The Force of Technology in the Transformation of Education

Shortly before I became president of Bowdoin College in 2001, our trustees and many others were caught up in the tech boom of the late 1990s. I remember well a trustee retreat that was centered in large part on this very issue. Many trustees shared the then-conventional wisdom that technology would fundamentally and profoundly change the educational landscape. Then came the dot-com bust as we began the 21st century, and those very same folks significantly discounted the projected impact of technology.

Yet the impact has been undeniable: e-mail, text messaging, Facebook, LinkedIn, Twitter, wireless, iPhones, iPads, Android, Skype, BlackBerry, Blackboard, mobile apps, the cloud, and on and on. Today, you can use an app to find out what’s for lunch at Bowdoin, and one of our professors, Eric Chown, is even teaching a course on building apps. I think it’s fair to say that we find ourselves on the brink of that revolution envisioned in the late 1990s. But it happened organically and through innovation, surrounded by less hype and without the same market exuberance—at least until recently.

In an essay published in the Wall Street Journal, Marc Andreessen—the venture capitalist who co-founded Netscape and has backed Facebook, Groupon, Skype, Twitter, Zyngra, and Foursquare—wrote that we are on the verge of a new time, when “software is eating the world.” Why now? “Six decades into the computer revolution, four decades since the invention of the microprocessor, and two decades into the rise of the modern Internet, all of the technology required to transform industries through software finally works and can be widely delivered at global scale.” As Andreessen tells us, over 2 billion people now have broadband Internet access, up from 50 million a decade ago. He expects that in the next ten years, 5 billion people now have broadband Internet access, up from 50 million a decade ago. He expects that in the next ten years, 5 billion people worldwide will own a smartphone—giving them “instant access to the full power of the Internet.”

Today, the world’s largest bookseller is Amazon, a software company. The largest video service by number of subscribers is Netflix, another software company (founded by Bowdoin alumnus Reed Hastings). Music is dominated by iTunes, Pandora, and Spotify, all software companies. And the list goes on. We are in a moment of change, disruptive change that is altering the landscape. Andreessen’s view is that health care and education are next in line for fundamental software-based transformation.

In higher education today, we are storing, sorting, and filtering information in ways vastly different from what we did fifty or twenty-five or maybe even ten years ago. I am willing to concede that it is not the same to conduct art history research without traveling to an archive in France and looking directly at a priceless piece of art. I am also willing to concede that generations have found it invaluable to walk through the stacks in a library and discover books and treatises that they didn’t even know existed. I understand the power of these experiences and this scholarship, but one must also concede that the transmission and organization of facts and information has changed—and has changed forever. In the future, we are less likely to be limited by one surprising find in a library, put there because a librarian decided to purchase a particular book. Instead, we will be surprised because an algorithm has placed a particular source at the top of our search list on Google, or on the next Google. Of course, the future will decide if the process of discovery is as equally rewarding.

We cannot ignore the changing dynamics in the way that information is stored and delivered, because these changing dynamics will undoubtedly change our role as educators. The imperative to supply information is being supplanted—or, more likely, refocused—by the availability of the information if sorted and organized responsibly.

What does this mean for Bowdoin and other liberal arts colleges? I’ll be the first to admit: I don’t know. But I am convinced it is worth thinking about. I do believe that there will always be a place for the mode and substance of a liberal arts education and for a residential college experience. And in a Google and Wikipedia world, with a high degree of access to facts and information, there will be a premium placed on a liberal arts education that helps students learn which facts are worth knowing, what they can rely on, and how to interpret these facts. College education is less about accumulating facts that are a keystroke away and more about evaluating the veracity of the information and developing the powers of interpretation and judgment. What we do in liberal arts colleges, at our best, is more than imparting information. We enable students to develop judgment and perspective using the available facts and information in a manner based on critical judgment and analysis.

I am also convinced that technology, and the modes of learning emancipated by technology, will have the power to incrementally, rather than disruptively, improve the educational model of liberal arts colleges.
model of liberal arts colleges such as Bowdoin. For example, one could imagine innumerable ways that technology and the power to connect with colleagues nationally and internationally will allow colleges to expand course offerings and become more global. Already, the power to connect is used in meaningful ways by faculty to collaborate with colleagues in research and scholarship. Expanding our conception of teaching to incorporate this technology in similar ways and to thus bring the global community into our classrooms will incrementally enhance our educational enterprise. Is this a perfect solution or an absolute replacement for foreign study? No. But it is quite likely that students, faculty, and the community would benefit from real-time, face-to-face interaction with students and faculty in foreign lands.

Likewise, we are continually asked by faculty and students to create new programs at Bowdoin. There is often genuine enthusiasm and many good reasons to consider a new program, but creating something new, from a standing start, when we might have only one or two faculty committed to the concept, is difficult and expensive. Would it be best to build the program ourselves in our own residential community? Most definitely, yes. But it is also certain that resources will be limited and that the power to connect with colleagues elsewhere could create the needed critical mass for these new programs. It is also apparent, at least to me, that there are opportunities to improve the substance and scope of our model of education by providing sophisticated programs and advanced study at the outer edges of certain disciplines.

How we utilize technology while preserving the core of our liberal arts colleges, the very brand of our colleges—the connection between our faculty as teachers and scholars and our students as learners—will be critical. But we should not turn away from opportunities to add depth and strength to our programs, not only because the opportunities might be cost-effective but also because the overall quality of a liberal arts education will be directly linked with the excellence and sophistication of those programs. At Bowdoin, the relationship between our faculty and students is at the core of what we do, but that core will be unsustainable if the relationship is not grounded in the most sophisticated educational resources available. If we are not first-rate and intellectually sophisticated, over time we will not continue to attract first-rate, intellectually sophisticated faculty or students.

Finally, elite institutions—those highly selective institutions with the most restrictive admissions criteria—would be well served to consider the means for imparting, more broadly and more cost-effectively, the sum and substance of what we teach. Technology has the power to be the conductor of this education and to empower masses of people, rather than just a privileged few at elite institutions. And by this, I am referring to more comprehensive efforts than merely open-source education and free-access lectures. How can elite institutions with the brightest minds and the most ambitious programs flatten the curve to make this quality education readily available to a much broader segment of our society? Although there is no doubt that elite institutions are doing great work in making our form of education available to many who could not have gained access in the past, the size of our institutions collectively and the access we have created compose a small fraction of the demographic that could benefit from the educational opportunity. This is a vexing and ambitious project, but it is a task made more possible every day through the innovations of software and technology. It is, in my view, a challenge that elite educational institutions must take on.

Of course, I am sufficiently humble to understand that the musings of a college president do not effect change. Nothing happens at a college or university unless faculty and others in the campus community decide that there is something to an idea and take the initiative. But I think the future is clear, and we will be looking in our rearview mirror if we are not prepared to grapple with these new opportunities. The educational transformation that we face demands that we have the confidence to explore these new opportunities.

Note
This column is extracted from President Mills’s annual Opening of the College address, delivered at Bowdoin’s 210th Convocation on August 31, 2011. The full version can be found here: [http://www.bowdoin.edu/news/archives/1bowdoincampus/008795.shtml].


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