not whether we can adopt whole cloth the education system of Switzerland (or any other country). The question should be, are there principles that undergird the Swiss Vocational Education and Training (VET) system and policies and practices they employ that might be adapted to our setting?

The first thing to be said about the Swiss VET system is that it is genuinely a mainstream system, enrolling 70% of young people from the age of 15 or 16. It serves a very broad range of students, including 45% of those who score in the highest two levels of the Program for International Student Assessment (PISA). Because traditional Swiss universities are much narrower in focus than those in the United States and prepare people for only a limited number of professions, young people interested in fields like engineering, business, banking, IT as well as the more traditional trades and crafts are as likely to choose the VET system as the

¹For a fuller report on the Swiss system, see Hoffman and Schwartz (2015).

traditional university system. This choice is informed by the knowledge that the Swiss now have a second university system, a network of Universities of Applied Science where after getting your initial VET certificate you can pursue Bachelor's and Master's degrees in some of the fields mentioned above.

The Swiss VET system, like that of its neighbors Germany and Austria, is a "dual" system, meaning that students split their time between learning at a worksite through a highly structured apprenticeship contract with an employer, and learning in a vocational school, where they continue to round out their general education while taking courses designed to provide the theoretical underpinning for the kinds of problems they are asked to address at their apprenticeship site. Over a 3- or 4-year-period students average about three days a week at the workplace and two in classrooms, with some time also reserved for learning the basics of their profession at an industry-sponsored training center. The students are paid an apprentice wage that starts at the equivalent of \$700 or \$800 a month and rises to \$1,000 or \$1,100 by the third or fourth year, an attractive salary for a teenager living at home. Because of the duration of the program, economic cost-benefit analyses have demonstrated to employers that the costs they incur in the first half of the apprenticeship are more than offset by the gains in productivity once the young people have received their training, largely because of the gap between the apprentice wage and the much higher wage received by full-time employees.

While it is likely that some Swiss employers, especially small ones, participate because of the cost/benefit ratio, most employers we talked with take a longer term view. Because employer participation is organized and supported through their industry associations, employers understand that the system is designed to ensure a steady stream of well-qualified workers for their entire sector, and that they all will benefit by participating. Because their association takes the lead role in working with government to set national training standards and curriculum and collaborates with educators in designing and carrying out the assessments, employers can be reasonably assured that wherever a young person has been trained, he or she will have comparable knowledge and skills. Swiss employers seem relatively relaxed about the prospect of losing an apprentice to a competitor firm after the training period because they know that all apprentices in their sector are trained to a common standard. Consequently, it is not unusual for larger firms to encourage their apprentices to get some experience in another firm and then think about returning. It is also not at all unusual to meet 25-year olds who are working in a different field from that in which they did an apprenticeship, for the generic or transferable skills young people receive during an apprenticeship signal their ability to learn on the job. The whole system is sufficiently permeable, with several crossover paths between the academic and vocational systems and pathways on the vocational side leading to advanced professional certificates and degrees, to warrant the phrase one hears consistently from policymakers and employers to describe the system, which is "no dead ends."

When you ask employers how can it be that a system that sends only 20% of its young people to the traditional research-oriented universities can rank 1st on the European Innovation Scorecard and 1st in the World Economic Forum's Global Competitiveness Report, one of the answers one hears is the strength of the VET system. Switzerland is a country with few natural resources and a very high standard of living. It knows that it has no choice but to compete in the global market on quality, not cost, so it by necessity must produce a workforce with very high skills to justify its high wages. It is a culture that values hard work and skilled craftsmanship and believes in socializing young people into work at a much younger age than most Americans would think appropriate. Because compulsory education ends at the end of the equivalent of grade 9 (what we used to call junior high), the natural break point in that system comes at age 15, whereas in our system it comes at the end of senior high (age 18). Interestingly, despite the earlier school-leaving age, over 90% of Swiss teens complete "upper secondary education" (the equivalent of our senior high) through either the vocational or academic route, whereas in the United States our completion rate has just broken 80%.

There is much more to say about the design of the Swiss system: its three-cornered partnership between employer associations, the cantons (states), and the federal government; its quality control and continuous improvement mechanisms; and the network of community-based career information and advising centers that support student and family choice. But at the end of the day, the existence proof that Switzerland offers is that it is possible to design a CTE system that works both for a dynamic, high-performing economy and for the healthy development of young people. What you see when you visit workplaces and talk with young people either during their apprenticeship or in the years following is that this system not only produces young people with skills and marketable credentials, but it provides young people with an extraordinary amount of adult mentoring, coaching, and support as they make the difficult transition not just from schooling to work and career, but from adolescence to adulthood. Nancy Hoffman and I have now led three study tours of the Swiss system for groups of U.S. policymakers and education leaders, and almost everyone comments on the maturity, self-confidence, and sense of agency they see in the young people we meet.

One final point to make about Switzerland is that it has the lowest youth unemployment rate in Europe. At only one point during the recession did it exceed 5%, and that rise was viewed as sufficiently alarming to trigger the creation of a new private fund to support the training and employment of those young people who were seen as most at-risk. Because of its small size and low birthrate, Swiss leaders understand that they need all of their young people to be productive participants in their economy, so they are committed to provide whatever extra time and support is required to meet that goal.

