

AMERICAN LEADERSHIP IN THE HUMAN CAPITAL CENTURY: HAVE THE VIRTUES OF THE PAST BECOME THE VICIES OF THE PRESENT?

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The twentieth century became the human capital century.¹ No nation today—no matter how poor—can afford *not* to educate its youth at the secondary school level and beyond. But at the start of the twentieth century even the world's richest countries—richer in per capita terms than many poor nations are today—had not yet begun the transition to mass secondary school education. There was one exception, the nation that led the world in mass secondary and mass higher education: the United States.

The United States accomplished the feat of mass education by creating a new and unique educational pattern or gauge—I will call it a “template”—that broke from the templates of Europe. The U.S. template was shaped by egalitarian institutions—a commitment to equality of opportunity; by New World factor endowments—lots of land relative to labor; and by republican ideology—meaning democracy and pluralism.

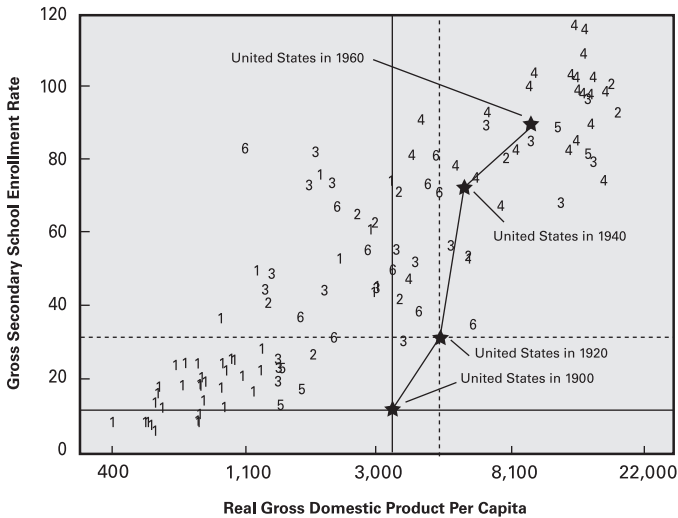
For much of the twentieth century, the template was synonymous with a set of “virtues.” That is, the template consisted of characteristics that were virtuous. Among the virtues of mass secondary education were that it was publicly funded; managed by numerous small, fiscally independent districts; open and forgiving; academic yet practical in its curriculum; secular in control; and gender-neutral in its admission. I call these characteristics virtues because they promoted and furthered mass education and thereby increased social mobility and enhanced economic growth.

What brought about the human capital century? Why and how did

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¹ This address draws on Goldin (2001).

Figure 1
Gross Enrollment Rates in Secondary Schools and
Real GDP Per Capita in 104 Countries, 1990



Note: The horizontal axis is expressed in natural log units. The markers refer to geographic groupings established by the United Nations Organization for Education, Science and Culture (UNESCO): 1 = Africa, 2 = Central and North America and the Caribbean, 3 = Asia, including the non-African Middle East, 4 = Europe, 5 = Oceania, and 6 = South America. Gross enrollment rate (GER) gives the fraction of individuals in an age group who are currently enrolled in a particular level of school (e.g., upper secondary). The age group in the UNESCO data is supposed to be tailored to those included in the school level for the particular nation. The GER can exceed 100 percent if some youths outside the usual age group, for various reasons, are enrolled in that level of schooling.

Source: Gross secondary enrollment rates: United Nations Organization for Education, Science and Culture (UNESCO) <<http://unescostat.unesco.org/en/stats/stats0.htm>>. GDP per capita: Penn World Tables <<http://pwt.econ.upenn.edu/>> through the efforts of Alan Heston and Robert Summers. For more details, see appendix to Goldin (2001).

the United States lead the world in mass education for much of the twentieth century? What does this history mean for the future of education in the United States?

Why Do I Claim That the Twentieth Century Was the Human Capital Century?

Even poor countries today have a far greater rate of secondary school enrollment than did the rich countries of the past. Consider Figure 1, for which the horizontal axis is real per capita income in 1990 (as represented by GDP) and the vertical axis is the enrollment rate of youths in upper secondary school in 1990. The lowest of the four stars in the figure

represents the real per capita income and the high school enrollment rate in the United States in 1900, just before secondary school education took off in the United States' high school movement.

