EXACTLY ONE HUNDRED YEARS AGO, an idealistic young writer began work on a marvelously ambitious trilogy. The author was Frank Norris, the first serious novelist in California’s then brief history as a state in the American Union. The opening novel of his trilogy, published in 1901, was the epoch-making *The Octopus*. That title referred to the Union Pacific Railroad, whose iron tentacles then seemed to be entangling all of California. Norris’s real subject, however, was signaled by the rarely remembered title that he gave to his unfinished trilogy as a whole. He called it *The Epic of Wheat*, and he intended it to lay bare the transformation of family farming in the Golden State into what we now call *agribusiness*.

That metamorphosis grew out of the harsh and even bloody interaction between the age-old localized activity of farming and a radically new delivery system for agricultural products: the railroad. The transformation, as Norris presented it, did not make a pretty picture, but it made an undeniably exciting portrait. The railroad was a thrilling, world-changing new technology. Yes, once you were caught in its octopus tentacles there seemed no escaping it; but if some feared that embrace, many more were intoxicated by it, and benefited greatly from it.
A century after Norris, we are witnessing an emerging and perhaps equally harsh interaction between the age-old localized human–machine teaching and learning delivery system for instruction: the technology-driven Internet. An education landscape now figuratively in the hands of thousands of “family farmers” will be transformed substantially, though not entirely, by interactive digital technology into a fiercely competitive knowledge industry. Teaching and learning will still be heavily influenced by our traditional institutions, but these colleges and universities will no longer dominate the landscape, and they will be seriously challenged by a sharply reduced number of dramatically enlarged competitors. The ubiquity of digital technologies, the emergence of new institutional players, the altered expectations of the employee workforce, and the changes in the student market will all be catalysts in the transformation. The ultimate question is how institutions of higher education in the United States will evolve in this emerging environment of corporate and technological competition and whether they can find a way to prosper alongside new educational delivery systems that are designed specifically for an evolving culture of individual empowerment and learning on demand.

The Changing Academic Landscape

By every demographic measure, higher education is destined to be one of the most rapidly changing of the next several decades. Currently, the 3,700 institutions in the United States enroll about fifteen million students. The traditional age cohort is expanding (perhaps adding as many as two million students over the next decade), but even more important, the traditional K–12 schools often combine the heads of two complex and notoriously creative corporations and the presidents of two superb and highly respected American universities. When pressured repeatedly about their unwillingness to acknowledge the desire or the need to make any fundamental change at their institutions, or others, the university presidents vehemently insist that the characteristics that made our graduate and professional schools the envy of the world, desired by many more than those who actually enroll and engage with them, capable of dramatically increasing price and capacity with no noticeable impact on productivity, will persist, combined with the decades of impressive growth of community colleges—changed the way we viewed education and research began to influence a number of our universities, and the postbaccalaureate chapters of our higher education system began.

The last major shift was signaled by the approval of the post–World War II GI Bill, a document that—combined with the explosive growth (perhaps adding as many as two million students to the next decade)—changed the way we viewed education and research began to influence a number of our universities, and the postbaccalaureate chapters of our higher education system began.

Increasingly, employed workers will require additional education to keep pace with the rapid changes in the work environment. We no longer speak of a single career but rather of a series of jobs in a career portfolio. As Stan Davis and Jim Botkin put it in their book _The Monster under the Bed_, “If you are not being educated in your job today, you may be out of a job tomorrow.” Howard Gardner, in his marvelous new book _The Disciplined Mind_, describes the characteristics that employee sought for in current job-seekers: “An individual must be highly literate, flexible, capable of troubleshooting and problem-finding, and, not incidentally, able to shift roles or even vocations should his current position become outmoded.” Gardner is not only an authority on creativity but his one hundred years ago, California farmers would understandably have insisted that each farmer was meaningfully distinct but that the railroad lumped them all together in a precarious corner of the new economy.

One hundred years ago, California farmers would understandably have insisted that each farmer was meaningfully distinct but that the railroad lumped them all together in a precarious corner of the new economy.
virtually guaranteed to attract focused time and considerable money. These programs have become the lifeblood of the technology market—providing an opportunity for for-profit institutions to seize on the growing need for knowledge and training among professionals in the workplace. This trend is particularly significant in the area of executive education, where the demand for skills in information technology and management continues to grow. For-profit institutions have responded to this demand by offering programs that are specifically designed to meet the needs of executives and professionals who are looking to enhance their skills and advance their careers. These programs often deliver educational content in a convenient format, such as online courses or on-site workshops, allowing learners to continue their professional development without having to interrupt their work schedules. The success of these for-profit providers in the executive education market is evident in the large number of participants and the significant revenue they generate. However, it is important to note that the growth of for-profit education is not without its challenges. There is a concern that for-profit providers may prioritize profit over quality, leading to lower standards of instruction and a lack of accountability. Additionally, some experts argue that the for-profit model may be at odds with the traditional values of higher education, which emphasizes the pursuit of knowledge for its own sake rather than for its potential financial returns. Despite these challenges, for-profit providers continue to be an important player in the education market, offering a valuable service to individuals and organizations that seek to improve their skills and advance their careers.
With a massive cultural sanction, schools have been licensed to tell students what they should learn, and students have not been licensed to decline the guidance. In no market economy does the vendor tell the customer what the customer will buy. Rather, the customer tells the vendor what he or she wants, and the vendor either provides it or goes out of business. For perhaps a longer time than most of us would care to admit, students have become increasingly unhappy with the mix of subjects that schools have required them to “buy” and with the way the subjects are provided. For better and perhaps very significantly for worse, the anarchic, asocial worldview that the Internet promotes is accelerating the transformation from a command to a market economy. If the way in which our schools, colleges, and universities respond to this challenge from the nation’s students, parents, employees, and employers is not more imaginative and more successful than how nineteenth-century elites are much more enriching than they are impoverished. Whatever costs they extract can be compensated for in other ways. All that is required is an intelligent, cautious, disciplined way of using them.

Were Frank Norris writing one hundred years later, contrasting the impact of computer networks on schools as he did railroad networks on farms, the same fears and warnings would emerge. But just as the truck and the plane made Norris’s villain look tame, so will unforeseen developments further transform the role that information science plays in our teaching and learning systems. Some form of classical university has survived for two and a half millennia, whereas virtually every other social institution has been broken or severely modified. New competitors for the market served by our historically decentralized, nonprofit colleges and universities have arisen with awesome speed and force—driven by the same digital innovations and consumer transformations that are reshaping so much else in society. Coexistence and recombination of the traditional institutions and the new competitors now seem inevitable, but with functions and formats still to be determined. Those institutions, old and new, that understand our underlying needs and values, and that exercise the ingenuity and courage to break down traditional patterns and boundaries, will design and ultimately control our educational future.

Notes
6. These data are from sources cited in the “Numbers” section of Business 2.0, September 1999, 190.