Barriers to Learning from Switzerland

The list of barriers standing in the way of adapting the Swiss model in the United States is formidable. First, the structure of our high schools and the role they play in our culture makes it virtually impossible to imagine large numbers of our youngsters spending 3 days a week learning at a workplace. Apprenticeship in the United States is for 20-somethings, not for teenagers, and happens after high school, not as part of high school.

Second, we have had sufficient difficulty coming to agreement on common standards in reading, writing, and mathematics to make one question the likelihood of our being able to come to national agreement on common occupational standards. For a short period during the Clinton Administration we had a National Skills Standards Board, but it collapsed. While we do have national industry groups in several fields, most notably manufacturing, that have promulgated such standards, their adoption by state and local education agencies and training providers is spotty at best, as is their uptake by employers.

Third, American employers simply do not have a tradition of banding together with others in their sector to solve their workforce pipeline problems. With few exceptions, our employer associations do not see workforce development as a central part of their agenda. This problem is compounded by the fact that most employers invest little in training, except for their managers and executives. While some may turn to their local community college for help in providing training to incumbent workers to support the introduction of some new technology, these relationships typically do not extend into the certificate or degree program side of the college, relationships that might yield a steady supply of candidates for future openings.

Finally, there remains a very substantial challenge with parental expectations and values. American parents have been told for generations that a 4-year college degree is the ticket to a bright economic future for their children, and whatever the current dissatisfaction with the rising costs and no-longer-certain returns to a college degree, this core belief will be hard to dislodge. On the talk shows my colleagues and I did following the release of our 2011 *Pathways* report, the most poignant comments came from suburban moms describing the social pressure they felt when one of their perfectly bright children simply did not want to sit in classrooms for 4 more years. In the absence of any alternative other than military service, such kids reluctantly drift into college without any kind of plan and are likely candidates to drop out with debt but no degree. Truth be told, in Switzerland most upper middle-class people one meets aspire to have their own kids attend a traditional university, so even in that culture there is still not “parity of esteem” between the academic and vocational routes. However, there is a widespread recognition, based on evidence, that for the vast majority of graduates of the vocational system the economic and life outcomes are highly positive, so there is

no sense of shame or failure if your child is among the 70% who wind up on the vocational path.

An American Adaptation

Given the barriers enumerated above, how realistic is it to think that an American adaptation of the underlying principles of the Swiss system is possible? This is one of the questions our Pathways Network, and the career pathways movement more generally, is designed to test. Our insistence on creating pathways that span the last years of high school and the first year or two of community college is an acknowledgement that, given the structure of the American high school and the core curriculum requirements for graduation, the opportunity for students to get an extended learning experience at a workplace is extremely limited during the high school years. In the United States, one is counted as a CTE concentrator if one takes three courses in a particular occupational field. While roughly one quarter of U.S. high school students meet this standard, in international terms this is such a weak dosage that the OECD comparative studies show the United States as having virtually no high school students primarily in vocational education (OECD, 2010a,b).

It is no accident that European companies like Siemens, Volkswagen, and Buehler that are attempting to adapt their home country apprenticeship system to the United States typically partner with community colleges rather than high schools. These companies, like their U.S. counterparts, understand the logistical and cultural barriers to partnering with high schools and have consequently opted to start with older students. We agree with this strategy: encourage employers and their associations to work with community colleges to design certificate and degree programs aligned with their pipeline needs, as a group of manufacturers has done in the Charlotte region with Central Piedmont Community College.² But we believe such programs should then extend backward into the high schools, enabling students using dual enrollment or the early college high school model to get started on these programs while still in high school. If employers could be persuaded to provide paid summer internships to rising high school seniors and then again following graduation, it would not only enable our students to begin to get the kind of workplace learning experience that is routine in the Swiss and other European systems, but would increase the likelihood of completing an aligned “program of study” (in the language of the Federal CTE law) for a postsecondary certificate or degree.

²For more information about this North Carolina initiative, see the Apprenticeship 2000 website at <http://apprenticeship2000.com/about/>

In the U.S. system it's the community college that needs to play the central institutional role if the new, modernized, grades 9–14 approach to CTE is to become a route to opportunity and upward mobility for large numbers of young Americans. Community colleges have multiple missions and serve a very broad range of learners: young people seeking a low-cost first 2 years of college prior to transferring to a 4-year institution; older adults, some with 4-year degrees, seeking new technical skills; adults seeking basic education; workers sponsored by their companies seeking to upgrade their skills; retirees pursuing an avocational interest. Given the financial constraints under which most community colleges operate and the interests of most faculty members, it should not surprise us when they privilege their transfer function over their workforce preparation function and add new classes in psychology or sociology rather than launching a new mechatronics program. It should also not surprise us that, given how few resources these institutions have to support a robust advising system, 18-year olds fresh out of high school are often at a competitive disadvantage in seeking access to the high demand technical programs compared to older adults who know how to work the system.