Two quadrants in the diagram have unambiguous interpretations—the northwest and southeast. I term the northwest quadrant the “good education” quadrant and the southeast quadrant the “bad education” quadrant. By the “good education” quadrant, I mean that nations found in it had lower real incomes in 1990 than the United States did in 1900 but a higher enrollment rate in 1990 than the United States had in 1900. By the “bad education” quadrant, I mean that the nations located in it had a higher income but a lower enrollment rate than the United States in 1900. No nation is in the bad quadrant and many are in the good quadrant. One can do the same thought experiment for other years. Figure 1 also contains a data point for the United States in 1920 and, once again, no country is located in the bad quadrant. The data point for 1940 places just a few countries in the bad quadrant. Only when the 1960 data point for the United States is considered do more than a handful of countries fall into the bad quadrant.

Two highly useful facts are embedded in these data and the thought experiment. The first fact—and it will be clearer in a moment—is that secondary schooling “took off” in the United States from around 1910 to 1940. The second fact is that the bad quadrant was virtually empty until the United States achieved very high enrollment rates, and the good quadrant was often brimming with countries. This demonstration suggests that even poor nations and poor people today invest in secondary schooling to a far greater degree than did the educational leader of the past. Thus, the twentieth century became the human capital century. Nations can no longer afford to be left behind in educating their people because today's technologies are produced by higher-education countries and are designed for an educated labor force.

The notions that “people skills” matter, that the wealth of a nation is embodied in its people, and that only an educated people can adopt, adapt, and innovate new technologies were voiced in America at the dawn of the twentieth century. In 1906, the governor of Massachusetts appointed a commission to study technical education and assigned the chairmanship to Carroll Wright—one of the greatest U.S. labor statisticians of all time, the first Massachusetts Commissioner of Labor, and the first Commissioner of the federal Bureau of Labor Statistics. The report of the Wright Commission concluded: “We know that the only assets of Massachusetts are its climate and its skilled labor” (Roman 1915). (Give the author half credit.) The modern concept of the wealth of nations had emerged. What mattered was capital embodied in people—*human capital*.

Why Did the Twentieth Century Become the Human Capital Century?

In the nineteenth century, machines and natural resources, not people, mattered to the industrial giants—Britain, Germany, France, and the United States. But in the early 1900s, attention began to shift to the education of the people at the secondary and higher levels.

A new economy—as it was termed by contemporaries—had emerged in the early twentieth century. It involved a greater use of science by industry, a proliferation of academic disciplines, a series of critical inventions and their diffusion (for example, small electric motors, the internal combustion engine, the airplane, various chemical processes), the rise of big business, and the growth of retailing. A host of demand-side factors increased the relative demand for educated labor and enhanced the returns to education and training.

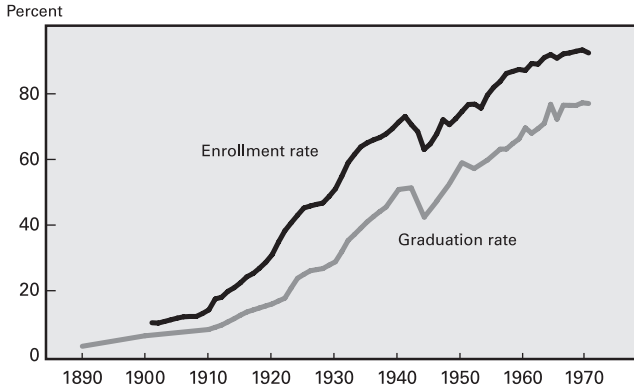
These changes did more than increase the demand for a small cadre of scientists and engineers. They increased the demand for skilled and educated labor among the mass of workers. Firms began to seek employees with a host of general skills. They sought a white-collar and clerical staff capable of using the latest office machinery, with modern office skills (such as stenography and typing), polished grammar, and some mathematical prowess. They also sought blue-collar workers who could decipher manuals, who could use algebra, and who had a mastery of mechanical drawing and a familiarity with chemical and electrical fundamentals.

A remarkable notion had emerged around 1900—it was that schooling could make the ordinary office clerk, the shop-floor worker, and even the farmer more productive. The odd thing is that even though most industrial nations acknowledged the change from physical capital to human capital, only one did much about it until well into the twentieth century.

How Did the United States Lead the World in Mass Education?