What would it take to enable community colleges to play the central role we envision for them in collaborating with employers and their associations in designing certificate and degree programs in high-growth, high-demand fields in their regional economy, and collaborating with high schools in enrolling students in these programs during their upper high school years? In our view, this will require state political and corporate leaders to come together and make the case publicly for a strategy that connects the dots between the state's economic future and its ability not only to increase educational attainment but to better align its certificate and degree programs with the demands of its regional economies. It's no accident that in the states that have made the most progress in our Pathways Network governors and other political leaders have been the ones articulating the need for a more highly skilled workforce and the role that high schools and community colleges working together need to play in meeting that need.

One major barrier the early college/dual enrollment component of the 9–14 career pathways strategy is designed to address is the remediation hurdle. This is a huge challenge. Even in Massachusetts, our highest performing state on national and international assessments, 60% of community college freshmen are shunted off to remediation. The problem is especially acute in mathematics, where college algebra is a gate through which very large numbers of students fail to pass. Fortunately, there are significant reforms underway in the community college world to reduce the proportion of students needing remediation, ranging from strategies to modularize remedial courses so that students only need to relearn those concepts they missed on the placement test to offering students the opportunity to take corequisite credit-bearing courses with intensified support.

The most fundamental and promising reforms underway are those that directly challenge the premise that all students need to pass through the algebra gateway. Led by two highly respected scholars, Anthony Bryk at the Carnegie Foundation for the Advancement of Teaching and Uri Treisman at the Charles A. Dana Center at the University of Texas Austin, there is a growing movement to substitute new courses under development at their respective organizations focused on quantitative reasoning and statistics for the traditional developmental math courses. Early implementation results are highly promising, showing dramatic increases in passing rates, and there is growing support among the leading mathematics associations for the need for multiple mathematics pathways that are better aligned with the kinds of mathematics people actually need for career advancement and civic participation. The Dana Center is introducing a course for 12th graders with weak mathematics skills that is designed to prepare them for credit-bearing college courses and is also encouraging colleges to offer the new quantitative reasoning and statistics courses to high school students via dual enrollment.³

The Road Ahead

In the discussion of the attainment data from our 2011 *Pathways* report, it is worth noting that we did not disaggregate the data by race and income. This was largely because we wanted to persuade readers that if only about half of young Americans are attaining a credential of value in the labor market, this is obviously a problem that cuts across race and class lines and affects middle-income families as well as low-income ones. Sadly, we know that it is much more difficult in our society to mobilize action to address problems that are seen as only affecting poor people. I would like to believe that, had we focused on the data showing that young people from upper-income families are nearly five times more likely to attain a 4-year degree than those from low-income families, or that African American and Latino graduation rates are well below those of Caucasian and Asian students, our report would have gained as much traction, but I don't believe that is so. William Julius Wilson argued in *The Truly Disadvantaged* (1987) that social programs that embed a targeted strategy to help the poor within a more universal design (e.g., Social Security and Medicare) are more likely to survive politically than those that are focused solely on the poor, and I think that observation is relevant here. If the career pathways movement is to become an engine of opportunity and upward mobility for low-income and minority youth, the challenge is to ensure that they

³For more information about these mathematics reform initiatives, see the Carnegie Foundation for the Advancement of Teaching website at <http://www.carnegiefoundation.org/in-action/pathways-improvement-communities/> and the Dana Center website at <http://www.utdanacenter.org/higher-education/new-mathways-project/>

are not seen as the sole populations to be served. This is true not only because of the historical legacy of vocational education as being for “other people’s children,” but also because we need to persuade employers to come to the table because this is about building a talent pipeline, not social work.

At the end of the day, the goal must be to build a mainstream movement, one that is demand-driven by employers who are genuinely concerned about how to keep their companies and their industry competitive in an increasingly global economy. This will require a cultural shift on the part of employers, educators, and ultimately parents. It will require us to restore a better balance between the strictly academic purposes of our education system, and the career and civic purposes, and to embrace the notion that all young people will need something beyond high school but not necessarily a 4-year degree. And it will require us to understand the powerful impact of well-structured work and learning programs not only as a motivation and engagement strategy, but also as a significant contributor to healthy youth development. This is a tall order, but if we can make progress on the career pathways agenda, it will benefit both the economy and our young people, especially those who now see little reason for staying in school.

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ROBERT SCHWARTZ joined the faculty of the Harvard Graduate School of Education in 1996, where he has served, successively, as Lecturer, Professor of Practice, Academic Dean, Francis Keppel Professor in Educational Policy and Administration, and Senior Research Fellow. While at Harvard he also served from 1997 to 2002 as founding president of Achieve, Inc. Prior to joining the HGSE faculty, Schwartz served in a variety of roles in education, including high school teacher and principal; education advisor to the mayor of Boston and the governor of Massachusetts; and education program director at The Pew Charitable Trusts. Schwartz currently coleads the *Pathways to Prosperity Network*, a collaboration between HGSE, Jobs for the Future, and 12 states and metropolitan regions that formed in response to a report he coauthored in 2011, *Pathways to Prosperity: Meeting the Challenge of Preparing Young Americans for the 21st Century*.