The demand for educated labor increased, and almost nationwide there was an outpouring of public and primarily local resources to build and staff high schools. These schools were academic (not industrial), free, secular, gender-neutral, open, and forgiving. The educational change was known then as the “high school movement.” In the United States as a whole, the enrollment rate for youths in all secondary schools—public high schools, private secular and religious high schools, and the preparatory departments of colleges and universities—soared from 1910 to

Figure 2
Public and Private Secondary School Enrollment
and Graduation Rates: United States, 1890 to 1970



Note: Enrollment figures are divided by the number of 14- to 17-year-olds. Graduation figures are divided by the number of 17-year-olds. Enrollment and graduation data include males and females in public and private schools. Year given is the end of the school year.

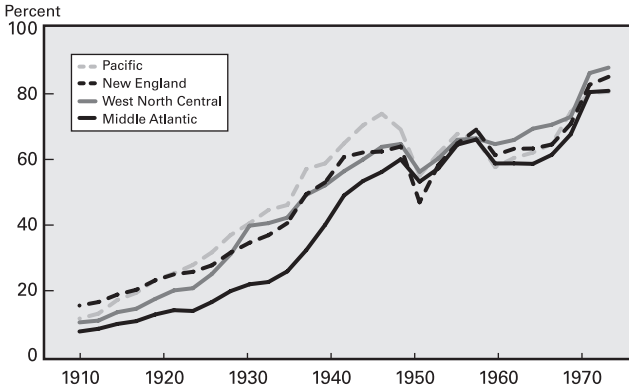
Source: U.S. Department of Education (1993), Table 19, supplemented for the years 1910 to 1930 by Goldin (1998).

1940, as seen in Figure 2.² In 1910, just one American youth in ten was a high school graduate, but in 1940 the median youth had a high school diploma. The contemporaneous graduation rate, expressed as a fraction of the relevant age group, also increased substantially during the same period. It is no wonder that those who lived through the early part of the period termed the change “one of the most remarkable educational movements of modern times” (California Department of Public Instruction 1914).

The high school movement was not just an urban phenomenon, and it was not just a New England phenomenon, although it began there. It quickly spread from New England towns to the rich agricultural areas in the central part of the country and to the western states. Because the southern states had lower levels of educational attainment for much of the twentieth century and because the high school movement diffused slowly throughout the South, the national data in Figure 2 give a

² High school or secondary school is historically defined in the United States as grades 9 through 12 (even if grade 9 is offered in a junior high school) and it generally includes youths from ages 14 or 15 to 17 or 18. For further details, see Goldin (1998, 1999).

Figure 3
Public and Private High School Graduation Rates,
1910 to 1970: Selected Regions of the United States



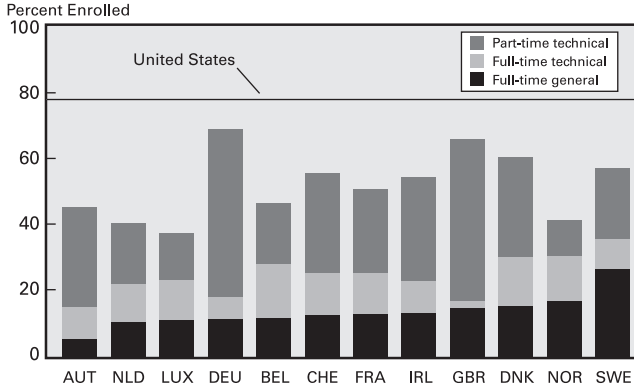
Note: Graduates include both males and females in public and private schools (including the preparatory departments of colleges and universities). The number of graduates is divided by the approximate number of 17-year-olds in the region. Constant growth rate interpolations of population data are made between census years.

Source: State-level high school graduation data from various sources. See Goldin (1998).

somewhat misleading impression of the speed of the high school movement throughout the rest of the country. High schools spread considerably faster in most other regions of the country, and graduation and enrollment rates were higher, as can be seen in the graduation rates of Figure 3. Even before 1930, graduation rates for 18-year-olds in many parts of the North, Midwest, and West exceeded the 50 percent mark.

In 1910, when the data on graduation rates begin, New England was the leading region. But by the mid-1910s, the rich states of the Pacific had closed in on New England, and by the 1920s, even the sparsely settled and agricultural states of the West North Central (consisting of states such as Iowa, Kansas, and Nebraska) had exceeded the rates achieved in New England. Only the Middle Atlantic states were left behind, but they caught up during the massive unemployment of the Great Depression, when jobs for teens evaporated overnight and education became a more attractive alternative. In 1940, as the world braced for yet another war, America could boast the most educated workforce in the world. It accomplished this feat even though, for much of the period, it had opened its doors to the poor of the world. America's success in mass secondary education resulted from its educational template and the associated virtues.

Figure 4
Secondary School Enrollment Rates for 12 European Nations and the United States, Youths Aged 15 to 19, 1955



Note: The data refer to the number of youths in public and private upper and lower secondary schools (of the types listed) ranging from those who turned 15 years old during the school year to those who turned 19 years old during that year. Thus, the age group under consideration is approximately all 15- to 18-year-olds, plus one-half of 14- and 19-year-olds. No youths in elementary schools or colleges and universities are included even if they were in the included ages. The procedure ensures consistency but implicitly favors countries, such as the Nordic nations, that have late starting ages and penalizes those, such as France and the United States, that have earlier starting ages.

The computation for the United States assumes 100 percent enrollment for the 14-year-olds and then adds all those enrolled in ninth through twelfth grades and divides by the number of youths aged 15 to 19.

Abbreviations are: Austria (AUT), Netherlands (NLD), Luxembourg (LUX), Germany (DEU), Belgium (BEL), Switzerland (CHE), France (FRA), Ireland (IRL), Great Britain (GBR), Denmark (DNK), Norway (NOR), and Sweden (SWE). Countries are listed in order of the full-time general secondary school enrollment rate.

Source: For European nations, Goldin (2001), Figure 1. For United States, U.S. Department of Education (1993), Tables 1 and 9.

In contrast to the U.S. template, European templates were characterized by quasi-public or private funding and provision, by the high standards of an unforgiving system, by the unity of church and state, and by a “boys come first” attitude. The German, British, and French templates or systems, while different in their details, had much in common—strict standards, individual accountability, severe tracking at early ages, and higher education for a small, elite corps. Most of these systems had centralized bureaucracies and finances, and some had elaborate apprenticeship systems.

By the mid-1950s, the United States’ lead in the human capital century was astoundingly large. A wide gap existed between the education of youth in Europe and in the United States. Across the 12 European countries in Figure 4, only one (Sweden) had a full-time, general education enrollment rate for 15- to 19-year-olds that exceeded 20

percent. In addition to Sweden, just two nations had a full-time general plus full-time technical educational enrollment rate that exceeded 30 percent. The U.S. enrollment rate for the same age group in 1955 was almost 80 percent. Even if one adds to the European data youths in part-time technical education, enrollment rates would still be considerably lower than in the United States. Only in the past three decades has the difference between the secondary school enrollment rate of the United States and that of Europe been largely eliminated and the lower quality of U.S. secondary school education become a major U.S. domestic issue.

Why did the United States at the turn of the twentieth century break from the educational and training templates of Europe and pioneer a novel form of secondary education? Why did Europeans believe that Americans were wasting resources by educating their masses? Why did Americans reject a highly specific, on-the-job, industrial form of education (such as the British, Danish, and German apprenticeship systems) in favor of one that was general, school-based, and academic? The answers to these questions concern basic differences between the New World and the Old World.

Formal, general education is more valued when geographic mobility and technical change are greater. School, not an apprenticeship and job training, enables a youth to change occupations over his lifetime, to garner skills different from his parents', and to respond rapidly to technological change. The U.S. template was not wasteful in the technologically dynamic, socially open, and geographically mobile New World setting. And, more important, it probably enhanced the dynamism.

Follow my reasoning thus far: A host of changes beginning in the late nineteenth century increased the demand for certain skills and knowledge. A set of republican institutions enabled the United States to respond to the increased demand for skill; these institutions, together with a set of New World preconditions (such as a high ratio of land to labor), meant that the United States responded to the technological imperative in a particular way. By the early twentieth century, the United States began to endow a large fraction of its youth with skills in formal, school-based, academic settings, using the U.S. template. The United States achieved mass secondary (and later mass higher) education because of a set of virtues that enabled the supply-side institutions to respond to the demand-side shift.

How did the virtues accomplish so much? Take decentralization, for example. In a state where public support for school expansion was less than 50 percent, the existence of numerous small, fiscally independent districts would enable high schools to diffuse. People choose where to live, and small districts are generally more homogeneous than are large districts with respect to income, ethnicity, religion, and cultural values. It is likely, therefore, that individual preferences for public goods are more similar the smaller the geographic area. Greater homogeneity means that

the public good—education in this case—might get funded by some of the districts, whereas there would be no funding if the district were the size of the state. In contrast to the United States, educational decisions were highly centralized in much of Europe. National legislation (in Britain and France, for example) was required to fund secondary school expansion, and it initially diffused more slowly than it did in the United States.

In the United States, about 130,000 separate school districts existed around 1925, but many were tiny common school districts of the open country, and some did not have the ability to set their own tax rates. That still left tens of thousands of fiscally independent school districts of a large enough size in the early part of the twentieth century to establish a public secondary school. These relatively small, fiscally independent school districts implicitly competed with each other to attract residents.

In work that Lawrence Katz and I have done using archival records from a unique state census, we found that an additional year of high school at the start of the high school movement in 1915 added more than 12 percent to the earnings of young men (18 to 34 years old). This return was almost double that for an additional year of secondary school in 1955.³ Returns were substantial even within various occupations. That is, whether a youth were somehow destined to be a blue-collar or a white-collar worker, there would still be significant returns to further education. The return to education, furthermore, was as high for farmers as it was for those in nonagricultural occupations.

What impact did the U.S. template have on economic growth and individual welfare? I'll give just one part of the answer: It had a major impact on economic inequality.⁴ As more individuals gained more years of education in the first half of the twentieth century, inequality declined. The structure of wages narrowed, wage ratios for higher-skilled relative to lesser-skilled positions fell, and the returns to education decreased. All of the data sets I have examined show declining inequality for the period from the late 1910s to the 1950s. And they also show rising inequality after the mid-1970s. If we think of the wage structure as being the result of a race between technology and education, then education ran faster than technology in the first half of the century, and technology ran faster than education in the second half. Interestingly, technology does not appear to have accelerated after the 1970s. Rather, advances in educational attainment slowed down, in part because of demographics. But that issue must wait for another talk.

³ See Goldin and Katz (2000).

⁴ For evidence on changes in inequality across the twentieth century, see Goldin and Katz (2001).

Have the Virtues of the Past Become the Vices of the Present?

The U.S. template (characterized by virtues) succeeded during the first half of the twentieth century, and for some time after, it did better than those of other nations. The system produced far more educated citizens and workers. It did not, by and large, reinforce class distinctions but, rather, it enabled economic and geographic mobility and resulted in a large decrease in inequality in economic outcomes. It may also have increased technological change and thus labor productivity, although that is far more difficult to prove.

The virtues I have mentioned include the following: education that was publicly funded and publicly provided; an open and forgiving system; an academic yet practical curriculum; numerous small, fiscally independent school districts; and secular (not church) control of schools. But these characteristics are no longer seen as uniformly virtuous. To some, they now constrain, rather than further, education. For example:

- Public or community funding and public provision were the hallmarks of the common school system. But vouchers—public funding but private provision—and charter schools are now being used and considered for use to increase competition. (Thomas Downes discusses these subjects in his paper for this conference.)
- An open and forgiving system without tracking at early ages was seen as egalitarian and non-elitist. But this type of system is now viewed as lacking both standards and accountability. Almost all states today have standards for grade promotion, high school graduation, school funding, and teacher retention. Some of these standards are strict and have serious consequences for those who do not pass. (Eric Hanushek and Margaret Raymond, and John Bishop, in their contributions for this conference, assess whether standards and accountability have positive effects on a variety of outcomes and, therefore, whether they are truly virtuous.)
- A general, academic education for all may enhance flexibility *ex ante*, but may, *ex post*, leave many behind and may have worsened rising inequality. Some have recently espoused technical and vocational training for certain youths.
- Although a decentralized system of small, fiscally independent districts competing for residents once fostered educational investments, these systems are now seen as producing serious funding inequities. State equalization plans are currently in effect in most states, although some plans (such as that in California) have led many to exit the public system and may actually reduce spending per child in poor districts.

(Thomas Downes summarizes this literature in his paper for this conference.)

- The separation of church and state encouraged a common education for all. But an insistence on the secular control of public funds would mean that Catholic and other church-based schools could not receive publicly funded vouchers, even in academically failing school districts where other private schools are unavailable to poor students. The recent Supreme Court ruling on this important issue (*Zelman v. Simmons Harris* on June 27, 2002) may widen the use of vouchers by denominational schools, not just by those in failing school districts.

In conclusion, the twentieth century was the human capital century. America led other nations by a wide margin in the provision of general, formal education to the masses and did so because of characteristics—virtues—that were shaped by New World endowments and republican ideology. Almost all of these virtues are now being questioned, and in the twenty-first century an entirely new set of virtues could emerge.

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